



Malaysian Society  
of Anaesthesiologists



College of  
Anaesthesiologists



Asian Society of Paediatric  
Anaesthesiologists

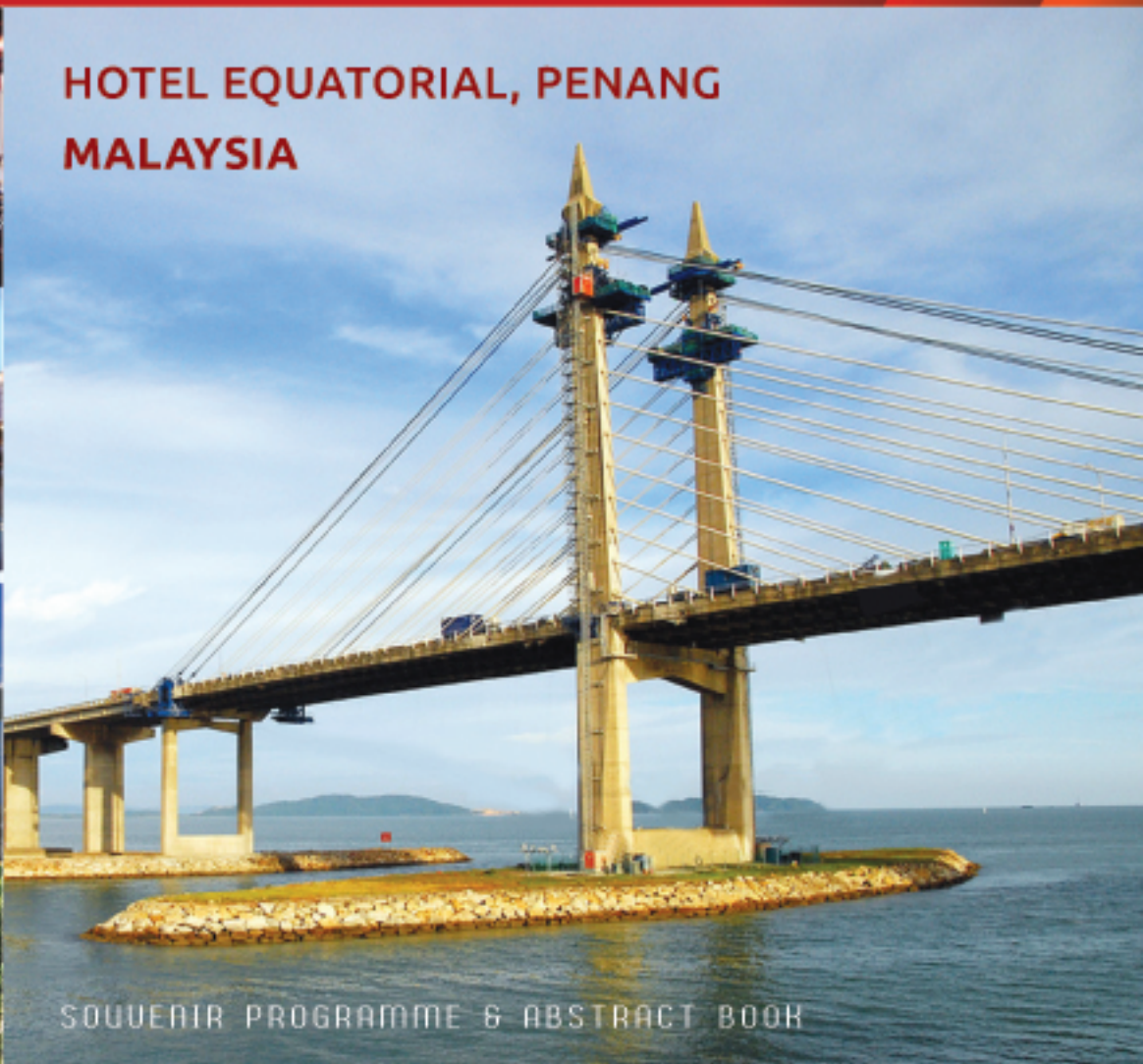
# MALAYSIAN SOCIETY OF ANAESTHESIOLOGISTS & COLLEGE OF ANAESTHESIOLOGISTS ANNUAL SCIENTIFIC CONGRESS 2015

THEME : "Anaesthesia In The New Era Of Technology"  
and

## 13<sup>th</sup> ASIAN SOCIETY OF PAEDIATRIC ANAESTHESIOLOGISTS CONGRESS

THEME : "Making Paediatric Anaesthesia Safe"

**11<sup>TH</sup> – 14<sup>TH</sup> JUNE 2015**



**HOTEL EQUATORIAL, PENANG  
MALAYSIA**

SOUVENIR PROGRAMME & ABSTRACT BOOK

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## PLATINUM SPONSOR



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## Message from the Honourable Deputy Minister of Health, Malaysia



It is indeed an honour and a pleasure to pen a few words in this programme book to commemorate the Annual Scientific Congress of the Malaysian Society of Anaesthesiologists and College of Anaesthesiologists, Academy of Medicine of Malaysia. My sincere thanks to the organisers of this joint scientific congress for their kind invitation for me to do so.

Allow me to bid all of you a warm welcome to this Annual Scientific Congress as well as the 13<sup>th</sup> Asian Society of Paediatric Anaesthesiologists (ASPA) Congress. I have been informed that this is the first time that the ASPA Congress is being held in Malaysia, and I am glad to know that the Island of Penang (my home state), has been given the honour to host this prestigious event!

I would also like to extend my heartiest congratulations to the Organising Committee for coming up with highly relevant themes for the respective Congresses. The theme for the ASC of the MSA / CoA is aptly titled 'Anaesthesia in the New Era of Technology' and the theme for the 13<sup>th</sup> ASPA Congress is 'Making Paediatric Anaesthesia Safe'.

In an era where patient safety is paramount, I am pleased that both themes centre on the delivery of safe anaesthesia in an ever-changing world of technology and it is vital that all practitioners are well-versed with current developments in order to attain the best outcomes for their patients. This is even more so for the paediatric age group who will have certain special issues to consider as well.

I sincerely hope that all delegates will learn as much as they can from the respected faculty who have been assembled here to impart their invaluable knowledge and experience. In addition, we can also learn from each other about what is considered as best practice worldwide.

Finally, I would also encourage the delegates to enjoy themselves not only at the Congress, but to also explore the many sights that the Island of Penang has to offer.

Wishing you a fruitful Congress and a memorable stay in Malaysia.

Thank you.

A handwritten signature in black ink, consisting of several fluid, overlapping strokes that form a stylized representation of the name.

**Dato' Seri Dr Hilmi bin Haji Yahaya**

# Message from the President, Malaysian Society of Anaesthesiologists



It gives me great pleasure, as my first task as President of the Malaysian Society of Anaesthesiologists, to write this message for the 53<sup>rd</sup> Annual Scientific Congress of the Malaysian Society of Anaesthesiologists and the College of Anaesthesiologists, Academy of Medicine of Malaysia, to be held from 11<sup>th</sup> to 14<sup>th</sup> June 2015, in this beautiful island of Penang, the Pearl of the Orient. This year, we have combined the Annual Scientific Congress with the 13<sup>th</sup> Asian Society of Paediatric Anaesthesiologists Congress.

In tandem with Malaysia moving forward towards a developed nation status, the theme of this year's congress is aptly titled "Anaesthesia in the New Era of Technology" and the Asian Society of Paediatric Anaesthesiologists Congress theme is "Making Paediatric Anaesthesia Safe".

The Scientific Committee has worked tirelessly to put forth a comprehensive programme covering a variety of topics. The faculty consists of very eminent speakers who are experts in their respective fields of anaesthesia. There is something for everyone, with eight pre-congress workshops, six plenaries, concurrent symposia and hands-on workshops.

On the social side, the Organising Committee has planned various activities during the four days of the Congress. The culmination of the congress is the Gala Nite with the theme being "Glamour & Glitter", so do come dressed in your finest.

The exhibition runs in parallel with the conference and offers you the chance to get up-to-date information from companies active in your area of interest. We are grateful to our Sponsors and Exhibitors for their interest and support for the Congress.

EAT SEE STAY in the food capital of Malaysia with its well-preserved heritage buildings and beautiful golden beaches.

In conclusion, I hope you will have a productive meeting and a successful exchange of views and insights.

"SELAMAT DATANG" to all our delegates.

A handwritten signature in black ink, which appears to read "Raveenthiran Rasiah". The signature is written in a cursive style and is positioned above the printed name.

**Dr Raveenthiran Rasiah**

## Message from the President, College of Anaesthesiologists, AMM and Organising Chairperson



Selamat Datang! On behalf of the College of Anaesthesiologists, Academy of Medicine of Malaysia and the Organising and Scientific Committees, it gives me great pleasure to welcome all guests and delegates to the beautiful island of Penang for the Annual Scientific Congress of the Malaysian Society of Anaesthesiologists / College of Anaesthesiologists 2015 and the 13<sup>th</sup> Asian Society of Paediatric Anaesthesiologists Congress.

It is indeed an honour for us to host the 13<sup>th</sup> Asian Society of Paediatric Anaesthesiologists as paediatric anaesthesia is still a fledgling field in Malaysia. It is definitely a field close to my heart. A special welcome to all the ASPA delegates!

The theme of the ASC of the MSA / CoA is 'Anaesthesia in the New Era of Technology' and the 13<sup>th</sup> ASPA 2015 being 'Making Paediatric Anaesthesia Safer'. The themes emphasise the need to adapt evidence-based new technology to make anaesthesia safer.

The ASC of MSA / CoA is the most important conference for anaesthesiologists, medical officers and the allied health professionals in Malaysia. The Congress is the perfect forum to foster collaborations, networks and relationships to enhance and transfer knowledge, to learn, share and problem-solve through discussions among delegates from diverse and contextual settings. The Scientific Committees of both the MSA/CoA ASC and ASPA Congress, under the able leadership of Associate Professor Dr Raha Abd Rahman and Professor Dr Felicia Lim and their teams, have researched extensively to produce a cutting-edge comprehensive programme containing six plenaries, sixteen symposia, meet-the-expert sessions, concurrent workshops, and eight pre-congress workshops including the ASPA Paediatric Perioperative Life Support Course, a 'Train the Trainers' workshop which is held for the first time.

The Special Interest Groups of the College of Anaesthesiologists, a total of 13, actively conduct workshops and conferences. The Paediatric Special Interest Group is a dynamic group. They conduct annual workshops, a successful Paediatric Anaesthesia Meeting in 2013 with eminent overseas speakers and now ASPA.

The Local Organising Committee, in the hands of the ever capable Datuk Dr Jahizah Hassan, has worked tirelessly to make this joint congress a success to a tee. It has been ten years since we last held MSA/CoA meeting in Penang. Going by the standards and success of the last meeting in Penang, you can be assured of not only an excellent educational congress but also a fun-filled social programme.

The alluring island of Penang, a UNESCO world heritage site, is a good fusion of East and West, rich in history and culture, beautiful beaches and known as the 'food capital' of Malaysia. Do take some time off to take in the sights and food!

I wish all delegates an inspiring, educational and enjoyable Congress in Penang.



**Dr Sushila Sivasubramaniam**

## Message from the President, Asian Society of Paediatric Anaesthesiologists (ASPA)



It gives me great pleasure to welcome all ASPA members to the 13<sup>th</sup> ASPA Congress in this beautiful island of Penang, Malaysia.

The Asian Society of Paediatric Anaesthesiologists (ASPA) was formed with the intention of allowing paediatric anaesthesiologists in Asian regions to come together to share their experiences. The Inaugural Meeting was held in 2000 at KK Women's and Children's Hospital in Singapore. Since then, many meetings have been held in different Asian countries - Singapore, India, China, Philippines, Thailand, Indonesia, Vietnam and Turkey. The objectives of the society are to establish a forum for exchange of views and to improve paediatric anaesthesia services in the Asian countries.

For this year, the Paediatric Anaesthesia Special Interest Group under the College of Anaesthesiologists, Academy of Medicine of Malaysia, has undertaken to organise the meeting with the theme of 'Making Paediatric Anaesthesia Safe'. In Asia, the perioperative care of paediatric patients is of great interest, not only for the paediatric anaesthesiologists but also to a large pool of specialist anaesthetists, anaesthetic trainees and medical officers as well as nurses and allied health professionals. Taking this into consideration, the Scientific Committee has planned a programme with a wide range of topics with the aim of addressing safety in providing anaesthesia for children. The topics include current as well as controversial issues which will be of interest not only to the paediatric anaesthesiologists but also to the generalists. The Scientific Committee has also taken great care in assembling a distinguished panel of prominent speakers from Asian regions and beyond as well as from home.

A Pre-Congress Workshop 'Paediatric Perioperative Life Support Course', first of its kind in this region, will be held. The aim of the course is to assist anaesthesiologists to anticipate, prevent and manage perioperative crisis in children undergoing surgery. This is a two-day workshop where participants who have attended the preliminary workshop in Singapore in December 2014, will come together to fine-tune the various modules and to map out strategies for introduction of this course to ASPA member countries.

ASPA is grateful to the Malaysian Society of Anaesthesiologists and the College of Anaesthesiologists, Academy of Medicine of Malaysia, for allowing this meeting to be held in conjunction with their Annual Scientific Congress. We would like to thank them for all the help and support they have rendered without which, we would not be able to hold this meeting. While this meeting gives an opportunity for members to get together to renew friendship and to build new ones, I hope you will also take time to visit the many attractions this Island has to offer.

I wish everyone an enjoyable and fruitful conference, and a pleasant stay in Penang.

A handwritten signature in black ink, appearing to read 'Yunxia Zuo', written in a cursive style.

**Dr Yunxia Zuo**

## Message from the Chairperson, Local Organising Committee, MSA / CoA ASC / ASPA Congress



On behalf of the Local Organising Committee, it gives us great pleasure to extend a warm welcome to all delegates and faculty members to the Annual Scientific Congress of the Malaysian Society of Anaesthesiologists and College of Anaesthesiologists 2015. Held in conjunction with this meeting, for the first time in Malaysia, is the 13<sup>th</sup> Asian Society of Paediatric Anaesthesiologists (ASPA) Congress.

It is indeed wonderful for the ASC to revisit Penang after a long-awaited lapse of ten years when the Local Organising Committee last hosted the event. We share, with our beautiful island and UNESCO World Heritage City of Georgetown, the pleasure of being host again. It is an honour to be entrusted with the responsibility of ensuring this Congress is as fruitful, enjoyable and memorable as the last one, not only for our dear friends from the anaesthetic fraternity of Malaysia but also for many of our delegates and speakers who have travelled from many other parts of Asia and the world.

“Anaesthesia in the New Era of Technology” and “Making Paediatric Anaesthesia Safe” are the respective themes for the ASC of the MSA / CoA and 13<sup>th</sup> ASPA Congresses. The chosen themes resonates with each other as clinical application of new technology, translational practice of evidence-based medicine and lifelong learning is the cornerstone of safety in anaesthesia. It had not been without challenge for the Local Organising Committee to coordinate with the main congress committee in our attempts to deliver a scientific programme that will live up to expectations. We sincerely hope we are able to deliver this in the extensive line up of pre-congress workshops, lecture plenaries, symposium lectures, and symposium workshops and meet-the-experts session.

I wish to thank the Local Organising Committee for their hard work and commitment in assisting me for the past few months. We are very keen to ensure that during this short stay, you are able to experience the best of Penang Island. We've lined up a sensory feast of “extra-curricular” activities for you, starting with local delicacies by the hotel chefs during your meal breaks, a sweat inducing hike up Bukit Jambul Hiking Trail for panoramic views of the two bridges of Penang, a King of the Fruits Durian Party, Gala Dinner and Malaysian Cultural Shows, inserted into our main events. We urge you to take time off to enjoy these activities and spend time to fraternise and strengthen our professional relationships.

I wish everyone a warm welcome and an enjoyable stay in Penang.

A handwritten signature in black ink, appearing to read 'Jahizah Hassan'. The signature is stylized and cursive.

**Dato' Dr Jahizah Hassan**

# Malaysian Society of Anaesthesiologists Office Bearers 2015-2016

<b>PRESIDENT</b>	Dr Raveenthiran Rasiah
<b>IMMEDIATE PAST-PRESIDENT</b>	Dr Sushila Sivasubramaniam
<b>PRESIDENT-ELECT</b>	Dato' Dr Jahizah Hassan
<b>CHAIRMAN</b>	Dr Mohamed Namazie Ibrahim
<b>HON SECRETARY</b>	Professor Dr Marzida Mansor
<b>HON TREASURER</b>	Datuk Dr V Kathiresan
<b>COMMITTEE MEMBERS</b>	Dr Gunalan a/l Palari @ Arumugam Dr Ina Ismiarti bt Shariffuddin Dr Mafeitzeral Mamat Dr Muhammad Maaya Dato' Dr Subrahmanyam Balan





# College of Anaesthesiologists, AMM Office Bearers 2015-2016

<b>PRESIDENT</b>	Dr Sushila Sivasubramaniam
<b>VICE-PRESIDENT</b>	Dr Lim Wee Leong
<b>HON SECRETARY</b>	Associate Professor Dr Raha Ab Rahman
<b>HON TREASURER</b>	Professor Dato' Dr Wang Chew Yin
<b>COUNCIL MEMBERS</b>	Professor Dr Lim Thiam Aun Dr Thohiroh Abd Razak Datin Dr V Sivasakthi Dr Patrick Tan Kee Seng
<b>COOPTED COUNCIL MEMBERS</b>	Dr Raveenthiran Rasiah Dr Tan Cheng Cheng

Professor Dr Lim Thiam Aun

Dr Thohiroh Abdul Razak

Associate Professor Dr Raha Abdul Rahman

Dr Raveenthiran Rasiah

Dr Patrick Tan Kee Seng

Dr Lim Wee Leong

Datin Dr V Sivasakthi

Professor Dato' Dr Wang Chew Yin

Dr Tan Cheng Cheng

Dr Sushila Sivasubramaniam

# Asian Society of Paediatric Anaesthesiologists (ASPA) Executive Committee 2015-2016

President	Dr Zuo Yun Xia
President-Elect	Dr Andi Ade Wr Fauzi
Honorary Secretary	Dr Serpil Ustalar Ozgen
Honorary Treasurer	Dr Josephine Tan
Committee Member	Dr Dayanti
	Dr Huang Yue
	Dr Felicia Lim
	Dr Kinouchi Keiko
	Dr Marichu Battard
	Dr Vivien Yuen
	Dr Vrushali Ponde
	Dr Erlinda Oracion
	Dr Arie Utariani
Secretariat	Ms Jessie Tan

## MSA / CoA ASC / ASPA 2015

### Organising Committee

Chairperson	Dr Sushila Sivasubramaniam
Hon Secretary	Professor Dr Marzida Mansor
Hon Treasurer	Datuk Dr V Kathiresan
Publications / Publicity	Dr Gunalan Palari

### Scientific Committees

#### ASPA

Prof Dr Felicia Lim (*Chairperson*)

Dr Sushila Sivasubramaniam, Dr Hamidah Ismail, Dr Ina Ismiarti Shariffuddin,  
Professor Dr Lucy Chan, Dr Thavaranjitham Sandrasegaram

#### MSA / CoA ASC

Associate Professor Dr Raha Abd Rahman (*Chairperson*)

Dr Julina Santhi Johami, Dr Muhammad Maaya, Dr Norliza Mohd Nor, Dr Vanitha Sivanaser

## Local Organising Committee

Chairperson	Dato' Dr Jahizah Hj Hassan
Co-Chairperson	Dr Yong Chow Yen
Secretary	Dr Linssey Ooi
Treasurer	Dr Shuraya Said
Scientific Committee Liaison	Dr Khoo Teik Hooi, Dr Harriszal Amiruddin, Dr Luah Lean Wah
Trade Exhibition	Dr Helmi Abd Halim, PPP Hj Abdul Halim Abdul Hamid, PPP Wan Khairil Azham
Social	Dr Ng Siew Ping, Dr Jusmidar Abdul Jamil, Dr Chin Im Im
Audio-Visual	Dr Mohammad Hanafi Mohd, Dr Khairul Amri Abdul Wahab
Registration	Dr Usha Rajah, Dr Nor Shafiza Mohammad Syariff, Matron Ong Poh Suan, Matron Kelijah Hamid
Press Liaison	Dr Tan Siew Ching, Dr Norhayati Mohd Said, Matron Gucharan Kaur
Transport	Dr Ang Ching Auang, Dr Ang Yiau Kian, PPP Afifuddeen Mahamud
Logistic Liaison	PPP Hj Azly Ahmad, PPP Hj Mohd Shahrin Ahmad, KJ Taniza Ahmad



# Invited Speakers

## AUSTRALIA

Michael Barrington  
Rob McDougall

## AUSTRIA

Peter Marhofer

## CHINA

Yunxia Zuo

## HONG KONG

Manoj Karmakar  
Vivien Yuen

## INDIA

Dilip Pawar  
Rebecca Jacob  
Chakra Rao  
Vrushali Ponde

## INDONESIA

Andi Ade Wijaya

## LITHUANIA

Robertas Salamavicius

## NETHERLANDS

Anthony Absolom

## PHILIPPINES

Angelina Gapay  
Erlinda Oracion

## SINGAPORE

Alex Sia Tiong Heng  
Ashish Ranjan Satapathy  
Theodore Wong Gar-Ling

## TURKEY

Serpil Ustalar Ozgen

## UNITED KINGDOM

Oliver Bagshaw

## UNITED STATES OF AMERICA

Adrian Bosenberg  
Keira Mason  
Raafat Hannallah

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## MALAYSIA

Abu Bakar Munir  
Amiruddin Nik Mohamed Kamil  
Azlina Masdar  
Azrin Mohd Azidin  
Lucy Chan  
Chan Yoo Kuen  
Eleanor Fe Fey Chew  
Hamidah Ismail  
Hasmizy Muhammad  
Hui Mun Tsong  
Ina Ismiarti Shariffuddin  
Kavita M Bhojwani  
Khoo Teik Hooi  
Luah Lean Wah  
Mary Suma Cardosa  
Marzida Mansor

Mohd Fahmi Lukman  
Muralitharan Perumal  
Nadia Md Nor  
Noraslawati Razak  
Nor'Azim Mohd Yunos  
Noryati Abu Amin  
Rafidah Atan  
Shahridan Mohd Fathil  
Tan Ai Pin  
Teo Shu Ching  
Thohiroh Abdul Razak  
V Sivasakthi  
Wan Mohd Nazaruddin Wan Hassan  
Wang Chew Yin  
Zuraini Md Noor

# MSA Honorary Member

## Dato' Dr Jenagaratnam S/O Sinnathamby, DPMP SMT PMP



### Citation by DR MARY SUMA CARDOSA

Dato' Dr S Jenagaratnam, or Dato' Jena as he is fondly called, is currently practising as a Consultant Anaesthesiologist in Ipoh Specialist Hospital, where he has been working for the past 34 years.

He was born in 1937 in Johore Bahru, where he grew up and went to school at the famous English College, JB. He then went on to get his MBBS degree from the University of Singapore, graduating in 1965. He served as a Medical Officer in the Department of Anaesthesia in the General Hospital Johore Bahru under Dato' Dr T Sachithanandan and after two years, he went off to the United Kingdom to train as an anaesthetist at the Middlesex Hospital, London.

He returned after obtaining his Fellowship in Anaesthesia from the Royal College of Surgeons, in Ireland in 1969, and worked as a specialist anaesthetist in Muar Hospital for two years before he was promoted and transferred to Kuala Terengganu to become the State Head of Anaesthesiology. For the next six years, he continued in this position during which time, he obtained his Fellowship in Anaesthesia and Intensive Care from the Royal Australasian College of Surgeons in 1975. He moved to Ipoh in 1977 to join private sector but continued to serve as an Honorary Consultant Anaesthesiologist to Ipoh General Hospital for a few years.

Dato' Jena has been involved with the Malaysian Society of Anaesthesiologists (MSA) from its founding years. He served as the President of the MSA for three terms - in 1980/1981 and 1981/1982, as well as from 1991-1993. He was elected as Chairman of the MSA in 2004 and served in this position for four years. Being there in the early days of the MSA and during the time that we first started networking with other Anaesthesiology societies in the region, Dato' Jena was also a Founder Member and Vice-President of CASA (the Confederation of ASEAN Societies of Anaesthesiologists) in 1979-1981, and was CASA Vice-President again in 1992-1993.

Apart from the MSA, Dato' Jena served two terms as President of the Chapter of Anaesthesiologists, Academy of Medicine of Malaysia (1993-1995 and 1995-1998). He has attended many anaesthesiology conferences, both locally and internationally, and has been an invited speaker at several of these conferences.

Even before he became a specialist, Dato' Jena was already contributing his time and energy to professional societies, starting in 1966 when he was Treasurer of the Johore/Melaka branch of the Malaysian Medical Association (MMA); he went on to serve in two other MMA branches Executive Committees - Terengganu/Kelantan and Perak - and was also in the Exco and several committees of the MMA at national level. He was also very active in the Perak Medical Practitioners' Society, serving in the Exco for many years and as Chairman from 1995-1997. He went on to become the President of the Federation of Private Medical Practitioners' Associations, Malaysia, in 1999.

His involvement in all those professional associations meant that he was deeply involved in the organising of several conferences and activities for these associations; notably, he was Organising Chairman of the First ASEAN Conference on Primary Care in Ipoh, Perak, in 1998, a conference that has continued to be held every two years till today.

## **MSA Honorary Member**

### **Dato' Dr Jenagaratnam S/O Sinnathamby, DPMP SMT PMP**

Dato' Jena has also been a pioneer in many areas in clinical practice. He set up the Intensive Care Unit in Ipoh Specialist Hospital (ISH) in the early 1990s and was also instrumental in setting up Pain services in the same hospital in the 2000s. He has served several terms as Head of the Anaesthesiology Unit in ISH and was appointed to several hospital-level management committees since the inception of the hospital. He went on to serve in Kumpulan Perubatan Johor (KPJ) National-level committee on clinical risk management and continues to be the Chairman of the clinical risk management committee of ISH till today.

His significant contributions to healthcare services was given recognition when he was conferred the title Dato' (Dato' Paduka Mahkota Perak or DPMP) by the Sultan of Perak, in 2000. More recently, in 2012, he was awarded "30 Years Long Service Award, medical consultant category" at the KPJ Ipoh Specialist Hospital's 30<sup>th</sup> anniversary dinner.

Dato' Jena is married to Dorothy and is blessed with three beautiful daughters, Sharon, Lydia and Rachel.

In summary, Dato' Jena is a real gentleman. He is always ready to help and give advice when approached. He is always able to keep cool even in conflict situations and can tease out the relevant issues when critical decisions need to be made. He is the right person to call upon to settle any conflict (which always occurs within committees). I had the privilege of serving in the MSA Exco when he was the President and I must say that it was a very pleasant and enriching experience for me as I was a junior specialist at that time and had just started my involvement in the MSA. Even after he had finished his third term as the MSA President, he agreed to serve the Society again a decade later as the MSA Chairman - it was during this time that he took on the job as Organising Chairman of the 16<sup>th</sup> ASEAN Conference of Anaesthesiologists in Kota Kinabalu, in 2009, a fine finale to his service to our Society and fitting testimony to his pioneering involvement in CASA in the 1970s and 1980s.

# Pre-Congress Workshop 1

## **ASPA Paediatric Perioperative Life Support Course (PPLS)** **10<sup>th</sup> & 11<sup>th</sup> June 2015 (Wednesday & Thursday)** *(by invitation only)*

**VENUE :** Pekaka Room, Hotel Equatorial, Penang

**COORDINATOR :** Agnes Ng

### **SYNOPSIS**

This two-day workshop is a train-the-trainers' workshop. Participants will be those who have attended the workshop in December 2014 held in Singapore. They come from Hong Kong, Bhutan, Kenya, India, Indonesia, Philippines, Malaysia, Thailand, Turkey, Sri Lanka and Singapore. They will fine-tune the various modules in the course. The format of the workshop will include a course-book, equipping talks, interactive case discussions and skills stations.

This workshop will finalise the accreditation process of the PPLS and map out strategies for introduction of PPLS to ASPA member countries.

# Pre-Congress Workshop 2

## Ultrasound Guided Neuroaxial and Paravertebral Blocks 11<sup>th</sup> June 2015 (Thursday)

Organised in collaboration with MALAYSIAN SOCIETY OF INTERVENTIONAL PAIN PRACTITIONERS (MSIPP) and PAIN SIG

**VENUE :** Murai I & II, Hotel Equatorial, Penang

**TIME :** 1400 - 1700 hrs

**CONVERNOR :** Anwar Samhari Mat Arshad

**FACILITATORS :** Anwar Samhari, Muralitharan Perumal, Choong L T, Marzida Mansor

### INTRODUCTION

Ultrasound (US) is a promising imaging technique in interventional pain management. It allows the identification of soft tissues, vessels, and nerves, without exposing patients and personnel to radiation. Imaging can be performed continuously and the fluid injected is visualized in a real-time fashion. Possible applications are nerve blocks of the cervical and lumbar zygapophysial joints, stellate ganglion block, intercostal nerve blocks, peripheral nerve blocks of the extremities, blocks of painful stump neuromas, caudal epidural injections, and injections of tender points. US can be used not only for local anesthetic blocks, but has a potential application for destructive procedures, such as cryoanalgesia, radiofrequency lesions, or chemical neurolysis.

We purposely chose 3 essential procedures of relevance to the practicing anaesthesiologist in their day to day practise, thus Lumbar Neuroaxial (interlaminar and caudal epidural) and Thoracic Paravertebral block are chosen (TPVB).

TPVB block produces ipsilateral somatic and sympathetic nerve blockade in multiple contiguous thoracic dermatomes above and below the site of injection, which is effective in treating acute and chronic pain of unilateral origin from the chest or abdomen. It is frequently performed using surface anatomical landmarks and loss of resistance. Recent advances in US technology and image-processing capabilities of US machines have made it possible to image the thoracic paravertebral space, which may offer several advantages when used for paravertebral injections. US is noninvasive, safe, simple to use, no radiation is involved, and one can preview the paravertebral anatomy before block placement. This allows one to accurately determine the distance to the transverse process and pleura. Preliminary data suggest that it is feasible to perform US-guided thoracic paravertebral block and also observe the spread of the injected local anesthetic in real-time. This may translate into improved technical outcomes, higher success rates, and reduced needle-related complications.

For the neuroaxial, the role of ultrasound has been underappreciated, partly because of the relative efficacy of the landmark-guided technique and partly because of the perceived difficulty in imaging through the narrow acoustic windows produced by the bony framework of the spine. However, this also is the basis for the utility of ultrasound: an interlaminar window that permits passage of sound waves into the vertebral canal also will permit passage of a needle. In addition, ultrasound aids in identification of intervertebral levels, estimation of the depth to epidural and intrathecal spaces, and location of important landmarks, including the midline and interlaminar spaces. This can facilitate neuraxial blockade, particularly in patients with difficult surface anatomical landmarks.

Thus the aim of this workshop is to introduce the sono-anatomy features of the thoracic and lumbar neuroaxial landmarks, describe the key ultrasonographic views and to propose a systemic approach to ultrasound imaging for the performance of the spinal and epidural blockage either for anaesthesia or chronic pain in adult patients.



# Pre-Congress Workshop 3

## Obstetric Anaesthesia Crisis Simulation 11<sup>th</sup> June 2015 (Thursday)

Organised by Special Interest Group (SIG) Obstetric and Special Interest Group (SIG) Simulation,  
College of Anaesthesiologist and Malaysian Society of Anaesthesiologist

**VENUE :** Matahari I, Hotel Equatorial, Penang

**FACULTY :** Rajeswary Kanapathipillai (Organising Chairperson), Thohiroh Abdul Razak, Rafidah Atan,  
Nor'Azim Mohd Yunos, Noraslawati Razak, Noorulhana S Hadzarami, Nadia Md Nor

### OBJECTIVES

The objective of this workshop is to highlight key issues required to optimize learning within a synthetic environment. In this workshop, participants will be taught on how to manage obstetric anaesthesia crisis in the perioperative setting. There will be hands-on training and practice in managing various obstetric emergency scenarios using simulated patients. The session will be conducted by a team of experts in their respective fields and who have had extensive experience running the simulation program.

### COURSE PROGRAMME

0800 - 0830	Registration
0830 - 0845	Welcome Message
0845 - 0900	Obstetric Crisis: An Overview <b>Thohiroh Abdul Razak</b>
0900 - 0945	Human Performance Issues And Errors In Anaesthesia <b>Rajeswary Kanapathipillai</b>
0945 - 1000	Isbar / Video Presentation <b>Rafidah Atan</b>
1000 - 1030	Tea
1030 - 1130	Hands-On Simulation Part 1 (Group 1, 2, 3)
1145 - 1245	Hands-On Simulation Part 2 (Group 2, 1, 3)
1245 - 1400	Lunch
1400 - 1500	Hands-On Simulation Part 3 (Group 3, 1, 2)
1500 - 1600	Debriefing and Q & A End of Session

## Pre-Congress Workshop 4

### **Basic Focused Cardiac Ultrasound in Critical Care 11<sup>th</sup> June 2015 (Thursday)**

**VENUE :** Matahari III, Hotel Equatorial, Penang

**ORGANISER :** Regional SIG / Winfocus

**COORDINATOR :** Julina Johami / Shahridan Mohd Fathil

#### **SYNOPSIS**

Focused Echocardiography in Critical Care course is designed to provide basic knowledge and skills required to perform and interpret rapid bedside transthoracic echocardiography in the critical care setting. The course is conducted in small groups, with a low trainer to participant ratio, in a one-day program consisting of relevant lectures and adequate hands-on sessions on live subjects.

# Pre-Congress Workshop 5

## Anaphylaxis

11<sup>th</sup> June 2015 (Thursday)

**VENUE :** Serindit, Hotel Equatorial, Penang

**FACILITATORS :** Hui Mun Tsong, Faizal Bakhtiar, Tang Min Moon,  
Padma Priya Bathumana Appan, Loo Su Yin, Sharmila A/P Bhaskaran

### OBJECTIVES

- Recognition of anaphylaxis and its subsequent management
- Immediate, refractory & post-crisis management of perioperative anaphylaxis
- Introduction to a list of potential perioperative allergens
- Concept of Anaesthetic Allergy Clinic, how this differs from the Immunological allergy clinic. You will learn interpretation of some appropriate skin and serum testing results
- Preparation of a Latex free kit
- Preparation of an Anaphylaxis Box

### PROGRAMME

0800 - 0830	Registration
0830 - 0840	Introduction <b>Hui Mun Tsong</b>
0840 - 0850	Pre-test
0850 - 0905	Immunological concepts of hypersensitivity <b>Faizal Bakhtiar</b>
0905 - 0920	Drugs / Antibiotics hypersensitivity <b>Faizal Bakhtiar</b>
0920 - 0935	Transfusion related anaphylaxis <b>Sharmila Bhaskaran</b>
0935 - 0950	NSAIDs and anaphylaxis <b>Tang Min Moon</b>
0950 - 1030	Tea
1030 - 1200	WORK STATIONS <ol style="list-style-type: none"><li>1. Latex allergy station <b>Faizal Bakhtiar, Tang Min Moon</b></li><li>2. Anaphylaxis box station <b>Loo Su Yin, Sharmila Bhaskaran</b></li><li>3. Clinic simulation station <b>Hui Mun Tsong, Padma Priya Bathumana Appan</b></li></ol>
1200 - 1400	Lunch
1400 - 1530	Interactive session - Case studies
1530 - 1550	Truths and myths about anaphylaxis <b>Padma Priya Bathumana Appan</b>
1550 - 1600	Post-test
1600	Disperse

# Pre-Congress Workshop 6

## Extra-Corporeal Membrane Oxygenation (ECMO) 11<sup>th</sup> June 2015 (Thursday)

Organised by Special Interest Group (SIG) of Cardiac Anaesthesia

**VENUE** : Merbah I & II, Hotel Equatorial, Penang

**ORGANISER** : Yong Chow Yen

### SYNOPSIS

This is a compact and comprehensive 1 day course covering pertinent technical and clinical applications of extra-corporeal cardiopulmonary life support in the peri-operative critical and intensive care setting. Recent advances in extra-corporeal membrane oxygenation (ECMO) technology has directed the utilisation of the treatment modality beyond cardiac surgical care into the areas where temporary extracorporeal support of the cardiopulmonary system is increasingly a reasonable option not only as a bridge to recovery but also as a bridge to decision making. The Ministry of Health Malaysia and several private hospitals in the country are embarking on providing ECMO services and it is timely that the anaesthetic fraternity becomes cognizant in another lifesaving treatment option available to our patients. This workshop will be useful for any doctor wanting a better understanding of ECMO for cardiac and respiratory support, in particular anaesthetists, intensivists, respiratory physicians, surgeons and paediatric intensivists.

0730	Registration
0800	Introduction and welcome by Chairperson
0815	Physiology of VA & VV ECMO <b>Winfried Dramburg</b>
0845	The ECMO circuit, pump, membrane oxygenator, surface coatings <b>Winfried Dramburg</b>
0915	Gas transfer in ECMO membranes <b>Winfried Dramburg</b>
0945	Daily patient and ECMO circuit management <b>Winfried Dramburg</b>
1015	Tea
1030	ECMO for acute respiratory failure <b>Robertas Samalavicius</b>
1100	Cannulation for VV ECMO <b>Winfried Dramburg</b>
1130	Mechanical ventilation of patients on VV ECMO for pulmonary diseases <b>Robertas Samalavicius</b>
1200	IABP for cardiogenic shock <b>Robertas Samalavicius</b>
1230	Cardiogenic shock, indications for ECMO <b>Robertas Samalavicius</b>
1300	Lunch
1400	Cannulation for VA ECMO (peripheral and central) <b>Robertas Samalavicius</b>
1445	Prevention and treatment of pulmonary edema under peripheral VA ECMO <b>Robertas Samalavicius</b>
1515	Pitfalls in ECMO <b>Winfried Dramburg</b>
1545	Tea
1600	Weaning from VA and VV ECMO <b>Winfried Dramburg</b>
1630	Hands-on training on MDC <b>Winfried Dramburg</b>
1730	Closing by Chairperson

# Pre-Congress Workshop 7

## **TIVA for the Paediatrics and the Obese** **11<sup>th</sup> June 2015 (Thursday)**

**VENUE :** Seminar Room, 4<sup>th</sup> Floor, ACC Building, Hospital Pulau Pinang, Penang

**WHO SHOULD ATTEND :** Anaesthesiologists, trainees and medical officers passionate about TIVA use.

**FACILITATORS :** Lim Wee Leong, Khoo Teik Hooi, Ina Shariffuddin, Sou Shin Ai, Jacynta Jayaram

### **OBJECTIVES**

The objectives of this practical workshop are to improve the standard of Intravenous Anaesthesia and its delivery systems including Target Controlled Infusion (TCI) technology; promote the clinical application of existing and new knowledge in Intravenous Anaesthesia; develop and recommend safety and quality standards for Intravenous Anaesthesia.

The focus of this interesting workshop is the practice of TIVA in paediatrics and obese patients. We also aim to bring together those who study and practice Intravenous Anaesthesia. It is structured with lectures and interactive live demos in the operating theaters.

Dr Oliver Bagshaw, Consultant in Paediatrics Anaesthesia and Intensive Care Birmingham Children's Hospital, UK and Professor (Anesthesiology) Dr Lim Thiam Aun, University Putra Malaysia, Serdang, Selangor will be conducting this workshop.

# Pre-Congress Workshop 8

## Deep Block with Neuromuscular Blocking Agents

11<sup>th</sup> June 2015 (Thursday)

(Hosted by Hospital Pulau Pinang, in collaboration with Merck Sharp & Dohme)

**VENUE :** Ambulatory Care Centre Operating Theater, Hospital Pulau Pinang, Penang

**INVITED FACULTY :** Shereen Tang Suet Ping

**COORDINATOR :** Harriszal Amiruddin

### SYNOPSIS

This one-day workshop aim to provide the participants the concept of deep neuromuscular blockade to improve optimum surgical condition especially in laparoscopic and orthopaedic surgery. The workshop is conducted by Dr Shereen Tang Suet Ping, from Department of Anaesthesiology and Intensive Care, Universiti Kebangsaan Malaysia Medical Center (UKMMC). This workshop will provide its participants with the relevant and necessary information to increase knowledge and highlight the principles towards the safe practice of deep block. Participants will be provided with live demonstrations. Case discussions and forums will be held at the end of the workshop for participants to share perspectives and experience.

### PROGRAMME

0830 - 0900	Registration
0900 - 0915	Opening remarks and introduction of workshop by <b>Dato' Dr Jahizah Hassan</b>
0915 - 0945	Has deep neuromuscular blockade a place in modern anaesthesia? <b>Shereen Tang Suet Ping</b>
0945 - 1015	Benefits of deep neuromuscular paralysis in laparoscopic surgeries - A gynaecologist's perspective <b>Diong Seng Kwok</b>
1015 - 1045	Tea break
1045 - 1230	Case observation (Laparoscopic BTL)
1230 - 1345	Lunch
1345 - 1430	Case observation (Laparoscopic herniorraphy)
1430 - 1500	Postoperative residual curarization : Problem and strategies <b>Shereen Tang Suet Ping</b>
1500 - 1530	Benefits of deep neuromuscular paralysis in laparoscopic surgeries - A surgeon's perspective <b>Prabhu A/L Ramasamy</b>
1530 - 1700	Group discussion and summary <b>Shereen Tang Suet Ping</b>

# ASPA Workshop

## Ultrasound Guided Nerve Blocks in Children

12<sup>th</sup> June 2015 (Friday)

**TITLE :** Paediatric Blocks That Every Anaesthesiologist Should Be Familiar With

**TIME :** 1630 - 1800 hrs (90 mins)

**VENUE :** Matahari III, Hotel Equatorial, Penang

**INVITED FACULTY :** Vrushali Ponde, Manoj Karmakar

### OBJECTIVES

The aim of this workshop is to provide attendees with a basic knowledge of the most frequently used ultrasound guided regional anaesthetic blocks in children. These include blocks of the upper extremity (interscalene, supraclavicular and infraclavicular approach), lower extremity (femoral and popliteal sciatic nerve block), abdominal (transversus abdominis plane, rectus sheath and ilioinguinal and iliohypogastric nerve block), and central neuraxis (caudal epidural).

### PROGRAMME

1630 - 1640	Introduction <b>Manoj Karmakar</b>
1640 - 1705	Upper extremity and abdominal wall blocks - Short presentation and live volunteer scan <b>Vrushali Ponde</b>
1705 - 1730	Lower extremity and central neuraxial blocks - Short presentation and live volunteer scan <b>Manoj Karmakar</b>
1730 - 1800	Q & A session
1800	Adjourn

# Programme Summary

Date Time	12 <sup>th</sup> June 2015 (Friday)	13 <sup>th</sup> June 2015 (Saturday)	14 <sup>th</sup> June 2015 (Sunday)
0730 - 0830	Registration	Brainy Breakfast	
0830 - 0930	<b>PLENARY 1 (ASPA)</b>	<b>PLENARY 2</b>	<b>PLENARY 4 (ASPA)</b>
0930 - 1030	<b>OPENING CEREMONY</b>	<b>PLENARY 3</b>	
		Tea / Trade Exhibition	
1030 - 1130	Tea / Trade Exhibition	<b>SYMPOSIUM</b>	
	<b>SYMPOSIUM</b>	<b>8</b>	<b>9</b>
1130 - 1230	<b>1</b>	<b>10 (ASPA)</b>	<b>15</b>
	<b>2</b>		<b>16</b>
1230 - 1330	<b>3 (ASPA)</b>	<b>MEET-THE-EXPERTS (ASPA)</b>	
	Lunch	<b>CLOSING CEREMONY</b>	
	Friday Prayers	Lunch	
1330 - 1430		<b>SYMPOSIUM</b>	
	<b>SYMPOSIUM 4</b>	<b>11</b>	<b>12</b>
1430 - 1530	<b>CONCURRENT WORKSHOPS</b>	<b>13 (ASPA)</b>	<b>14 (ASPA)</b>
	<b>1</b>	<b>CONCURRENT WORKSHOP 3</b>	<b>MSA AWARD / MSA-AZ YIA</b>
1530 - 1630	<b>2</b>	<b>POSTER PRESENTATIONS</b>	
	<b>SYMPOSIUM 5</b>		
1630 - 1730	Tea / Trade Exhibition	Tea / Trade Exhibition (1700 - 1830)	<b>ASPA AGM</b>
1730 - 1830	(1630 - 1830) Fun Hike	Durian / Fruit Party	
1930 - 2200	<b>FACULTY DINNER (by invitation only)</b>	<b>CONGRESS GALA DINNER</b>	



# Daily Programme

## 12<sup>TH</sup> JUNE 2015 (FRIDAY)

0730 - 0830	Registration		
0830 - 0915	<b>PLENARY 1 (ASPA)</b> <i>Grand Ballroom I - III</i> Chairperson: Felicia Lim Reducing the risk in neonatal anaesthesia <b>Adrian Bosenberg</b>		
0915 - 1030	<b>OPENING CEREMONY</b> <i>Grand Ballroom I - III</i> 0915 Guests and Delegates to be seated 0920 Arrival of YB Dato' Seri Dr Hilmi bin Haji Yahaya, Deputy Minister of Health Malaysia Persembahan Silat Doa Selamat Welcome address by Dato' Dr Jahizah Hassan, Local Organising Chairperson, MSA / CoA ASC / ASPA Congress 2015 Welcome by Dr Sushila Sivasubramaniam, President, College of Anaesthesiologists & Organising Chairperson, MSA / CoA ASC / ASPA Congress 2015 Speech by Dr Raveenthiran Rasiah, President, Malaysian Society of Anaesthesiologists Speech and Official Opening by YB Dato' Seri Dr Hilmi bin Haji Yahaya, Deputy Minister of Health Malaysia Gamelan Orchestra Montage MSA Conferment of MSA Honorary Membership on Dato' Dr S Jenagaratnam, citation by Dr Mary Cardosa Visit to Trade Exhibition Coffee / Tea		
1030 - 1100	Tea & Trade Exhibition		
1100 - 1230	<b>SYMPOSIUM 1</b> <b>CARDIOTHORACIC ANAESTHESIA</b> <i>Matahari I</i> Chairpersons: Norzalina Esa, Mohammad Hanafi Mohd	<b>SYMPOSIUM 2</b> <b>AMBULATORY ANAESTHESIA</b> <i>Grand Ballroom I - III</i> Chairpersons: Kavitha M Bhojwani, Mohd Fahmi Lukman	<b>SYMPOSIUM 3 (ASPA)</b> <b>ADVANCES IN AIRWAY &amp; VENTILATION</b> <i>Matahari III</i> Chairpersons: Usha Nair, Agnes Ng
1100 - 1130	1100 - 1130 Pushing the boundaries for the use of ECMO in acute cardiac and pulmonary failure <b>Robertas Samalavicius</b>	1100 - 1130 Obesity and OSA - Can it be done as daycare? <b>Wang Chew Yin</b>	1100 - 1120 Challenges of single-lung ventilation in infants and children <i>[page 38]</i> <b>Oliver Bagshaw</b>
1130 - 1200	1130 - 1200 Cardiopulmonary bypass for non-cardiac surgery <i>[page 34]</i> <b>Hasmizy Muhammad</b>	1130 - 1200 The way forward! Regional anaesthesia in the day care surgery <i>[page 36]</i> <b>Amiruddin Nik Mohamed Kamil</b>	1120 - 1140 Oxygen in neonatal anaesthesia, friend or foe? <b>Adrian Bosenberg</b>
1200 - 1230	1200 - 1230 ECMO/ECLS in refractory in and out hospital cardiac arrest <i>[page 35]</i> <b>Zuraini Md Noor</b>	1200 - 1230 Best practice for daycare surgery: TIVA vs inhalational <i>[page 37]</i> <b>Eleanor Fe Fey Chew</b>	1140 - 1200 Emergency airway intervention using ultrasound <b>Manoj Karmakar</b>
1200 - 1220			1200 - 1220 Low flow anaesthesia for paediatric practice <b>Serpil Ustalar Ozgen</b>
1230 - 1400	Lunch / Friday Prayers		

# Daily Programme

## 12<sup>TH</sup> JUNE 2015 (FRIDAY) [CONT'D]

1400 - 1600	<b>SYMPOSIUM 4 AIRWAY</b> <i>Grand Ballroom I &amp; II</i> Chairpersons: Muhammad Maaya, Azrin Azidin	<b>CONCURRENT WORKSHOPS</b>		<b>SYMPOSIUM 6 (ASPA) CHALLENGES &amp; CONTROVERSIES</b> <i>Matahari III</i> Chairpersons: Intan Zarina, Andi Ade Wijaya
1400 - 1430	Videolaryngoscope should totally replace conventional laryngoscopy. Pros and cons <b>Mohd Fahmi Lukman</b>	1430 - 1600 <b>CONCURRENT WORKSHOP 1 REGIONAL ANAESTHESIA</b> The Regional Anaesthesia Special Interest Group <i>Grand Ballroom III</i>	1430 - 1600 <b>CONCURRENT WORKSHOP 2 ACUPUNCTURE</b> Kavita M Bhojwani <i>Matahari I</i>	1400 - 1420 Peri-operative fluid management - Is Holliday and Segar regime still relevant? <i>[page 40]</i> <b>Rob McDougall</b>
1430 - 1500	Flexible vs rigid fibreoptic scope - The pros and cons in their use for difficult intubation <i>[page 39]</i> <b>Theodore Wong Gar-Ling</b>			1420 - 1440 Blood transfusion in children of Jehovah Witnesses <b>Angelina Gapay</b>
	<b>SYMPOSIUM 5 SAFETY &amp; QUALITY</b> <i>Grand Ballroom I &amp; II</i> Chairpersons: Marzida Mansor, Hui Mun Tsong			1440 - 1500 Use of Human Albumin in paediatric anaesthesia <b>Vivien Yuen</b>
1500 - 1530	Guidelines for blood transfusion <b>Noryati Abu Amin</b>			1500 - 1520 Anaesthesia for cardiac catheterization in children <i>[page 41]</i> <b>Hamidah Ismail</b>
1530 - 1600	Safe central line <b>Shahridan Mohd Fathil</b>			
1600 - 1630	Tea & Trade Exhibition			
1630 - 1800	Tea & Trade Exhibition			<b>ASPA WORKSHOP</b> <i>Matahari III</i> Ultrasound guided nerve blocks in children <b>Vrushali Ponde, Manoj Karmakar</b>
(1630 - 1830)	<b>FUN HIKE</b>			
1930 - 2200	<b>FACULTY DINNER</b> (by invitation only)			

# Daily Programme

## 13<sup>TH</sup> JUNE 2015 (SATURDAY)

0730 - 0830	<b>BRAINY BREAKFAST</b> <i>Matahari I</i> Chairperson: Julina Santhi Johami Various pathways to become an anaesthetic specialist <i>[page 42]</i> <b>Marzida Mansor, Ashish Ranjan Satapathy, Azlina Masdar, Khoo Teik Hooi, V Sivasakthi</b>		
0830 - 1000	0830 - 0915 <b>PLENARY 2</b> <i>Grand Ballroom I - III</i> Chairperson: Raveenthiran Rasiah Regional anaesthesia in children: Achievement of new horizons <b>Peter Marhofer</b>		
	0915 - 1000 <b>PLENARY 3</b> <i>Grand Ballroom I - III</i> Chairperson: Jahizah Hassan 3D ultrasound for regional anaesthesia: Is it useful? <b>Manoj Karmakar</b>	<b>SYMPOSIUM 7 (ASPA)</b> <b>SAFETY &amp; QUALITY</b> <i>Matahari III</i> Chairpersons: Rajeswary Kanapathypillai, Masao Yamashita <hr/> 0915 - 0935 Blood pressure control in infants and babies <i>[page 43]</i> <b>Rob McDougall</b> <hr/> 0935 - 0955 Nitrous oxide - Is it obsolete in paediatric anaesthesia? <i>[page 44]</i> <b>Rebecca Jacob</b>	
1000 - 1030	Tea & Trade Exhibition		
1030 - 1200	<b>SYMPOSIUM 8</b> <b>REGIONAL ANAESTHESIA</b> <i>Grand Ballroom I - III</i> Chairpersons: Amiruddin Nik Mohamed Kamil, Julina Santhi Johami	<b>SYMPOSIUM 9</b> <b>MISCELLANEOUS</b> <i>Matahari I</i> Chairpersons: Wang Chew Yin, Wan Mohd Nazaruddin Wan Hassan	<b>SYMPOSIUM 10 (ASPA)</b> <b>CLINICAL PHARMACOLOGY</b> <i>Matahari III</i> Chairpersons: Yoga Bhavani, Marichu Battard
	1030 - 1050 Low dose blocks: How low can you go? <b>Ashish Ranjan Satapathy</b>	1030 - 1100 Renal replacement therapy in critically ill patients: Review and updates <b>Rafidah Atan</b>	1030 - 1050 The role of muscle relaxant in paediatric anaesthesia <b>Lucy Chan</b>
	1050 - 1110 Abdominal wall block or blocks for breast surgery: The current evidence <b>Michael Barrington</b>	1100 - 1130 Modern anaesthesiologist as perioperative physician <b>Chakra Rao</b>	1050 - 1110 Is there a need to reverse muscle relaxant? <b>Erlinda Oracion</b>
	1110 - 1130 Has dual guidance been a success? A review of recent evidence <i>[page 45]</i> <b>Azrin Mohd Azidin</b>	1110 - 1130 Wealth, wisdom and wellbeing <i>[page 46]</i> <b>Chan Yoo Kuen</b>	1110 - 1130 Anaphylaxis and allergies in children <b>Andi Ade Wijaya</b>
	1130 - 1200 Additives to local anaesthetics: Optimizing regional blocks <b>Peter Marhofer</b>	1130 - 1200 Anaesthesia and health information: Protecting personal data <b>Abu Bakar Munir</b>	1130 - 1150 Premedication for unco-operative children - Hints and tips <i>[page 47]</i> <b>Ina Ismiarti Shariffuddin</b>
1200 - 1330	<b>Lunch Satellite Symposium (Baxter)</b> <i>Grand Ballroom I - III</i> Anaesthesia for day care surgery - Is faster better? <b>Joseph Answine</b>		

# Daily Programme

## 13<sup>TH</sup> JUNE 2015 (SATURDAY) [CONT'D]

1330 - 1500	<b>SYMPOSIUM 11 NEUROANAESTHESIA</b> <i>Grand Ballroom I - III</i> Chairpersons: Vanitha M Sivanaser, Nor'Azim Mohd Yunos		<b>SYMPOSIUM 12 PAIN MANAGEMENT</b> <i>Matahari I</i> Chairpersons: Nadia Md Nor, Rafidah Atan		<b>SYMPOSIUM 13 (ASPA) REGIONAL ANAESTHESIA - SAFE &amp; EASY</b> <i>Matahari III</i> Chairpersons: Ruwaida Isa, Lim Suan Ling	
	1330 - 1400 Is there an ideal fluid therapy in neuro anaesthesia? <i>[page 48]</i> <b>Wan Mohd Nazaruddin Wan Hassan</b>	1330 - 1400 Updates on new drugs and technology in the management of cancer pain <b>Mary Suma Cardosa</b>	1330 - 1350 Making paediatric regional anaesthesia safer <b>Adrian Bosenberg</b>			
	1400 - 1430 Does it matter? Comparison of TIVA and inhalational anaesthesia in elective intracranial surgery? <b>Mohd Fahmi Lukman</b>	1400 - 1430 Electroanalgesia - Better outcomes with new technology? <i>[page 50]</i> <b>Marzida Mansor</b>	1350 - 1410 How has ultrasound changed the practice of paediatric regional anaesthesia <b>Vrushali Ponde</b>			
	1430 - 1500 A potential blood bath? Antiplatelet and anticoagulation therapy in elective neurosurgery <i>[page 49]</i> <b>Hui Mun Tsong</b>	1430 - 1500 Evidence-based used of RFA (radiofrequency ablation) in pain management <b>Muralitharan Perumal</b>	1410 - 1420 Use of intravenous lipid emulsion on bupivacaine carditoxicity in children <b>Dilip Pawar</b>			
1500 - 1630	<b>CONCURRENT WORKSHOP 3 AIRWAY</b> <i>Grand Ballroom III</i>		<b>MSA AWARD / MSA-AZ YOUNG INVESTIGATOR AWARD</b> <i>Matahari I</i>		<b>POSTER PRESENTATIONS</b> <i>Glass Link Corridor</i>	
			<b>SYMPOSIUM 14 (ASPA) NEW PERSPECTIVE ON PAIN MANAGEMENT</b> <i>Matahari III</i> Chairpersons: Hamidah Ismail, Vivien Yuen			
			1440 - 1500 Postoperative pain management for daycare surgeries in children <i>[page 51]</i> <b>Yunxia Zuo</b>			
			1500 - 1520 Analgesia for an OSA child after tonsillectomy <b>Teo Shu Ching</b>			
1520 - 1540 Choice of analgesia in paediatric minimally invasive surgery <i>[page 52]</i> <b>Raafat Hannallah</b>						
1630 - 1700	Tea & Trade Exhibition				1630 - 1800 <b>ASPA AGM</b> <i>Kuang</i>	
1700 - 1830	<b>DURIAN / FRUIT PARTY</b>					
1930 - 2200	<b>CONGRESS GALA DINNER</b> <i>Grand Ballroom I - III</i> <b>Theme: Glamour and Glitter</b> Arrival of guests and delegates Arrival of YBhg Datuk Dr Noor Hisham Abdullah, Director-General of Health Malaysia Welcome remarks by Dato' Dr Jahizah Hassan, Local Organising Chairperson Speech by Dr Sushila Sivasubramaniam, Organising Chairperson Speech by YBhg Datuk Dr Noor Hisham Abdullah, Director-General of Health Malaysia Dinner MSA Award and MSA-AZ YIA Award Best Poster Awards Best Dressed Awards Entertainment Table Draw Best 10 Lucky Draws					

# Daily Programme

## 14<sup>TH</sup> JUNE 2015 (SUNDAY)

0730 - 0830	<b>BRAINY BREAKFAST</b> <i>Matahari I</i> Chairperson: Vanitha M Sivanaser How to cope with stress <b>Chan Yoo Kuen, Rafidah Atan</b>		
0830 - 0915	<b>PLENARY 4 (ASPA)</b> <i>Grand Ballroom I - III</i> Chairperson: Sushila Sivasubramaniam Anaesthesia and the developing brain <b>Anthony Absolom</b>		
0915 - 1000	<b>PLENARY 5</b> <i>Grand Ballroom I - III</i> Chairperson: Chan Yoo Kuen Labour analgesia: Epidural, PCEA and beyond <b>Alex Sia Tiong Heng</b>	<b>PLENARY 6 (ASPA)</b> <i>Matahari III</i> Chairperson: Thavaranjitham Sandrasegaram TIVA/TCI in paediatric anaesthesia, now and future <i>[page 53]</i> <b>Oliver Bagshaw</b>	
1000 - 1030	Tea & Trade Exhibition		
1030 - 1200	<b>SYMPOSIUM 15</b> <b>OBSTETRIC ANAESTHESIA</b> <i>Grand Ballroom I - III</i> Chairpersons: Norliza Mohd Nor, Azlina Masdar	<b>SYMPOSIUM 16</b> <b>ALLIED HEALTH</b> <i>Matahari I</i> Chairpersons: Raha Abd Rahman, Zuraini Md Noor	<b>MEET-THE-EXPERTS (ASPA)</b> <b>TIVA / SEDATION</b> <i>Matahari III</i> Chairpersons: Teo Shu Ching, Josephine Tan
	1030 - 1050 Studies in obstetric anaesthesia - What do we do, what else do we need to do <b>Alex Sia Tiong Heng</b>	1030 - 1100 To lead or be led? The role of allied health care providers in CPR <b>Luah Lean Wah</b>	1030 - 1050 Establishing a culture of safety in anaesthesia outside the operating room <b>Keira Mason</b>
	1050 - 1110 Massive transfusion protocol in obstetric: The evidence <i>[page 54]</i> <b>Thohiroh Abdul Razak</b>	1100 - 1130 The role of a nurse in acute pain management <b>Tan Ai Pin</b>	1050 - 1110 Monitoring depth in TIVA for children <b>Anthony Absolom</b>
	1110 - 1130 Post op pain relief - The new horizon <b>Nadia Md Nor</b>		1110 - 1130 Remifentanil - Clinical applications in paediatric anaesthesia <i>[page 57]</i> <b>Oliver Bagshaw</b>
	1130 - 1200 Natural birthing - Where do the anaesthetist stand? <i>[page 55]</i> <b>Noraslawati Razak</b>	1130 - 1200 Working together for patient safety <i>[page 56]</i> <b>Nor'Azim Mohd Yunos</b>	1130 - 1150 Dexmedetomidine for anaesthesia and sedation in children <b>Keira Mason</b>
1200 - 1230	Closing Ceremony <i>Grand Ballroom I - III</i>		Closing Ceremony (ASPA) <i>Matahari III</i>
1230 - 1330	Lunch		

# FUN HIKE

## 12<sup>TH</sup> JUNE 2015 (FRIDAY)



### PANORAMIC VIEW OF 2 BRIDGES

#### Bukit Jambul Trail Fun Hike

12<sup>th</sup> June 2015 (Friday), 1645 hrs

This hike will take you up Bukit Jambul Hiking Trail. It is an easy trek that goes up the hill immediately behind Hotel Equatorial. It is a favorite hiking trail for local fitness enthusiasts living in the south eastern part of Penang Island. The entrance of the trail is less than 5 minutes' walk from the hotel. The route to the top requires some climbing over rocks, with steps

having been added in places. At the top of the hill, there are two look-out gazebos offering panoramic views of both Penang Bridge and the Sultan Abdul Halim Muadzam Shah Bridge or Penang Second Bridge. On a clear day, the views span the entire south eastern part of Penang Island, from Bayan Baru to Pulau Jerejak, on to the mainland across the sea.

The trail is well-marked and the Organising Committee will provide trail signage and guides, but hikers have been known to get lost when the jungle gets dark in the evening. The return journey is approximately 3 km and will take about 1.5 hours depending on how long we spend at the top. It is recommended that we start early, latest by 1645 hrs from the hotel.

#### To join the hike you are required to:

1. Register at the main congress registration counter before 1500 hrs on 12<sup>th</sup> June 2015 (Friday).
2. Collect your hiking t-shirt at the starting point at 1630 hrs on 12<sup>th</sup> June 2015 (Friday).
3. Wear suitable sport attire especially shoes with good grip. No special hiking boots required.

#### You will be provided with:

1. Hiking t-shirt if you are registered before 1500 hrs on 12<sup>th</sup> June 2015 (Friday), first-come first-served basis.
2. A 500ml bottle of drinking water at the hotel lobby as we start and a second bottle at hill top.
3. Light snack at hill top.
4. Traffic wardens to take you across the road and traffic junctions from the hotel to the trail entrance.
5. Guides along the trail.

#### Optional personal items to bring along:

1. A small sweat towel
2. Mosquito repellent
3. A walking stick if you have knee problem.
4. Camera
5. Rain poncho

#### Start and End Points: Lobby, Equatorial Hotel

Please be at the start point at 1630 hrs. We start at 1645 hrs sharp.

This activity is subject to change depending on weather condition.

# Conference Information

## CONGRESS VENUE

### Hotel Equatorial

No. 1, Jalan Bukit Jambul, Bayan Lepas, 11900 Penang, Malaysia  
Tel: +604 632 7000

## REGISTRATION

The registration hours are:

11 <sup>th</sup> June 2015 (Thursday)	1400 to 1900 hrs
12 <sup>th</sup> June 2015 (Friday)	0730 to 1800 hrs
13 <sup>th</sup> June 2015 (Saturday)	0730 to 1800 hrs
14 <sup>th</sup> June 2015 (Sunday)	0730 to 1100 hrs

## IDENTITY BADGES

Delegates are kindly requested to wear identity badges during all sessions and functions.

## ENTITLEMENTS

Registered delegates will be entitled to the following:

- Admission to the scientific sessions, satellite symposia and trade exhibition
- Conference bag and materials
- Gala Dinner
- Lunches & Coffee/Tea

## SPEAKERS AND PRESENTERS

All speakers and presenters are requested to check into the Speaker Ready Room at least two hours prior to their presentation. There will be helpers on duty to assist with your requirements regarding your presentation.

The operating hours are:

11 <sup>th</sup> June 2015 (Thursday)	1500 to 1900 hrs
12 <sup>th</sup> June 2015 (Friday)	0730 to 1700 hrs
13 <sup>th</sup> June 2015 (Saturday)	0730 to 1700 hrs
14 <sup>th</sup> June 2015 (Sunday)	0730 to 1100 hrs

All presentations will be deleted from the conference computers after the presentations are over.

## PHOTOGRAPHY & VIDEOTAPING POLICIES

No photography or videotaping of the presentations is permitted during the scientific sessions.

## MOBILE PHONE

For the convenience of all delegates, please ensure that your mobile phone is silenced during the conference sessions.

### DISCLAIMER

Whilst every attempt would be made to ensure that all aspects of the Convention as mentioned in this publication will take place as scheduled, the Organising Committee reserves the right to make the changes should the need arises.

## Complimentary Shuttle Bus Service Schedule

11 <sup>th</sup> JUNE 2015 (THURSDAY)		
DEPARTURE TIME	PICK-UP POINT	DROP-OFF POINT
0700	Equatorial Hotel	Ambulatory Care Centre, Penang Hospital
0700	Vistana Hotel	Ambulatory Care Centre, Penang Hospital
1700	Ambulatory Care Centre, Penang Hospital	Equatorial Hotel
1700	Ambulatory Care Centre, Penang Hospital	Vistana Hotel

12 <sup>th</sup> JUNE 2015 (FRIDAY)		
DEPARTURE TIME	PICK-UP POINT	DROP-OFF POINT
0730	Vistana Hotel	Equatorial Hotel
0745	Vistana Hotel	Equatorial Hotel
1240	Equatorial Hotel	Masjid Bayan Baru
1250	Equatorial Hotel	Masjid Bayan Baru
1415	Masjid Bayan Baru	Equatorial Hotel
1430	Masjid Bayan Baru	Equatorial Hotel
1700	Equatorial Hotel	Vistana Hotel
1730	Equatorial Hotel	Vistana Hotel
1830	Equatorial Hotel	Vistana Hotel

FACULTY DINNER, 12 <sup>th</sup> JUNE 2015 (FRIDAY)		
DEPARTURE TIME	PICK-UP POINT	DROP-OFF POINT
1900	Equatorial Hotel	Dinner Venue
1915	Equatorial Hotel	Dinner Venue
2300	Dinner Venue	Equatorial Hotel

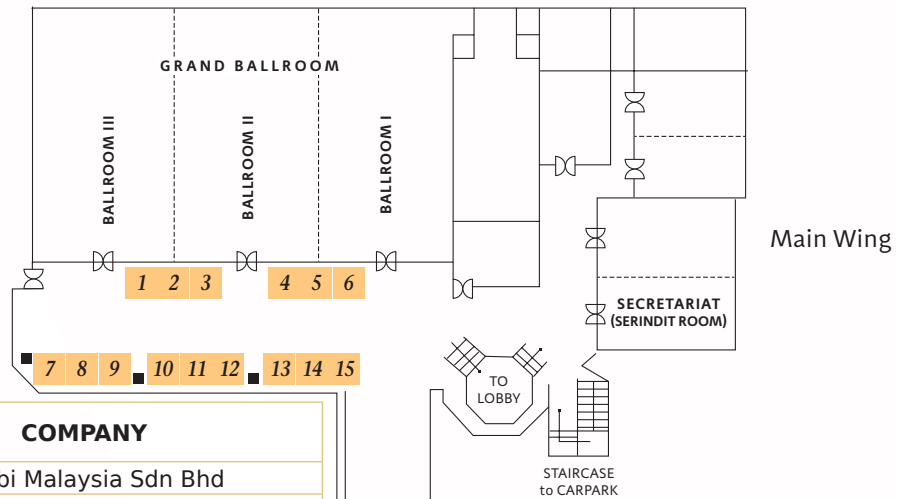
13 <sup>th</sup> JUNE 2015 (SATURDAY)		
DEPARTURE TIME	PICK-UP POINT	DROP-OFF POINT
0730	Vistana Hotel	Equatorial Hotel
0745	Vistana Hotel	Equatorial Hotel
1700	Equatorial Hotel	Vistana Hotel
1730	Equatorial Hotel	Vistana Hotel
1830	Equatorial Hotel	Vistana Hotel

GALA DINNER, 13 <sup>th</sup> JUNE 2015 (SATURDAY)		
DEPARTURE TIME	PICK-UP POINT	DROP-OFF POINT
1900	Vistana Hotel	Equatorial Hotel
1915	Vistana Hotel	Equatorial Hotel
2300	Equatorial Hotel	Vistana Hotel
2315	Equatorial Hotel	Vistana Hotel

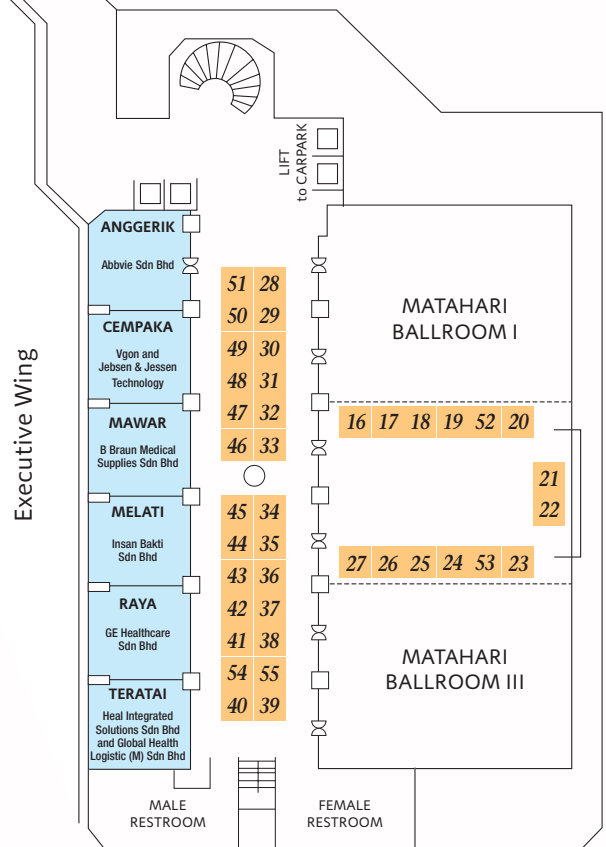
14 <sup>th</sup> JUNE 2015 (SUNDAY)		
DEPARTURE TIME	PICK-UP POINT	DROP -OFF POINT
0730	Vistana Hotel	Equatorial Hotel
0745	Vistana Hotel	Equatorial Hotel
1300	Equatorial Hotel	Vistana Hotel
1330	Equatorial Hotel	Vistana Hotel



# Floor Plan & Trade Exhibition



BOOTH STAND	COMPANY
1,2,3	Fresenius Kabi Malaysia Sdn Bhd
4,5,6	Baxter Healthcare
7,8	Primed Medical Sdn Bhd
9	Megsher Medic (M) Sdn Bhd
10,11	3M Malaysia Sdn Bhd
12,13,14,15	Malaysian Healthcare Sdn Bhd
16,17	Roche (M) Sdn Bhd
18	Emstec Medical Solution Sdn Bhd
19	Takeda Malaysia Sdn Bhd
20	Elsevier Singapore Pte Ltd
21,22	Drager Medical S E A Pte Ltd
23	Anugerah Saintifik Sdn Bhd
24	Hospimetrix Sdn Bhd
25	Transmedic Healthcare Sdn Bhd
26,27	KL Med Supplies (M) Sdn Bhd
28,51	Schiller (Malaysia) Sdn Bhd
29	ATN Medic Sdn Bhd
30,31	Merck Sharp & Dohme (I.A) Corp
32,33	Norse Crown Co (M) Sdn Bhd
34	IDS Services (Malaysia) Sdn Bhd
35	Halyard Health Pte Ltd
36	UMMI Surgical Sdn Bhd
37	Mundipharma Pharmaceuticals Sdn Bhd
38	Laerdal Malaysia Sdn Bhd
39	Integrated Medical System & Lifetronic Medical System
40	Bumi Biomed Sdn Bhd
41	Medental (M) & Pall Thai Medical Sdn Bhd
42	Unimed Sdn Bhd
43	AFT Pharma (S E Asia) Sdn Bhd
44	Edward Lifesciences (Malaysia) Sdn Bhd
45	Hospira Malaysia Sdn Bhd
46	Gemilang Asia Technology Sdn Bhd
47	Taraf Synergy Sdn Bhd
48	Medic Dot Com Sdn Bhd
49	Ain Medicare Sdn Bhd
50	Goodlabs Medical (M) Sdn Bhd
52	Oralex Sdn Bhd
53	Medi-Life (M) Sdn Bhd
54	Radiometer Malaysia Sdn Bhd
55	Sutra Medi-Environ Sdn Bhd



### Legend

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# Acknowledgements

The Organising Committee of the MSA / CoA ASC / ASPA 2015 wishes to thank the following for their support and contribution:

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## **CARDIOPULMONARY BYPASS FOR NON-CARDIAC SURGERY**

**Hasmizy Bin Muhammad**

*Sarawak General Hospital Heart Centre, Sarawak, Malaysia*

Cardiopulmonary bypass system successfully used since 1950s for cardiac surgery. Their essential components such as the pump, oxygenator and heat exchanger replace the function of the heart, lung and body temperature regulator. This physiological capability of cardiopulmonary bypass system will support organs for complex surgical and medical treatments.

Traditionally, cardiopulmonary bypass require cannulation at right atrium and ascending aorta through midline sternotomy. However, cannulation via femoral vein and artery, now common practise in non-cardiac surgery.

Cardiopulmonary bypass can be applied for circulatory support or tissue oxygenation in aortic surgery, neurosurgery, urologic surgery, lung surgery, surgery of the lower trachea and carina, liver surgery, multiple trauma (cardiac, chest, airways), severe hypothermia, malignant hyperthermia and cardiopulmonary arrest.

Adverse effects of cardiopulmonary bypass in non-cardiac surgical patients similar as in cardiac surgery. Furthermore, femoral arterial cannulation has potential for hypoperfusion, dissection of the great arteries, and vascular or neurologic injury to the lower extremity.

A multidisciplinary team approach consists of cardiac anaesthesiologist, cardiac surgeon, primary surgeon and perfusionist, is important in the application of cardiopulmonary bypass system for non-cardiac surgery. Experienced, knowledgeable and well-trained team significantly improves patient outcome.

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1. Birnbaum D.E. Extracorporeal circulation in non-cardiac surgery. *European Journal of Cardiothoracic Surgery*. 2004;26
2. Jameel S, Colah S, Klien A.A. Recent advances in cardiopulmonary bypass techniques. *Continuing Education in Anaesthesia, Critical Care & Pain*. 2010;10.1
3. Kawahito S, Kitahata H, Kitagawa T. Non-cardiac surgery applications of extracorporeal circulation. *The Journal of Medical Investigation*. 2007;54
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## **ECMO/ECLS IN REFRACTORY IN AND OUT OF HOSPITAL CARDIAC ARREST**

**Zuraini Md Noor**

*Hospital Serdang, Selangor, Malaysia*

Cardiac arrest has a poor prognosis, and despite conventional cardiopulmonary resuscitation (CPR), only a few patients can fully resume their former lifestyle. The main reason for poor prognosis in cardiac arrests are a lack of return of spontaneous circulation (ROSC), re-arrest from haemodynamic instability after ROSC and hypoxic brain injury. In some studies, alternative CPR using extracorporeal life support (ECLS) (previously called emergency cardiopulmonary bypass, extracorporeal membrane oxygenation, percutaneous cardiopulmonary bypass or percutaneous cardiopulmonary support) was reported to be effective in patients in whom ROSC could not be achieved by conventional CPR.

Now, there is growing evidence that extracorporeal cardiopulmonary resuscitation (ECPR) can save lives when standard advanced cardiac life support fails. While ECPR has saved the lives of many adults and children with in-hospital cardiac arrest (IHCA), its usefulness for out-of-hospital cardiac arrest (OHCA) victims is less certain. When ECPR is used to treat in-hospital cardiac arrest patients, rather than having poor survival rates less than 10% seen with standard advanced cardiac life support (ACLS), survival rates reportedly increase to 20-30%.

## **THE WAY FORWARD! REGIONAL ANAESTHESIA IN DAY CARE SURGERY**

**Amiruddin Nik Mohamed Kamil**

*Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

Pain control following day care surgery continues to be a problem in a substantial number of patients. They have poor quality health style at home such as fatigue, immobilization, poor appetite and disturbed sleep.

Pain relief heavily depends on multiple classes of oral analgesics when treating moderate to severe pain yet still insufficient. Side effects like nausea and vomiting are common especially if opioid-based medication is used.

High expectation from surgeon - more types of surgery varying in complexity producing moderate to severe pain that requires strong analgesic. On the other hand patients expect excellent pain control but without unwanted side effects.

In multiple studies Regional Anaesthesia (RA) have been clearly shown to provide the solution.

This lecture will address RA issues in day care surgery like inadequate duration of analgesia when single shot block is used. Continuous perineural catheter technique becomes popular to overcome the short duration of analgesia in single shot block but is not totally perfect. Numerous innovations in perineural catheter and infusion pump design are continuously being produced.

Wound catheter infusion technique is another option besides perineural infusion. This technique is now gaining popularity because of no motor blockade.

Latest evidence on adductor canal block has shown that this technique able to provide good analgesia and preserving quadriceps muscle strength.

In near future we hope that liposomal bupivacaine will be available in our armamentarium in providing sufficient analgesia duration especially for day care surgery patient.

Will RA improve outcome in day care surgery?

## **BEST PRACTICE FOR DAYCARE SURGERY: TIVA VS INHALATIONAL**

**Eleanor Fe Fey Chew**

*Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

Daycare anaesthesia is administered with dual goal, 1. To rapidly and safely establishing excellent surgical conditions. 2. To ensure rapid predictable recovery with minimal post-op sequelae. Anaesthetist has a role in fast track surgery. However, opinions differ as to 'best anaesthetic technique' to achieve this.

Many new drugs have pharmacological profiles that are ideal for daycare setting. The advantages of TIVA over inhaled anaesthesia have been extensively discussed in numerous studies. The introduction of less-soluble inhaled anaesthetics, desflurane and sevoflurane, has added a new dimension to recovery and fast tracking.

Patient satisfaction with their perioperative experience and quality of recovery is improved when the anaesthetic technique chosen is associated with a low incidence of postoperative side effects (e.g. pain, dizziness, headache, PONV). The time required to achieve "fitness" for discharge home is also influenced by a wide variety of anaesthetic factors.

In today's climate of cost-consciousness, there is increasing pressure on the anaesthetist to consider the cost impact of current anaesthesia strategies. And with all these in mind, hopefully the 'battle' between inhalational and TIVA will be rendered easier.

## **CHALLENGES OF SINGLE-LUNG VENTILATION IN INFANTS AND CHILDREN**

**Oliver Bagshaw**

*Department of Anaesthesia, Birmingham Children's Hospital, United Kingdom*

Single-lung ventilation (SLV) is routinely practiced in adult thoracic anaesthesia through the use of a double-lumen endobronchial tube (DLT). In children this may not be possible, as the smallest commercially available DLT is 26FG, which equates to the outer diameter of a 6.5 standard endotracheal tube (ETT). Given that most thoracic surgery in children is undertaken for the excision of congenital cystic lung lesions and occurs around one to two years of age, alternative methods of lung isolation have to be employed. These include:

- Standard endotracheal intubation with lung retraction or carbon dioxide insufflation
- Endobronchial intubation on the opposite side to the surgery
- Insertion of a bronchial blocker on the opposite site to the surgery
- DLT (if the child is over 8 years of age)

All methods have their advantages and disadvantages and no technique has been shown to be obviously superior to any other.

Other challenges include the following:

- Vascular access and monitoring
- Adverse physiological consequences of SLV in children
- Adverse physiological consequences of surgical pneumothorax
- Lung reinflation on the operative side
- Postoperative analgesia

The key to success in paediatric thoracic anaesthesia is preparation, awareness of potential complications, understanding of the physiological consequences of surgery and, most importantly, good communication between you and your surgeon.

## **FLEXIBLE VS RIGID FIBREOPTIC SCOPE - THE PROS AND CONS IN THEIR USE FOR DIFFICULT INTUBATION**

**Theodore Wong Gar-Ling**

*Department of Anesthesia, Singapore General Hospital, Singapore*

Airway management has significantly changed in the past decade with the introduction and advancements in supraglottic airways (SGA) and video laryngoscopes. According to the NAP4 study (1) - 56% of all general anesthetics were done using a SGA, yet major airway complications still occurred mainly due to poor airway assessment and management strategies and to a lesser extent avoidance of fiberoptic use. The NAP4 also found that of the major airway complications - 40% of the cases were associated with head and neck pathology. Such cases may not be ideally suited for SGA or videolaryngoscopy, especially airway tumors.

Certainly, the use of SGA and video laryngoscopes have made securing a majority of airways smoother and easier, but this may be to the detriment of less scrutiny of pre-op assessment of the airway and less training / experience with fiberoptic use.

With clinical exposure to the use of fiberoptics lessening, there is a need to introduce novel ways of training and maintaining such skills. This has taken the form of workshops that include use of computer simulators, cadavers, animal models, human models and the traditional mannikins.

Fiberoptic use still remains the gold standard of difficult airway management and maintenance of one's skills in its use is paramount.



## PERI-OPERATIVE FLUID MANAGEMENT - IS HOLLIDAY AND SEGAR REGIME STILL RELEVANT?

**Rob McDougall**

*The Royal Children's Hospital Melbourne. Melbourne, Australia*

Anaesthetists have used relatively isotonic balanced salt solutions, such as Hartmann's solution, intra-operatively for many years. However, for the past 50 years (since Holliday and Segar), children have generally been prescribed hypotonic IV solutions for post-operative maintenance, with such solutions as 4% Dextrose and 0.18% NaCl and more recently with 5% Dextrose and 0.45% NaCl<sup>1</sup>. There is now strong evidence that the use of such fluids is associated with the development of hyponatraemia<sup>2</sup>. Many paediatric hospitals are considering moving to isotonic fluids for maintenance. The Royal Children's Hospital, Melbourne, is soon to make Plasmalyte 148 in 5% Dextrose the standard maintenance fluid, replacing 0.45% NaCl in 5% Dextrose. Plasmalyte 148 has been chosen because it has been demonstrated to have a lower rate of hyponatraemia in a large randomized trial -the PIMS study<sup>3</sup>. Both Hartmann's solution and 0.9% NaCl were considered but were not considered ideal. It is expected that Plasmalyte 148 (without glucose) will also replace Hartmann's solution as the standard intra-operative fluid.

A SUGGESTED APPROACH TO FLUID PRESCRIPTION IS:

1. What resuscitation fluids are required? Usually isotonic fluid is appropriate and Plasmalyte 148 is close to ideal.
2. What maintenance rate should be prescribed? The "4,2,1" rule remains a widely used guide although consideration should be given to reducing rates in patients at risk of hyponatraemia.
3. Is Potassium required? Most surgical patients do not require potassium in the immediate post-operative period. Patients with bowel obstructions or persistent vomiting are exceptions.
4. Is glucose required? The stress response of surgery usually provides adequate glucose in most children for the operative period. Consider intra-operative glucose only for those with prolonged fasting. Neonates should have continuous glucose infusions at all times when fasting more than 3-4 hours. Minimising fasting times by allowing clear sugar containing fluids up to 2 hours prior to anaesthesia means that few children require intra-operative glucose. Post-operative prescription of a solution (eg. Plasmalyte 148, 0.9% NaCl) with 5% Dextrose is usually adequate to avoid hypoglycaemia.
5. Monitoring: Patients on full maintenance fluids should have close monitoring using fluid balance charts and regular measurement of electrolytes.

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## **ANAESTHESIA FOR CARDIAC CATHETERIZATION IN CHILDREN**

**Hamidah Ismail**

*Hospital Serdang, Selangor, Malaysia*

During the last fifteen years, major developments have occurred in the use of interventional technique in paediatric cardiology as well as imaging technique in congenital heart disease ( CHD ). Nowadays most of the anatomical information required for making decision on treatment of CHD can be obtained from echocardiography and magnetic resonance imaging ( MRI ). Shunt quantification can be derived from nuclear medicine techniques. This allows paediatric cardiologist to perform cardiac catheterization to obtain specific information that has not been obtained by other imaging or to perform therapeutic procedure.

Therapeutic cardiac catheterization constituted about 10% in earlier years and increased to 20-60% nowadays. It has become more complex and has wider indication ranging from neonatal age to adult group. The procedure associated with higher risk of complication especially in ballon and valvular procedure. Complications are either related to sedation and anaesthesia during procedure or related to the procedure itself.

Rhodes et al analysed complication occurring within 48 hours of cardiac catheterization in 2042 cases. Of these 68% were interventional and 32% diagnostic . Major complication occurred in 2.6% including five death and 7.5% are minor complication.

Risk factor for major complications are weight less than 5 kilogram, ballon interventions, multiple malformation syndrome and interventional more than diagnostic procedure. For these reasons many centre adopted general anaesthesia technique for interventional procedure in cardiac catheterization.

## **VARIOUS PATHWAYS TO BECOME AN ANAESTHETIC SPECIALIST**

**Azlina Masdar**

*Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia*

Anaesthetists play a crucial part in the running of a hospital. Without us, the theatres, intensive care unit, pain services and delivery suites will probably be non-functional. Despite working under the radar and often not recognized by patients, anaesthetist has become an increasingly popular career of choice in Malaysia and some parts of the world. What it takes to be an anaesthetist? Do we have options to pursue the career locally and abroad?

## BLOOD PRESSURE CONTROL IN INFANTS AND BABIES

**Rob McDougall**

*The Royal Children's Hospital Melbourne. Melbourne, Australia*

There is substantial evidence that there is an association between major surgery as an infant and baby and developmental delay. The possible reasons for this delay appear to be multi-factorial and include coexisting disease, genetics as well as factors relating to the procedure and peri-operative course. There has been much focus on the relationship between anaesthesia drugs and developmental outcome but there is little data on the effect of different approaches to peri-operative management of babies and infants.

Providing anaesthesia for a baby or an infant undergoing a laparotomy can be challenging for the anaesthetist. Determination of cerebral perfusion and oxygen delivery to the brain usually relies on indirect assessments, especially blood pressure. Normal values for blood pressure in term, awake babies are surprisingly high with some evidence of mean arterial blood pressure over 70mmHg at 2 days of age rising to over 90mmHg at six weeks<sup>1</sup>. There has been difficulty in defining hypotension in anaesthetized children although paediatric anaesthetists have indicated that hypotension can be defined as 20-30% reduction in baseline systolic pressure<sup>2</sup>. For preterm infants the lower limits for mean arterial pressure have been shown to be numerically similar to gestational age (eg: an infant at 32 weeks post conceptual age should have a mean arterial pressure of at least 32mmHg)<sup>3</sup>. Non-invasive blood pressure measurements depend on the site of measurement and there is evidence in infants that calf measurements are significantly lower than arm measurements and that a calf measurement cannot accurately predict arm blood pressure<sup>4</sup>.

There is currently much debate about the correct approach to management of hypotension in adults undergoing major abdominal surgery and there is evidence for both "liberal" and "restrictive" approaches to fluid therapy<sup>5</sup>. Paediatric anaesthetists are encouraged to watch the adult literature for guidance.

These and other issues will be discussed and cases used to demonstrate the potential problem.

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## NITROUS OXIDE - IS IT OBSOLETE IN PAEDIATRIC ANAESTHESIA?

**Rebecca Jacob**

*Columbia Asia Referral Hospital, Bangalore, India*

Nitrous oxide has been in use for nearly 150 years. It is easily synthesized and manufactured, is inexpensive to use, available in small portable cylinders as well as large H type cylinders for 'banks' in larger centers. For its use it does not need intravenous access and as it is odorless it is easily administered. It has a rapid onset and offset. It is an anxiolytic and helps to calm the child, allows easy acceptance of a second (stronger) inhalational agent and accelerates the induction of anaesthesia with the second gas effect. It does not produce emergence agitation. It is an NMDA receptor antagonist and therefore produces mild analgesia – enough to start an IV access. It does not produce haemodynamic instability or significantly affect ventilation. It has minimal effect on cerebral blood flow and promotes intraoperative brain relaxation. It does not cause hepatic dysfunction nor does it cause MH. Toxicity after brief exposure is rare.

With all these attributes it does seem to be a near perfect anaesthetic- so why the question – is this drug obsolete?

Like all drugs nitrous oxide is not perfect and one must use it judiciously knowing its shortcomings and side effects. It is a relatively weak anaesthetic and it has long been accepted that it cannot be used as a sole anaesthetic for most procedures. It is unfair to compare it to sevoflurane, propofol and epidural anesthesia and suggest that it is useless as an anaesthetic. Its strength lies in its ability to quieten a child into accepting an IV or a mask so as to be able to introduce a stronger anaesthetic. Its strength lies in that it has a very rapid onset and can be used to hasten induction with another gas. Its strength lies in its judicious use at the end of surgery permitting a smooth rapid emergence without agitation. Its strength lies in its analgesic properties (which many of the inhalational agents do not have) which help in providing a balanced anaesthetic with less of the potent inhalational agents which have side effects on the cardiovascular system and ventilation. Of course, it should not be used in situations where an increase of gas volumes is problematic as in abdominal, eye or middle ear surgery.

Much has been said about its deleterious effects on vit B12 and methionine synthase with *chronic exposure* but whether or not this is harmful to medical personnel (not to the children who have shorter exposures to the gas) is controversial. Similarly the risk of spontaneous abortion in female anaesthetists has not been proved conclusively. *It points more to the absence of good air conditioning and scavenging systems.* Then comes the 'ethical' argument that nitrous oxide is a dominant ozone depleting substance or not mentioning that 70 % of nitrous oxide in the atmosphere is natural and only 30 % is man made of which only 0.05% is produced by medical use.

Alternatives that are touted to be 'safe and efficient' are proving expensive, difficult to use, exhibiting unwanted side effects (seen more as their use increases) giving rise to doubts that they may not stand the test of time – the 150 years nitrous oxide has been in use.

## **HAS DUAL GUIDANCE BEEN A SUCCESS? A REVIEW OF RECENT EVIDENCE**

**Azrin Mohd Azidin**

*Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

### INTRODUCTION

Dual Guidance, a technique combining both US and PNS has been advocated for the safe and a more accurate practice of PNB over the last decade. However, despite prior studies showing promise in various areas surrounding the practice of peripheral nerve blocks, not all were conclusive with few key questions remain fully unanswered especially in the areas surrounding;

- Dual Guidance and neuro-localization (location mode and safety mode)
- Dual Guidance and block success
- Dual Guidance and nerve injury

### PRACTICAL ISSUES WITH DUAL GUIDANCE

- Interpretation failure
- Inconsistent interpretation of the definition for intraneural
- Use of injection pressure monitoring/ Compressed Air Injection Technique
- Lack of evidence on the use of SENS (Sequential Electrical Nerve stimulation)

### CLICK ASSOCIATED ADEQUATE SPREAD (CLASS) TECHNIQUE; AN ALTERNATIVE METHOD?

CLASS technique is utilizing the appreciable tactile sensation of a fascial click to recognize spatial orientation of perineural spaces, and direct real-time visualization of test injection spread to indicate successful local anaesthetic deposition by looking at its pattern.

### SUGGESTIONS AND RECOMMENDATIONS

Understanding the limitations and advantages of either and both techniques will further enhance understanding and guide on the effective use of the available tools for accurate and safe delivery of regional anaesthetic practice.

Always have a mechanism to document, analyse and review the current practice so that further improvements on technique can be made.

### CONCLUSION

Continued experience and improved understanding in the use of ultrasound and image interpretation together with various enhancements in equipment technology may improve overall efficacy of regional anaesthetic practices in the near future in terms of optimizing success rates and eliminate, if possible, the incidence of neural complications.

## **WEALTH, WISDOM AND WELLBEING**

**Y K Chan**

*Department of Anaesthesiology, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia*

In a career that promises to bring a lot of wealth – doctors belong to the top earning profession in Malaysia, many amongst us pursue it to such an extent that we have enough money to fend for many generations of our family to come! It is time to understand that wealth never goes beyond the 3rd generation – we do not have to push ourselves to earn and look after the needs of our grandchildren! By providing for them, we limit their development to the full potential. Our only duty to the next generation is to provide them with an education that will enable them to earn a living. It is more useful to free ourselves of the time and live. Everybody, whether rich or poor, has 24 hours in a day – nothing more, nothing less. Most enjoy a life span of about 80 years and this clock ticks from the time we are born. It is only at the end of life that we realize that we cannot exchange our accumulated wealth for more time on earth.

The medical career also serves to expand our knowledge so much that we can harvest lots of wisdom from the many experiences we are exposed to. Many who choose to focus on accumulating wisdom opt for an academic career at the expense of wealth. Treasure the wisdom you have accumulated and put it down in a book so that others may benefit from this wisdom. To have lived a full life, one must have “fathered a child, planted a tree and written a book”

As providers of healthcare, it is our duty to promote wellbeing in all our patients as it is cheaper to prevent a disease than to have to treat a disease, especially one in the late and usually irreversible state. Whilst we may have that philosophy for our patients, we may sometimes be myopic and not apply that same philosophy whilst looking after ourselves. In the early stages of a disease, it is difficult to recognize but easy to treat; in the later stages, it becomes easy to recognize but difficult to treat. This is especially true for non-physical conditions like stress. Practice what you preach and live well. So, accumulate moderate wealth, pursue wisdom and leave behind a legacy but most of all live – stress and disease free so that at the end of it all, one can definitely say one has lived fully!

## **PREMEDICATION FOR UNCO-OPERATIVE CHILDREN - HINTS AND TIPS**

**Ina Ismiarti Shariffuddin**

*Department Of Anaesthesia And Intensive Care, Faculty of Medicine, University Malaya, Kuala Lumpur, Malaysia*

Children can be unco-operative when undergoing anaesthesia and surgery, merely due to the fear of unfamiliar environment, faces and procedures or because they have neurodevelopmental disorder such as autism. Anaesthetist can help alleviate these fears in various ways.

Premedication can be used to improve the co-operativity in these children. The objectives of premedication in children are to relieve anxiety, to reduce the trauma associated with separation from their parents and to facilitate induction of anaesthesia without prolonging the recovery period. Recent studies show that the stress of anxiety and trauma of separation from parents can lead to long-term psychological impairment. There are various drugs available as premedication for children and they can be administered via various routes that are tolerated by the individual child.

Apart from the use of drugs as premedication, the anaesthetist should also address all the issues that cause anxiety to these children and their parents pre-operatively. These can be done with assistance from other health care professionals such as hospital play specialist.

In conclusion, a multi disciplinary approach with combination of premedication prior to the anaesthesia and surgery is useful in allaying anxiety in unco-operative children.



## IS THERE AN IDEAL FLUID THERAPY IN NEURO ANAESTHESIA?

**W Mohd Nazaruddin W Hassan**

*Department of Anaesthesiology & Intensive Care, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia*

The intraoperative fluid management is one of the challenges during neuro anaesthesia. The main goals of fluid therapy during neuro anaesthesia are to prevent cerebral oedema and intracranial hypertension by maintaining serum osmolarity, to maintain cerebral perfusion pressure by maintaining intravascular volume and haemodynamic stability, to maintain electrolyte and acid-base stability, to prevent cerebral vasospasm and to treat complication of cerebral oedema.

The discovery of an ideal fluid regimen for neuro anaesthesia is still unsolved. The ideal criteria for fluid solution for neurosurgical patients are isotonic in nature and the electrolyte contents are similar to the contents of the plasma. Normal saline (NS) is currently a crystalloid solution of choice in view of its advantage in isotonicity. However it has higher level of sodium and chloride than plasma without containing any other electrolytes. Some of the studies have shown that prolonged infusion of NS can lead to hyperchloraemic metabolic acidosis, which might reduce renal blood flow by vasoconstriction.

The recent availability of both balanced crystalloid and colloid solutions are potential to be an answer to an ideal fluid regimen for neuro anaesthesia. Balanced solution is an isotonic solution either crystalloid or colloid that contains electrolytes such as sodium, potassium, calcium, magnesium and chloride, closer to the plasma contents. This can be the answer to the question given and the presentation will review all the available evidences.

## **A POTENTIAL BLOOD BATH? ANTIPLATELET AND ANTICOAGULATION THERAPY IN ELECTIVE NEUROSURGERY**

**M T Hui**

*Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

It is no longer foreign for us to encounter patients with multiple comorbidities coming for neurosurgeries nowadays, to complicate the perioperative management further, some of them are on antiplatelets and anticoagulants which impose an increased bleeding risk to the surgery. It's the anaesthetist, surgeon and the physician's duty to co-manage these groups of patients to achieve a balance between the thrombotic and bleeding risks.

Gone were the days where there were only availability of a handful of antiplatelets and anticoagulants. With the latest advancement in medicine, there are more blood thinners marketed, each with its own unique indications, not mentioning their different pharmacological properties. The older generation drugs like warfarin might have an unpredictable half life while some newer ones are less studied clinically.

The dilemma of withholding the blood thinners preoperative, bridging and restarting it postoperatively are all not easy decisions. Antiplatelets and anticoagulants both have different indications and mechanisms of actions, thus management of each patient should really be individualized according to the urgency of the surgery. The need and timing for prophylaxis for venous thromboembolism in neurosurgical patients is another issue to be discussed here.

Although recommendations from the latest guidelines give us a guide to optimize risks, the principles of management should ultimately consist of an effective communication between the 3 parties of physician, surgeon and anaesthetist along with an aggressive preoperative and an intensive intra and postoperative care.

## ELECTROANALGESIA: BETTER OUTCOMES WITH NEW TECHNOLOGY?

**Marzida Mansor**

*Department of Anaesthesiology, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia*

Electroanalgesia or the practice of using electrical stimulation for pain control began centuries ago. Electrical stimulation has been applied directly to the spinal cord, deep brain centers, peripheral nerves, and to the traditional Chinese acupoints, in an effort to improve the management of acute and chronic pain.

The techniques range from noninvasive (e.g., Transcutaneous Electrical Nerve Stimulation), to minimally invasive (e.g., Percutaneous Electrical Nerve Stimulation), to highly invasive (e.g., Deep Brain Stimulation, Spinal Cord Stimulation). Recent modifications in the pattern of the electrical stimulus may further improve the analgesic efficacy of electroanalgesic techniques like TENS. A more "in depth" understanding of the effect of different electrical stimulation patterns on the pain response may lead to further long-term benefits with electroanalgesic therapy.<sup>1</sup>

Transcutaneous electrical nerve stimulation (TENS) is a non-invasive therapy that uses low-voltage electrical current for pain relief. A TENS machine is a small, battery-operated device that has leads connected to electrodes. The mechanism of the analgesia produced by TENS is explained by the gate-control theory proposed by Melzack and Wall in 1965. The currently proposed mechanisms by which TENS produces neuromodulation include the following:

- Presynaptic inhibition in the dorsal horn of the spinal cord
- Endogenous pain control (via endorphins, enkephalins, and dynorphins)
- Direct inhibition of an abnormally excited nerve
- Restoration of afferent input.

TENS has been developed and used since 1960s and currently is one of the most commonly used forms of electroanalgesia intended to reduce both acute and chronic pain. TENS stood the test of time despite numerous conflicting studies on its efficacy.<sup>2,3</sup>

Some of the indications for the use of TENS include Neurogenic pain, Musculoskeletal pain, Visceral pain and dysmenorrhea, Diabetic neuropathy, angina pectoris, urge incontinence and in patients requiring dental anesthesia. There are reports discussing the use of TENS to assist patients in regaining motor function following stroke, to control nausea in patients undergoing chemotherapy, as an opioid -sparing modality in postoperative recovery and in post-fracture pain.

The use of TENS is contraindicated in patients with a pacemaker (especially of the demand type), during pregnancy, because it may induce premature labor. The electrodes should not be applied over the carotid sinuses due to the risk of acute hypotension through a vasovagal reflex, should not be placed over the anterior neck, because laryngospasm due to laryngeal muscle contraction may occur, should not be placed in an area of sensory impairment (eg, in cases of nerve lesions, neuropathies), where the possibility of burns exists and a TENS unit should be used cautiously in patients with a spinal cord stimulator or an intrathecal pump.

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## POSTOPERATIVE PAIN MANAGEMENT FOR DAYCARE SURGERIES IN CHILDREN

Yunxia Zuo

*Department of Anesthesiology, West China Hospital, Sichuan University, China*

There are many surgeries performed as day care surgeries in the pediatric population. The children are taken home within 24 hours after the surgery. Although children may feel more comfortable for getting recovered in his familiar environment, it is quite a challenge for the parents to take care of them particularly in pain assessments and treatments. Therefore, anesthesiologists should educate the parents to recognize and handle postoperative pain either before the surgery or after surgery prior they return home. There are many pain assessment scales recommended for children. Some of them may be useful for both medical professionals and care givers such as Wong and Baker Face scale or the Bieri Faces Pain Scale. We have demonstrated that parents can do as good as the nurses by using complicated FLACC Pain Scale. The majority of day care surgeries for children are minor which are unlikely to have a serious pain. However, some surgeries are performed at the most sensitive part of the body such as circumcision. It is very uncomfortable. Postoperative pain management for day surgeries is recommended as following:

### 1. NON-PHARMACOLOGICAL STRATEGIES

Psychological interventions, affection supports and spirit comforts have good analgesic effect. Hypnosis and distractions are most effective among them. Sucrose solution sucking can be used in newborns.

### 2. LOCAL ANESTHETICS

Local anesthesia should be used as more as possible in pediatric day care surgeries. The long lasting local anesthetics including bupivacaine and ropivacaine are good options. The analgesia effect lasts from 6 hours to 12 hours when local anesthetics were administered by local wound infiltration, peripheral nerve blocks or caudal/epidural blocks. Recently, it is found to add dexamethasone into local anesthetic solutions will prolong the analgesia time significantly.

### 3. PARACETAMOL AND NON STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDs)

Since paracetamol is a safe drug, it is commonly used as the only drug for minor surgeries or as a baseline drug for larger surgeries in postoperative pain treatment. NSAIDs are effective for the treatment of mild or moderate pain in children. The combination of NSAIDs and paracetamol provides better analgesia than either drug alone.

Caution should be taken when NSAIDs are administered.

NSAIDs are contraindicated in children with coagulation problems or in those who are receiving anti-coagulant therapy.

NSAIDs should not be administered with nephrotoxic agents concurrently.

NSAIDs can cause gastric bleeding or irritation.

NSAIDs should be avoided in children with severe acute asthma.

NSAIDs are neither recommended for analgesia in neonates nor long term use in children.

### 4. TRAMADOL AND LONG ACTING OPIOIDS

Tramadol is commonly used in European countries and some Asian countries. Oxycodone as a long acting opioid which can be given as a capsule, liquid, tablet, or controlled release tablet. It is usually for moderate to severe postoperative pain. It is also available as a combination product mixed with acetaminophen.

## **CHOICE OF ANALGESIA IN PAEDIATRIC MINIMALLY INVASIVE SURGERY**

**Raafat S Hannallah**

*Children's National Medical Center, Washington, DC, USA*

Minimally invasive surgery allows surgeons to operate with less injury to the body than with open procedures. Patients recover faster and heal with less pain and scarring. Since minimally invasive surgery is usually done on an outpatient basis or requires only a short hospital stay, pain management strategies must allow comfortable recovery with minimal side-effects. This lecture will outline how pain management techniques can be tailored to the individual procedure to achieve these goals.

Laparoscopy, including robotic surgery was one of the first types of minimally invasive surgery and continues to be performed for such procedures as cholecystectomies, pyloromyotomies, appendectomies, fundoplication, etc. Local anesthetic infiltration of the port-insertion site combined with systemic NSAIDs after surgery are usually sufficient to provide good post-operative analgesia. If needed, intravenous opioids (fentanyl or morphine) may be added.

In our institution, minimally-invasive bariatric surgical procedures such as gastric banding are commonly done on very obese children who meet specific medical and psychological criteria. A very specific pain management protocol is strictly followed to allow early mobilization. In addition to the local anesthetic infiltration, ketorolac 30 mg IV q6 hrs. is used with the first dose started in the OR. At present, our bariatric anesthesiologists avoid the use of PCA. Morphine 2 mg IV q 4 hrs. is given PRN. CPAP is used for significant OSA.

A more challenging minimally-invasive procedure that we perform is the Nuss operation for pectus excavatum. Although it is considerably less invasive than open surgery, postoperative pain can still be severe. Our protocol calls for the placement of a thoracic epidural catheter for these patients and use it for the first 2-3 postoperative days. Although most of these patients are adolescents, we usually place the epidural catheter under general anesthesia and only allow experienced staff to perform the block.

## TIVA/TCI IN PAEDIATRIC ANAESTHESIA, NOW AND FUTURE

**Oliver Bagshaw**

*Department of Anaesthesia, Birmingham Children's Hospital, United Kingdom*

There are two paediatric TCI models currently available, the Kataria and the Paedfusor. Both use age and weight as covariates. The Paedfusor is the more versatile with an age range of 1-16 years and a weight range of 5-61kg.

A key to using TCI successfully in children is the principle of propofol-opioid interactions and the synergism that is demonstrated between propofol and, in particular, remifentanyl. Co-administration of the latter allows the anaesthetist to greatly reduce the amount of propofol given to children. Even so, paediatric patients will still receive about 50% more propofol than an equivalent sized adult during an anaesthetic.

Neither paediatric model allows effect-site targeting. The reason for this is that the PK data in the models uses an adult  $ke_0$  value. PK studies in children suggest they have higher  $ke_0$  values than adults, with further variation relating to age.

TIVA in children is an effective anaesthetic technique that can be used in a variety of clinical situations. Obvious advantages include less pollution, superior quality wake-up, absence of laryngospasm and less nausea and vomiting.

The main challenges for the future include validation of the Groningen General Purpose Model in the paediatric population, assessment of closed-loop anaesthesia, intraoperative calibration of the propofol model and finding practical methods of monitoring the blood propofol concentration during surgery.

## MASSIVE TRANSFUSION PROTOCOL IN OBSTETRIC: THE EVIDENCE

Thohiroh A R

*Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

### INTRODUCTION

Massive haemorrhage requires effective and well-managed resuscitation efforts to reduce morbidity and mortality associated with it. The causes in obstetric are mainly abnormal placentation, uterine atony and trauma to uterus. Studies from civilian and military trauma patients suggested early transfusion of blood and blood products while preventing hypothermia, acidosis and coagulopathy.

Trauma induced coagulopathy occurs early not as secondary entity as previously thought. Even though the cause of massive bleeding in trauma is different from obstetric but management of massive haemorrhage is similar in strategies which include stopping of bleeding, maintenance of efficient oxygen delivery and early transfusion of blood and blood products. Significant interest in protocolization of transfusion process in trauma patients has resulted in Massive Transfusion Protocol (MTP).

MTP refers to early and rapid transfusion of rbc and blood products over a short period of time. The suggested ratio for MTP for rbc:plasma:platelet is 1:1:1 to resemble the whole blood component even though the ideal ratio is still unknown. The protocol describes an empirical treatment that optimizes management of resuscitation and correction of coagulopathy by ensuring early availability of blood and blood products. It is a valuable tool to delineate how blood and blood product is ordered, prepared and delivered, determines laboratory algorithm as guidelines, outlines duties of staff involved and ensure good line of communication. Monitoring at point of care is also important to ensure the blood products given is timely. Currently, Haemacue only tell the Hb status, but thromboelastography (TEG) can tell the strength of clots formed, thus provides a real time monitoring in resuscitation of severe haemorrhage. Future research is necessary in this field. Ongoing research are: Prophylaxis use of tranexamic acid (WOMAN trial) in preventing PPH and Fibrinogen concentrate as initial treatment for PPH.

### KEYWORDS

Massive transfusion protocol, massive bleeding, trauma induced

## **NATURAL BIRTHING: WHERE DO THE ANAESTHETIST STAND?**

**Noraslawati Razak**

*Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

Natural birthing is a vaginal birth without any of medical procedures, including epidural or spinal anaesthetics, instrumental delivery or cesarean section. It is the kind of care that can be provided either at home, or in a birth centre, though it is also possible in hospital setting. Hence, with the rise of advocators on natural birthing; more women opt to have their delivery at home. These include mothers who are at higher risk for home birthing. Therefore, there are mortalities due to home birthing worldwide, and post-partum haemorrhage is the commonest cause. Ministry of Health has introduced Mother-Friendly care guidelines in hospitals nationwide. These guidelines allow mothers to practice natural birth in the hospital. Hospitals who want to attain the baby-friendly care status have to fulfil these guidelines which include encouraging the use of *non-pharmacological pain relief* and *allowing light foods and fluids during labour*.



## WORKING TOGETHER FOR PATIENT SAFETY

**Nor'azim Mohd Yunus**

*Clinical School of Johor Bahru, Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Selangor, Malaysia*

The publication of 'To Err is Human: Building a Safer Health System' by the American Institute of Medicine in the year 2000 was a seminal event in the global Patient Safety movement. The revelation that preventable medical errors contributed to deaths more than the feared motor vehicle accidents, breast cancer and AIDS was as a wake-up call to the medical profession. In this respect, the anaesthesia team – the anaesthetists, nurses and allied health members - have a unique role. Safety has long been the ultimate motto of the team; their experience and views are therefore valuable in the promotion of Patient Safety in healthcare.

In the local context, the anaesthesia community could do more for Patient Safety. A revisit of our own appreciation of the safety culture will be a good starting point. The culture should be adopted and practiced at all levels of the team. Hierarchy could often be a hindrance and as such, empowerment of junior staff members is an imperative measure in Patient Safety. A strong Patient Safety culture also recognizes the significance of human factors, and implements system reviews of errors (the Swiss Cheese model) rather than individual witch hunts. The system reviews of errors will in turn encourage sharing of near misses; the useful learning opportunities that are often lost unreported.

It is often thought that Patient Safety should be second nature for everyone in the healthcare profession. In reality, there is still a lot that can be learned and staff education is central in Patient Safety. Effective communication, a key component of safety, could be further enhanced with communication tools like ISBAR. There are tools to help junior staff members to assert themselves, for example the PACE graded assertiveness tool. On the teaching approach itself, clinical simulation has been used to impart Patient Safety values. In fact, Patient Safety has been one of the key drivers to the emergence of clinical simulation as a medical education medium.

It is encouraging to see that the Patient Safety movement is gradually picking up its momentum in Malaysia. The Ministry of Health of Malaysia has set up a Patient Safety Unit under its Medical Development Division, with Strategic Directions and Key Performance Indicators determined for all government hospitals. So let us all work together for Patient Safety, in line with the age-old healthcare ethos, 'primum, non nocere - first, do no harm'.

## REMIFENTANIL - CLINICAL APPLICATIONS IN PAEDIATRIC ANAESTHESIA

**Oliver Bagshaw**

*Department of Anaesthesia, Birmingham Children's Hospital, United Kingdom*

Since remifentanil was introduced into clinical practice in the late 1990's it has established itself as an excellent adjunct, with its rapid onset of action, potency, short context-sensitive half life and metabolism by esterases, which are present in all age groups.

Indications are widespread and include neonatal surgery, neurosurgery, thoracic surgery, major abdominal surgery, intubation without relaxant and as an adjunct to TIVA.

Remifentanil can be administered by either mass rate infusion mode or target-controlled infusion using the Minto model. The latter is limited in the model to children of greater than 12 years of age, although the pharmacokinetics of remifentanil in children is such that it can be used successfully in younger patients, as long as they are above the lower weight limit of 30kg.

In younger children the main pharmacokinetic difference is the greater clearance. This means infants and small children often need up to twice the dose of remifentanil than older children and adults for the same clinical effect. It also means they tolerate higher doses when spontaneously breathing.

Remifentanil is generally well tolerated by children, with the main side effects being bradycardia and dose-dependent respiratory depression, the latter. Blood pressure is generally well maintained, although adolescents may behave more like adults and drop their BP with higher doses. At higher infusion rates and with large bolus doses, muscle rigidity, affecting both the chest and abdomen, can occur, compromising ventilation.

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<sup>1</sup>Department of Anesthesia and Intensive Care, The Chinese University of Hong Kong, Shatin, Hong Kong, SAR, China  
<sup>2</sup>Department of Anesthesiology, Hospital Clinic Barcelona, Barcelona, Spain

## PLASMA NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN BEST DIAGNOSED ACUTE KIDNEY INJURY IN PATIENS WITH SYSTEMIC INFLAMMATORY SYNDROME AND SEPSIS

**Azrina Md Ralib<sup>1</sup>, Nurzamzila Abdullah<sup>2</sup>, Abdul Hadi Mohamad<sup>1</sup>, Mohd Basri Mat Nor<sup>1</sup>**

<sup>1</sup>Department of Anaesthesiology and Intensive Care, Kulliyah of Medicine, International Islamic University Malaysia, Kuantan, Pahang, Malaysia

<sup>2</sup>Department of Basic Medical Science, Kulliyah of Medicine, International Islamic University Malaysia, Kuantan, Pahang, Malaysia

### INTRODUCTION

Sepsis is the leading cause of ICU admission. About 60% of patients with severe sepsis had acute kidney injury (AKI). To date, plasma Neutrophil-Gelatinase Associated Lipocalin (NGAL) is the most promising biomarker for AKI, however it is also increased with inflammation and infection.

### OBJECTIVES

We aim to evaluate the utility of NGAL, Procalcitonin (PCT) and Interleukin-6 (IL-6) for AKI and sepsis.

### METHODS

This is an interim analysis of a prospective observational study of adult ICU patients with systemic inflammatory response syndrome (SIRS). PCT was measured using BRAHMS Kryptor compact assay, NGAL using TriageMeter, IL-6 using ELISA technique, and creatinine using Olympus AU2700TM analyser. Patients were classified according to the occurrence of AKI and sepsis.

### RESULTS

Of the 115 patients, 62 (54%) had AKI, of which 43 (69%) had sepsis, and in 19 (31%) non-infectious SIRS. NGAL and PCT were higher in patients with AKI-SIRS compared to No AKI-SIRS ( $p=0.001$  and  $p=0.02$ , respectively), and in AKI-Sepsis compared to No AKI-Sepsis ( $p<0.0001$  and  $p=0.001$ , respectively). However, there were no differences in plasma IL-6. NGAL had the highest AUC in diagnosing AKI (0.78 (0.69 to 0.86)). The AUC of NGAL in diagnosing AKI was 0.80 (0.66 to 0.93) in SIRS, and 0.76 (0.65 to 0.87) in sepsis. The optimal cut-off point was 84 ng/ml in SIRS and 256 ng/ml in sepsis. Addition of NGAL to the reference model, which includes age, weight, and SAPSII score, showed the largest improvement in risk assessment; with total IDI of 0.09 (0.02 to 0.28).

### CONCLUSIONS

AKI is more common in sepsis patients. Of the biomarkers measured, NGAL had the highest diagnostic performance for AKI. The optimal cut-off point for diagnosing AKI in sepsis was higher than in non-infectious SIRS. The addition of NGAL improved the clinical model incorporating age, illness severity and weight in diagnosing AKI.

## THE EFFICACY OF INTRAOPERATIVE DEXMEDETOMIDINE INFUSION IN REDUCING POSTOPERATIVE MORPHINE CONSUMPTION

Mazlilah Abdul Malek<sup>1</sup>, Nurlia Yahya<sup>1</sup>, Ruffinah Teo<sup>1</sup>, Vanitha Sivanaser<sup>2</sup>, Shereen Tang Suet Ping<sup>1</sup>, Raha Abdul Rahman<sup>1</sup>, Norsidah Abdul Manap<sup>1</sup>

<sup>1</sup>Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia

<sup>2</sup>Hospital Kuala Lumpur, Kuala Lumpur, Malaysia

### OBJECTIVE

This prospective, randomized, double-blind placebo controlled study was conducted in patients undergoing total abdominal hysterectomy to determine the efficacy of 2 different intraoperative dexmedetomidine infusion doses in reducing the first 24 hours postoperative morphine consumption.

### METHODS

Sixty ASA I or II patients aged between 35 to 60 years were randomized into three groups to receive intraoperative infusions of either dexmedetomidine 0.3 µg/kg/hr (Group A), dexmedetomidine 0.5 µg/kg/hr (Group B) or normal saline as placebo (Group C) without any loading dose, immediately after induction of anaesthesia. Haemodynamic parameters such as heart rate and mean arterial pressure were recorded prior to induction of anaesthesia and at 15 minute intervals intraoperatively. Patients were given patient-controlled analgesia with morphine after surgery and morphine consumption was recorded at 6, 12 and 24 hours postoperatively. Side effects were noted.

### RESULTS

Group A and B showed a significant reduction in morphine consumption, compared to Group C and a higher percentage of reduction was noted in Group B as compared to Group A. Group B showed a significant 33% reduction at the 24 hour postoperative period. Mean heart rates were significantly lower in both Group A and B however none of the patients required any rescue drugs. There were no significant differences observed in MAP in all three groups. No side effects were reported.

### CONCLUSION

Intraoperative dexmedetomidine infusion of 0.5 µg/kg/hr significantly reduces postoperative morphine consumption when compared to dexmedetomidine 0.3 µg/kg/hr without causing significant haemodynamic instability and side effects.

## **AVAZZIA BIOFEEDBACK ELECTROSTIMULATION THERAPY: ITS EFFECTS ON PAIN SCORE AND CHANGES IN PAIN BIOMARKERS ON CHRONIC NEUROPATHIC PAIN: A PROSPECTIVE RANDOMISED CONTROLLED TRIAL**

**Marzida Mansor, Zhi Shan Lee, Mee Mei Ng**

*University of Malaya, Kuala Lumpur, Malaysia*

### BACKGROUND

Chronic pain management has incorporated both pharmacotherapy and non-pharmacotherapy in view of its complexity of the nature of pain. Avazzia BEST-RSI had been introduced as the latest innovation in the TENS-like technology in treatment of chronic pain.

### OBJECTIVES

This study aims to determine the effects of Avazzia BEST-RSI treatment on chronic neuropathic pain patients with regards to changes in perceived pain level, and changes in pain biomarkers such as serum cortisol, b-endorphin, TNF-a and nitric oxide levels.

### METHODS

This is a prospective single blinded randomized controlled study involving 20 patients from the Pain Clinic of University Malaya Medical Centre between 1st January 2014 to 31st June 2014. The patients were randomized to treatment and placebo arm. Measured outcomes were perceived pain level (visual analogue score), and pain biomarkers pre- and post-treatment.

### RESULTS

Pain score reduction post treatment were statistically significant in both arms with P value 0.005 (treatment) and 0.039 (placebo). Change in serum cortisol is statistically significant with P value 0.013, but change in serum TNF-a level and nitric oxide were somehow not statistically significant. No correlation is observed between b-endorphin level.

### CONCLUSIONS

Avazzia BEST-RSI demonstrated a promising improvement in perceived pain level and significant changes in serum cortisol after one single treatment. Therefore, it may be potentially effective in the long term of chronic pain management.

## **A PROSPECTIVE PARALLEL GROUP STUDY TO EVALUATE THE USE OF LUNG ULTRASONOGRAPHY IN CONFIRMATION OF POSITION OF LEFT SIDED DOUBLE LUMEN TUBE IN ELECTIVE THORACIC SURGERIES**

**Swapnil Parab, J V Divatia, Apurva Chogle**

*Department of Anesthesiology, Tata Memorial Hospital, Mumbai, India*

### BACKGROUND

Clinical methods to confirm double lumen tube position have been found to be inaccurate. Lung ultrasonography (USG) reliably identifies tidal movement (lung sliding) and collapse of lung (lung pulse). Intensive care practices have already involved lung USG to confirm position of endotracheal tube. Same principles can be used to confirm position of double lumen tube.

### OBJECTIVE

To check whether sensitivity, specificity and accuracy of clinical methods can be improved by addition of ultrasonography in confirmation of left DLT (LDLT) position.

### METHODS

This is a single centred prospective, parallel group study. Seventy adult patients undergoing thoracic surgeries requiring use of LDLT were included. Patients were assigned to group A (35 patients)- where LDLT position is judged by using clinical methods alone, and group B (35 patients)- where LDLT position is judged by USG and clinical methods. Correct position was predicted when USG demonstrated absence of lung sliding and presence of lung pulse on right side, presence of lung sliding on left side, along with normal airway pressures and oxygenation. Final verification of LDLT position was done by direct observation of lung isolation by a surgeon, blinded for method of confirmation. Contingency tables were drawn to calculate sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy of each method.

### RESULTS

Compared to clinical methods alone, addition of lung USG improved sensitivity (75% vs. 88%), specificity (18% vs. 75%), PPV, NPV and accuracy (57% vs. 85%) for correct prediction of LDLT position.

### CONCLUSION

USG is a useful addition to the armamentarium of anaesthesiologist for the confirmation of LDLT position.

## TIVA FOR CHILDREN IN MRI - HUS EXPERIENCE

S C Teo, S E H Tsan, K C Sia, Norzalina E

*Department of Anaesthesiology & Intensive Care Unit, Hospital Umum Sarawak, Kuching, Sarawak, Malaysia*

### BACKGROUND

Magnetic Resonance Imaging (MRI) in children has been done widely under general anaesthesia (GA). In our hospital, though there is no proper infrastructure and facility for a GA machine to be placed, the safety of children undergoing poly pharmaceutical sedation for the long procedure without proper monitoring and high failure rate has prompted the service to be started with the utilization of total intravenous anaesthesia (TIVA) technique maintaining spontaneous ventilation.

### OBJECTIVES

We used combination of remifentanil-propofol mixture of 5ug/ml and 10mg/ml respectively running on Paedfusor® model for paediatrics population above 1 month of age with our own protocol. We observed that the Target Controlled Infusion (TCI) of propofol varies among ages hence we audited our protocol in the amount of propofol used, the ability to maintain spontaneous respiration and awakening time.

### METHODS

We collected data over a period of three months for all paediatric patients who required GA for MRI.

### RESULTS

A total of 29 patients were surveyed. Majority of the children were less than 4 years old due to the inability to go through MRI without anaesthesia. We divided the group into group 1 (0-4 years) and 2 (age 5-12 years). Our observation was confirmed that the amount of propofol used for younger group was higher (mean 0.0417 mcg/kg/min vs 0.0204 mcg/kg/min,  $p < 0.0001$ ). The frequency of apnea was however less in group 1 even though more remifentanil was given as a result of higher TCI rate. The observed awakening time varies in the two groups (Group 1, mean 19.05 minutes vs Group 2, mean 9.9 minutes). Although statistically not significance ( $p = 0.206$ ), it is clinically important. Hence we propose that further study should be done with variable remifentanil dose to find the optimum dose for least propofol, shorter awakening time and hence faster turnover between cases.



## **THE EFFECTS OF PRE-EMPTIVE INTRAVENOUS PARECOXIB ON THE INTRAOPERATIVE SEVOFLURANE AND FENTANYL REQUIREMENT DURING GYNAECOLOGIC ABDOMINAL HYSTERECTOMY**

**Erham Hassan, Nik Abdullah**

*Department of Anaesthesiology, School of Medical Sciences, Universiti Sains Malaysia, Kubang Kerian, Kota Bharu, Kelantan, Malaysia*

### BACKGROUND

Many clinical studies suggest pre-emptive administration of analgesics has postoperative opioid-sparing analgesia. This study was designed to evaluate the effects of pre-emptive intravenous parecoxib on intraoperative anaesthetic and analgesic sparing potential in patients undergoing elective total abdominal hysterectomy.

### METHODS

Sixty eight ASA I and II patients were studied in a double blind, randomized placebo controlled trial. Patients were randomly divided to receive either 2 ml of intravenous parecoxib or 2ml of normal saline 30 minutes before induction of anaesthesia. Sevoflurane concentration was adjusted according to BIS values to maintain depth of anaesthesia. Intraoperative end tidal sevoflurane concentrations and hemodynamics were recorded every 10 minutes during the surgery. Total intraoperative rescue analgesic consumption, extubation time, time to first postoperative analgesia requirement and postoperative pain score, sedation score, nausea and vomiting score were also recorded.

### RESULTS

Pre-emptive intravenous parecoxib were significantly reduced the intraoperative anaesthetic requirement of sevoflurane and analgesic requirement of opioids (all  $P < 0.001$ ). In addition to that, postoperative recovery condition of parecoxib group were much better than control group in term of significantly faster extubation time, longer time to first postoperative analgesia requirement, less morphine consumption, good pain score and good sedation score (all  $P < 0.05$ ) but equivocal for the incidence of postoperative nausea and vomiting and postoperative complications ( $P= 1.0$ ).

### CONCLUSIONS

Pre-emptive intravenous parecoxib provides intraoperative anaesthetic and analgesic sparing effects that improves postoperative recovery and analgesia without increasing the incidence of side-effects.

## USE OF DEXMEDETOMIDINE TO FACILITATE PROSEAL LARYNGEAL MASK AIRWAY INSERTION: A DOSE COMPARISON STUDY

Y S Choo<sup>1</sup>, C H Lim<sup>2</sup>, C Y Lee<sup>1</sup>

<sup>1</sup>Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia

<sup>2</sup>Hospital Pulau Pinang, Penang, Malaysia

### BACKGROUND

The ProSeal™ laryngeal mask airway (PLMA) is often inserted following induction of anaesthesia with propofol. Fentanyl is often used to provide acceptable insertion condition. Dexmedetomidine, a highly selective, short-acting central  $\alpha$ -2 agonist, has been used to facilitate insertion of classic LMA (cLMA) but not PLMA.

### OBJECTIVES

This prospective, randomized, double-blinded study was carried out to compare two doses of dexmedetomidine with fentanyl to facilitate PLMA insertion following induction with propofol.

### METHODS

A total of 102 patients with ASA classification I and II, aged between 18 and 65 years old scheduled for surgery under general anaesthesia with the use of PLMA were recruited and randomly allocated into three groups - Group 1 (dexmedetomidine 0.5 mg/kg), Group 2 (dexmedetomidine 1 mg/kg) or Group 3 (fentanyl 1 mg/kg). Induction of anaesthesia was carried out using IV propofol 2 mg/kg and PLMA was inserted 60 s later. Insertion condition was assessed based on six criteria - jaw opening, ease of insertion, coughing, gagging, laryngospasm and patient movements. Number of insertion attempts, duration of apnoea and haemodynamic parameters up to 5 min after PLMA insertion were also recorded.

### RESULTS

All three groups exhibited comparable patient demographics. No statistically significant differences were noted in insertion condition, insertion score, number of insertion attempts and duration of apnoea among the groups. Mean HR was significantly lower in both dexmedetomidine groups compared to fentanyl at completion of dexmedetomidine infusion but not at other time intervals. Reduction in mean MAP from baseline was statistically significant on intra-group comparison. Inter-group comparison showed the mean MAP in fentanyl group to be the lowest.

### CONCLUSION

Both doses of dexmedetomidine provided similar insertion condition and duration of apnoea compared with fentanyl. There was a significant reduction in heart rate following dexmedetomidine administration but this was short-lived and did not require treatment.

## **ULTRASOUND GUIDED INFRACLAVICULAR BRACHIAL BLOCK: PROSPECTIVE RANDOMIZED COMPARISON OF THE LATERAL PARACORACOID AND COSTOCLAVICULAR TECHNIQUES**

**M K Karmakar<sup>1</sup>, J W Li<sup>1</sup>, B Songthamwat<sup>1</sup>, W Samy<sup>1</sup>, X Sala-Blanch<sup>2</sup>**

<sup>1</sup>*Department of Anesthesia and Intensive Care, The Chinese University of Hong Kong, Shatin, Hong Kong, SAR, China*

<sup>2</sup>*Department of Anesthesiology, Hospital Clinic Barcelona, Barcelona, Spain*

### INTRODUCTION

We have recently proposed that ultrasound-guided (USG) infraclavicular brachial plexus block (ICBPB) at the costoclavicular space (CCS) may overcome some of the limitations of the lateral paracoracoid (PC) approach, and have described the costoclavicular (CC) approach. In this study we hypothesized that the CC approach will produce faster onset of brachial plexus blockade than a lateral PC approach.

### METHODS

After local research ethics committee approval and written informed consent, 48 patients undergoing elective upper extremity surgery under an ICBPB were randomized to receive either the lateral PC (Gp-A, n=22) or CC approach (Gp-B, n=26). A double-blind methodology and 25 ml of 0.5% ropivacaine was used for the BPB during the study. Sensory-motor blockade of the ipsilateral median, radial, ulnar and musculocutaneous nerve was assessed at regular intervals for 30 mins. Sensory block was assessed using a verbal rating scale (VRS, 100-0) and motor block using a 3-point scale (2-0). Onset of sensory (our primary outcome variable) and motor blockade was defined as the time it took to achieve a sensory VRS of  $\leq 30$  and motor grade  $\leq 1$  respectively.

### RESULTS

The 2 study groups were comparable with respect to demographic data and clinical parameters. Onset of sensory blockade was significantly faster ( $p=0.04$ ) in Gp-B (10 [10-18.75] mins) than in Gp-A (15 [10-30] mins). The motor block score in Gp-B (0.5 [0-1]) was also significantly lower ( $p=0.03$ ) than that in Gp-A (1 [0.875-2]) at 10 mins after the BPB. Time to readiness for surgery (i.e. time to achieve a sensory score  $\leq 30$  and motor grade  $\leq 1$  in all the 4 nerves) was also significantly faster ( $p=0.01$ ) in Gp-B (10 [10-18.75] mins) than in Gp-A (17.5[15-30] mins).

### CONCLUSION

The costoclavicular approach for ICBPB produces faster onset of sensory-motor blockade than the lateral paracoracoid approach.

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*<sup>1</sup>Department of Anaesthesia, Hospital Tengku Ampuan Rahimah, Klang, Selangor, Malaysia*  
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*<sup>1</sup>Anaesthesiology, University of Malaya, Kuala Lumpur, Malaysia*  
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*<sup>1</sup>Department of Anaesthesiology and Critical Care, Hospital Sultanah Nur Zahirah, Terengganu, Malaysia  
<sup>2</sup>Department of Anaesthesiology and Critical Care, Hospital Raja Perempuan Zainab II, Kelantan, Malaysia  
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*<sup>1</sup>Allergy & Immunology Research Centre, Institute for Medical Research, Kuala Lumpur, Malaysia  
<sup>2</sup>Anaesthetic Allergy Clinic, Department of Anaesthesia & Intensive Care, Hospital Kuala Lumpur,  
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*<sup>1</sup>Allergy & Immunology Research Centre, Institute for Medical Research, Kuala Lumpur, Malaysia  
<sup>2</sup>Anaesthetic Allergy Clinic, Department of Anaesthesia & Intensive Care, Hospital Kuala Lumpur,  
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*<sup>1</sup>Hospital Sibul, Sarawak, Malaysia  
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*<sup>1</sup>Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia  
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*<sup>1</sup>Department of Anaesthesia and Intensive Care, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*  
*<sup>2</sup>Department of Neurology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*  
*<sup>3</sup>Department of Obstetric and Gynaecology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*  
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*<sup>1</sup>Department of Anaesthesia and Intensive Care, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*  
*<sup>2</sup>Department of Obstetric and Gynaecology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*  
*<sup>3</sup>Department of Radiology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*  
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*<sup>2</sup>Department of Psychiatry and Mental Health, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*  
*<sup>3</sup>Department of Obstetric and Gynaecology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*
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<sup>1</sup>*Department of Anaesthesia and Intensive Care Medicine, Universiti Malaya Medical Centre, Kuala Lumpur, Malaysia*  
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<sup>1</sup>*Department of Anaesthesia and Intensive Care Medicine, Universiti Malaya Medical Centre, Kuala Lumpur, Malaysia*  
<sup>2</sup>*Department of Nursing Science, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia*  
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*<sup>1</sup>Department of Anesthesia and Intensive Care, The Chinese University of Hong Kong, Shatin, Hong Kong, SAR, China*  
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*Department of Anesthesia and Intensive Care, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, Hong Kong, SAR, China*

## **ANAESTHETIC CHALLENGE FOR MICROLARYNGOSCOPIC SURGERY IN A CHILD WITH RECURRENT RESPIRATORY PAPILLOMATOSIS CAUSING NEAR COMPLETE AIRWAY OBSTRUCTION: A CASE REPORT**

**Wan Hafidz W H<sup>1</sup>, Habibullah Z<sup>1</sup>, Najihah T H<sup>2</sup>, Ridhwan M N<sup>1</sup>**

*<sup>1</sup>Department of Anaesthesiology and Critical Care, Hospital Sultanah Nur Zahirah, Terengganu, Malaysia*

*<sup>2</sup>Department of ENT, Hospital Sultanah Nur Zahirah, Terengganu, Malaysia*

Recurrent Respiratory Papillomatosis (RRP) is a benign condition, of viral etiology, characterized by recurrent proliferations of squamous papillomata within the airway, anywhere from lips to lungs. The viral pathogen is most commonly Human Papilloma Virus types 6 and 11. Proliferations involving the larynx may present with childhood hoarseness and symptoms of progressive airway obstruction.

We describe a 7 year old child with hoarseness and stridor was posted for microlaryngoscopic excision of laryngeal papilloma. The anaesthetic management revealed the severity of obstruction that this child presented and the obstacles that faced the anaesthesiologist trying to secure the airway and provide adequate ventilation.

## PRINCIPLES OF TRANSPORTATION (INTER & INTRA-HOSPITAL) IN CRITICALLY ILL PEDIATRIC PATIENTS

Rajendra Prasad Koduri<sup>1</sup>, Karl Anton Langer<sup>2</sup>

<sup>1</sup>*Al Mafraq Hospital, Abu Dhabi, UAE*

<sup>2</sup>*Department of Anesthesia & Pain Therapy Al Mafraq Hospital, Abu Dhabi, UAE*

### BACKGROUND

Transport of critically ill pediatric patients is a practice in the field of modern medicine due to the need for advanced diagnostics, life-saving surgeries and to provide access to specialized care. Advanced diagnostic procedures often require pediatric patients to be transported within areas of hospital (Intra-hospital) to tertiary care hospitals that house specialized equipment/personnel (Inter-hospital). Risks are inherent during transport and the benefits of specialized care may outweigh risks.

### OBJECTIVES

Critically ill pediatric patients are those that by dysfunction or failure of one or more organs/systems depend on survival from advanced instruments of monitoring/ventilation or therapy. Currently the Joint Commission International has few requirements on transport related issues. The only accrediting body is Commission on Accreditation of Medical Transport Systems (CAMTS) and participation is voluntary. It is therefore the responsibility of individual hospitals to set guidelines, train & monitor the transport. The literature offers suggestions with one common objective "Safe Transfer with Low unplanned adverse events during the transfer". Clinical practice guidelines include:

1. Stabilize patient before the transfer/ use check lists for equipment & drugs.
2. Bring the transport environment in a controlled fashion to the patient.
3. Enhanced monitoring during transfer provides caregivers with information to avert adverse events and provide interventions.
4. Specialized teams for pediatric & neonatal transfer are the most effective way to minimize risk.

### METHODS

25 pediatric patients were transferred to a tertiary hospital during a period of one year (Intra-hospital) and 50 patients were transferred for diagnostic & therapeutic procedures (Inter-hospital) in our hospital based on local clinical practice guidelines & check lists.

### RESULTS

The incidence of unplanned adverse events was 1 in 75 patients.

### CONCLUSION

Careful planning, monitoring, resource allocation including providers appropriate for transportation are important for safe Intra & Inter hospital transport.

**INJECTION SPEED OF SPINAL ANAESTHESIA FOR CAESAREAN DELIVERY AND THE INCIDENCE OF HYPOTENSION: A RANDOMISED CONTROLLED TRIAL**  
**C F Chiang<sup>1</sup>, M Shahnaz Hasan<sup>2</sup>, Tham Sin Wan<sup>1</sup>, Sebastian Sundaraj<sup>1</sup>, Ahmad Faris<sup>1</sup>, Nagappan a/l Ganason<sup>1</sup>**

<sup>1</sup>*Department of Anaesthesia, Hospital Tengku Ampuan Rahimah, Klang, Selangor, Malaysia*

<sup>2</sup>*Department of Anaesthesiology, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia*

#### BACKGROUND

Spinal anaesthesia for Cesarean delivery is now the norm as compared to general anaesthesia. Several strategies exist to reduce the incidence of hypotension after spinal injection. The purpose of this investigation was to determine if a slower speed of injection would reduce the incidence of hypotension.

#### METHODS

Following the approval from the Medical Research and Ethics Committee, we performed a prospective, randomised controlled trial involving 77 ASA I-II patients undergoing elective Caesarean delivery. All patients received 9.5 mg of 0.5% heavy bupivacaine, 15 µg of fentanyl and 100 µg of morphine with a total volume of 2.3 ml. Patients were divided into a slow injection group (SLOW) who received the injection over 60 seconds, and fast injection group (FAST) who received the injection over 15 seconds. Systolic blood pressure was assessed every minute for the first 10 minutes and incidence of hypotension (reduction in blood pressure > 20% and 30%) was recorded. The use of vasopressor and occurrence of nausea/vomiting were also recorded.

#### RESULTS

36 patients in SLOW group and 41 patients in FAST group were recruited into the study. There was no significant difference in blood pressure drop of more than 20% ( $p=0.373$ ) and drop of more than 30% ( $p=0.497$ ). There was no difference in the amount of vasopressor used and incidence of nausea/vomiting in both groups.

#### CONCLUSION

In our study population, there was no difference in incidence of hypotension and nausea/vomiting when spinal injection time is prolonged beyond 15 seconds.

#### TRIAL REGISTRATION

ClinicalTrials.gov NCT02275897. Registered on 15 October 2014.

## **A MANNEQUIN STUDY OF INTUBATION WITH THE KING VISION VIDEO LARYNGOSCOPE AND MACINTOSH LARYNGOSCOPE IN NOVICE PROVIDERS**

**C W K'ng<sup>1</sup>, L W Luah<sup>2</sup>, Vijayan R<sup>1</sup>**

*<sup>1</sup>Universiti Malaya Medical Centre, Kuala Lumpur, Malaysia*

*<sup>2</sup>Hospital Pulau Pinang, Penang, Malaysia*

This is a single centered, un-blinded, randomized, crossover study to evaluate the efficacy of the King Vision Video Laryngoscope (KVIS01, KVL03C) by © 2010 King Systems compared to the Macintosh laryngoscope with respect to time to intubate the trachea in a normal airway mannequin by house officers. A total of 40 house officers were recruited for the study. After a brief introduction and practice session, they were given 4 attempts of intubation using each laryngoscope whereby the scope sequence was determined using a computer generated permuted block randomization. Intubation time (time to deliver the endotracheal tube), glottis view and observed injury was documented. Time to deliver the endotracheal tube using the King Vision Video Laryngoscope was significantly faster (95% confidence interval) at 9.3 seconds (SD 5.1 seconds) compared to 10.8 seconds (SD 7.1 sec;  $p < 0.05$ ) by using the Macintosh laryngoscope. There was no significant difference in terms of success rate in intubation using either the Macintosh Laryngoscope (98.1%) or the King Vision Video Laryngoscope (99.4%). In conclusion, the King Vision Video Laryngoscope shortens the time of intubating the trachea and improves time of visualization of the glottis.

## INFLUENCE OF AUTOLOGOUS TRANSFUSION TECHNIQUE ON POST-OPERATIVE HEMOGLOBIN LEVEL IN ADOLESCENT IDIOPATHIC SCOLIOSIS SURGERY

C C Ng<sup>1</sup>, M Shahnaz Hasan<sup>1</sup>, M K Kwan<sup>2</sup>

<sup>1</sup>Department of Anaesthesiology, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

<sup>2</sup>Department of Orthopaedic Surgery, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

Surgical correction of Adolescent Idiopathic Scoliosis (AIS) with instrumentation carries significant blood loss. Use of intraoperative autologous transfusion techniques will reduce the drop in post-operative hemoglobin and the need for allogenic blood transfusion with its inherent risk and cost.

### OBJECTIVES

This randomized controlled trial compared the efficacy of Intraoperative Cell Salvage (ICS) combined with Acute Normovolemic Hemodilution (ANH) versus ICS alone for AIS surgery.

### METHODS

44 patients undergoing elective idiopathic scoliosis correction surgery who meet the inclusion criteria were randomly assigned into 2 groups, group A (ICS with ANH, n=22) and B (ICS only, n=22). The primary outcome measured the difference between pre-operative and post-operative Hemoglobin level (time frame: at 0 hour and 24 hours post-operation). The secondary outcome examined the requirement of allogenic blood transfusion in idiopathic scoliosis corrective surgery in our center.

### RESULT

The use of combined technique (ICS with ANH) and ICS alone showed comparable changes in the overall perioperative Hemoglobin level (Group A,  $2.79 \pm 1.15$  g/dl, Group B,  $2.76 \pm 1.00$  g/dl,  $p=0.93$ ). Combined ICS and ANH observed a larger drift in the initial Hemoglobin level ( $2.57 \pm 0.82$  g/dl) immediately post-operation and subsequently a more stabilizing trend within the next 24 hours ( $0.22 \pm 1.33$  g/dl). The other group utilizing ICS solely showed a continued drop in Hemoglobin level immediately post-operation ( $1.60 \pm 0.67$  g/dl) and within the next 24 hours ( $1.16 \pm 0.78$  g/dl). The likelihood of receiving allogenic blood transfusion are not significantly influenced by either method (0% vs 4.55 %,  $p=0.32$ ). Total blood loss in both groups have significant positive correlations with number of vertebral level fused, screw numbers, duration of surgery and skin incision length.

### CONCLUSION

Combined ANH and ICS technique did not confer additional benefit over ICS alone in term of overall perioperative Hemoglobin level and allogenic blood transfusion requirement in Adolescent Idiopathic Scoliosis correction surgery.

# **IN CAESAREAN SECTION UNDER GENERAL ANAESTHESIA, IS PROPOFOL OR THIOPENTONE THE IDEAL INDUCTION AGENT? AN EVIDENCE-BASED REPORT**

**S E H Tsan, S C Teo, Norzalina E**

*Department of Anaesthesiology and Intensive Care, Hospital Umum Sarawak, Sarawak, Malaysia*

## INTRODUCTION

Obstetric general anaesthesia (GA) for caesarean section (CS) has historically used thiopentone as the induction agent of choice. However propofol has also been advocated as the drug for GA induction in this population. We aimed to find out whether thiopentone or propofol should be the ideal induction agent.

## METHODS

A structured search of Pubmed, Scopus and Cochrane Central databases was carried out to look for clinical trials evaluating thiopentone and propofol in CS. A total of 207 articles were found, and after applying predefined inclusion and exclusion criteria, four randomized, double-blinded studies ranging from 1989 to 2012 were selected. All four articles were scored according to validity and level of evidence after critical appraisal.

## RESULTS

Propofol is shown to significantly maintain lower levels of blood pressure and heart rate during CS under GA, compared to thiopentone. Usage of propofol has been proven to cause a lighter plane of anaesthesia in up to 54% of patients undergoing CS (versus 0% in thiopentone group), which implies a higher risk of awareness. On the other hand, propofol has been shown to be able to preserve significantly lower bispectral index throughout surgery, the importance of which is unclear. No differences between propofol and thiopentone were found for post-operative recovery. For neonatal depression, there was a significantly higher risk of poorer APGAR scores in neonates born to mothers given propofol, with a higher prevalence for hypotonia. There is inconclusive evidence to determine whether propofol or thiopentone depresses neonatal neurobehavioral status.

## CONCLUSION

While both propofol and thiopentone are effective induction agents, overall there is a higher risk of awareness and neonatal depression when propofol is used. In view of current available evidence, thiopentone should remain the induction agent of choice in CS under GA until more credible evidence can prove the safety of propofol.



## **A PROSPECTIVE REVIEW OF ANALGESIA PRACTICES ON ELECTIVE NEUROSURGICAL PATIENTS**

**Bathumana Appan P P, Sivanaser V, Hui M T, Velayuthapillai S**

*Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

### INTRODUCTION

The treatment of pain after neurosurgical procedures presents challenges in the form of pain assessment and choice of analgesia. A review on the incidence of pain and analgesia practices on neurosurgical patients was conducted in Hospital Kuala Lumpur from March 2014 until September 2014.

### METHODOLOGY

A prospective review of analgesia practices on elective neurosurgical patients was undertaken. Data included patients' demographics, type of surgery, preoperative GCS and pain scores, intraoperative analgesics and a 48 hour post-operative follow up on pain scores and analgesics prescribed. Collected data was tabulated and analyzed using SPSS.

### RESULTS

98 patients were reviewed; 62.2% males. Patients aged 50-59 years were the largest group (20.4%). 87.8% had Glasgow Coma Scale (GCS) of 15. Tumor surgery was the main procedure (37.8%). Remifentanil was used intraoperatively in 44.9% of neurosurgical procedures. The other commonest intraoperative analgesia was fentanyl and paracetamol in neurosurgical procedures compared to a combination of fentanyl, morphine and paracetamol in spinal surgery. In recovery, GCS was full in 85.7% of patients and majority (78.6%) had mild pain (pain score < 3/10). There was no statistically significant relationship between the site of incision and pain scores. Patients who received remifentanil intraoperatively were found to have significantly higher pain scores (median 2, IQR 3, p value 0.026) in recovery compared to those who did not receive remifentanil intraoperatively. Most patients reported no pain to mild pain on post-operative day 1 (89.6%) and post-operative day 2 (91.8%). The main postoperative analgesia was tramadol (65.3%) with side effects of nausea and vomiting (12.9%).

### DISCUSSION/CONCLUSION

Neurosurgical patients in Hospital Kuala Lumpur suffered mild pain post craniotomy, which fared better than other similar studies. Ongoing analysis is undertaken to ascertain pain predictors and whether current method of pain assessment is a factor to the difference in our institution.

## **A PROSPECTIVE, RANDOMIZED COMPARISON BETWEEN LATERAL AND POSTERIOR PARASAGITTAL IN-PLANE TECHNIQUE ULTRASOUND-GUIDED INFRACLAVICULAR BRACHIAL PLEXUS BLOCK**

**Z Y Beh<sup>1</sup>, M S Hasan<sup>1</sup>, H Y Lai<sup>1</sup>, N M Kassim<sup>2</sup>, S R Md Zin<sup>2</sup>, K F Chin<sup>3</sup>**

<sup>1</sup>Anaesthesiology, University of Malaya, Kuala Lumpur, Malaysia

<sup>2</sup>Anatomy, University of Malaya, Kuala Lumpur, Malaysia

<sup>3</sup>M.I.L.E.S Training Centre, University of Malaya, Kuala Lumpur, Malaysia

### BACKGROUND

The lateral parasagittal in-plane is the current conventional approach in ultrasound-guided infraclavicular brachial plexus block. However this technique seemed less popular because brachial plexus at the infraclavicular level runs deeper compared to its course proximally, often give rise to impaired needle visualisation due to its steep angle of needle trajectory to the ultrasound beam. (1) A new posterior parasagittal in-plane approach was introduced to improve needle visibility (2). This approach proved feasible from our case series (3), therefore we compared it with the conventional method in this study.

### OBJECTIVES

This study compared the conventional lateral and posterior approach parasagittal in-plane ultrasound guided infraclavicular brachial plexus block for upper limb surgery. A cadaveric study was also performed to complement the findings.

### Methodology

After obtaining approval from the Medical Ethics Committee, University Malaya Medical Centre (IRB reference no. 949.14 dated 17 October 2012), patients scheduled for upper limb surgery were randomized to receive ultrasound guided infraclavicular brachial plexus block either by lateral (n=23) or posterior (n=23) parasagittal in-plane approach. A cadaveric dissection was also conducted to complement the findings. The main endpoints of this study were the success rate. Other end points were the performance time, total anaesthesia-related time, quality of anaesthesia and any incidence of complications.

### RESULTS

Both techniques, lateral vs posterior parasagittal had comparable success rate, 91.3% vs 95.6% (P value 0.55). There were no significant differences in needling, performance, onset and total anaesthesia related times found between the two groups. No major adverse event reported. Both techniques showed similar pattern of nerve blockade in terms of sensory and motor blocks profile. In the cadaveric study, both techniques showed similar distribution and spread pattern of the methylene blue stain. Note the median and ulnar nerves were less stained compared to musculocutaneous and radial nerves.

### CONCLUSION

The posterior parasagittal in-plane technique ultrasound guided infraclavicular brachial plexus block did not offer significant advantages over the lateral parasagittal in-plane technique.

## **REAL-TIME ULTRASOUND FACILITATES PARAMEDIAN APPROACH OF SPINAL ANAESTHESIA IN LATERAL POSITION FOR LOWER LIMB SURGERY**

**S E Chong, Mohd Nikman A**

*Universiti Sains Malaysia, Kota Bharu, Kelantan, Malaysia*

### OBJECTIVES

To compare the clinical efficacy of real-time ultrasonographic localization of intrathecal space by comparing success rate, first needle pass and immediate complications.

### METHODS

60 patients with BMI less than 30 kg/m<sup>2</sup> undergoing lower limb surgery under spinal anesthesia were recruited. Following palpation and a pre-procedural ultrasound scan, a spinal needle introducer was inserted in-plane to the ultrasound probe. The angle of introducer was adjusted in real-time until it pointed in between two vertebral laminae. A 25G Pencan spinal needle was inserted. Successful dural puncture was confirmed by backflow of cerebrospinal fluid. This was compared to paramedian spinal anaesthesia via palpation method.

### RESULTS

There were no differences in age, weight, height, BMI, or ASA grading between the two groups. Successful dural puncture on first skin puncture was significantly higher in the ultrasound group than palpation group (86.7% vs. 43.3%,  $P < 0.01$ ).

The success rate of single needle pass was also significantly higher in the ultrasound group (46.7% vs. 20%,  $P = 0.028$ ). Among the overweight (BMI > 25) patients, dural puncture was successful on the first skin puncture in 17 patients (85%) in ultrasound group vs. 6 patients (33.3%) in palpation group. ( $p = 0.001$ ). Successful rate of single needle pass was also significant in ultrasound group (50% vs. 16.7%,  $p = 0.033$ ). Amongst patients with BMI < 25, there were no significant difference in both groups. Duration taken for determining puncture site was (0.69+1.01) minutes in the ultrasound group and (1.60+1.19) minutes in the palpation group. ( $P = 0.002$ ).

### CONCLUSION

Real-time ultrasound-guidance improves the success rate of paramedian spinal anaesthesia in lateral position, especially in overweight patients. It has not much of role in patients who are thin and have easily palpable spinous process.

## URINE OUTPUT IN DIAGNOSING ACUTE KIDNEY INJURY AND PREDICTING MORTALITY

**Azrina Md Ralib, Mohd Basri Mat Nor**

*Department of Anaesthesiology and Intensive Care, Kulliyah of Medicine, International Islamic University Malaysia,  
Kuantan, Pahang, Malaysia*

### BACKGROUND

Urine output is the oldest biomarker of AKI. Clinically it can be the first indication of kidney dysfunction, especially in critical care settings where hourly urine outputs are routinely measured. It has been shown that the ideal urine output threshold for prediction of mortality or dialysis was 0.3 ml/kg/h for moving block of 6 hours.

### OBJECTIVES

We aim to assess this threshold in mortality prediction in our ICU population.

### METHODS

This was a secondary analysis of a single centre, prospective observational study. Admission of less than 48 hours, post-elective surgery and ICU readmission were excluded. A moving average urine output over 6 hours over body weight was calculated for the first 48<sup>th</sup> hour post ICU admission. AKI<sub>uo</sub> was defined if urine output less than 0.5 ml/kg/h, and UO<sub>0.3</sub> less than 0.3 ml/kg/h.

### RESULTS

A total of 143 patients were recruited, of these 87 (61%) had AKI<sub>uo</sub>, and 52 (36%) had UO<sub>0.3</sub>. The AUC of AKI<sub>uo</sub> in predicting mortality was 0.62 (0.51 to 0.72), and UO<sub>0.3</sub> was 0.66 (0.55 to 0.77). There were lower survival in patients with AKI<sub>uo</sub> and UO<sub>0.3</sub> compared to those without ( $p=0.01$ , and  $0.001$ , respectively). However, after adjusting for covariates (age and SOFA score without renal score), only UO<sub>0.3</sub> but not AKI<sub>uo</sub> independently predicted mortality (HR 2.44 (1.15 to 5.18)). AKUuo assessed over 6 hours or longer independently predicted mortality, whereas UO<sub>0.3</sub> assessed over 2 hours or longer predicted mortality.

### CONCLUSIONS

A threshold of 6 hourly urine output of 0.3 ml/kg/h but not 0.5 ml/kg/h was independently predictive of mortality. Duration of urine output assessed as low as 2 hours can be used when utilising the stricter definition, whereas at 6 hours is needed using the standard criteria. This supports previous findings of a more strict urine output definition in acute kidney injury.

## **CASE REPORT: ANAESTHETIC CHALLENGE FOR RESECTION OF LEFT BRONCHIAL STRICTURE POST BLUNT CHEST TRAUMA IN A TEN YEARS OLD BOY**

**Sanah M<sup>1</sup>, Habibullah Z<sup>2</sup>, Thavam S<sup>1</sup>, Nik Azizah J<sup>1</sup>**

*<sup>1</sup>Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

*<sup>2</sup>Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

### INTRODUCTION

Tracheobronchial injury is a rare complication of blunt chest trauma. A substantial delayed in diagnosis and management would lead to airway lumen strictures from scarring and further adversely impact the function of distal lung units such as lung collapse.

### CASE REPORT

A ten-year-old, 40-kg boy with left mainstem bronchial disruption post-traumatic blunt injury was scheduled for resection and anastomosis. He was intubated and ventilated for three weeks before able to wean down to NIV. A repeated CXR and a CT thorax showed total left lung collapse with over expansion of the right lung with mediastinum shifted to left hemithorax that suggestive of previous bronchus and bronchial arterial injury. Intraoperative flexible bronchoscopic assessment confirmed a severe stricture of left bronchus at approximately 2.0 cm from the carina that unable to pass a 2.8 mm bronchoscope through. The one lung ventilation technique with MLT and anaesthetic challenge for resection of left bronchial stricture post blunt trauma for this patient will be described and discussed.

### CONCLUSION

Single lung ventilation with selective right main bronchus intubation could be achieved efficiently and successfully using appropriate MLT size and optimal tube placement under FOB guidance even in intraoperative emergency situation.

## **ANAESTHETIC MANAGEMENT OF A NEONATAL WITH GIANT SACROCOCCYGEAL TERATOMA: A CASE REPORT**

**Habibullah Z<sup>1</sup>, Ruwaida I<sup>2</sup>, Fazilawati Z<sup>2</sup>, Lee K T<sup>2</sup>, Tarmizi M N<sup>3</sup>**

*<sup>1</sup>Department of Anaesthesiology and Critical Care, Hospital Sultanah Nur Zahirah, Terengganu, Malaysia*

*<sup>2</sup>Department of Anaesthesiology and Critical Care, Hospital Raja Perempuan Zainab II, Kelantan, Malaysia*

*<sup>3</sup>Department of Surgery, Hospital Raja Perempuan Zainab II, Kelantan, Malaysia*

Sacrococcygeal teratomas (SCT) are the most common neonatal tumours, with an incidence of one in 35 000 to 40 000 live births. Females are affected more ratio of almost 4:1. Treatment for SCT classically consists in surgical removal of the sacral mass and is usually performed immediately after birth. Surgery in these tumours is high risk and requires careful anaesthetic management. Clinical reviews of SCT include several deaths because of exsanguinating haemorrhage during surgery and cardiac arrests due to electrolyte imbalances.

We report a case of prenatally diagnosed SCT and address the evaluation, anaesthetic consideration and mechanisms needed to care for this high risk population.

## MANAGEMENT OF PAEDIATRIC DIFFICULT AIRWAY - A CASE SERIES

**Swapna Thampi**

*National University Hospital, Singapore*

### BACKGROUND

The paediatric airway is challenging due to the smaller size and increased collapsibility compared with the adult airway. The lack of established algorithms in a paediatric difficult airway scenario and the dearth of appropriate paediatric equipment make it scarier. The following two case reports describe the challenges and offer potential solutions.

A written informed consent was obtained from the parents of the children below to publish anonymised images.

### CASE REPORT 1

A 1 year and 11 months old baby boy with retrognathia, posteriorly placed tongue and hypotonia was admitted to undergo Nissen's fundoplication and PEG insertion under general anaesthesia. He was anticipated to have a difficult airway. We illustrate how the airway was managed in this baby and how a "cannot ventilate, cannot intubate" scenario was rescued by an LMA.

### CASE REPORT 2

A 5week old male baby with a huge retropharyngeal tumor (in stridor) presented to the Emergency operating theatre for emergency intubation. This case illustrates the use of a videolaryngoscope to aid in anticipated difficult airway management.

### CONCLUSION

Paediatric difficult airway is technically challenging. It is essential to have a plan A and a back up plan with all the necessary equipment and personnel available. Fiberoptic bronchoscopy remains the gold standard, but familiarity with atleast one video videolaryngoscope may be helpful in difficult airways. An LMA is an important rescue device in paediatric "cannot ventilate, cannot intubate" scenario.

## **PEDIATRIC PAIN ASSESSMENT AND MANAGEMENT PRE AND POST EDUCATIONAL INTERVENTION**

**L Ooi<sup>1</sup>, Vijayan R<sup>2</sup>, Lai H Y<sup>2</sup>, M Md Nor<sup>2</sup>**

*<sup>1</sup>University of Malaya, Kuala Lumpur, Malaysia*

*<sup>2</sup>Hospital Pulau Pinang, Penang, Malaysia*

### INTRODUCTION

The pediatric population is at risk of inadequate pain management, with age-related factors affecting pain assessment and management in children. Although much is known about pain management in children, it has not been widely and effectively translated into our routine clinical practice.

### OBJECTIVES

In this study, we aimed to address these deficiencies by educating pediatric surgical nurses about pediatric pain assessment as well as providing developmentally appropriate pain assessments for use in the clinical setting.

### METHODOLOGY

An audit regarding pain assessment and management practices was carried out before and after an educational intervention to pediatric surgical nurses during which they received information about pediatric pain knowledge and assessments. Through the use of questionnaires, the nurses were reassessed on any improvement of their pain knowledge, comfort and confidence levels regarding treatment of pediatric patients after the educational intervention.

### RESULTS

There was improvement of the pediatric surgical nurses' pain knowledge after the educational intervention ( $t = -13.656$ ,  $p = 0.000$ ). This subsequently lead to improvement of the pain assessment and management practices in the ward ( $t = -2.281$ ,  $p = 0.025$ ). The nurses' comfort and confidence levels improved as well after the intervention but statistically the improvement was not significant.

### CONCLUSION

The results of the study confirmed the effectiveness of pain educational intervention in improving the nurses' knowledge and attitude as well as their pain assessment and management. Hopefully this can form the basis for the development of an effective pain management educational program for their continuing training and education.



## PARASITOSIS PRESENTING AS AN ALLERGIC REACTION DURING AMBULATORY ANAESTHESIA: A CASE REPORT

Faizal B<sup>1</sup>, Cindy T J<sup>2</sup>, Hui M T<sup>2</sup>, Brenda L<sup>1</sup>, Norhidayah Z<sup>1</sup>, Shahnaz M<sup>1</sup>

<sup>1</sup>Allergy & Immunology Research Centre, Institute for Medical Research, Kuala Lumpur, Malaysia

<sup>2</sup>Anaesthetic Allergy Clinic, Department of Anaesthesia & Intensive Care, Hospital Kuala Lumpur, Kuala Lumpur, Malaysia

### BACKGROUND

Urticarial rash has a wide scope of diagnoses. Drug hypersensitivity is suspected when urticaria occurs perioperatively. Other possible causes should be entertained if drug allergy testing is negative.

### REPORT

A nine year old boy with end stage renal failure (ESRF) and allergic rhinitis, who recently travelled to Vietnam, developed generalized urticaria after the institution of intravenous (IV) midazolam and morphine following insertion of a femoral dialysis catheter under monitored sedation. It was not associated with angioedema and/or cardiorespiratory symptoms. It resolved after administration of one dose of IV chlorpheniramine and IV hydrocortisone. He has undergone several procedures thereafter under general and monitored anaesthesia without incident. Intradermal testing (IDT) to validated concentrations of IV midazolam and morphine were negative. His total IgE was 360 KU/L and specific IgE to chlorhexidine and latex were negative. His baseline tryptase was raised (15.2 µg/L). Subsequently, he was investigated for mast cell activation syndrome (MCAS). The flowcytometric analysis of his lymphocytes was normal but his full blood picture returned with eosinophilia (28%,  $1.5 \times 10^3/\mu\text{L}$ ). A repeat tryptase level after his renal transplant was normal (3.83 µg/L). Parasite serological screen was positive for schistosomiasis (IgG). Urine schistosomal antigen was negative and so was his stool analysis. Ultrasound scan of his hepatobiliary system showed no focal lesions. As his eosinophil count was increasing, he was treated with oral praziquantel with complete resolution of his eosinophilia.

### CONCLUSION

Parasitosis is part of the differential diagnosis for urticaria in endemic areas particularly when there is eosinophilia. Unfortunately, it is often neglected. ESRF patients on dialysis usually have raised tryptase levels secondary to the mast cell inflammatory process associated with the condition.

## **THREE CASES OF LATEX FRUIT-SYNDROME PRESENTING INCIDENTALLY AS PERIOPERATIVE ANAPHYLAXIS: UTILITY OF SELECTED LATEX COMPONENT TESTING**

**Faizal B<sup>1</sup>, Hui M T<sup>2</sup>, Cindy T J<sup>2</sup>, Zailayul H M Y<sup>1</sup>, Anastasia R N<sup>1</sup>, Noorhidayah Y<sup>1</sup>, Shahnaz M<sup>1</sup>**

<sup>1</sup>Allergy & Immunology Research Centre, Institute for Medical Research, Kuala Lumpur, Malaysia

<sup>2</sup>Anaesthetic Allergy Clinic, Department of Anaesthesia & Intensive Care, Hospital Kuala Lumpur, Kuala Lumpur, Malaysia

### BACKGROUND

Latex hypersensitivity is the second most common cause of perioperative anaphylaxis. Patients with known history of hypersensitivity to certain fruits are particularly at increased risk due to known cross-reactivity with latex.

### REPORT

We report three cases presenting as perioperative anaphylaxis secondary to latex-fruit syndrome (age range 22 – 36 years). All three patients presented with prominent urticarial rash following induction of anaesthesia. Two of them had history of significant symptoms on exposure to latex and certain fruits while the third had eczema with presumed seafood hypersensitivity. None of them were suspected to be latex allergic preoperatively. All three patients had undergone anaesthesia in the past with only one of them having had an eventful course of anaesthesia. They were investigated extensively after the most recent reaction. All patients skin tested positive to latex, with only two whose provocation tests were positive. One patient also skin tested positive for antibiotics. Specific IgE for latex was positive for all patients (range 0.93 - 100 kU/L). Selected latex components were utilized to determine cross reactivity. One patient was positive for both rHev b5 and b6.02 (>100 kU/L) whilst the other two were positive only for rHev b6.02 (range 1.05 - 1.20 kU/L). None was positive for rHev b8. The specific IgE was positive for banana (range 1.05 - 1.33kU/L) and kiwi (0.45 - 1.53 kU/L) for all of them. Total IgE was raised in all patients (range 369- 1547 kU/L).

### CONCLUSION

A significant preoperative history paired with skin and provocation tests, in addition to specific IgE tests for latex are vital in differentiating genuine latex allergy from asymptomatic sensitization. The latex component, rHev b6.02 is a promising tool for confirmation of this syndrome.

## **PROPOFOL CO-INDUCTION WITH KETAMINE OR MIDAZOLAM: COMPARING CONDITIONS DURING PROSEAL LARYNGEAL MASK AIRWAY INSERTION**

**R Latif Mohamad<sup>1</sup>, S S P Tang<sup>2</sup>, N Abdul Manap<sup>2</sup>, A Izaham<sup>2</sup>, A Mohamad Yusof<sup>2</sup>, S P Ng<sup>3</sup>, N Yahya<sup>2</sup>**

*<sup>1</sup>Hospital Sibu, Sarawak, Malaysia*

*<sup>2</sup>Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia*

*<sup>3</sup>Hospital Pulau Pinang, Penang, Malaysia*

### OBJECTIVE

Optimal conditions during supraglottic airway devices placement is important to prevent events associated with inadequate depth of anaesthesia. This study compared propofol co-induction with ketamine or midazolam during Proseal Laryngeal Mask Airway (PLMA) insertion.

### METHODS

A total of 118 ASA I or II patients aged 18 to 60 years requiring PLMA placement for surgery were recruited into this prospective, randomized and double blind study. Patients were grouped into propofol co-induction (2mg/kg) with either ketamine (0.5mg/kg) or midazolam (0.03mg/kg). During PLMA insertion, the haemodynamic changes were recorded and the degree of mouth opening, ease of insertion, swallowing, coughing or gagging, movement and laryngospasm were scored. Overall insertion condition was further graded into excellent, good, poor or unacceptable.

### RESULTS

The ketamine-propofol group had significantly better mouth opening ( $p=0.01$ ) and shorter duration of apnoea ( $p<0.001$ ). Other conditions during PLMA placement and the overall grading were comparable between groups. Haemodynamic parameters were comparable to baseline in both groups. However, the ketamine-propofol group had more stable blood pressure readings and maintained a higher heart rate ( $p<0.05$ ).

### CONCLUSION

Overall, propofol co-induction with either ketamine or midazolam produced comparable PLMA placement conditions.

## INTRAVENOUS KETAMINE AS PRE-EMPTIVE ANALGESIA IN PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY

**S S Wang<sup>1</sup>, N Yahya<sup>1</sup>, S S P Tang<sup>1</sup>, M Z Abdullah<sup>2</sup>, M Budiman<sup>3</sup>, A M Yusof<sup>1</sup>, F S K Lim<sup>1</sup>**

<sup>1</sup>*Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia*

<sup>2</sup>*Hospital Sibu, Sarawak, Malaysia*

<sup>3</sup>*Hospital Tengku Ampuan Afzan, Pahang, Malaysia*

### OBJECTIVES

Pre-emptive analgesia is a technique that is initiated before noxious stimuli is experienced and has been shown to lower the pain intensity when compared to analgesics administered after the surgical incision. As previous studies were inconclusive in determining the optimal dose, this study was done to evaluate if pain could be alleviated when comparing low doses of intravenous ketamine for pre-emptive analgesia.

### METHODS

Seventy eight patients undergoing laparoscopic cholecystectomy were randomly allocated into 3 groups: Group 1 (placebo); Group 2 (IV ketamine 0.25 mg/kg); and Group 3 (IV ketamine 0.5 mg/kg). All study drugs were given 5 minutes after endotracheal intubation prior to surgical incision. Blood pressure and heart rate were recorded before and after induction of anaesthesia and subsequently at 5 minute intervals for 30 minutes after the study drug was given. Post-operative pain control was evaluated through visual analogue scale (VAS) at 0, 3, 6, 12 and 24 hours post-operatively. Any adverse effects of ketamine were documented.

### RESULTS

Group 3 patients had significantly lower VAS scores at 0, 3, 6 and 24 hours post-operatively compared to patients in Group 1. Group 1 and 2 patients did not have significantly different VAS scores throughout the study period. Haemodynamic parameters including heart rate and mean arterial pressure were not significantly different among the 3 groups. Side effects documented were nausea, vomiting and blurring of vision.

### CONCLUSION

IV ketamine 0.5 mg/kg showed significant pre-emptive analgesic effects when compared to IV ketamine 0.25 mg/kg, in patients undergoing laparoscopic cholecystectomy.

## COMPARISON BETWEEN MODIFIED MALLAMPATI CLASSIFICATION, UPPER LIP BITE TEST AND NECK CIRCUMFERENCE IN PREDICTING DIFFICULT INTUBATION IN OBESE PATIENTS

Z Kassim<sup>1</sup>, S S P Tang<sup>2</sup>, E Kamaruzaman<sup>2</sup>, N Abdul Manap<sup>2</sup>, F S K Lim<sup>2</sup>, K Zainuddin<sup>2</sup>, J Md Zain<sup>2</sup>

<sup>1</sup>Hospital Segamat, Johor, Malaysia

<sup>2</sup>Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia

### OBJECTIVE

Most tests for difficult intubation lack sensitivity and specificity especially in the obese. We proceeded to evaluate the airway test which best predicts difficult intubation in the obese population.

### METHODS

One hundred adults with body mass index  $\geq 27.5$  kg/m<sup>2</sup>, scheduled for elective surgery requiring endotracheal intubation under general anaesthesia were enrolled in this prospective, clinical study. Patients were assessed pre-operatively with additional airway evaluation consisting of upper lip bite test (ULBT), modified Mallampati classification (MMC) and neck circumference (NC) measurement. Following induction of anaesthesia, laryngoscopic evaluation of the glottic view was performed and graded using Cormack and Lehane classification.

### RESULTS

Airway assessments and laryngoscopic findings were analysed for its sensitivity (Sn), specificity (Sp), positive and negative predictive value (PPV, NPV) and positive and negative likelihood ratio (positive LR, negative LR) as predictors of difficult intubation. The ULBT had a Sn, Sp, PPV and positive LR of 75.0%, 96.4%, 80.0% and 20.8 respectively. The MMC and NC had lower predictive values (Sn 68.8%, Sp 66.7%, PPV 28.2% and positive LR 2.0 versus Sn 68.8%, Sp 59.5%, PPV 24.4% and positive LR 1.7).

### CONCLUSION

This study shows that the ULBT is a better predictor for difficult intubation in obese patients with higher Sn, Sp, PPV and positive LR values when compared to MMC and NC measurement.

## **ANESTHETIC MANAGEMENT OF LARYNGO-TRACHEO-ESOPHAGEAL CLEFT: 3 CHALLENGING CASES WITH COMPLICATED ASSOCIATED MALFORMATIONS**

**Mayuko Wakimoto, Yoshikazu Miyamoto, Akihiro Taniguchi, Keiko Kinouchi**

*Osaka Medical Center and Research Institute for Maternal and Child Health, Osaka, Japan*

### BACKGROUND

Laryngo-tracheo-esophageal cleft (LC) is a rare malformation characterized by septal defect between the trachea and the esophagus. The management of severe LC is challenging because of the difficulties in maintaining satisfactory ventilation and preventing aspiration.

### CASE 1

A 2420g girl with congenital diaphragmatic hernia (CDH) was transferred to our hospital. Immediately, repair of the diaphragmatic defect was performed. Through perioperative course, maintaining satisfactory ventilation was difficult and her SpO<sub>2</sub> was unstable. Bronchoscopy demonstrated the presence of LC (type III). On the seventh day, cleft repair was performed uneventfully.

### CASE 2

A 2024g boy with prenatally diagnosed esophageal atresia with tracheo-esophageal fistula (TEF) and double outlet right ventricle, was delivered vaginally at 38 weeks gestation with Apgar scores 7/9 at 1/5 minutes respectively. During the TEF repair, his SpO<sub>2</sub> was unstable and accidental extubation was suspected. Bronchoscopy revealed LC (Type III). On day 83, a tracheostomy and 16 months later, cleft repair was performed. Through clinical courses, he is free of aspiration pneumonia and currently doing well.

### CASE 3

2520g boy with prenatally diagnosed CDH and single ventricle was delivered by caesarean section at 36 weeks gestation. Immediate resuscitation was required but tracheal intubation failed. Bronchoscopy was performed and demonstrated LC (Type IV). Banding of lower esophagus and repair of CDH were performed, but his respiratory condition was still unstable, which necessitated the additional procedures of banding of upper esophageal and tracheostomy. His condition gradually improved and he was discharged from ICU.

### DISCUSSION

LC is difficult to diagnose prenatally and often associated with other congenital abnormalities. If several attempts of intubation fail, LC should be suspected. As respiratory complication is lethal for type III and IV patients, early cleft closure or tracheostomy is recommended for preventing aspiration and the better outcome.

## **PULMONARY HEMORRHAGE IN FAT EMBOLISM SYNDROME: A CASE REPORT**

**M Y Khuzaimah, Z Zulaikha, M S Zayuah, H Rahimah**

*Hospital Sultan Haji Ahmad Shah, Temerloh, Pahang, Malaysia*

### BACKGROUND

Fat embolism syndrome describes a constellation of signs and symptoms associated with fracture and surgical manipulation of skeletal elements. Thus the diagnosis of fat embolism syndrome can be difficult as none of the proposed diagnostic criteria have good diagnostic value. A rare association of fat embolism syndrome such as pulmonary haemorrhage makes timely diagnosis and management remains as anaesthetic and surgical challenge.

### CASE REPORT

A 17 year-old man referred to our centre post trauma day 3 with closed fracture of right femur. He developed high grade fever with temperature of 40 degree Celsius, shortness of breath and restlessness in Hospital Bentong, Pahang. Upon arrival in Emergency Department Hospital Sultan Haji Ahmad Shah (HoSHAS), he had altered consciousness, pulse rate of 153 beat/min, respiratory rate of 30 breath/min, blood pressure of 179/55 mmHg, SpO<sub>2</sub> 88% under high flow mask. Chest x-ray revealed generalized reticulonodular opacities of bilateral lung field with type 1 respiratory failure. He was electively intubated for perioperative stabilization, but 4 hours post intubation he developed massive fresh blood through endotracheal tube (ETT). Here, we present further management of pulmonary haemorrhage associated with fat embolism syndrome.

## **CASE REPORT: BRAIN ABSCESS FOR BURRHOLE AND CRANIOTOMY UNDER MONITORED SEDATION IN PATIENT WITH UNDERLYING EISENMENGER SYNDROME SECONDARY TO UNCORRECTED ATRIAL SEPTAL DEFECT**

**Farah R, Cathryn L, Lai S C, Norzalina E**

*Department of Anaesthesiology and Intensive Care, Sarawak General Hospital, Sarawak, Malaysia*

### INTRODUCTION

Presentation of non-cardiac surgery in Eisenmenger Syndrome patients is associated with high mortality. Goals of monitoring and anaesthetic plan is important to an anaesthesiologist for a safe surgery.

### CASE DESCRIPTION

A 36 years old male, underlying Atrial Septal Defect (ASD) with pulmonary hypertension and bronchial asthma, presented with severe throbbing right-sided headache for one week associated with nausea, vomiting, and blurring of vision. He is now in New York Heart Association (NYHA) Class 4 and Metabolic Equivalent (METs) less than 4. Computed tomography brain suggestive of abscess stage 4. He was planned for right frontal burrhole and drainage under monitored sedation.

Preoperatively Glasgow Coma Scale was 15, vital signs were stable with pulse oximeter 84-88% on nasal prong 2L/min, no neurological deficit, and laboratory results within normal limits. Chest x-ray showed cardiomegaly with globular heart. Electrocardiogram was sinus rhythm with biventricular hypertrophy and right bundle branch block. Echocardiography revealed ejection fraction 35-45%, large ASD, flattened septum with right atrium severely dilated, right ventricle systolic pressure more than 60mmHg, severe tricuspid regurgitation, and moderate pulmonary artery dilatation.

Intraoperatively, he was on routine monitoring, left radial arterial blood pressure monitoring and supplemented with 5L/min oxygen via simple face mask. Intravenous Midazolam 0.5mg bolus and Target Controlled Infusion (TCI) Remifentanyl 50ug/ml was started and maintained at 0.5-1ng/ml. Surgery was uneventful.

Postoperatively, he was discharged to general ward after 30 minutes observation in recovery bay. Further plan by Neurosurgical team is to complete six weeks of antibiotics.

### CONCLUSION

Eisenmenger syndrome patients undergoing non-cardiac surgery have considerable risks with various technique of modern anaesthesia. Nevertheless, the cornerstone of safe anaesthesia requires meticulous preparation and knowledge of the pathophysiology to minimize complications.



## **CASE REPORT: A CASE OF SUSPECTED DELAYED MALIGNANT HYPERTHERMIA WITH SEVOFLURANE ANAESTHESIA IN SARAWAK GENERAL HOSPITAL**

**Kwan Tuck L, Farah R, Normi S, A Rafidi L K, Norzalina E**

*Department of Anaesthesiology and Intensive Care, Sarawak General Hospital, Sarawak, Malaysia*

### INTRODUCTION

Malignant hyperthermia (MH) is a rare anaesthetic-related pharmacogenetic disorder, triggered by succinylcholine and volatile anaesthetic agent. In the absence of succinylcholine, MH symptoms can be manifested with prolonged exposure of volatile anaesthetics.

### CASE DESCRIPTION

A 42 year old male with no known medical illness was admitted after motor vehicle accident and sustained right closed proximal 1/3 femur fracture. He was scheduled for right femur interlocking nail and counselled for combined spinal epidural anaesthesia but refused, hence for general anaesthesia. Anaesthesia was induced with Intravenous Fentanyl, Intravenous Propofol, and Sevoflurane. Laryngeal mask airway was inserted and mechanically ventilated with Pressure Support Ventilation (PSV) Pro. Intraoperatively vital signs were stable and general anaesthesia was maintained with Sevoflurane. Approximately two hours after induction, noted that ETCO<sub>2</sub> had risen to 76mmHg, tachypnoea with 40 breaths per minute (bpm), tachycardia of 140 beats per minute (bpm) and normotensive. There was no masseter rigidity detected. Temperature probe via nasopharyngeal showed 40.6°C.

A presumptive diagnosis of MH made, given the clinical picture. Sevoflurane was turned off. Target Controlled Infusion (TCI) Propofol was started. Patient intubated and manual positive pressure hyperventilation with high flow oxygen from portable oxygen tank given. Intravenous Dantrolene was given up to a total of 360mg (5mg/kg). Active cooling measures were performed. Cardiopulmonary resuscitation initiated for Ventricular Fibrillation. He was admitted to Intensive Care Unit (ICU) after return of spontaneous circulation. Unfortunately he succumbed to death postoperative day five due to disseminated intravascular coagulopathy and multiorgan failure.

### CONCLUSION

MH is a rarely encountered life threatening anaesthetic event. Anaesthesiology provider should be prepared and vigilant to treat suspected cases as the delayed onset of pathological hypermetabolic state may preclude timely recognition and management.

## **POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES) IN A PATIENT WITH SEVERE PREECLAMPSIA**

**Tan K W, Norliza Mohd Nor**

*Hospital Selayang, Selayang, Selangor, Malaysia*

### INTRODUCTION

Posterior reversible encephalopathy syndrome (PRES), is also known as reversible posterior leucoencephalopathy syndrome (RPLS) was first described by Hinchey et al in 1996. It is a syndrome where neurotoxic state that occurs secondary to the inability of posterior circulation to auto-regulate in response to acute changes in blood pressure. Clinical presentation usually with headache, seizures, encephalopathy and/or visual disturbance. We report a case of PRES in a patient with severe preeclampsia.

### CASE REPORT

A 26-year-old Indonesian lady (G1, P0) with underlying gestational diabetes, no previous history of hypertension, presented to the delivery suite at 38 weeks of gestation

with complaints of severe headache and worsening visual disturbances which progressed to blindness. During pregnancy her blood pressure remained <110 / 70 mmHg. Her initial and subsequent blood pressures during presentation were between 160-180 / 95-105 mmHg, accompanied by 3+ proteinuria; severe preeclampsia was diagnosed. She was started on magnesium sulfate and hydralazine for control of her blood pressure then booked for emergency cesarean section.

On arrival in theatre it was noted that her blood pressure was 160 / 90 mmHg and her symptoms (headache, blindness) still persist. Cesarean section was done under general anesthesia with rapid sequence induction and was uneventful. Estimated blood loss was 700ml. Postoperatively the patient was not extubated and admitted to intensive care unit (ICU) for cerebral protection. A CT scan was done revealed bilateral ill-defined hypodense areas in parietal and occipital lobes consistent with PRES. MRI brain showed patchy symmetrical white matter hyperintensities with small intraparenchymal hemorrhages and infarcts.

During ICU stay, she requires parenteral antihypertensives to control her blood pressure. She was successfully extubated on day 4 and fully regained her vision on the same day. Visual assessment done by ophthalmologist reported to be normal. She recovered well and was discharged home.

## **BLUNT TRAUMATIC TOTAL THORACIC TRACHEAL TRANSECTION: A CASE REPORT**

**M Y Khuzaimah, Z Zulaikha, M S Zayuah, H Rahimah**

*Hospital Sultan Haji Ahmad Shah, Temerloh, Pahang, Malaysia*

### BACKGROUND

Blunt tracheal injury is rarely seen in Malaysia. Despite its rare occurrence, failure to recognize and manage it accordingly will lead to potential life threatening condition thus highlighting the critical aspect in ensuring prompt yet effective ventilatory support in critical care unit setting. The signs and symptoms of tracheal injury are not always specific to the extent of injury thus high index of clinical suspicion is needed upon receiving such cases.

### CASE REPORT

We report a case of 39 years old Bangladeshi male alleged hit by a backhoe at work, sustained blunt trauma to the neck. He presented to Hospital Jengka, Pahang with difficulty in breathing and stridor. He was intubated for airway protection but subsequently developed massive subcutaneous emphysema with rapid desaturation to 60%. Urgent chest X ray revealed bilateral pneumothorax with lung contusion. Bilateral chest tube was inserted and was further referred to our centre, Hospital Sultan Haji Ahmad Shah (HoSHAS). Upon further assessment in Emergency Department, high index of suspicion for tracheal injury was made based on clinical assessment and chest x-ray finding. Here, we present the challenges in ensuing effective ventilation and further management that was done during his stay in our Intensive Care Unit.

**A CASE REPORT: A NOVEL APPROACH OF SPINAL ANAESTHESIA TECHNIQUE FOR ELECTIVE CAESAREAN SECTION WITH ADJUSTED SPINAL DOSE BASED ON HARTEN CHART AND PROPHYLAXIS SINGLE DOSE IV ONDANSETRON TO IMPROVE HEMODYNAMIC STABILITY**

**K H Anwar, A Esa**

*Hospital Sultan Ismail, Johor, Malaysia*

The means to reliably prevent maternal hypotension under spinal anesthesia continues to elude the practicing anesthetists. Thus adjusted spinal dose of Heavy Marcaine based on Harten chart according to height and weight will limit wide spread of sympathetic block desired for a surgery. Five-hydroxytryptamine (5-HT) receptor is mechanoreceptor located in the left ventricle wall is an important factor associated with inducing the Bezold Jarish reflex (BJR) that lead to the bradycardia and hypotension in the setting of reduced venous return after spinal anaesthesia. Ondansetron, alleviates the (BJR) triggered by 5-HT , and thus suppresses further expansion of peripheral vessels and lead to increase in blood return to the heart. Thus it significantly attenuates spinal induced hypotension, bradycardic and proven to reduce incidence of vomiting, shivering and itchiness. We hereby present the recent spinal anesthetic management of a parturient scheduled for cesarean section (CS). A 32 year-old G4P2+1 @ 38 week with 1 previous scar and breech presentation required a CS. Five minutes after IV ondansetron 4 mg bolus, spinal anesthesia was done and patient received 1.7 ml of intrathecal heavy bupivacaine (0.5 %) according to the height (160 cm ) and weight ( 100 kg ) of patient, based from the Harten's dose chart developed from Caucasian parturients, plus intrathecal fentanyl 20 mcg and morphine 0.1 mg ( total 2.2 ml ). Rapid pressurized coloadung with crystalloid infusion commenced and the patient was then turned to the supine position with a folded towel beneath the right pelvic region. She had no episodes of hypotension, bradycardia, vomiting, shivering or itchiness and completed surgery without intraoperative pain and no vasopressor needed. To the best of our knowledge there is no report in literature of the combination of prophylaxis single dose of IV ondansetron and application of Harten chart to improve safety margin of hemodynamic profile.

## CASE REPORT OF MORQUIO SYNDROME: AN ANESTHETIC CHALLENGE

**Sunny Dawoodi, Pradnya Sawant, Varinder Kaur**

*Bai Jerbai Wadia Hospital For Children And Research Centre, Mumbai, India*

### REPORT

A 5 year 2 month, 11kg height 125cm, male child with Morquio Syndrome posted for Posterior Instrumentation of Thoraco Lumber (D11-L3). MRI spine revealed TL Kyphoscoliosis and atlantoaxial instability cervical kyphosis C2-C3 level. On examination child was of short stature, normal intelligence, flat nose, wide teeth space, prominent mandible, large tongue & barrel shaped chest. HR 98bts/min, RR 30/min, SpO<sub>2</sub> on room air 99%, cardiac and pulmonary examinations normal. Blood investigations revealed haemoglobin of 11gm%, WBC of 7000/mm<sup>3</sup>, platelet count 2.91lac/mm<sup>3</sup>, prothrombin time/partial thromboplastin time within normal range. Premedicated with 5mg midazolam orally, 20min prior to OR. Monitoring included ECG, NIBP, Pulse Oximeter, Capnography. Preoxygenation with 100% oxygen, inhalational induction oxygen, nitrous oxide, sevoflurane (3:3:5%). 20G wide bore iv cannula secured. Antisialagogue glycopyrrolate 40mcg given. Sedation and induction with fentanyl 20mcg, propofol 20mg. Tracheal intubation performed after atracurium 11mg given, head manually held in neutral position. Cormack Lehane grade 1 view was obtained. Endotracheal tube no.5 (uncuffed) used after confirming bilateral air entry and fixed. Left radial artery cannulated with 22gauge jelco. General anaesthesia maintained with oxygen air sevoflurane (1:1:1.5%). Supplementation with Dexmedetomidine at 1mcg/kg/min for first 10min as loading dose, followed by infusion maintained at 0.2-0.5 mcg/kg/hr. Careful eye padding and pressure points padded. Surgery uneventful. Intraoperative hemodynamically patient remained stable. Neuromuscular blockade antagonized, patient extubated, transferred to post anaesthesia care. Recovery uneventful.

### CONCLUSION

Important to understand Morquio syndrome and plan anaesthesia accordingly. Airway issues in these patients are frequently complicated by cervical spine instability. Preoperative evaluation of the airway, careful assessment of cervical spine, cardiac, respiratory and neurological functions are important. Inhalational induction is useful to overcome the problem of difficult intubation when fiberoptic intubation being minimally invasive is not possible.

## **CASE REPORT: ANAESTHETIC MANAGEMENT OF A WOMAN WITH LIMB-GIRDLE MUSCULAR DYSTROPHY FOR CAESAREAN SECTION**

**A L Leong, Mohd Rohisham Bin Zainal Abidin**

*Hospital Tengku Ampuan Rahimah, Klang, Selangor, Malaysia*

### BACKGROUND

Limb Girdle Muscular Dystrophy (LGMD) is a group of inherited disorders that affect the voluntary muscles of the hip and shoulder areas. This disorder is progressive but there is sparing of involuntary muscles of the digestive system, bowel and bladder with normal sexual function, intellectual and cognitive abilities. Women with LGMD have been reported to have marked progressions and exacerbations of symptoms due to physiological demands of pregnancy whereby there might be severe pelvic girdle weakness and respiratory insufficiency leading to increased obstetric complications.

### CASE REPORT

We present a case of a 38-year-old Malay lady, Gravida 9 Para 3+5 who had underlying limb-girdle muscular dystrophy complicated with restrictive lung disease and history of recurrent miscarriages. Clinically, she had proximal muscle weakness over bilateral upper limbs and lower limbs with power of 2-3/5. For this pregnancy, she was admitted to hospital thrice for presyncopal attack secondary to anemia, vasovagal attack and laryngopharyngeal reflux. Combined discussion between multiple disciplines concluded that there was no medical indication for caesarean section but patient strongly requested for operative management. We then explained to the patient that combined spinal-epidural (CSE) anaesthesia would be the preferred technique as it minimized the risks of general anaesthesia associated with pregnancy and LGMD. When the patient went into labour at 36 weeks of gestation, we proceeded with CSE followed by incremental boluses with the epidural for her caesarean section. Blockade was adequate with no significant drop in blood pressure intra-operatively or respiratory compromise. The post-operative course was also uneventful. In a nutshell, regional anaesthesia (CSE in this case) is the preferred technique for obstetric patients with LGMD with respiratory involvement. This is because it obviates the need for general anaesthesia which can prove to be detrimental with the risk of rhabdomyolysis, malignant hyperthermia and significant postoperative pulmonary complications.

## **EFFECT OF ALVEOLAR RECRUITMENT OF DEPENDENT LUNG ON THE ARTERIAL OXYGENATION DURING ONE LUNG VENTILATION (OLV) DURING VATS (VIDEO ASSISTED THORACIC SURGERY) OESOPHAGECTOMY**

**Madhavi Shetmahajan, Meenal Rana**

*Department of Anaesthesiology, Critical Care and Pain, Tata Memorial Hospital, Mumbai, India*

### BACKGROUND

Pulmonary shunt leading to arterial hypoxemia remains a major concern during OLV. Atelectasis in the dependent lung which is one of the contributors to pulmonary shunt can be treated with recruitment manoeuvre. The purpose of this study was to test the hypothesis that Alveolar recruitment manoeuvre (ARM) at the beginning of OLV would improve arterial oxygenation during OLV.

### AIMS AND OBJECTIVES

To study the effect of ARM of the dependent lung on arterial oxygenation during one lung ventilation during VATS oesophagectomy.

### METHODOLOGY

Prospective randomized controlled double blinded single centre study. Study was approved by institutional review board. Patients in the study group received ARM in the lateral position after institution of OLV

### STUDY PROCEDURE

ARM : Ventilation for 10 breaths with Pressure Controlled Ventilation with Inspiratory pressures of 40 and PEEP of 10 cm water, I:E 1:2. RR 16 breaths/ minute.

### RESULTS

29 patients were randomized over a period of 8 months, 15 in the control group and 14 in the study group. The 2 groups were similar in their demographic variables. The mean values of PaO<sub>2</sub> (in mmHg) at baseline, 5, 30, 60 and at end of OLV in the study group were 230 ±108.87, 217 ±127.8, 186 ±80.2, 207 ± 107 and 202 ±102 respectively. The corresponding values in the control group were 241±120.7, 247 ±117.7, 243 ±136.9, 199 ± 99 and 167 ±81 respectively. Thus the changes in PaO<sub>2</sub> at the predefined time points from baseline values were not statistically significant. There was a lower drop in PaO<sub>2</sub> at 60 minutes in the study group than in the control group but could not achieve statistical significance. Also there were no significant haemodynamic effects of ARM.

### CONCLUSION

Application of ARM to the dependent lung during OLV during VATS oesophagectomy failed to show a significant difference in oxygenation in the two groups

## **CASE REPORT: ANAESTHETIC CHALLENGES IN THE MANAGEMENT OF AN INFANT WITH DIGEORGE SYNDROME**

**Malavika Kulkarni**

*Kasturba Medical College, Manipal University, Manipal, Udupi, Karnataka, India*

### BACKGROUND

Di George syndrome (DGS) is a genetic disorder with multisystemic involvement characterised by craniofacial, cardiac anomalies, parathyroid and immune system dysfunction.

### REPORT

In this case report, the perioperative management of a 5 month old infant diagnosed as DGS with concurrent problems such as anticipated difficult airway, congenital heart disease (Post PDA closure with ASD), aspiration pneumonia secondary to uvulopalatal insufficiency, gastroesophageal reflux and laryngomalacia for gastric fundoplication and gastrostomy is discussed.

### METHODS

Our choice of anaesthesia was general endotracheal anaesthesia with modified rapid sequence induction. Adequate venous access was obtained in upper limb. Care was taken to avoid air bubbles in the venous access. Standard ASA monitors were placed. Nasogastric decompression was followed by preoxygenation & modified rapid sequence induction with IV Propofol and Succinyl choline. Oropharyngeal suctioning was done. On direct laryngoscopy with Mackintosh blade, the Cormac Lehane grading was IIIb which did not improve with external laryngeal maneuver (ELM). Hence we resumed to mask ventilation with cricoid pressure. In the second attempt we opted for a McGill's blade with which the view was grade IIb with ELM. The airway was secured with a 3.5mm uncuffed endotracheal tube fixed at 10cm. Maintenance of anaesthesia was with opioids/Isoflurane/O<sub>2</sub> + air/atracurium with ventilatory goals of SpO<sub>2</sub> 90%-95%, PIP ≤ 25cm H<sub>2</sub>O, PaCO<sub>2</sub> 45-55mm Hg.

### RESULTS

Post operatively the infant was managed in PICU with continued mechanical ventilatory support, IV opioid infusion, antibiotics, bronchodilators and chest physiotherapy. The infant was weaned & extubated after 48hrs of mechanical ventilation.



## **PATIENT SATISFACTION AFTER ANAESTHESIA FOLLOWING ELECTIVE AND EMERGENCY SURGERY**

**Hafizah Mohamed, Tg Muhammad Ridzauddin Tg Abd Halim, Shafie Ahmad Jameran, Suhaila Nanyan,  
Asmarawati Mohamad Yatim**

*Hospital Tengku Ampuan Afzan, Kuantan, Pahang, Malaysia*

Patient satisfaction after anaesthesia is an important aspect of quality care in the perioperative period. Patient dissatisfaction can affect clinical outcomes, delayed discharged, and may even lead to medical malpractice claims. Patient satisfaction relating to anaesthesia is important so that problems arising from it can be dealt with early. This will result in improved care and better quality of anaesthetic services in the future.

The primary aim of this survey was to assess the level of patients' satisfaction with the anaesthetic management. The secondary aims were to identify the factors associated with patients' dissatisfaction and to determine the degree of understanding regarding the role of the anaesthetist perioperatively.

A survey of patient satisfaction was conducted following elective and emergency surgery in HTAA over a period of 6 months from September 2014 to February 2015. A total of 1800 patients were enrolled, where 900 patients underwent elective surgery and the remainder had emergency surgery. They were interviewed postoperatively and were asked about the quality of anaesthetic care they had received.

1666 patients (92.56%) admitted that they received good quality of care by the anaesthetic team. Dissatisfaction was mainly associated with postoperative pain and postoperative nausea and vomiting which were experienced by 116 patients (6.44%) and 12 patients (0.67%) respectively. However, 94.03% of the patients were satisfied with the management of postoperative pain and postoperative nausea and vomiting (PONV).

1785 patients (99.17%) were satisfied with the information provided about anaesthesia and all of them agreed that they understood the information given. 100% of patients agreed that they were able to discuss issues concerning anaesthesia during the pre-anaesthetic visit. 360 patients (20.00%) did not understand the role of the anaesthetist perioperatively.

In conclusion, this study revealed a high satisfaction of perioperative anaesthetic care while dissatisfaction was mainly associated with postoperative pain management.

## **AN AUDIT ON POST OPERATIVE PAIN MANAGEMENT IN A TERTIARY HOSPITAL: HOW DO WE FARE?**

**Maria H S Lee, Lakshmi T**

*Hospital Sultanah Aminah, Johor Bahru, Johor, Malaysia*

### BACKGROUND

The performance indicator for anaesthesia services is set at less than 10% of patients should leave Recovery Room with pain score (PS)  $\geq 4$  and at least 75% of patients should have adequate pain relief i.e. a PS of  $\leq 4$  within the first 24 hrs after elective and emergency surgery. We set out a prospective audit on perioperative pain management using these indicators as yardstick and correlate it with patient satisfaction score (PSS).

### METHODS

All patients arriving at recovery bay between 8am to 3pm on 30 weekdays in January and Jun 2013 were included for the audit. The post operative review was done on the same day from 6pm to 8pm. PS was measured on arrival in recovery, upon arrival to ward and during post-operative review, reflecting the adequacy of pain management in operation room, recovery bay and ward respectively. PSS was obtained from adult patients using a 100mm visual analogue scale.

### RESULTS

A total of 247 patients had been reviewed. 79.8% of patients arrived in recovery bay with adequate pain relief, 66.2% on arrival to ward and 82.7% during review. PSS was obtained from 172 adults with mean score of 78.6 (95% CI 75.9, 81.3) and negatively correlated best with PS at review ( $\rho = -0.595$ )

### CONCLUSION

Intraoperative and recovery bay pain management fall short of the set standards. Adequacy of pain management in ward met quality standard and since PS in ward correlated best with satisfaction score, the overall degree of satisfaction was high despite inadequacy in OT.

## **PREGNANT WITH MULTIPLE SCLEROSIS FOR CESAREAN SECTION**

**T A Tg Alim Shah<sup>1</sup>, N Razak<sup>1</sup>, Z Abd Aziz<sup>2</sup>, N W Alias<sup>3</sup>, W I Wan Zulkafli<sup>4</sup>**

*<sup>1</sup>Department of Anaesthesia and Intensive Care, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

*<sup>2</sup>Department of Neurology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

*<sup>3</sup>Department of Obstetric and Gynaecology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

*<sup>4</sup>Department of Radiology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

Multiple sclerosis is a rare autoimmune demyelinating disorder of central nervous system. It manifests as periodic attacks of varied neurologic symptoms; it progress to fixed neurological deficits and disability. The prevalence of multiple sclerosis in Asian countries is very rare. We report a case of young pregnant, who is newly diagnosed with multiple sclerosis at 16 weeks gestation. Her clinical symptoms and radiological examination finding highly suggestive of multiple sclerosis. However, she refused lumbar puncture examination and steroid therapy. Her pregnancy progressing well until term but her neurological symptoms progressively worsened. She underwent cesarean section under general anaesthesia. Anaesthetic implications include assessment of neurological deficits peri-operatively, awareness of side-effects and potential drug interactions of medications, selection of suitable techniques/anaesthetic agents, neuromuscular monitoring-guided titration of non-depolarizing blocking agents, invasive haemodynamic monitoring and respiratory monitoring. We also discuss the impact of local anaesthetic used in central neuraxial blockade in the susceptibility of demyelinated neurons, towards local anaesthetic neurotoxicity. This is a case report of successful general anaesthesia in a patient with multiple sclerosis for cesarean section.

## CRANIAL SUBDURAL HEMATOMA AND CEREBRAL INFARCT AFTER SPINAL ANAESTHESIA

**T A K Tg Zainal Abidin<sup>1</sup>, N Razak<sup>1</sup>, R Ismail<sup>2</sup>, W I Wan Zulkafli<sup>3</sup>, Z Abd Aziz<sup>4</sup>**

<sup>1</sup>*Department of Anaesthesia and Intensive Care, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

<sup>2</sup>*Department of Obstetric and Gynaecology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

<sup>3</sup>*Department of Radiology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

<sup>4</sup>*Department of Neurology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

Spinal anaesthesia is a common mode of anaesthesia for caesarean section. The most common complication of spinal anaesthesia is post dural puncture headache. Intracranial subdural hematoma is a rare complication of spinal anaesthesia. We describe an obstetric case of a 32-year-old pregnant presented for emergency cesarean section; complicated with post-partum haemorrhage. After 4 days of spinal anaesthetic administration, she developed severe headache and neck stiffness; with subsequent seizure and one-sided body weakness 24 hours later. Initially was treated as post dural puncture headache which resolved with bed rest, analgesics and caffeine. As she develop seizures and body weakness; radiological assessment was done and revealed acute cerebral infarct with subdural haemorrhage at right parietal region. The patient improved without surgical decompression. In this case we illustrates the broad spectrum of differential diagnoses of post partum headache. The pathogenesis of headache, subdural hematoma and acute cerebral infarction were discussed. Clinicians should aware that severe and prolonged post dural puncture headache should be regarded as a warning sign of an intracranial complication.

## ANAESTHESIA FOR ELECTROCONVULSIVE THERAPY IN PREGNANCY

**M H Che Mat<sup>1</sup>, N Razak<sup>1</sup>, T S Tuan Hadi<sup>2</sup>, R Ismail<sup>3</sup>**

<sup>1</sup>*Department of Anaesthesia and Intensive Care, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

<sup>2</sup>*Department of Psychiatry and Mental Health, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

<sup>3</sup>*Department of Obstetric and Gynaecology, Hospital Sultanah Nur Zahirah, Kuala Terengganu, Terengganu, Malaysia*

Management of a psychiatric illness in obstetric patient is challenging. Pharmacological treatment of major psychiatric condition such as schizophrenia is very difficult during pregnancy. Medication resistant, life threatening deterioration can be one of the urgent need for rapid and effective intervention, which is electroconvulsive therapy (ECT). ECT is consider a safe therapeutic intervention for obstetric patient. We report a case of a 22-year-old primigravidae at 17 weeks gestation with a BMI of 36 kg/m<sup>2</sup>. She was diagnosed with schizophrenia, currently presented with severe, therapy-resistant schizophrenia. Full symptomatic remission was achieved with ECT given between 17<sup>th</sup> and 21<sup>st</sup> gestation weeks. Her pregnancy progress well and reached full term, and a healthy child is born via cesarean section. We discuss the challenged that we encounter during anaesthetising her for ECT. We highlight the specific concern for obstetric to undergo ECT varies between gestational age. The importance of close cooperation between managing team involved in this patient.

## **RELATIONSHIP BETWEEN END TIDAL SEVOFLURANE CONCENTRATION AND BISPECTRAL INDEX (BIS) DURING ANAESTHESIA**

**O Imran, T A Lim, F Hu, I Airini**

*Universiti Putra Malaysia, Selangor, Malaysia*

### BACKGROUND

Sevoflurane is commonly used as the main anaesthesia agent together with fentanyl and propofol during induction, and morphine during maintenance. Currently, end tidal anaesthetic gas concentrations are used as a guide to adequate depth of anaesthesia.

### OBJECTIVES

The aim of this report was to describe the Bispectral Index (BIS) during the maintenance phase of a standard anaesthetic with sevoflurane as the inhalational agent.

### METHODS

Anonymous archived data from a trial to assess data acquisition from standard anaesthesia monitors was analyzed. The trial was part of a study approved by the institutional review board. All patients received a balanced anaesthetic following the usual practice of the attending anaesthesiologist. The changes in end tidal sevoflurane concentration and BIS values were recorded at 5-minute intervals.

The BIS-time profile of each patient was fitted to a pharmacodynamic model using the Microsoft Excel programme. The resulting model was then used to calculate the predicted concentration at a BIS of 60.

### RESULTS

196 BIS measurements from 12 patients were available for analysis. Mean (SD) BIS during maintenance of anaesthesia was 41.5 (4.4), corresponding to an end tidal concentration of 2.00 (0.20) %.

Assuming a sigmoid Emax model, the mean (SD) values for the EC50 and  $s$  1.58 (0.27) % and 1.61 (1.25) respectively.

### CONCLUSION

Since a BIS of 60 and below is associated with unawareness during anaesthesia, the end tidal sevoflurane concentration should be kept above 1.60 % if a BIS monitor is not used.

## **PROTECTIVE LUNG STRATEGY DURING BRONCHOSCOPIC LASER RESECTION OF TRACHEO-BRONCHIAL TUMOURS: A CASE SERIES**

**Swapnil Parab, Vandana Agarwal**

*Department of Anaesthesia, Critical Care and Pain, Tata Memorial Hospital, Mumbai, India*

### INTRODUCTION

Bronchoscopic laser resection of tracheobronchial tumours challenges anaesthetist with shared airway, maintaining ventilation and oxygenation, avoiding airway fires; however, lung contamination by blood, tumour debris and laser plume is often considered inevitable and hence is neglected. To our knowledge, we are first to report a lung protective strategy in such cases.

### METHODS

After induction of anaesthesia, modified Coopdech bronchial blocker (shaft wrapped with aluminium tape to protect from laser fire) was inserted by direct laryngoscopy into the trachea. Rigid bronchoscope was then inserted and the bronchial blocker guided in non-diseased bronchus. Anaesthesia was maintained with total intravenous technique, with intermittent periods of apnea for surgical resection. Lateral tilt was given to patient so that diseased bronchus became non-dependent and lung was not soiled by gravity dependent drainage of debris. Dependent, non diseased bronchus and lung were protected by inflated cuff of bronchial blocker. Surgical resection continued using flexible bronchoscope with diode laser during apnea. For ventilation, bronchial blocker was deflated after thorough suction with the flexible bronchoscope and both lungs were ventilated with 100% oxygen through the side arm of the rigid bronchoscope.

### RESULTS

We conducted 3 cases (carinal, right main and left main bronchial tumour) and succeeded in preventing contamination on the contra lateral lung, thus reducing need for post operative oxygen supplementation, antibiotics and stay in intensive care unit.

### CONCLUSIONS

This novel technique with bronchial blocker improves patient safety by preventing lung contamination from blood and tumour debris during bronchoscopic laser resection of tracheobronchial tumours.

## THE HANDOVER PROCESS FROM ANAESTHETIST TO NURSES: THE NURSES' VIEW

P S Loh<sup>1</sup>, L L Lai<sup>2</sup>, V Jeyaganesh<sup>1</sup>, Ng<sup>1</sup>, L Chan<sup>1</sup>

<sup>1</sup>Department of Anaesthesia and Intensive Care Medicine, Universiti Malaya Medical Centre, Kuala Lumpur, Malaysia

<sup>2</sup>Department of Nursing Science, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

### BACKGROUND

Handover is a process of transferring patient information and responsibility from one care giver to another to ensure the continuity of care. Handovers play a key role in allowing continuous flow of quality and safety in patient care.

### OBJECTIVES

1. To understand and compare the current hand over practice between anaesthetists and nurses from the nurses' point of view in University Malaya Medical Centre (UMMC) and other health care centres. There is substantial research on nurse-to-nurse handovers and between doctors, but there has been little work exploring interprofessional handovers
2. To determine the common problems or issues faced by nurses during the handover process in their respective institutions.
3. To outline some recommendation method of handover to improve the standard of care in anaesthesia.

### METHODS

The Ethics Committee of University of Malaya Medical Centre approved this study (MEC ID: 201310-0366). A self-completed questionnaire was distributed among the nursing staff in the Operating Theatre of University Malaya Medical Centre (UMMC) and the Annual Scientific Meeting 2014 organized by the Malaysian Society of Anaesthesiology.

### RESULTS

A total of 152 nurses participated in the study who were mostly staff nurses working in the public and university hospitals (61.2% and 34.9% respectively). Majority of them have less than 10 years working experience which is about 90 (59.2%). About 16.4% had experienced problems related to inadequate or unclear post-operative handover.

### CONCLUSION

Communication plays very important role in medical practice. It has become a key skill to deliver the medical care of patients from one care giver to another in a handover process that occurs frequently. We found that 60% handovers from anaesthetists to nurses are done verbally without guidelines or notes. These gaps in communication result in serious consequences when post-anaesthetic complications such as residual neuromuscular blockade or severe nausea and vomiting develops in the recovery area.



## **A SURVEY ON NEUROMUSCULAR BLOCKADE AMONG MALAYSIAN ANAESTHETISTS: OUR ATTITUDE, PRACTICE AND BELIEFS**

**P S Loh<sup>1</sup>, L L Lai<sup>2</sup>, V Jeyaganesh<sup>1</sup>, Ng<sup>1</sup>, L Chan<sup>1</sup>, T Ledowski<sup>3</sup>**

*<sup>1</sup>Department of Anaesthesia and Intensive Care Medicine, Universiti Malaya Medical Centre, Kuala Lumpur, Malaysia*

*<sup>2</sup>Department of Nursing Science, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia*

*<sup>3</sup>University of Western Australia, Perth, Australia*

### BACKGROUND

Malaysia has been one of the first Asian countries to introduce sugammadex, a new reversal agent for amino-steroidal neuromuscular blocking agents.

### OBJECTIVES

Our main aim was to identify the current practice and general attitude of Malaysian anaesthetists towards neuromuscular blocking agents, monitoring, reversal and more specifically, if the new reversal agent has created any impact in the practice.

### METHODS

Our main aim was to identify the current practice and general attitude of Malaysian anaesthetists towards neuromuscular blocking agents, monitoring, reversal and more specifically, if the new reversal agent has created any impact in the practice.

### RESULTS

Results were captured from 20.6%. Rocuronium was the first choice of neuromuscular blocking agent (91.7%) followed by succinylcholine (79.6%). Although 80% of anaesthetists in Malaysia had access to a neuromuscular monitoring device, 78.6% still relied on clinical criteria for paralyzed patients and would not routinely utilize neuromuscular monitoring. 90% of respondents always used neostigmine for reversal while sugammadex was used rarely in 65% or never used in 16.1%.

### CONCLUSION

We observed an under-estimation of the problem of residual neuromuscular blockade as well as a significant under-utilization of neuromuscular monitoring. Increasing the availability of monitors, staff education and guidelines may improve the attitude towards neuromuscular monitoring and residual neuromuscular blockade. Sugammadex has started to be routinely used although infrequently by many as its cost and availability still hinders its widespread use compared to neostigmine.

## **THE USE OF TIVA TECHNIQUE IN THE MANAGEMENT OF AN INFANT WITH AN OBSTRUCTED AIRWAY**

**Navina Thiagarajah, SH Chaw, Ramona Maya Paran, Ina Shariffuddin**

*University of Malaya, Kuala Lumpur, Malaysia*

### INTRODUCTION

Tracheal stenosis refers to an abnormal narrowing of the central air passageways, which can occur at the level of larynx, trachea, carina or main bronchi. This causes stridor, worsening of dyspnea and eventually respiratory distress. Anaesthetising a child with this condition needs meticulous planning and caution, as a loss of airway will be an anaesthetist's nightmare. We described a case of emergency examination under anaesthesia, direct laryngoscopy and tracheostomy in a child with persistent stridor due to tracheal stenosis using total intravenous anesthesia technique (TIVA).

### CASE REPORT

An eight-month-old full-term Down-syndrome female infant with multiple co-morbidities was referred to our centre for tracheal stenosis. She had a stormy postnatal period in her previous hospital in which she had a severe pneumonia that lead to acute exacerbations of hyperactive airway and an event of cardiopulmonary arrest secondary to hypoxia. Subsequently, she had multiple intubations that caused an upper airway obstruction secondary to tracheal stenosis.

In our institution, she underwent examination under anesthesia and dilatation of trachea. She was extubated the next day but was dependent on non-invasive ventilator to maintain oxygenation. As the upper airway obstruction persisted, an emergency examination under anaesthesia, direct laryngoscopy and tracheostomy was planned 4 days later. We used TIVA with combination of intravenous (IV) Remifentanil and IV Propofol for this procedure. Haemodynamic parameters remain stable throughout. There was no incidence of bucking, coughing, laryngospasm or desaturation noted during airway manipulation.

Traditionally, deep inhalational anesthesia has been used for airway endoscopy and surgery. However, this can lead to many intra operative complications such as coughing, bucking and laryngospasm during airway manipulation. In addition, pollution around the surgical field can also occur. In our case, we successfully used TIVA with combination of IV Remifentanil and IV Propofol to induce a child with obstructed airway and to maintain the anesthesia.

## **LIVER TRANSPLANTATION IN MALAYSIA: A DECADE OF EXPERIENCE IN HOSPITAL SELAYANG**

**Ahmad Suhaimi Amir, Nas Shazli Amri Nasruddin**

*Hospital Selayang, Selangor, Malaysia*

### AIM

To report both adults and paediatric liver transplantation, (LTx) undertaken by Hospital Selayang since its inception until 2014.

### METHODS

The records of all patients assessed from January 2002 and December 2014 were examined. Demographics, criteria for listing, transplant-hospitalization details and outcome to date are reported.

### RESULTS

362 patients were assessed, of whom only 108 were listed. However, a total of 69 patients have been transplanted; 30 adults and 39 paediatrics (< 18 y.o). 55 were cadaveric whereas all of the 18 live related recipients were paediatrics. Both male and female constituted 50% of recipients. In adults, 9 (30%) were Malay, 13 (43%) Chinese, 7(23%) Indian and 1 (3%) other. Meanwhile, in the paediatric category, 9(42%) were Malay, 8 (38%) Chinese, 3 (14%) Indian and 1 (4%) other. The most common diagnosis was Extra Hepatic Biliary Atresia 30 (43%), followed by Decompensated Liver Cirrhosis 9 (13%) due to multiple causes such as Recurrent Cholangitis, Wilson's and Non Alcoholic Liver Disease. Others include Hepatholithiasis 3(4%), Hepatocellular Carcinoma 3 (4%) and others. Of all recipients, 53 (73%) are still alive until now, whereas 16 (23%) died due to various reasons such as Septicaemia 8 (43%), Primary Graft Nonfunctional 3 (18.7%), Portal Vein Thrombosis 2 (12.5%) and others 3 (18.7%). One and five year survival rates were 78 % and 74% respectively.

### CONCLUSION

Comparable outcomes with larger oversea centres have been achieved here.

Liver transplantation is now established as the treatment for end stage liver disease in both adult and paediatric population in Malaysia.

## RESUSCITATION KNOWLEDGE AMONG HOUSE OFFICERS IN PENANG

L W Luah<sup>1</sup>, H C Wee<sup>2</sup>, C C Ch'ng<sup>2</sup>, C W K'ng<sup>3</sup>

<sup>1</sup>Penang General Hospital, Penang, Malaysia

<sup>2</sup>Clinical Research Centre, Penang General Hospital, Penang, Malaysia

<sup>3</sup>Seberang Jaya Hospital, Penang, Malaysia

### INTRODUCTION

Cardiopulmonary resuscitation (CPR) remains the most fundamental life-saving skill for medical personnel attending to critically ill patients. Lack of formal assessment of resuscitation knowledge in House Officers (HO) raises concern over the quality of their resuscitation skills.

### METHODS

This is a cross-sectional study conducted from 15th October to 14th December 2014. All HOs in Penang General Hospital (PGH) and Seberang Jaya Hospital (SJH) who had consented to participate were included in the study. Each participant had to complete a set of questionnaire which consisted of questions on their opinions regarding CPR training and 20 CPR-related Multiple Choice Questions (MCQ). These MCQs were based on the ACLS Provider Manual 2010 (ILCOR) and the BLS for Healthcare Providers Manual 2010 (ILCOR). The passing score was 75%.

### RESULTS

A total of 530 HOs with a mean age of 25.9 years (2.2) were recruited in the study. Majority (74.5%) received ACLS and/or BLS training in university however, only 37.9% were trained during their HO training. Overall, the mean score was 11.9 (2.93). Only 104 (19.6%) HOs achieved the passing score. Controlled for other variables, the odds of HOs trained in ACLS passing the MCQ were increased by a factor of 5.8 (95% CI=3.09, 11.03,  $p<0.001$ ) compared to those who were not trained. Their odds of passing were also predicted to be significantly better if they underwent posting in Anaesthesiology (OR=20.7, 95% CI=6.44, 66.7,  $p<0.001$ ) or A&E (OR=2.6, 95% CI=1.11, 6.02,  $p=0.027$ ) departments compared to those who had not.

Only a third (32.6%) of the HOs felt competent in handling a patient with cardiac collapse. Almost all of them felt formal resuscitation training should be incorporated into undergraduate study (98.1%) and HO training (98.5%).

### CONCLUSION

ACLS training is an important component in improving resuscitation knowledge of HOs.

## OPERATING THEATRE UTILIZATION: ARE WE DOING FAST ENOUGH?

W K Chan<sup>1</sup>, P X Kuan<sup>2</sup>, S C Teo<sup>1</sup>, Norzalina E<sup>1</sup>

<sup>1</sup>Department of Anaesthesiology & Intensive Care Unit, Sarawak General Hospital, Sarawak, Malaysia

<sup>2</sup>Clinical Research Centre, Sarawak General Hospital, Sarawak, Malaysia

### BACKGROUND

Retrospective audit of OT utilization in Sarawak General Hospital (SGH) for December 2014 showed that an average of 1.6 elective cases were cancelled daily, total of 35 overshoot elective OT, and an average of 17 emergency cases were brought forward daily. These contributed to the high bed occupancy rate and increased medical cost secondary to prolonged hospital stay. We hypothesized that poor time management may have contributed to these problems.

### OBJECTIVES

1. To assess the accuracy of anaesthetists and surgeons in estimating time taken to complete a procedure.
2. To determine the relationship between ASA (American Society of Anaesthesiologists) classes, mode of anaesthesia and surgical discipline with duration to complete a procedure.

### METHODS

This is a single centre, prospective observational study on estimated time versus actual time taken to complete a procedure in elective OT in SGH for February 2015. Participants were asked to estimate the time taken for procedures, which include induction, surgical preparation, skin to skin, and reversal prior to operation. These were compared with the actual time. All elective OT were involved except for Trauma OT, Maternity OT and remote OT. Data from 269 out of a total of 306 cases were collected.

### RESULTS

Overall, anaesthetists have good estimation of induction time (both mean estimated and actual time were 19 mins). However, they tend to overestimated reversal time by 5 mins ( $p < 0.001$ ). Surgeons have good estimation of skin preparation time (both mean estimated and actual were 19 mins,  $p = 0.889$ ). They also overestimate their skin-to-skin time ( $p < 0.001$ ). Different ASA classification does not affect the time taken for a procedure, but the mode of anaesthesia and surgical discipline affects the time taken for a procedure.

### CONCLUSION

Our centre generally has good accuracy in estimating procedure time and we advocate regional anaesthesia to further improve the turn-around-time.

## **ANAESTHETIC MANAGEMENT FOR A PARTURIENT WITH FACIOSCAPULOHUMERAL MUSCULAR DYSTROPHY UNDERGOING CAESAREAN SECTION**

**Sangeeta Shrestha, Yoo Kuen Chan, Farah Nadia Razali**

*Universiti Malaya Medical Centre, Kuala Lumpur, Malaysia*

### INTRODUCTION

Facioscapulohumeral muscular dystrophy (FSHD) is an autosomal dominant muscle disorder characterized by progressive weakness and wasting of facial, shoulder girdle and upper arm muscles. Anesthetic management for the parturient with muscular dystrophy is very challenging for anesthesiologists because general as well as regional anesthesia may cause deleterious effect to the patient.

### CASE REPORT

We report a 28 years old primigravida with the history of FSHD admitted for elective caesarean section. At the age of 8 years, the symptoms started which gradually progressed and with pregnancy it further worsened. At 6 months of pregnancy, she was wheel chair bound and required neck collar.

On evaluation, her bilateral upper and lower limb power was 4/5 with minimum facial weakness. Though she had thoracolumbar scoliosis, her vitals and rest of systemic examinations were within normal limit, and airway assessment with Mallampati Grade was II.

On investigation, her pulmonary function test revealed forced expiratory volume in 1 second of 51%, vital capacity of 46%, and FEV1/FVC >100, suggestive of restrictive pattern secondary to muscular dystrophy. Other routine investigations were within normal limit.

We performed under combined spinal epidural anesthesia but general anesthesia with malignant hyperthermia protocol of prevention was kept as a back-up anesthesia in case if regional anesthesia failed. Peri-operative period was uneventful though we noticed prolonged motor block.

### CONCLUSION

Though the outcome depends on the severity of the FSHD, multidisciplinary team approach with combined spinal epidural anesthesia can be safely used to provide anesthesia for caesarean section in a pregnant women with FSHD.

## **CASE REPORT: SEVERE BRONCHOSPASM IN A PATIENT WITH MULTIPLE DRUG ALLERGIES**

**A R Siti Hashimah, S Sushila**

*Department of Anaesthesia and Intensive Care, Hospital Selayang, Selangor, Malaysia*

This is a case report of a 26 year old Chinese lady, weight 56kg with a documented history of multiple drug allergies and underlying childhood asthma who presented for dental extraction under general anaesthesia as daycare surgery and was seen in the Anaesthetic Clinic.

On the day of surgery, there was no evidence of Upper Respiratory Tract Infection. Her multiple drug allergies were reconfirmed and documented. She was induced with intravenous Fentanyl, Propofol and Rocuronium. She was intubated nasally on second attempt as the first attempt did not register a capnography and there was no air entry on bagging. She had developed bronchospasm with desaturation. Manual bagging was difficult to maintain saturation. She was put on IPPV with prolong expiratory phase. She was administered MDI salbutamol and intravenous Hydrocortisone 100mg. There was no urticarial rash. There was no exposure to local anaesthetic infiltration or surgical prep solutions. There were also no colloids given. In view of her persistent bronchospasm and relatively low saturations the surgery was deferred. With frequent suction and MDI salbutamol, her saturations improved. She was hemodynamically stable throughout and reversed well. In the recovery room, she maintained good saturations.

A decision was made to refer her to the Anaesthetic Allergy Clinic and Dermatology Clinic in Kuala Lumpur Hospital. After 6 weeks, she underwent an intradermal skin testing and serum testing in Hospital Kuala Lumpur. However, she was found to be negative to all anaesthetic medications, latex, chlorhexidine and morphine.

### CONCLUSION

Although the clinical picture suggested anaphylaxis as a differential diagnosis, the skin and serum testing results did not support the diagnosis of hypersensitivity to any of the drugs tested. Anaesthetic Allergy Clinic advised that vigilance to be maintained at all times when anaesthetics are administered and all future anaesthetics should be documented to the Anaesthetic Allergy Clinic.

## **ANALGESIC APPROACH OF PREGNANT WOMAN WITH CEREBRAL ARTERIOVENOUS MALFORMATION AND HISTORY OF HAEMORRHAGIC STROKE PRIOR TO CONCEPTION: A CASE REPORT**

**Thohiroh Abdul Razak, Siti Hajar Fauzi**

*Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

### CASE REPORT

Arteriovenous malformation (AVM) in pregnancy is a rare event and post a high risk of morbidity and mortality. The authors describe the analgesic approach of a patient presented in labour with history of intracranial haemorrhage due to AVM prior to conception.

25 year old Malay, primigravida at 39 weeks gestation, presented in latent phase of labour. There was history of visual disturbances associated with headache, giddiness and vomiting, prior to conception. CT brain showed right occipital bleed. Cerebral angiogram confirmed presence of right occipital AVM. Plan for clipping was postponed then. A decision for normal delivery was decided despite a higher risk of AVM rupture. Patient was admitted in latent phase of labour and counseled for epidural analgesia. After epidural catheter insertion, artificial rupture of membrane was done and first stage of labour lasted for 6 hours and 55 minutes while second stage lasted for 15 minutes. Blood pressure remained normal and pain score throughout active phase of labour was 0 to 2. Baby delivered safely with with Apgar Score 9 in 1 minute, 10 in 5 minutes. There was no neurological deficits intra and post partum.

### CONCLUSIONS

There are not many published cases on analgesic approach for patient with underlying AVM with history of haemorrhage. All decisions from mode of delivery and type of anesthesia and analgesia were weighted according to the risk of brain damage. A decision for epidural analgesia was made in view of good pain control therefore the risk of haemodynamic instability can be prevented.



## **INCREASING EPIDURAL ANALGESIA FOR DELIVERY IN A SPECIALIST HOSPITAL - WAY TO MOVE FORWARD**

**Norliza M N, Husaini J, Sushila S**

*Department of Anaesthesiology, Hospital Selayang, Selayang, Selangor, Malaysia*

Epidural analgesia is the most effective method in relieving pain during labour. The extent of pain experience during labour has been shown to depend on many factors including age, parity and education. The objectives of this observational control study was to investigate the level of acceptance and satisfaction of epidural labour analgesia in Selayang Hospital and identifies ways to increase the number of epidural analgesia performed. It also identifies patient and system factors that hinder the delivery of epidural analgesia to mothers in labour. The study consists of 3 phases which are Phase 1 (Pre-intervention Survey), Phase 2 (Formulation of Interventions) and Phase 3 (Post Intervention Phase). Epidural Analgesia Support Team (EAST) was formed to ascertain reason for refusal of epidural analgesia and provide further information regarding epidural analgesia. 615 mothers in labour were consecutively included in this prospective study. 518 patients were recruited to the pre-interventional phase and 97 patients for snap shot periods in the post-interventional phase. The study group consisted of patients who came to delivery room from July 2012 to Feb 2014 and delivery between 0800H and 2100H. The result showed significant difference in rate of acceptance in pre-intervention & post-intervention group, 318(81.7%) and 87(96.7%) respectively. In the pre intervention phase, 71(18.3%) of patients accepted epidural but we were not able to perform as compared to 3( 3.3%) in the post intervention phase ( $p < 0.001$ ). The reasons for not being able to provide epidurals were 26 (37.1%) unavailability of the anaesthetic doctors to perform the service. Another 24 (33.8%) were too advanced in labour or have already delivered by the time the anaesthetic doctors came. Majority of patients in the epidural group has satisfaction score from very good to excellent as compared to the non epidural group which has scored predominantly average to good( $p < 0.001$ ). For conclusion, high acceptance rate of epidural labour among the study groups. The conversion from refusal to acceptance of epidural were small even after EAST team intervention. Epidural provides good satisfaction for mother in labour. This study managed to increase the overall epidural rate in Selayang Hospital and reduce the number of patients that we were not able to provide epidural analgesia due to increasing awareness among patients and labour room staff.

## **ANAESTHESIA FOR WHOLE LUNG LAVAGE IN PULMONARY ALVEOLAR PROTEINOSIS: A CASE REPORT**

**Chen Chen C, Lily Ng, Sakthi A N**

*Department of Anaesthesia and Intensive Care, Hospital Queen Elizabeth, Kota Kinabalu, Sabah, Malaysia*

### REPORT

Pulmonary alveolar proteinosis (PAP) is a rare diffuse lung disease, characterized by alveolar deposition of large amount of phospholipoproteinaceous material. Whole lung lavage (WLL), despite being invasive remains the gold standard of treatment. We report a successful anaesthetic management of a PAP patient who underwent whole lung lavage using lung isolation technique.

The patient was a 40 year-old ex-smoker, and a chemical analyst with history of exposure to toxic material. He presented with 2 weeks history of productive cough, fever and progressively worsening dyspnoea. On presentation he was febrile and hypoxic on air with bibasal crepitations. Chest radiograph revealed bilateral lung infiltrates. He was admitted and treated for pneumonia, but showed no progress. Subsequent chest tomography and CT-guided lung biopsy done clinched the diagnosis of PAP. Patient was then referred to us for whole lung lavage using double lumen endotracheal tube and lung isolation technique. Pre-operatively, patient was hypoxemic requiring pre-oxygenation. He was intubated with a left-sided double lumen endotracheal tube and placed on lateral decubitus position with the lung to be lavaged lowermost, to prevent spillage to the ventilated lung. Pressure-controlled ventilation was used; airway pressure and tidal volume were monitored to detect fluid leakage into the ventilated lung. Repeated cycles of instillation of warm 0.9% saline followed by passive drainage under gravity were done by the respiratory physician until the milky lung effluent became clear. Manual chest percussion done by the physiotherapist facilitated optimal drainage of lung segments. Throughout the procedure, hypoxaemia posed a constant challenge. Patient was transferred to intensive care unit and extubated successfully after 3 days. The procedure was repeated for the right lung after 2 weeks using similar anaesthetic technique.

We advocate a multidisciplinary teamwork (anaesthetist, respiratory physician and physiotherapist) with effective anaesthetic technique to ensure a safe and efficacious WLL.

## **A SUCCESSFUL MULTIDISCIPLINARY MANAGEMENT OF PARTURIENT WITH EXTENSIVE BILATERAL PULMONARY EMBOLISM: A CASE REPORT**

**Thohiroh Abdul Razak, Woon Jee Lee**

*Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

### CASE REPORT

A 30 year old Malay lady presented with worsening dyspnoea , pleuritic chest pain and reduced effort tolerance at 16 weeks of gestation .CTPA showed extensive bilateral pulmonary embolism with mosaic attenuation of lungs. The primary source was unknown. Patient was discharged with therapeutic dose of s/c tinzaparin 14000u daily and electively admitted at 35 weeks of gestation. A multidisciplinary discussion involving obstetrician, cardiologist, obstetric anesthetist , neonatologist, cardiothoracic surgeon, haematologist and interventional radiologist was held to discuss peri-partum management of her. ECHO showed :EF >60%, normal chambers, good RV function, normal PAP and no embolus seen in left and right pulmonary arteries. The team noted the risk of thromboembolic events with adequate treatment was <5%. A repeat CTPA was unnecessary at the time. As primary source of emboli was unknown, IVC filter was not required. Surgical embolectomy was unnecessary since the embolus must have organized and surgical endarterectomy posted a high risk. A decision for earlier operative date at 37 weeks was done to avoid delivery over long weekend. S.c Tinzparine was withheld 24 hours prior to operation. GA was given by a careful titration of induction agents. Intra-operately, haemodynamic parameters were supported with vasopressors. Estimated blood loss was 1.5 liters. Patient was successfully extubated at end of operation and monitored in HDW. PCA fentanyl was started for post operative analgesia. S.C Tinzaparin was recommenced at 24 hours post operatively till 6/52 post partum or at least 3 months in total duration of treatment.

### CONCLUSION

A multidisciplinary management at consultant based centre is necessary in managing this high risk of pregnancy.

## **OPEN CHOLECYSTECTOMY UNDER SEGMENTAL THORACIC EPIDURAL ANAESTHESIA (TEA) IN A PATIENT WITH SEVERE LUNG DISEASE**

**Husni Zaeem A H, Saiful Aizar K, Ng F Y, Navin P P Naidu, Siti Zuraidah A K**

*Hospital Tuanku Ampuan Najihah, Kuala Pilah, Negeri Sembilan, Malaysia*

A 72 years old Orang Asli lady presented for open cholecystectomy. She was classified as American Society of Anaesthesia (ASA) III, a chronic smoker with Chronic Obstructive Pulmonary Disease with chronic Type II Respiratory Failure and pulmonary fibrosis.

Open cholecystectomy requires a large abdominal subcostal incision which post-operatively may impair pulmonary function and cause diaphragmatic dysfunction due to reflex diaphragmatic changes. The 20-40% reduction from pre-operative values in vital capacity and functional residual capacity may not recover until 48 hours post-operatively. Endotracheal intubation may trigger life-threatening bronchospasm necessitating prolonged ventilation after general anaesthesia.

TEA was chosen as mode of anaesthesia and analgesia. An 20G epidural catheter was inserted at level of T<sub>11</sub>-T<sub>12</sub> epidural space via paramedian approach in sitting position. Using 0.75% Ropivacaine, an initial bolus of 3mls was followed by 2mls after 15 minutes and a further 2mls after 5 minutes. Segmental blockade was achieved at level of T<sub>3</sub>-T<sub>10</sub> 45 minutes after the initial dose.

Intraoperatively, mean arterial pressure (MAP) which was invasively monitored fell to 40mmHg requiring IVI Dopamine up to 5mcg/kg/min. Subsequently, MAP was maintained above 70mmHg. Supplemental analgesia with IV Fentanyl 50 mcg was given along with titrated IV Midazolam (total 1mg) for patient anxiety. PaCO<sub>2</sub> ranged between 52-60mmHg not exceeding the baseline value. Surgery was uneventful.

Maintenance of analgesia was initiated an hour after initial bolus with 0.15% Ropivacaine and 2mcg Fentanyl at 4mls per hour. This was continued for 48 hours by the acute pain service team. Patient was discharged on post-operative day 3.

### CONCLUSION

TEA is safe and reduces morbidity and mortality in patients with severe lung disease undergoing open cholecystectomy. It provides satisfactory operating conditions and reduces the need for prolonged post-operative ventilation. Its contribution to post-operative pain management allows early mobilization thus reducing length and cost of hospital admission.

## **ANAESTHETIC MANAGEMENT OF LAPAROSCOPIC LEFT ADRENALECTOMY IN A 26 WEEKS PREGNANT WOMAN WITH CUSHING'S SYNDROME**

**C K Lee<sup>1</sup>, Mohd Rohisham Z A<sup>2</sup>, Zarina A K<sup>1</sup>, Sivasakthi V<sup>1</sup>**

*<sup>1</sup>Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

*<sup>2</sup>Hospital Tengku Ampuan Rahimah, Klang, Selangor, Malaysia*

### REPORT

Cushing's syndrome is rare during pregnancy. It may lead to severe maternal and fetal morbidities and even mortalities in pregnancy. Early diagnosis and treatment are critical. Surgery is the treatment of choice for Cushing's syndrome in pregnancy with medical therapy being a second choice. We describe the anaesthetic management of a 28 year old Pakistani pregnant lady with Cushing's Syndrome secondary to a functional adrenal adenoma who underwent laparoscopic left adrenalectomy in her 26th week of pregnancy. She is obese with BMI of 41 having uncontrolled blood pressure and Diabetes Mellitus, presented with heart failure symptoms during admission at 24th weeks gestation. She improved after the surgery and a male baby was delivered via spontaneous vaginal delivery at 36 weeks gestation.

## **TRANSVERSUS ABDOMINIS PLANE BLOCK AND INTRATHECAL MORPHINE FOR POST OPERATIVE MANAGEMENT IN ELECTIVE CAESAREAN SECTION: EXPERIENCE IN HOSPITAL KUALA LUMPUR**

**Thohiroh A R<sup>1</sup>, Aizatul Isla A L<sup>2</sup>**

*<sup>1</sup>Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

*<sup>2</sup>Hospital Tengku Ampuan Rahimah, Klang, Selangor*

### BACKGROUND

The use of opioids, such as intrathecal morphine (ITM) has been proven to alleviate post-operative pain in patient who had undergone caesarean section. However, it is often associated with unwanted side effects. The development of ultrasound guided transversus abdominis plane (TAP) block with higher successful rate as compared to blind technique has offered a new option of post-operative analgesia with lesser side effects.

### OBJECTIVES

In this study, we compared patient's satisfaction between these two techniques and time of first ambulation.

### METHODOLOGY

A retrospective cross sectional study was done over a period of 6 months from 1<sup>st</sup> April till 30<sup>th</sup> September 2014 in Maternity OT HKL. 380 elective cases were done over period of 6 months. The primary outcome measured was satisfaction score in 24 hours post operatively and other parameters analysed were first time of ambulation to the toilet, post operative pain score, post operative nausea and vomiting and sedation at 0, 6, 12 and 24 hours post operation.

### RESULTS

A total of 321 patients were eligible to be recruited for the study. There were no clinical difference in satisfaction score reported in TAP block and ITM as both techniques were scored as excellent. However, we noted, at 6 hours of post-operation, 4% of patient under TAP block had already obtained full recovery of motor power compared to none in ITM group, ( $p < 0.05$ ). There were significant reduction of pruritus in TAP block group at 0, 6 and 12 hours ( $p < 0.05$ ) and less incidence of PONV in TAP group ( $p < 0.05$ ).

### CONCLUSION

TAP block as a component of multimodal analgesia provided a comparable satisfaction score as ITM. It did reduce the incidence of PONV, pruritus and allowed faster ambulation. It can be beneficial in patient with history of side effects with ITM.

## **FIRE IN OPERATION ROOM**

**Pamela Francis, Noraini Bt Sangit, Muralitharan Perumal**

*Hospital Tengku Ampuan Rahimah, Klang, Selangor, Malaysia*

Eighty two years old Chinese lady sustained closed fracture neck of right femur planned for right hip hemiarthroplasty. Spinal anesthesia given successfully and patient positioned accordingly with warming blanket placed on patient to prevent hypothermia. Seconds before surgery to start, Line Isolation Overload Monitoring (LIOM) indicator alarmed followed by small explosion and the blanket control panel was on fire causing operation room filled with smoke. Medical officer in charge act instantaneously unplug the cord and flame was douse with splashing water by nearby assistance. Fire was successfully put out with no injuries. The device was immediately pushed out of operation room while the LIOM still alarming. Patient was transferred to another operation room and preceded with operation as planned. Question to ponder? How would you manage this situation? Do you think the medical officer and his assistance act appropriately?

Fire Triangle composed of necessary ingredients that are oxygen, heat and fuel. Operation room is oxygen rich environment with nitrous oxide supports combustion. Heat sources are from electrical equipments eg. Fiber optic light, diathermy. Fuel as combustive materials eg. gauze, papers. To stop a combustion reaction, one of the three elements of the triangle has to be removed. Therefore, prevention and knowledge on managing fire in operation room is mandatory as it can be life saving in fire emergency. Managing fire emergency requires team effort, good communication skills and coordination which can be achieved by having more fire drills and training on evacuation plans as often as possible.

**CASE REPORT: TREACHER-COLLINS SYNDROME PATIENT WITH  
UNDIAGNOSED LIMITED MOUTH OPENING - INTUBATED SUCCESSFULLY  
WITH CONVENTIONAL TECHNIQUE**

**Angeli Quah, M Mujaheed, M Nazir, Lim W L**

*Sungai Buloh Hospital, Selangor, Malaysia*

Treacher Collins syndrome (TCS) is a known congenital disease that associated with difficult airways. It is commonly seen in pediatric patients and is a challenge when coming for general anesthesia. TCS patients normally need multiple general anesthesia for craniofacial and other surgeries. As the patient grows older, direct laryngoscope becomes more difficult and most of the patients require specialized intubation techniques. Difficult airway algorithm must be well familiarized. Laryngeal mask airway is one of the tools that is useful in difficult intubation algorithm.

Our TCS patient who is 7-year-old presented for palatoplasty. The limited mouth opening detected only after the induction which resulted in inability to insert glidescope, LMA was not an option at that time. Eventually the patient was intubated by conventional technique successfully.



## **A CASE SERIES REPORT: TRACHEOBRONCHIAL STENTING**

**Wilson M, Asri A, Lai S C, Noriza D, Noorfidah A R, Norsila A R, Norzalina E**

*Department of Anaesthesiology and Intensive Care, Sarawak General Hospital, Sarawak, Malaysia*

### INTRODUCTION

Interventional management of airway lesions of tracheobronchial tree include stenting. Stents are placed into airway for intrinsic airway lesion, extrinsic compression and tracheomalacia. We reported two different cases for stent placement under total intravenous anaesthesia (TIVA).

### CASE DESCRIPTION

Twenty years old lady was involved in a road traffic accident and sustained polytrauma. She was ventilated in ICU for 2 months with high PEEP 23 - 35 cmH<sub>2</sub>O for left main bronchus (LMB) tear and rupture of LMB cartilage. Cardiothoracic surgery and respiratory team proceeded with stenting of the LMB using Partially Covered Ultraflex Tracheobronchial Stent 12mm x 40mm. The procedure was done under TIVA with Target Controlled Infusion (TCI) Remifentanyl and Propofol. She was given a dose of intravenous Rocuronium 50 mg. Intraoperatively, she was ventilated with jet ventilation and she remained hemodynamically stable. Stent was deployed once the rigid bronchoscope reached the LMB, proximal to the stenotic segment. She was weaned off ventilator after five days and tracheostomy was closed subsequently. She went home 2 weeks later.

A 52 years old gentleman presented with complaints of worsening dyspnoea for three weeks associated with orthopnoea, intermittent fever and dysphagia. CECT of thorax demonstrated a large mediastinal mass (Squamous cell carcinoma) on the right causing severe tracheal stenosis. He was intubated with endotracheal tube (ETT) to pass through the most stenotic part. Bronchoscopy revealed severe extrinsic compression of distal trachea and complete compression of right main bronchus. Cardiothoracic surgeon proposed tracheobronchial stenting as the tumour was non-resectable and tracheal balloon dilatation had failed. Stenting was performed under TIVA with TCI Remifentanyl and Propofol. A size 16mm x 50mm Dumon's silicone stent was inserted at the distal trachea under rigid bronchoscopy. Intraoperatively, he was ventilated with jet ventilation and remained hemodynamically stable. He was successfully extubated after three days and weaned off oxygen therapy.

### CONCLUSION

Tracheobronchial stenting can be performed for various airway lesions under TIVA. Achievement of airway patency and reestablishment of ventilatory airflow is of crucial importance and pose a great challenge for the anaesthesiologists.

## **CASE SERIES - NEUROLOGICAL COMPLICATIONS IN PERIPHERAL NERVE BLOCKS, HOSPITAL KUALA LUMPUR 2014**

**Z Y Beh, N M K Amiruddin, M A Azrin, V Sivasakthi**

*Department of Anaesthesiology & Intensive Care, Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

### BACKGROUND

Nerve injury following PNB is a potentially devastating complication with medico-legal implication and it can result in permanent disability. In 2014, our center recorded 558 cases receiving peripheral nerve blocks (PNB). Out of these numbers, 12 cases (2.1%) had neurological complications after PNB and majority had persistent numbness which resolved few days during ward stay. However, five cases (0.9%) reported prolongation of the neurological complications after 1 month follow up. They were referred to anaesthetic clinic for follow up review and definitive management.

### OBJECTIVES

We systematically report all cases with neurological complications following PNBs and hope to identify aetiology and confounding factors of the cases for learning purposes

### METHODOLOGY

*Design:* Case series, retrospective analysis

*Setting:* Hospital Kuala Lumpur, data from January till December 2014

*Method:* All patients with neurological symptoms beyond 1 month following PNBs were reviewed and followed up at the anaesthetic clinic. Their medical records were analysed and managed accordingly. Necessary referral to respective discipline were made.

### RESULTS

#### *Transient neuropraxia:*

Case 1 involved left femoral nerve following femoral nerve block (catheter technique) for total knee replacement

Case 2 involved numbness over right T1 region (medial arm) post op for fistula surgery under single shot supraclavicular brachial plexus block.

Both resolved with Neurobion and they only required reassurance.

#### *Serious neurological sequelae:*

Case 3 had mixed right radial and ulnar neuropathy following single shot supraclavicular brachial plexus block plus general anaesthesia for humerus fracture surgery. Patient defaulted follow up (uncontactable).

Case 4 had radial nerve palsy following humerus surgery under single shot supraclavicular brachial plexus block plus general anaesthesia. Nerve conduction study was done revealed surgical factor. She defaulted follow up subsequently.

Case 5 had ulnar nerve palsy following fistula surgery under single shot supraclavicular brachial plexus block. Nerve conduction study revealed surgical and patient factor (diabetic neuropathy).

### CONCLUSION

There is a need to establish a workflow or guideline about practical approach in management of a patient with neurological deficit after PNB in our setting. All patients receiving PNB must be evaluated for presence of neuropathy prior to block administration and patients should be well informed of its potential complications.

## **THE PRACTICE OF PERIPHERAL NERVE BLOCKS, HOSPITAL KUALA LUMPUR 2014**

**Z Y Beh, N M K Amiruddin, M A Azrin, V Sivasakthi, N H Zainol Abidin**

*Department of Anaesthesiology & Intensive Care, Hospital Kuala Lumpur, Kuala Lumpur, Malaysia*

### BACKGROUND

Since the implementation of regional corner in general operation theatre from June 2014, we observed significant rise in cases receiving peripheral nerve blocks (PNB). The regional block area was established to improve the efficiency of ultrasound guided peripheral nerve block services.

### OBJECTIVES

We reviewed the practice of PNBs in Hospital Kuala Lumpur. In specific, we assessed level of improvement since the introduction of regional corner and adaptation of data analysis by SPSS software.

### METHODOLOGY

We analysed the data recorded in the regional anaesthesia data collection form from January to December 2014. The observed data include demography, types of blocks, types and concentration of local anaesthetics (LAs) used, block performances, requirement for rescue analgesia or supplements and perioperative complications. All data were tabulated and analysed using SPSS version 20 statistical software (SPSS, IBM Corp).

### RESULTS

For year 2014, 558 patients received peripheral nerve blocks and 722 peripheral nerve blocks were performed in these patients. It was significant jump in cases (nearly double) as compared with previous years. In terms of block intention, 367 cases (65.8%) were for analgesia purposes while 191 cases (34.2%) were for anaesthesia. 178 cases (31.9%) were conducted with sole PNB, 276 cases (49.5%) received combined general anaesthesia (GA) plus PNB and remainder received combined spinal anaesthesia (SAB) plus PNB, 104 cases (18.6%). There were many interesting findings from other parameters.

### CONCLUSION

We recognized that regional corner had indeed boost the service of providing effective regional anaesthesia to suitable patients in our setting. To prevent potential complication like wrong side of block, we had produced regional block pre-procedural checklist. To standardize our practice and enhance the service, we are in the process of modifying the regional data collection form to make it more relevant and user friendly. A web based Malaysian registry of regional anaesthesia for nationwide use is in progress.

## **FATAL COMPLICATION OF ANAESTHESIA - INTRAOPERATIVE SEVERE ANAPHYLACTIC SHOCK**

**Ng F Y, Yong J T, Muzlifah K B, Siti Zuraidah A K**

*Hospital Tuanku Ampuan Najihah, Kuala Pilah, Negeri Sembilan, Malaysia*

A 26 years old Indonesian gentleman presented with closed fracture of right midshaft femur after a Motor Vehicle Accident. Patient is fit and healthy and classified as American Society of Anaesthesia (ASA) I with only history of allergy to shellfish.

Dynamic Locking Plate (DCP) of femur was planned for the patient. On the day of operation, Sub-Arachnoid Block (SAB) was given to patient. A 27G pencil-type Sub-arachnoid needle was inserted at L4-L5 level via midline approach in sitting position. A total of 3.0cc of combination of drugs including Fentanyl 20mcg (0.4cc) and Heavy Bupivacaine 0.5% (2.6cc) was injected into the subarachnoid space. The procedure was uneventful. A test dose of IV Cefuroxime around 150mg was given subsequently.

Immediately after the injection of the test dose, patient started to cough, tachypnoic and followed by desaturation associated with expiratory rhonchi and hypotension. Oxygen supplement was given immediately through Face Mask and IV Adrenaline 1:10000 in view of high possibility of anaphylactic shock. Within minute, urticaria rashes were seen over the face, limbs and cheeks together with swollen lips. IV Hydrocortisone 200mg and IV Piriton 10mg were given immediately and patient was intubated urgently.

Patient required both ventilatory support and IV infusion of adrenaline for 48 hours to overcome the complication of anaphylactic shock before able to extubate patient on the 3rd day of stay in ICU. Consultation to Anaesthetic Skin Allergic Clinic H.K.L. was made immediately. Subsequently, he was discharged with an allergic card and Epi-Pen.

### CONCLUSION

Anaesthesia involves multiple foreign substances exposure to patients which can produce immediate hypersensitivity reaction or anaphylactic reaction. Rapid recognition and treatment is important to prevent death. Therefore, allergological investigation to identify offending agent along with patient's education and allergy card are utmost important to prevent recurrence and make future anaesthesia safe.

## **BRAVING A NEW FRONTIER IN SABAH, ANAESTHESIA FOR PAEDIATRIC CARDIOLOGICAL INTERVENTION**

**Lily Ng, C W Tan, Siva Rao**

*Department of Anaesthesia and Intensive Care, Hospital Queen Elizabeth, Kota Kinabalu, Sabah, Malaysia*

### BACKGROUND

Diagnostic cardiac catheterization was reported in nineteenth century and interventional cardiac catheterization was first described by Rubo-Alvarez in 1954 for treatment of pulmonary valve stenosis. Interventional paediatric catheterization at Sabah Heart Centre started on 20th January 2015. This study aims to evaluate the anaesthetic complication rate of patients with many types of congenital cardiac abnormalities undergoing general anaesthesia for these procedures.

### REPORT

This study took place over a period of 3 months, from January till March 2015. There were a total of 11 cases done, with ages ranging from day 5 of life to 10 years, of whom 36.4 % were male and 63.6% female. Duration taken for procedures ranged from 55 minutes to over 2 hours. Indications comprised of patent ductus arteriosus (PDA), 54.5%, severe pulmonary stenosis, 27.3%, critical pulmonary stenosis with large patent ductus arteriosus, 9.1% and severe aortic stenosis with moderate patent ductus arteriosus, 9.1%.

Major complication rate was 9.1%. The 5 day old baby with critical pulmonary stenosis and large patent ductus arteriosus, underwent general anaesthesia for valvuloplasty . She developed 2 bradycardic episodes requiring IV atropine, IV adrenaline and CPR for less than a minute. Blood pressure and heart rate were subsequently stabilised but the procedure was abandoned. Patient was admitted into ICU for 1 day and extubated after. IV Prostaglandin E was started at 5ng/kg/min.

Many of the non-PDA patients and one PDA patient with Down syndrome developed runs of ventricular tachycardia, but each time they reverted spontaneously while team stood by to spur into action.

### CONCLUSION

This study confirms that the procedures though new in Sabah, in the hands of a skilled team are safe.

## ULTRASOUND-GUIDED INFRACLAVICULAR BRACHIAL PLEXUS BLOCK AT THE COSTOCLAVICULAR SPACE: TECHNICAL FEASIBILITY AND BLOCK DYNAMICS

J W Li<sup>1</sup>, B Songthamwat<sup>1</sup>, W Samy<sup>1</sup>, X Sala-Blanch<sup>2</sup>, M K Karmakar<sup>1</sup>

<sup>1</sup>Department of Anesthesia and Intensive Care, The Chinese University of Hong Kong, Shatin, Hong Kong, SAR, China

<sup>2</sup>Department of Anesthesiology, Hospital Clinic Barcelona, Barcelona, Spain

### INTRODUCTION

Ultrasound guided (USG) infraclavicular brachial plexus block (ICBPB) is traditionally performed at the lateral infraclavicular fossa (LIF) where the cords of brachial plexus are separated from one another and rarely visualized in a single ultrasound window. We have recently proposed that the “costoclavicular space (CCS)” may be a better site for USG ICBPB than the LIF. This study aimed to evaluate the feasibility of an USG ICBPB at the CCS.

### METHODS

After ethics approval 30 consenting patients undergoing upper extremity surgery received the CC approach ICBPB in supine position using a high-frequency (12-5 MHz) linear transducer and 20 ml of 0.5% ropivacaine. A transverse scan was performed immediately below the mid-point of clavicle and the cords of brachial plexus were located lateral to the first part of axillary artery. The sensory-motor blockade of the ipsilateral median, radial, ulnar, and musculocutaneous nerve were assessed at regular intervals for 30 minutes using a verbal rating scale (VRS, 100=normal sensation, 0=anesthesia) for sensory block and a 3-point scale (2=no block, 1=paresis, and 0=paralysis) for motor block. Onset of sensory-motor blockade was defined as the time to achieve a sensory VRS of  $\leq 30$  and motor grade  $\leq 1$  respectively.

### RESULTS

The median [IQR] onset time for sensory and motor blockade of all the four nerves was 5 [5-15] and 5 [5-10] mins. Complete sensory and motor blockade was achieved in 30 [20-30] and 20 [20-30] mins respectively. The BPB was effective for surgical anesthesia in all patients and there were no complications directly related to the BPB.

### CONCLUSION

The CC approach for USG ICBPB is technically feasible and produces very rapid onset of BPB. Future research should compare USG ICBPB at the CCS with that at the LIF.

## ULTRASOUND-GUIDED MULTILEVEL THORACIC PARAVERTEBRAL BLOCK FOR SURGICAL ANESTHESIA DURING MAJOR BREAST CANCER SURGERY

P Pangthipumpai, J W Li, B Songthamwat, M K Karmakar

*Department of Anaesthesia and Intensive Care, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, Hong Kong, SAR, China*

### INTRODUCTION

Thoracic paravertebral block (TPVB) as multiple injections (m-TPVB, T1-T6), in conjunction with intravenous sedation, is reported to be effective for surgical anesthesia during major breast cancer surgery (BCS). However although ultrasound guided (USG) TPVB has been described there are no reports on USG m-TPVB for BCS, which this study aimed to evaluate.

### METHODS

After ethical approval 25 consenting female patients undergoing major BCS received an USG m-TPVB in the lateral decubitus position. Midazolam (1-3 mg) and ketamine (10-20 mg) were administered intravenously for sedation and analgesia during the block. An infusion of dexmedetomidine (0.1-0.5 mcg/kg/h) was used to maintain conscious sedation during surgery. A transverse in-plane USG TPVB, using the articular process window, was performed at T1-T6 levels using 3-4 ml of ropivacaine 0.5% (with adrenaline 1:200,000) at each level. Ketamine (10 mg IV bolus) was administered as rescue analgesia if patients reported any discomfort during surgery.

### RESULTS

The USG m-TPVB was successfully performed on 25 patients (aged  $59.0 \pm 13.0$  years) undergoing major BCS. Surgery was successful performed under the m-TPVB in all patients but 80% of patients reported pain during pectoral dissection, which necessitated ketamine ( $38.0 \pm 20.5$  mg) for rescue analgesia. There were no complications and recovery from the TPVB was uneventful.

### DISCUSSION

USG m-TPVB is technically feasible but was inadequate as the sole anesthetic technique for major BCS. The need for rescue analgesia during pectoral dissection indicates that the pectoral nerves, which are not affected by a TPVB, may be involved in afferent nociception during breast surgery.

## SONOANATOMY RELEVANT FOR THORACIC PARAVERTEBRAL BLOCK CORRELATED WITH CROSS-SECTIONAL ANATOMIC, COMPUTERIZED TOMOGRAPHIC AND MAGNETIC RESONANCE IMAGES

J W Li<sup>1</sup>, P Pangthipampai<sup>1</sup>, B Songthamwat<sup>1</sup>, E Soh<sup>2</sup>, M K Karmakar<sup>1</sup>

<sup>1</sup>Department of Anesthesia and Intensive Care, The Chinese University of Hong Kong, Shatin, Hong Kong, SAR, China

<sup>2</sup>Department of Radiology, Alexandra Hospital, Singapore

### INTRODUCTION

Ultrasound imaging of the thoracic paravertebral space (TPVS) is frequently performed using a transverse ultrasound scan at the level of the transverse process (TP). However, during a transverse scan at the level of the transverse process (TP) the TPVS is partly obscured by the acoustic shadow of the TP. We hypothesized that a transverse scan through the inter-transverse space and at the level of articular process (AP) will overcome the problem of the “acoustic shadow” and allow clear visualization of the TPVS.

### METHODS

After ethical approval and informed consent 30 young volunteers underwent a transverse scan of the right thoracic paravertebral region (T3-T4 level) in the sitting position using a low frequency (5-1 MHz) curved array transducer. Optimized transverse sonograms were captured from the TP and AP levels. The sonoanatomy of the TPVS was defined and correlated visually in matching cadaver anatomic sections, CT and MRI images. The area of the TPVS visualized was also measured. Data are presented as mean  $\pm$ SD and paired samples t-test was used to compare the area of the TPVS visualized in the two ultrasound scan windows.

### RESULTS

Transverse ultrasound imaging of the TPVS was successfully performed at the TP and AP levels in all volunteers studied. The TP or AP, superior costotransverse ligament, TPVS and parietal pleura were clearly delineated. The intercostal nerve couldn't be identified in any of the volunteers studied. The mean area of the TPVS visualized at the AP level was significantly larger than that at the TP level ( $0.62 \pm 0.24$  vs  $0.36 \pm 0.18$  cm<sup>2</sup>,  $p < 0.005$ ).

### CONCLUSION

The anatomy relevant for TPVB is clearly delineated in a transverse sonogram of the paravertebral region at the AP level. The area of the “true” TPVS visualized at the AP level is also significantly larger than that at the TP level.



## **COMBINED ULTRASOUND-GUIDED THORACIC PARAVERTEBRAL AND PECTORAL NERVE BLOCKS FOR MODIFIED RADICAL MASTECTOMY IN A PATIENT WITH SEVERE THORACOLUMBAR SCOLIOSIS AND COR PULMONALE**

**M H Wong, B Songthamwat, W H Kwok, M K Karmakar**

*Department of Anesthesia and Intensive Care, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, Hong Kong, SAR, China*

### REPORT

Scoliosis is a complex deformity of the spine characterized by lateral curvature and vertebral rotation as well as deformity of the rib cage. It is often associated with restrictive lung disease that can lead to severe cardiovascular compromise. It may also cause difficulties with tracheal intubation and central neuraxial blocks. Therefore patients with scoliosis are at increased risk of perioperative morbidity and present unique challenges to the attending anesthesiologist. We report, with patients consent, a case of severe thoracolumbar scoliosis presenting for modified radical mastectomy that was successfully managed using a combined ultrasound-guided (USG) multilevel thoracic paravertebral (m-TPVB) and pectoral nerve (PECS) block.

### METHODS

A 79-year-old, 35-kg, 139-cm lady with S-shaped curvature of the thoracolumbar spine and left breast cancer presented for elective modified radical mastectomy. The patient had a history of systemic lupus erythematosus, cor pulmonale, ischaemic heart disease and hypertension. Her physical activity was considered less than normal due to her easy fatigability (NYHA Class III). Echocardiogram revealed pulmonary artery systolic pressure of 55 mmHg, moderate tricuspid and aortic regurgitation and degenerative aortic valve. Due to the risks associated with giving her general anesthesia we decided to use a combination of USG m-TPVB (T1-T6, 0.5% ropivacaine 120 mg) and PECs block (0.5% ropivacaine 25 mg) for surgical anesthesia and postoperative analgesia.

### RESULTS

A simple method of imaging the thoracic paravertebral region and performing USG m-TPVB and PECS block in a patient with severe thoracolumbar scoliosis is described. There were no complications directly related to the technique or the local anesthetic injection. The patient tolerated the procedure well and denied experiencing any pain or discomfort during the surgery. After a short stay (30 mins) in the PACU she was discharged to the surgical ward. She made an uneventful recovery and was discharged home on postoperative day 5.