20th ANNUAL CONFERENCE

Society of Anaesthesiologists of Nepal (SANCON)

OVERCOMING CHALLENGES IN ANAESTHESIA

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ABSTRACTS

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Overcoming challenges in Anaesthesia

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ABSTRACT

Since the successful documented demonstration of ether anesthesia in 16 October 1846 in Masachussets Hospital, Boston, anesthesiology field has traversed a long way developing practices, adopting modern technologies to provide safe anesthesia. Anesthesiologists realized long time back that clinical practice is not enough for development of the specialty which opened new horizon of academic area integrating field of research that complemented dream and vision of providing safer anesthesia across the world.

There are several milestones in the development of anesthetic drugs and agents that made anesthesia more predictable and safer. Memory lanes in the field of intravenous induction agents will take us to 1930 when sodium thiopental was discovered and was first tried in human volunteers. This was an era when a classical step of induction of anesthesia which was evident during Ether anesthesia induction was abolished. First challenge of dream of smooth induction was met. Later on development of Etomidate, Ketamine and Propofol in 1960, 1962 & 1986 respectively addressed many challenges of anesthesiologists in safety issues in intravenous induction agents. Similarly morphine, pethidine, fentanyl solved analgesic component of balanced anesthesia during 1804, 1939 and 1960. 1846, 1955, 1970, 1990 introduced ether, halothane, isoflurane and sevoflurane in inhalational agent's forum addressing several challenges for anesthesiologists. Similarly anesthesia delivery system developed from Schimmelbusch mask to modern anesthesia delivery work. Monitoring area took a huge leap from sphygmomanometer in 1881 to state of art patient monitoring

systems. All those developments were phenomenal in addressing challenges to decrease morbidity and mortality due to anesthetic reasons. Though Nepalese history of clinical anesthesia is very short with first anesthesiologist giving anesthesia only in 1956, all the latest developments in this field is already being used in Nepal.

Though it's not clear when and where first academic program was started globally, post graduate program in Nepal started in 1985 contributing in the development of almost 45 MD postgraduate anesthesiologists per year in current scenario. The number of anesthesiologists in Nepal is 1:100,000 populations which is still far from WHO standard of 5:100,000. Settling in more lucrative jobs outside the country, entering in different subspecialties like critical care, pain and palliative medicine leaving the role as anesthesiologist in operation theatres, limited post graduate programs and expanding surgical areas may contribute to less number of anesthesiologists worldwide.

Development of societies of anesthesiologists globally developed a forum to discuss and solve common problems and support societies from less affluent countries academically and clinically providing opportunities for the same.

Likewise, it's a continuum process that we are always challenged to provide services to the rapidly developing surgical and allied areas in and outside operation theaters and hence should make ourselves up-to-date and develop vision to overcome challenges in the field of anesthesia to provide anesthesia services by competent anesthesiologists only.

Overcoming Challenges in Anaesthesia - Korean Perspective

Dr.Yoon Ji Choi

ABSTRACT

I am an anesthesiologist from Korea and I would like to talk about the development and challenges of the Korean Society of Anesthesiologists of the Republic of Korea in the South of the Korean Peninsula in East Asia.

Initially, the "Korean Society of Anesthesiologists" was founded by 9 doctors on November 10, 1956 and the area of the Anesthesiology Society was nothing but anesthesia in the operating room. However, for the past 62 years, the Korean Society of Anesthesiologists has established a large-scale scientific society with more than 5,000 professionals and 15 sub-special associations. The 2018 conference (Koreanesthesia 2018) was held as an international conference with 250 international participants from 26 countries. In addition, we are playing a pivotal role in general medical care including pre-operative and post-operative patient care, acute or chronic pain management, intensive care management, surgical out-patient anesthesia, sedation, and hospice.

However, we also face some problems as the medical environment changes.

Firstly, the 'legalization of anesthesia nurses' as a part of the professional nursing system in 2017 is causing problems. This is controversial because the nurse can administer anesthesia without anesthesiologists, which is directly related to the safety of the patient and the scope of the nurse's medical care.

Secondly, the 80-hour work problem of the resident under 'the special law of the resident' has improved the quality of life of the residents, but it causes various problems because this increases the loading of specialists and shortens training time.

Third, the concentration of the anesthesiologist in the metropolitan area causes problems due to imbalance such as failure to meet the needs of the anesthesiologist in the province or decrease in income due to oversupply in the metropolitan area.

However, we will do our best to solve these challenges and develop social and anesthetic fields.

Overcoming challenges in anesthesia - Chinese perspective

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ABSTRACT

Today, there are three major challenges in anesthesia in China. The first is that china has the biggest population (1.4 billion) in the world and we now provide about 70 million anesthesia a year. The second is that the needs for anesthesia service growth rapidly, more than 10% a year in terms of anesthesia cases. The third is the big gap in anesthesia quality between 2000 big hospitals and small hospitals. In order to overcoming these challenges., The government, CSA and CAA made a plan to increase number and quality of anesthesiologists in near future. We will increase anesthesiologists from 90,000 today to 160,000 by 2030; adjust the ratio of surgeons : anesthesiologists to 3:1. By that time, the density of anesthesiologists will be 1.2 per 10,000 population. We need 300,000 anesthesiologists in 2050. Over last 5 years, China has established a national standard residency training system (3 year training) for all medical specialties and now, we have 309 anesthesia residency training programs in China and we plan to expand the programs to 1000 by 2030. About 20% of residency graduates will take one of 7 subspecialty training (2 years) in anesthesiology: cardiothoracic anesthesia, pediatric anesthesia, intensive care, pain, OB-GYN anesthesia, cardiopulmonary perfusion, and advanced general anesthesia. By requiring all medical graduates taking the national standard residency training,

China will iron out the difference in routing anesthesia service between city and countryside in the near future.

Regional Anaesthesia In Japan: Past, Present And Future

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ABSTRACT

There is growing demand for regional anaesthesia due to early ambulation, short hospital stays, and increased focus on patient satisfaction. Thus, regional anaesthesia now appears to be a requisite skill for all anaesthesiologists. The advent of ultrasound-guided regional anaesthesia has led to the development of a number of new blocks. Recent research has shown that ultrasound can effectively and safely facilitate neuraxial anaesthesia and peripheral nerve blocks. However, patients receiving regional anaesthesia during their perioperative period are still in the minority.

In the past, regional anaesthesia was not popular in Japan because there was a lack of a proper educational system. There was insufficient opportunity to obtain the knowledge necessary for regional anaesthesia.

Under such circumstances, the Japanese Society of Regional Anesthesiologists (JSRA) was established in 2013. The first meeting was held in 2014. Each annual meeting consists of educational lectures and hands-on workshops. In addition, JSRA will start the Japanese Regional Anesthesia Certificate Examination this year.

Despite the positive achievements of JSRA, there are still a number of problems. First, not many institutions have a proper environment to provide regional anaesthesia. This includes specialized block rooms as well as support from administrators, surgeons and/or nurses. Second, not many institutions have ultrasound machines of good quality. Third, conducting regional anaesthesia is still considered as an extra, time-consuming service. Fourth, there are not enough qualified experts who can teach in each hospital where major surgeries are conducted. And finally, there is no educational institution that offers a regional anaesthesiology and acute pain medicine fellowship program.

In this presentation, I will sketch a brief history of regional anaesthesia in Japan and summarize recent progress in anaesthesia. I'll also highlight major problems we still face and offer potential solutions as to how we can provide better pain management by using regional anaesthesia.

Life of professor thomas joseph mccaughey

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Professor Thomas Joseph McCaughey was born on 3 December 1925 in Fintona, County Tyrone in Northern Ireland. His parents were Thomas James McCaughey and Margaret McSorley-McCaughey and they had six children: Nan, Tom, Gerry, Ita, Vera and Sheelagh.

Tom married twice and had six children with his first wife Suzanne: Marie -France (deceased in infancy), Danny, Gerry, Paul, Tom and Dominique.

He went to St Column's college in Derry. He graduated as a doctor from University College in Dublin in 1950. After graduation he worked at Hackney Hospital in London and then did several locum jobs in England.

Tom moved to Newfoundland, Canada in 1954 and then became Head of Department of Anaesthesiology at Winnipeg Children's Hospital, a position he held for 13 years. He was a leading paediatric cardiac anaesthesiologist there.

He subsequently moved to Montreal in 1970 and became Head of Department of Anaesthesiology at Montreal General Hospital and Co-chair of Anaesthesia at McGill University. He then worked in Community Hospitals in Hull, Shawville, Buckingham and Maria in Canada.

Tom's time in Nepal:

Tom and his second wife Theodora visited Nepal and trekked to Arun River in December 1983.

1983: Shanta Bhavan Hospital. Here he met Dr Chris Ward, the author of "Anaesthetic Equipment".

1985: Quoting Prof Maltby: He converted the DA program into a triumph.

1987-88: One full year in Nepal as a preceptor for DA program

1990-93: Tom shared 6 months of work with professors Sandison, Maltby, and Tweed

1994: Tom conducted feasibility study for MD program

1996: MD program was started; Tom remained in Nepal until 2000.

After that he visited Nepal many more times.

Tom was an excellent teacher, keen observer and an effective facilitator. He was always available to his students and colleagues. He was a very caring, compassionate and spiritual person and regularly visited church every Sunday.

Throughout his career Tom published many academic papers and in 2000 was awarded the Canadian Anaesthesiologists Society's Highest Honour, the Gold Medal.

Late in life, he dedicated himself to writing, both fiction and non-fiction, publishing "Sick and You Cared" (2005), "When Miss Nepal Vanished" (2007), "Maoist in the House" (2007) and "Disdaining the reins: my life to fifty-five" (2012).

Apart from Nepal Tom also worked and taught in Uganda.

Tom died on 20 December 2013 peacefully in Canada, surrounded by his family..

Overcoming challenges in Anaesthesia- Sri Lankan Perspective

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In 1981 the Post Graduate Institute of Medicine of the University of Colombo commenced its MD programme in Anaesthesiology and board certification. In 2012 the board of study initiated a new programme for Board Certification in Critical Care Medicine. However we are still unable to provide consultant cover for each and every theatre list in the country. We should be able to meet this demand in the next few years.

In anaesthesia, our auditing is very poor and we have no audit departments. We also need well-established day case units. At present we try to provide this service within the existing infrastructure which is far short of the ideal.

When it comes to Critical Care, we lack proper outreach teams which should be multi-disciplinary. Our Intensive care Units are not designed by medical architects. We also have a severe shortage of nurses. We still don't have ICU follow up clinics and clear ICU admission and discharge criteria.

In Pain Medicine we need better organized acute pain services established in every hospital undertaking surgery and a chronic pain programme at least in all provinces with follow up clinics.

We have no electronic data storage system or data link. The patients are often ignorant about their medical condition and the clinicians are dependent on the diagnosis cards. Lack of a proper GP referral system and patient migration to any hospital at their will are major problems in our country. Health expenditure which is 4.9% of the GDP is totally inadequate. Total lack of any guide line as to what clinical procedure can be undertaken where a major setback in our free health service is. Ministry policy of making appointments purely on seniority basis and not recognizing special training in a particular field either locally or during their training abroad has wasted a lot of good human resource. Also the ministry policy of appointing consultants to places where there is no infrastructure has wasted valuable human resource. Politically made decisions to open up new stations have resulted in mal distribution of consultant services in the ministry. Culture of being resistance to change and the trade unions becoming a deciding factor is detrimental to our progress.

Principles of quality improvement and patient safety

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ABSTRACT

Patient safety and quality healthcare services are becoming more and more relevant these days in a country like Nepal. Quality improvement and safety implementation are proven tools to improve patient care and outcomes. The new constitution of Nepal reaffirms the nation's commitment to providing a high-quality universal health service. However, a proper process of implementing the safety and quality are lacking mainly due to fear of an increase in cost, probably unwillingness of the leadership of the health care systems and more importantly due to lack of knowledge of the processes and training programs. This presentation will focus on the core principles of quality improvement and patient safety, the position of Anesthesiologists as a leader, creating a culture, methods of identifying weaknesses in the system, scientific approach of creating, implementing and then sustaining changes. The value aspect of quality and cost of quality will also be discussed.
Keywords: Healthcare Quality; Patient safety; PDSA cycles; Quality improvement project; System approach

Persistent pain in cancer patients

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ABSTRACT

Pain is one of the major concerns in any patient suffering from cancer. It does not only cause suffering in untreated patients and those undergoing treatment but also adversely affects the recovery and rehabilitation of the patient even if the disease is appropriately treated. Further, it has massive negative influence on the patient's quality of life, mental wellbeing and employment status. Persistent pain in cancer patients is quite complex in pathophysiology and very challenging to treat. The pain may be because of the disease itself and/or associated with the treatment or intervention received viz. chemotherapy-induced, radiotherapy induced and/or persistent postsurgical pain. The issue is further complicated by existence of different barriers in our surrounding that often hinder the optimal management of pain in cancer patients. Current views on pathophysiology and treatment of persistent pain in cancer patients will be discussed.

Topic 1 Predicting and preventing persistent postsurgical pain

Although numerous studies have been published on the subject in recent years, persistent postsurgical pain is still a highly underestimated problem. This lecture puts the spotlight on risk factors and prevention of chronic pain and offers an alternative view of its origin.

Topic 2 Opioid free anaesthesia

Over decades, opioids have been regarded as a cornerstone of modern anesthesia. Looking at the problems we generate by administering them we should start asking ourselves whether this should still be the case…

Biography

Roman Zuercher is an alumnus of the University of Basel, Switzerland. As the former medical head of the orthopedic, obstetric and gynecological operating theaters, he has established ultrasound-guided regional anesthesia more than a decade ago as a standard practice at the University of Basel. He is particularly interested in the advancement of continuous nerve block techniques for pre- and postoperative pain control, regional anesthesia procedures to reduce chronic pain following surgical interventions as well as new concepts in anesthesia for cancer surgery. At the moment he is the Director of the Regional Anesthesia Program and Head of the Ambulatory Center at the Bethesda Hospital in Basel, Switzerland.

Roman is a dedicated clinical anesthesiologist with a keen interest in promoting and teaching regional anesthesia. His extracurricular interests include family outings with his wife Corinne and his three children in the mountains of his Swiss homeland.

Tramadol- are we prescribing appropriately?

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ABSTRACT

Tramadol is one of the most common analgesic drug. It is an opioid analgesic licensed for use in moderate to severe pain. It is commonly used as a step 2 option of the World Health Organization (WHO) analgesic ladder. Tramadol is a synthetic, atypical, centrally-acting analgesic that binds to the μ-opioid receptors and also inhibits the reuptake of serotonin and noradrenaline, resulting in both opioid and antidepressant-like effects. Tramadol is associated with less risk of respiratory depression and constipation than other opioids but has an increased risk of serotonin toxicity. Although it is associated with fewer of the typical opioid adverse effects, other effects such as nausea, vomiting and dizziness are common, and can be problematic.

Tramadol was said to have low risk for abuse, so it was initially approved by US FDA as a non controlled analgesic in 1995 but now has placed tramadol into schedule IV of the Controlled Substances Act effective August 18, 2014. Tramadol was also freely available in drug stores in Nepal and was commonly used for various pain conditions when analgesics like paracetamol and NSAIDS were not effective. It was also commonly used for postoperative pain management. However, stating the reason that the abuse of tramadol was found to be massively increased, DDA of Government of Nepal has also placed tramadol into controlled drug list effective from 31st August 2018

Tramadol is being used for various acute and chronic pain conditions. It is also been used for patients with different conditions, age or character and also been used singly or in combination with different medications however the effect may not be same for all and sometimes may land into serious adverse problem. We need to be more appropriate in using tramadol in different patient, different condition and with different other drugs.

The journey on developing pain management services in nepal

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ABSTRACT

INTRODUCTION: Pain is a universal phenomenon with no discriminations. Pain is one of the most common symptom experienced at some point during the course of many illnesses.

Pain medicine is a branch of employing an interdisciplinary approach for erasing the suffering and improving the quality of life of those living with chronic pain.The science of pain management has been rapidly developing in western world. Hence with the urgent need to bring together clinicians, healthcare provider, scientists and policy makers our pursuit to seek better pain services in Nepal started one and half decade ago in many tertiary level teaching institutes. The issues such as lack of human resources and lack of advanced skills, lack of proper infrastructure, reliable medical supplies and lack of recognition to pain services by the concerned authorities is an ever persisting problem that needs lot of efforts from the health system of the country. Inspite of all the difficulties, we have been able to provide dedicated services to manage acute pain, chronic pain conditions and complex pain disorders in an multidisciplinary manner only in few tertiary level teaching institutes.Whatsoever it does not fulfill the need of pain service in the country.

CONCLUSION: Pain services are ever evolving and each patient needs precision care which makes the service and the outcome so diverse. Realising the complexity and difficulty of management of chronic pain disorders, we need to keep together clinicians, health care providers and policy makers to find better solution for better pain service and to implement the future directives, which will be highlighted in this paper.

Off-pump cardiac surgery: Anaesthetic considerations

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ABSTRACT

Coronary artery disease (CAD) is a leading cause of death and contributes significantly to health care resource utilization. It is well known that compared with medical management alone, conventional coronary artery bypass surgery (CCAB) prolongs life and reduces symptoms. Therefore, CCAB has been the standard surgical treatment for CAD. However, there are adverse clinical consequences associated with CCAB that have largely been attributed to the cardiopulmonary bypass (CPB) circuit, hypothermic cardiac arrest, aortic cannulation and cross clamping. The off-pump beating heart surgery (OPCAB) without exposure to CPB circuit and percutaneous coronary intervention with stenting have emerged as safe alternatives to CCAB. Although, OPCAB was first developed in 1960s, the wider application of this technique has been possible in late 90s, when the tissue stabilizers, which utilize suction technology were introduced. With further improvements such as the apical positioners and intracoronary shunts, complete revascularisation of all the coronary vessels during OPCAB became a reality. The OPCAB is technically more demanding and the incidence of OPCAB in a given centre can vary from 0-100% and is mostly determined by the surgical expertise.

Initial reports were mainly based on non-randomised trials on low-risk patients undergoing single-vessel or double-vessel bypass. These demonstrated significant benefits of OPCAB over CCAB. However, they suffered from the potential risk of unbalanced baseline characteristics leading to biases in favour of OPCAB. More recently randomized trials have been published. But for one trial that reported a reduction in graft patency rates at 3 months , most others reported favourable outcome with OPCAB. The lack of power of individual trials to adequately explore important effects on clinically relevant outcomes such as death,

stroke and myocardial infarction can be overcome by using meta-analysis (stastical aggregation of randomized trials) to detect potential differences in clinical outcomes. One such meta-analysis has shown that no significant differences were found for 30-day mortality, myocardial infarction, stroke, renal dysfunction, intraaortic balloon pump, wound infection, re-thoracotomy, or reintervention. However, OPCAB significantly decreased atrial fibrillation, transfusion, inotropic requirements, respiratory infections, ventilation time, intensive care unit stay and hospital stay. Patency and neurocongnitive function results were inconclusive. In-hospital and 1 year direct costs were generally higher for CCAB. Thus, this meta-analysis has demonstrated selected short-term and mid-term clinical and resource outcome benefits with OPCAB in comparison to CCAB. The never ending debate whether OPCAB is better than CCAB continues to date. The current literature suggests, and the consensus is that the short-term outcome of OPCAB is comparable and at times better than CCAB, However, CCAB provides survival benefit in the long term. A recent paper has substantiated these conclusions and shown that OPCAB was associated with higher mortality compared with CCAB at 10 years. It was associated with higher risk of incomplete revascularization, and higher rates of repeat revascularization.

The anaesthetic technique has evolved to match the progress in the techniques of the OPCAB surgery. When the tissue stabilizers were not present, minithoracotomy was performed to accomplish beating heart surgery. The use of beta-blockers to decrease the heart rate, one lung ventilation and anaesthetic technique directed to achieve early extubation were the prominent features of the anaesthetic management. With the availability of tissue stabilizers, the need for decreasing the heart rate and one lung ventilation is no longer required. The changes in the anaesthetic techniques that have emerged in a patient undergoing OPCAB are summarized in the table.

Table: Anaesthetic techniques used in OPCAB. These are mainly directed towards achieving early extubation, which entails more intensive pain relieving measures in the postoperative period

- Reduction in the dosage of opoids
- Use of shorter acting opioids
- Administration of opioids in the form of an infusion
- Maintenance of anaesthesia with inhalational agents or propofol

- Use of thoracic epidural analgesia
- Use of intrathecal opioids
- Intensive monitoring and maintenance of haemodynamics
- Early extubation
- Intensive pain management in the postoperative period

With the improvement in tissue stabilizers (especially the apical positioners), intracoronary shunts, as well as the surgical expertise, the haemodynamic course is not as turbulent as it used to be and the use of inotropes to maintain the haemodynamics has certainly gone down. Likewise, the regular use of ischaemic preconditioning is declining and the groups describing large series of OPCAB do not report its usage. Pharmacological preconditioning with the help of volatile anaesthetics can be employed to limit the adverse effects of ischaemic myocardial damage.

Myocardial ischaemia during OPCAB: The protection of the myocardium from ischaemia is one of the main problems that the anaesthesiologists have faced. The period during which, the distal anastomosis is performed constitutes the ischaemic interval. The use of intracoronary shunts provides blood flow to the distal myocardium. However, the blood flow through the intracoronary shunt depends on the degree of narrowing of the native coronary artery. Further, it also depends on the haemodynamic status at that moment. The mean arterial pressure and cardiac output have been shown to decrease during this period, thus compromising the flow across the shunt. It is therefore, important to understand the principles of mechanical and pharmacological assistance to reduce myocardial ischaemia during OPCAB.

In conclusion, the OPCAB has demonstrated significant short term benefits. However, the OPCAB technique is more technically demanding and the long-term graft patency using this technique is inferior to CCAB. Also, few other issues that need to be looked into are its utility in the high-risk population (which is most likely to benefit due to avoidance of CPB) and the conversion rate to CCAB and the results of such converted operations. There is no denying that the anaesthesiologists and the surgeons need to be proficient in both on- and off-pump techniques and individual patient's best interest should be one of the important parameters in the selection of the technique.

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Delirium after cardiac surgery

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ABSTRACT

Delirium is a common problem that occurs after cardiac surgery. The incidence of delirium after cardiac surgery is estimated to be 26-52%, with a significant percentage being hypoactive delirium1-4.Postoperative delirium has been associated with higher hospital costs, longer lengths of hospital stay, increased likelihood of institutionalization, increased risk for dementia, and increased morbidity and mortality.5-7 Recognizing delirium and those at risk can reduce the impact of delirium through targeted interventions and risk reduction[8,9].Despite extensive research, acute confusion states after cardiac surgery remain a subject of great importance and controversy. The profound impact of psychotic disturbances on postoperative outcomes was noted in numerous studies.

This review highlights the epidemiology, peri-operative risk factors, tools to assist in diagnosing delirium, and current pharmacological and non-pharmacological therapy options.Understanding the frequency of delirium and the complications associated with it can help guide future research and resource allocation.

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Nirs in perioperative cardiac surgery

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ABSTRACT

Cerebral oximetry based on Near-Infrared Spectroscopy (NIRS) is a noninvasive technology that can monitor the regional oxygen saturation of the frontal cortex. Intraoperatively, it provides continuous information about brain oxygenation, it becomes the sentinel organ indexing overall organ perfusion and injury. One of the major concerns during intraoperative fall in perfusion pressure is the risk of tissue ischemia, hence this ischemia not detectable at the systemic level is considered a major contributor to postoperative morbidity and mortality. To limit this gap, between recognition of problematic oxygenation in systemic and tissue level, non invasive techniques capable for continuous assessment of tissue oxygenation were introduced. Among them, the most promising and broadly spread technique is near-infrared spectroscopy (NIRS). As neurological outcome remains problematic in cardiac surgery, many anesthesiologists working in these fields use the technology for brain perfusion assessment.

Normal rSO2 values, prior to the induction of general anesthesia, range from 60% to 80%. Although lower values (55-60%) for cardiac surgery patients breathing room air are not considered atypical, these patients deserve a higher degree of attention. Besides cerebral oxygenation, baseline cerebral oximetry values reflect a patient's overall cardiopulmonary function and systemic oxygen needs. It is known that cerebral metabolic rate is coupled to oxygen delivery. Cerebral blood flow is modulated in the presence of decreased oxygen delivery due to decreased arterial oxygen content. A diversion of flow towards the central compartment is apparent during circulatory distress, to maintain perfusion/oxygenation of vital organs. Cerebral blood flow is preserved at the expense of relative systemic hypoperfusion, hence a low rSO2 reflects significant systemic circulatory compromise. The NIRS-monitored brain becomes an index organ where, beyond alterations of local factors, alone or in combination, derangements of systemic factors are reflected.

KEY word: Cerebral oximetry, cardiac, surgery, anesthesia, monitor, brain

Cardiac Anaesthesia Management Of Pulmonary Hypertension In Children Post Cardiac Surgery

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PHYSIOLOGY: Normal mean pulmonary artery pressures ranges around 15mmHg. A mean of >25mmHg at rest or 30mmHg under stress is accepted as pulmonary hypertension. This elevated pressure and resistance will lead to progressive RV hypertrophy and failure depending on the duration and severity of the disease.

In the perioperative period, pulmonary hypertension most commonly occurs as a result of hypoxia, left to right shunts, precapillary and post capillary causes (LV Failure, Mitral stenosis, obstructive pulmonary venous diseases). Symptomatic therapy should start by reducing factors that stimulate or accentuate pulmonary hypertension.

MANAGEMENT: The approach to the patient with perioperative pulmonary hypertension can be looked at from my simple way of tackling the problem using the Alphabetical approach.

A **Airway** manipulation. This involves correction of hypoxia, hypercarbia, high airway pressures etc. and institution of different modes of ventilation (high frequency ventilation, reverse I:E ratios).

B **Biochemical** correction of acidosis, hypomagnesaemia, hypokalaemia etc.

C **Correctable cardiac** lesions e.g. Residual shunts, MAPCAs, etc.

D **Drugs**

1) direct vasodilators – calcium channel blockers, tolazoline, hydrallazine
2) cAMP augmenters – adrenaline, isoprenaline, PGE1, PGI2, adenosine, bipyridine derivatives (amrinone, milrinone, sildanefil)
3) cGMP augmenters – nitric oxide, sodium nitroprusside, glyceryl trinitrate
4) Newer agents - sildanefil, bosentan
5) Others –Ca channel blockers, Mg,

E **ECMO**

F **Failure** Prevention especially RVF – Atrial septostomy, not closing/creating PFO during surgery, not closing the chest after surgery.

Obstetric anaesthesia; up-to-date

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ABSTRACT

Anaesthetic management for caesarean section has been changing. First, spinal anesthesia (SA) or epidural anesthesia (EA) alone was performed and second, combination of epidural and spinal anesthesia (CESA) became a popular anaesthesia method. Recently, spinal anaesthesia with opioids (morphine and fentanyl) has been spreading internationally. CESA is superior to SA or EA on stability of anaesthesia during surgery and postoperative pain relief. However, its technique is complexed. On the other hand, SA using morphine 0.1 mg and fentanyl 0.05 mg with hyperbaric bupivacaine 2.0 – 3.0 mL has both stability of anaesthesia by fentanyl and postoperative pain relief by morphine. General anaesthesia (GA) is seldom selected for elective caesarean section. Prognosis of newborn is controversial in GA; similar prognosis to regional anesthesia (RA) (1) and worse prognosis to RA (2). In GA, the problem is airway management, particularly difficult mask ventilation and/or tracheal intubation. To avoid this accident, high flow humidified nasal oxygen therapy is applied for pregnant women before induction of GA (3).

The considerable issue during caesarean section is massive obstetric hemorrhage. When massive obstetric hemorrhage occurs, an anesthesiologist becomes a commander to operate the bundle for maternal safety. The check-list and protocols for maternal safety should be prepared and simulation according a scenario of massive obstetric hemorrhage should be performed periodically among medical staffs including surgeons, anaesthesiologists, nurses and clinical engineers in the operating room (4).

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Death in OT: What to do?

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Death on the table is fortunately not a common event. In a survey conducted by Lunn & Mushin 1 in 166 surgical patients died within 6 days, only 1 in 10,000 was actually due to the effects of the anesthesia alone. The survey also showed that the causes have not changed significantly during the last 30 years in-spite of marked changes in anaesthetic technology. [In another study of peri-operative deaths, the most common (56%) cause of perioperative death was disease/injury for which the operation was done, followed by shock & inevitable risks of the operation (30%).

Common Reasons for a Patient to Die During Surgery

The most common causes of a patient death during surgery includes:

- Surgical/patient related factors
- factors related to anaesthesia
- Uncontrolled bleeding/pulmonary embolism
- Equipment failure

Anaesthesia related factors: anaesthesia related variables includes hypersensitivity or adverse effects of anaesthetic agents ,Improper techniques & equipments, lack of experience, gross negligence in precautions, careless in method, accidents during intubation/bronchoscopy, over dose of drugs and improper pre-anaesthetic medications.

Simple anaesthetic management principles seem to have a major effect on peri-operative mortality. The routine use of an equipment checklist, direct availability of an anesthesiologist to help lend a hand or troubleshoot when needed, the use of full-time compared with part-time anesthesia team members, the presence of two members of the anesthesia team at emergence, and reversal of muscle relaxants at the end of anesthesia had dramatic, positive effects that were associated with reduced perioperative mortality within 48 h after surgery and anesthesia.

Liability of an Aneasthetist and Medico- Legal Aspects Related To Anaesthetic Deaths

When death occurs during a surgical procedure performed under anesthesia, the surgeon or anesthetists should at once report the matter to police for holding an inquest. As per

Sec.39 CrPC all deaths occurring in due course of surgery and anesthesia should be treated as unnatural deaths and should be reported to the police. Failing of which the doctor can be punished under Section 202 IPC for intentional omission to give information of offence to police by the person who is bound to inform [

Medico-legal Aspects related to Anaesthetic Deaths and liability of anaesthesiologists:

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Anaesthesiologist duty in Anaesthetic Practices:

- Anesthesiologist must attend the patient a day before surgery, do Pre-anesthetic check-up and investigate the patient for any alarming situations if required. Before consent, anesthetist must explain the procedure of anesthesia, type and nature of anesthetic agent, its side effects, complications and risks involved in the procedure clearly to the patient in local language, so that he can understand the nature and consequences of giving consent.

- Informed Consent: Before administration of anesthesia, the anesthetist must take the consent in writing from the patient or his legal guardian or parents if he or she is unconscious or below 18 years of age. It is the ultimate right of the patient to accept or refuse the medication. Nothing should be decided against the patient's will.

- Reasonable Degree of Skill: He must apply reasonable degree of skill and care in the selection of anesthetic agent and the procedure. It is the duty of the hospital management to provide adequate and trained hands. They must provide all necessary latest functioning equipment. Trainee should be regularly supervised by the seniors. Anesthetic must adhere to standard practice and follow the protocols of the institution.

- Precaution and Defense: Anesthetist should update his professional knowledge all the time, keep full and accurate records of his patients. He must check the instruments prior to use do the sensitivity test for a drug known to cause anaphylactic reactions and do not leave patient till recovered from effect of anesthesia.

Steps to be taken after death in OT:
("Catastrophes in Anaesthetic Practice - Handling the aftermath" GUIDELINES OF THE AAGBI AND THE ASA)

Steps to take immediately after the event
1. Breathe, curse, pray, sit down…take a moment to **regain your composure**

2. Records
- If possible, designate one person during the resuscitation to keep a record of the sequence of events, including personnel involved, times, drugs and fluids used, interventions and procedures performed, and the outcomes
- After the event, make accurate, detailed notes on the anaesthetic chart of the anaesthetic given and the events as they occurred
- No alterations should be made to the original notes, if any additions or amendments need to be made, these should be recorded separately, signed, timed and dated
- Ideally, details of the preoperative discussion with the patient should have been documented – including risks of the anaesthesia and consent for regional techniques.
- Make a photocopy of the anaesthetic chart, copies of relevant investigations for your personal record, as well as a personal set of notes detailing the event

"The personal notes should include every detail of the routine followed for this patient – when the patient was first seen, by whom, what was prescribed, investigations and results, anaesthetic plan –

From a medico-legal point of view: make no assumptions, and the more detail the better.

3. Supporting the Anaesthetist
In the period immediately following the death, aspects that our anaesthetic colleague may need assistance with are:
- Inform the senior registrar / consultant on duty
- Quickly review the case and go over the sequence of events that transpired while still fresh in one"s memory
- Help to complete documents and make appropriate patient notes

- Help from a senior to speak to the patient"s family
- Depending on the circumstances a decision will need to be made together with the anaesthetist involved and the senior whether or not they are fit to complete their slate/call or whether they need to be relieved of their duties

4. Dealing with the patient

- Any death occurring whilst under the influence of anaesthesia constitutes a procedure-related death6, and will necessitate further investigation and post-mortem
- All lines, tubes, drains and other equipment connected to the patient must be left in place, and a detailed description should be made thereof. If any doubt exists regarding the position of the endotracheal tube, this should be checked and recorded by a second anaesthetist.
- Documentation should be completed as soon as possible to expedite the process and to facilitate transfer of the body to the mortuary

5. Communicating with the relatives

- Whenever possible, such news should be communicated to the family in person. You may need to contact the family telephonically, inform them that a serious complication has occurred and ask them to come to the hospital to speak in person. Try to avoid disclosing the news of the death over the telephone.
- Find a quiet, comfortable room to sit down with the family. The initial meeting will involve informing them what has occurred, and answering any of their immediate questions.
- Never speak to the family alone, ideally you and the surgical colleague involved should speak to them together, including a member of the nursing team and an interpreter if necessary.
- Before the meeting, you and the surgeon should decide jointly on what information to disclose. Offering conflicting versions of events creates mistrust and such miscommunication could be the root of possible litigation.
- If the cause of death is known, then this should be explained in simple terms. If no cause has been determined yet, do not speculate or offer an opinion – rather inform them that the matter is under investigation.

- Be empathetic. Offering an apology does not imply fault.
- The family will likely need time to process the news, don"t give too much detailed information initially, but rather schedule a second meeting, if necessary, to answer further questions.
- Inform them of the procedure that will follow regarding a post-mortem and whom they can liaise with to enquire when the body will be released for funeral arrangements

6. Documentation to Complete

- A perioperative death in theatre mandates the completion of a GW24/7 form.
- For an unnatural death in the Intensive Care Unit (KEH and IALCH), we complete an “Unnatural death form” and standard discharge summary.
- These forms go through to the Forensic Pathologist. The purpose of these forms is to provide as much detail as possible to assist the Forensic Pathologist and inquest Magistrate in understanding the events that transpired and in making their findings. Upon completion of their investigation, the Forensic Pathologist will issue a Notification of Death form (DHA-1663).

Subsequent Actions

1. Equipment and drugs

- If there is any suspicion of malfunctioning equipment in the theatre or drug irregularities, this may warrant further investigation. A decision will need to be made in conjunction with theatre matron whether to take the theatre or individual equipment out of commission until such time that its safety can be verified by medical equipment maintenance personnel, manufacturers or toxicologists.

2. Debriefing the theatre team

- Ideally all members of the theatre team (including nursing and technical staff) involved in the case should be debriefed as soon as is possible or convenient after the event. Having a short, even informal discussion together of the events that transpired, in an open honest manner could go a long way in gaining information, feedback, relieving anxiety, blame; and in maintaining the camaraderie of the theatre teams we work with each day.

3. Communicating with the media

- Following the intraoperative death of patient, there may be scenarios in which the media may be involved and approach the hospital staff for statements. A nominated hospital representative should be the only person liaising with the media and all enquiries should be directed to this person

The Role of the Anaesthetic Department

- Departments should be prepared to exercise flexibility and a commitment to providing support to the anaesthetist who may be stressed or emotionally traumatized after the event. Aside from the personal wellbeing of the anaesthetists themselves, the guidelines highlight that a "stressed anaesthetist will be more prone to making errors"4, which helps neither the department nor the subsequent patients who come under their care.
- In the immediate time period following the event, it may be necessary to arrange for someone to take over the anaesthetist's duties or complete his/her call should s/he feel unable to do so.
- An informal debriefing following the event is strongly suggested, where necessary a trusted senior colleague should be assigned to mentor and provide support to the anaesthetist for as long as they may need it. This could involve follow-ups with the anaesthetist (formal or informal) in the weeks following the event.
- At a later stage, review of the case in a departmental Morbidity and Mortality meeting may be a useful learning tool.
- Provide retraining, if needed, in a particular skill that the anaesthetist had

Conclusion

- Morbidity and mortality during anesthesia has been markedly reduced due to better understanding of human physiology and pathology of disease processes.
- For the investigation of cause of death discussion between forensic pathologist, surgeon and anaesthesiologist may arrive that will be the best consensus of opinion to offer the investigating authority and courts of law. The Indian Society of anesthesiologist must come out with protocols to be followed by its members in different clinical situations.
- A good record keeping, sympathetic attitude towards the nature of loss ,moral support to attendants and taking care of medicolegal formalities plays an important role in dealing with such eventualities

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An update on perioerative anaphylaxis and national audit

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ABSTRACT

Introduction: Anaphylaxis is a rare but life-threatening condition, which requires immediate and effective management for a successful outcome. The NAP6 report is the largest ever prospective study of anaphylaxis related to anaesthesia and surgery. Main objectives of NAP6 were: How many are proven to be anaphylaxis and what are the culprits? How well does immediate management, referral and investigation match published guidelines?

Material and Method: The report of NAP 6 is used for this presentation. Data collection for NAP6 was conducted for 12 months starting from 5 November 2015 in the UK. The project surveyed 356 National Health Service hospitals to determine anaesthetic activity in October 2016.

Results:

- Responses from 342 (96%) hospitals
- Annual workload: 3,126,067 including 2.394874 general anaesthetics
- Neuromuscular blocking agents (NMBAs) used in 47,2%, antibiotics in 57.2%, chlorhexidine in 73.5%, and iodine in 40.0%, blood products in 3%, bone cement/ blue dyes/radio contrast in 2-3% of cases
- Fifty-eight percent of anaphylaxis in women

- Hypotension: presenting feature in 46% of cases, and occurred in all cases. Cardiac patients had poor outcomes.
- Bronchospasm: presenting feature in 18% of cases and occurred in 49%
- Skin signs, urticaria and flushing/non-urticaria uncommon
- Anaphylaxis within 10 minutes of exposure to the agent in 83% of cases. In less than 2% cases it was delayed beyond 60 minutes.
- Anaphylaxis to NMBAs and antibiotics occurred rapidly, hypotension was a common presenting feature particularly with atracurium, whereas bronchospasm was more common with suxamethonium.
- Anaphylaxis to chlorhexidine and Patent Blue dye was slow, hypotension was common and bronchospasm was not seen.

Conclusions: The incident of perioperative anaphylaxis is about 1:10000. Main culprits were identified as antibiotics, NMBAs, chlorhexidine and Patient Blue dye. The Association of Anaesthetists of Great Britain and Ireland and Australian and New Zealand College of Anaesthetist have produced the guidelines for immediate management, investigations and future anaesthetics.

Opioid free anaesthesia; is it possible? A review

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ABSTRACT

Opioids have long been used for the management of pain conditions and during perioperative period. More recently, use of opioids has been speculated to be associated with acute and chronic side effects and poor surgical outcome. Opioid free anesthesia has recently gained popularity secondary to early recovery, postoperative analgesic sparing effect and prevention of opioid related side effects.

Opioid free anesthesia (OFA) is a technique where no opioids are used by any route during conduct of anaesthesia. Various studies have been done with opioid free technique and data obtained are promising. OFA can be practiced as an alternative to standard opioid based anesthesia. It is especially beneficial in few selected groups of patients, where side effects associated with use of opioids could be of risk.

Hypnosis, analgesia and relaxation are the primary goals of general anesthesia. Before opioids were developed, these goals were achieved by increasing depth of anesthesia, which often lead to hemodynamic instability. Introduction of opioids proved to be a standard practice as a part of balanced anesthesia. More recently concerns regarding side effects related to use of opioids has been highlighted. And alternative technique of balanced anesthesia without use of opioids is gaining popularity.

A stable anesthetic management with a multimodal approach of sympatholytic drugs and non opioid analgesics have been found to be effective in many studies. Non opioid analgesics like NSAIDs, Paracetamol, Dexmedetomidine or Clonidine, Lignocaine, Magnesium, low dose Ketamine has been used successfully during OFA management.

In absence of accurate monitoring technique for intraoperative nociception , management of anesthesia free of opioids still remains a challenge. OFA however is possible in daily practice, allowing stable and safe anesthesia preventing known early side effects associated with use of opioids and spares opioids as analgesics for postoperative period.

Enhanced recovery after surgery

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ABSTRACT

The enhanced recovery after surgery (ERAS) programmes was introduced in 1990s as an initiative to reduce variations in patient care and improve the quality standards. ERAS programmes have been internationally adopted and widely implemented for major elective surgical pathways in colorectal surgery, orthopaedics, gynaecology, cardiology and urology. The aim of ERAS pathways is to reduce the length of hospital stay and lessen readmissions, minimise surgical complications, decrease morbidity and improve cost-effectiveness. ERAS protocols have brought about a revolutionary change in the perioperative care of the patient, redefining our roles as perioperative physicians. That is, besides 'Anesthesia' and 'Analgesia', 'Early Recovery' of the patients too becomes our responsibility.

ERAS tends to improve patient experiences and outcomes by focusing on key aspects of their care in preoperative, perioperative and postoperative periods to reduce the physiological and psychological stress. The elements of care as stated in the ERAS protocol are distributed throughout the perioperative pathway and are provided by different medical professionals. This involves preoperative counselling for patients, the use of minimally invasive surgical techniques and anaesthesia, optimal pain management and early postoperative mobilisation. Despite their protocol-based foundations, evidence from recent studies indicates that ERAS pathways are implemented variably across different hospital settings. Moreover there is limited data on applicability of the ERAS care pathways and their advantages in developing countries. The perceived barriers include resistance to change, inadequate funding, lack of support from management, high staff turnover, poor documentation and shortness of time, while facilitators included a dedicated enhanced recovery lead, effective multidisciplinary team (MDT) working and ongoing education for staff and patients. ERAS is now established as a safe and effective tool for optimizing recovery. The current evidence for its individual components is increasing, leading to exciting avenues of new research and the removal of interventions without benefit.

Preadmission	Preoperative	Intraoperative	Postoperative
• Smoking cessation • Nutritional assessment & counselling • Optimise comorbidities	• Reduce fasting duration • Carbohydrate loading • Selective bowel preparation • VTE prophylaxis • Antibiotic prophylaxis • Pre anaesthetic medications	• Prevent hypothermia • Multimodal pain management • Minimally invasive surgery • Minimise drains and nasogastric tube • Goal directed fluid • Prevent PONV • Intraoperative glycemic control	• Early ambulation • Early oral nutrition • Early removal of catheters • PONV management

Suggested reading

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NICE and warm – Putting NICE into practice

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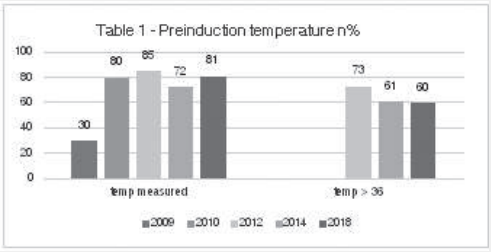
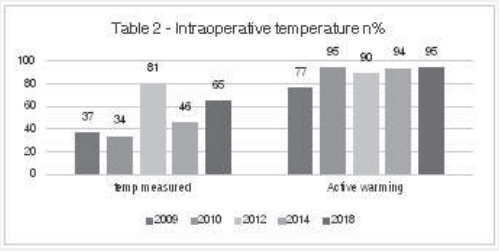
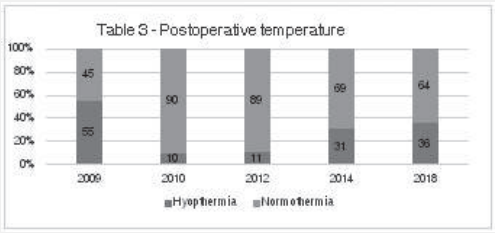
Introduction: The NHS outcomes framework 2011/12 set "helping people to recover from episodes of ill health or following injury" as one of the five outcome goals that is used to monitor the progress and improvement in care delivery. Perioperative care is an important indicator when looking to achieve this outcome and surgical site infections (SSI) specifically have been identified as a quantifiable quality indictor. To reduce SSIs guidelines NICE created guidance to avoid inadvertent perioperative hypothermia. This is a re-audit to evaluate the effect of recommendations made in previous audits. NICE suggest that patients temperature should be above 36 degrees prior to surgery and anaesthesia, and should be monitored throughout the intra and postoperative period. Active warming should be used if the temp is below 360C, in all high risk patients and if anaesthesia time is more than 30 mins.

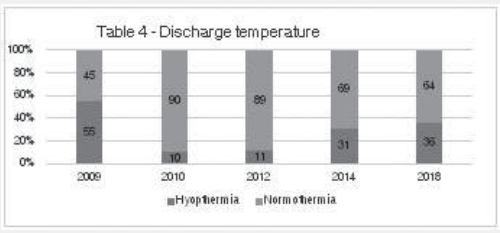
Materials and Methods: Hypothermia was defined as core temperature below 360C. Prospective data collected was based on NICE guidelines and included temperatures measured pre, intra and postoperative period, prior to recovery discharge, use of intraoperative temperature monitoring and preventative measures used for hypothermia.

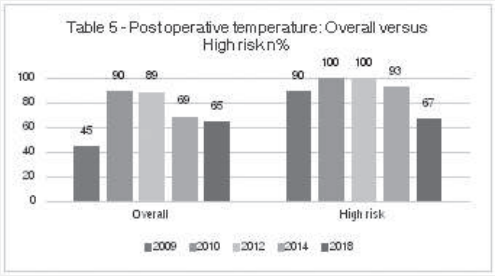
Results: Data from 118 patients was collected and analyzed in 2018. Tables' 1 – 5 show preinduction, intraoperative and postoperative temperature data compared to previous years. High risk patients comprised of around 50% of the overall data. There were no significant delays in discharge related to hypothermia.

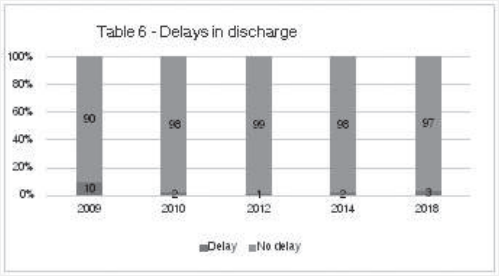












Conclusion: Implementing NICE guidelines have shown a consistent improvement in hypothermia prevention and management with a greater focus on high risk patients. A third of patients admitted to the recovery had hypothermia however, with no impact on recovery discharge.

Challenges in management of septic shock, do we need to change our focus?

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ABSTRACT

Sepsis is a common and highly morbid condition with an estimated 1.7 million cases occurring in the United States each year, resulting in over 270,000 deaths. We don't have exact data for Nepal, estimated death due to sepsis is said to be very high. Despite advances in critical care practices, sepsis remains the most common cause of death in non-cardiac intensive care units (ICUs) . The traditional thought of organ dysfunction in sepsis has focused on decreased systemic vascular resistance resulting in decreased organ perfusion, and ultimately impaired oxygen delivery . Numerous studies, however, have shown that organ dysfunction can occur during sepsis and septic shock even in the absence of decreased perfusion. All the guidelines developed so far focuses on early antibiotics, fluid therapy and vasopressure. Despite following these guidelines mortality is still very high. This is high time we should change our focus on management of sepsis and septic shock. In a small, retrospective observational study of septic ICU patients, the combination of thiamine (200 mg every 12 h), ascorbic acid (1500 mg every 6 h), and hydrocortisone (50 mg every 6 h) was associated with a dramatic improvement in organ injury, time to shock reversal, and mortality . This therapy is based on the concept that a combination of readily available, safe and cheap agents, which target multiple components of the host's response to an infectious agent, will synergistically restore the dysregulated immune response and thereby prevent organ failure and death. Each component of this combination of therapies has been recently evaluated individually in septic shock. I have tried to review the pathophysiologic basis and supporting research for each element of the thiamine, ascorbic acid, and hydrocortisone drug combination in sepsis and shall be discussing.

Key words : Septic shock , adjunct therapy

Hemodynamic monitoring for critically ill patient-an approach

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ABSTRACT

Inadequate organ perfusion is the common clinical finding in critically ill patients and hemodynamic monitoring for adequacy of perfusion is an integral part of critical care management. Hemodynamic monitoring assists in early recognition of organ failure and thus early intervention of hemodynamic support. Assessment of hemodynamic status represents a functional tool that may be used to derive estimates of organ performance and physiological reserve that may in turn guide clinical management.

Hemodynamic monitoring is a combined approach including clinical and laboratory assessment of perfusion, application of basic noninvasive tools and finally use of advanced invasive strategies to assess the organ perfusion. Traditionally, static parameters measuring right and left sided pressure and volume of heart have been used for assessing the hemodynamic status. But, many evidences have shown that the CVP is a poor predictor of fluid responsiveness and may not accurately reflect preload. Dynamic parameters are nowadays widely used for assessing the heamodynamic status. The respiratory variation on stroke volume, pulse pressure and systolic pressure can be used to assess the fluid responsiveness in mechanically ventilated patient. Even dynamic parameters are not free of limitation in view of being highly invasive, costly and not suitable for resource limited settings. In order to overcome the shortcomings of dynamics parameters, passive leg raise test, mini fluid challenge and end expiratory occlusion test can be used at the bedside more effectively that produce more specific result about hemodynamic status of the patients.

The outcome of the patients is not affected by the choice of hemodynamic tools. Moreover, the requirement of monitoring devices may change with the time and depend on the local equipment availability and training. In this regard, the choice of hemodynamics monitoring should be based on clinical assessments and on the patient's response to the intervention. The interpretation of the hemodynamic monitoring should always be coupled with clinical intervention in order to obtain a better outcome.

Keywords: dynamic parameters, hemodynamic monitoring, perfusion, static parameter,

Role of stellate ganglion block for the relief of sympathetically maintained pain

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ABSTRACT

Chronic pain is a debilitating condition, often affecting 11-40% of the population, and has serious medical, emotional and economic burden. However, many a times, it is underreported, under-recognized and undertreated. Trauma to the bones, soft tissues and even nerves can often progress to chronic pain characterized by persistent pain along with allodynia and hyperalgesia. Complex regional pain syndrome (CRPS) is a chronic neurological condition involving the limbs that is characterized by severe pain along with sensory, autonomic, motor and trophic impairment. Sometimes, this can be maintained by sympathetic activity and catecholamines, which is termed as sympathetically mediated pain (SMP), while in some patients, the pain may be sympathetically independent and is frequently known as sympathetically independent pain (SIP). It is this SMP, which is often drastically responsive to the sympathetic blocks.

A stellate ganglion block, using local anaesthetic agents is very useful as a diagnostic and a therapeutic approach to the management of CRPS in the upper extremities. Failure to alleviate the symptoms with conservative management presents a huge socioeconomic burden to the patients and they are often depressed as the pain hampers their daily activities. These blocks can be very useful in such patients, as the pain relief from these blocks often lasts longer than the action of the drugs we use. And with the availability of Ultrasound in our daily practice, the safety of these blocks has also dramatically improved. The role of stellate ganglion block in the management of sympathetically mediated pain, especially in the complex regional pain syndrome (CRPS) along with few of our experiences will be discussed.

Keywords: Complex regional pain syndrome, Stellate ganglion block, Sympathetically mediated pain

Perioperative duloxetine as part of multimodal analgesia regime reduces postoperative pain in lumbar discectomy: a randomized, triple blind, placebo-controlled trial

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ABSTRACT

Postoperative pain after discectomy involves pre-existing neuropathic and inflammatory component as well as surgical nociceptive stimuli. In majority of post discectomy patients, conventional analgesics do not relieve acute surgical pain completely. We planned this randomized, triple blinded, placebo-controlled trial to study the efficacy of duloxetine in reducing postoperative pain after lumbar discectomy.

Fifty patients of age between 25-50 years undergoing lumbar discectomy randomized into two group. Experimental group received oral duloxetine 20 mg BD preoperatively for 2 days, incremented dose of 40 mg BD from day of surgery to 2nd postoperative day (POD) and 20 mg BD for next 2 days (up to 4th POD). Similar looking placebo capsule was prepared and given to the patient in placebo group for similar period of 7 days. Postoperatively, pain scores at rest up to 24 hours and during ambulation up to 48 hours, total opioid and nonopioid consumption up to 4th POD, time to ambulation and complications recorded.

Demographic and baseline variables are similar between two groups. Pain scores were significantly less in experimental group at all times at rest, with movement and during ambulation up to 48 hours. There was a significant difference with decrease total analgesic consumption (both opioid and nonopioid) in the first 24 hours as well as up to 4th POD in

experimental group. There was no significant difference between the time to ambulation after surgery and incidence of complication. (Table 1)

Duloxetine significantly reduced postoperative pain scores, analgesic requirement with no increase incidence of complication.

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Table 1 Results showing comparison of VAS and total analgesic consumption

S No		Experimental group	Placebo group	Level of significance
1	Demographics and other baseline variables	-----	------	-------
2	Pain Scores (VAS) at rest (up to 24 hr)	4.4 ± 1.2	6.6 ± 1.6	p value = 0.01 95% CI: [-3.00 to -1.39]
3	Pain Scores (VAS) at movement (up to 24 hr)	5.4 ± 1.1	7.6 ± 1.4	p value = 0.01 95% CI: [-2.91 to -1.48]
4	Pain scores (VAS) on ambulation (after 24 hr till 48 hr)	4.2 ± 1.0	6.2 ± 1.4	p value = 0.01 95% CI: [-2.69 to -1.31]
5	Analgesic Consumption (up to 24 hr) IV Morphine mg	2.48 ± 0.87	4.80 ± 0.86	p value = 0.01 95% CI: [-2.81 to -1.82]
6	Analgesic Consumption (after 24 hr till 4th POD)			
	Oral tramadol mg	224 ± 16.26	424 ± 16.26	p value < 0.01
	Oral Paracetamol mg	2900 ±187.06	4800 ± 122.40	p value < 0.01

All Values expressed as Mean ± SD; p value < 0.05 is significant

New fronteir of pain management in thoracic region: ultrasound guided newer blocks

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ABSTRACT

The use of ultrasound machine in operation theatre leads to change of anaesthesiologist practice. There practice of pain management change from landmark guided to real time visualisation of regional block and they start moving away from central neuraxial block to more safer peripheral nerve blocks. Ultrasound guided regional anaesthesia techniques are safer and more effective than comparable landmark based approaches because anaesthesiologist enable to locate target nerve, plexus or muscular plane easily identified and there is reduced requirement of local anaesthetics as drug precisely given to target area and less chance of needle trauma to surrounding structure including nerve , vessels or pleura. Success rate of blocks increased with use of ultrasound. The most frequently used block techniques for pain management in thoracic region include the paravertebral block, intercostal block, pectoralis block (PECI&PECII), serratus anterior block (SAP) recently describe erector spinae plane (ESP) blocks and mid transverse process to pleura (MTP) block. Advantage of these ultrasound guided block over central neuraxial block is better safety profile and less hemodynamic disturbance. In addition to this these block can be given in patients with coagulopathy while central neuraxial block are contraindicate in these conditions.

Ultrasound guided stellate ganglion block – is it the holy grail ?

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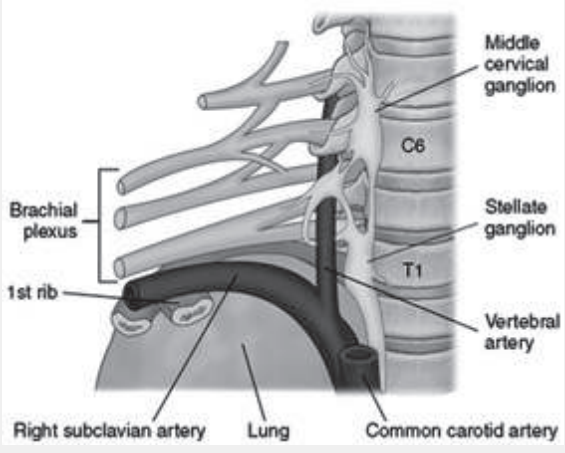
ABSTRACT

In the cervical region, the three sympathetic ganglia are superior, middle and inferior. The inferior ganglia combine with the first thoracic ganglion and this is called the stellate ganglion which relays the sympathetic signals from the arm and is not involved with feeling or movement. It is in close proximity of various vessels, brachial plexus and lung as shown below.



The stellate ganglion is clinically blocked mainly in condiitons where the vacular supply to the upper limbs is compromised (vasculitis) and in chronic pain conditions where there is hyperactivity of the sympathetic system in the limb .

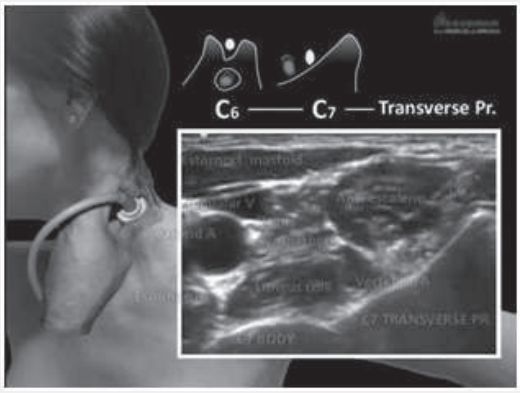
Location of the stellate ganglion

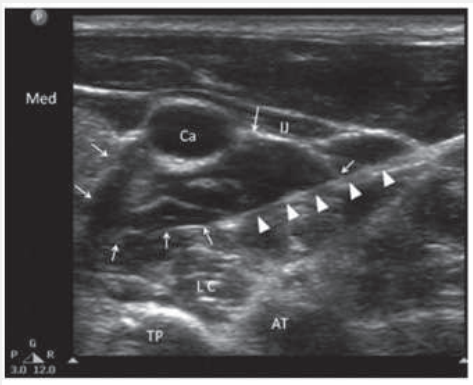
It is present anterior to the body of C7 vertebral body between longus colli muscle and carotid sheath.

Techniques to perform stellate ganglion block

a) Landmark technique
b) fluoroscopic guidance
c) ultrasound guidance

Advantage of the ultrasound technique is visualization of the needle trajectory and the needle tip along with the spread of the LA makes it useful for correct placement of the block . Moreover because the needle tip can be placed between the plane of longus colli muscle and the carotid sheath at the level of C7 rather than C6 , we can get the effect of a successful block with smaller volumes of drug. Ultrasound guided block is a real time block with correct idenification of the fascial planes . It avoids deposition of the drug in the belly of longus colli muscle and also avoids deposition of drug in carotid sheath both of which cannot be identified on landmark or fluoroscopy tecnique. Identification of sensitive surrounding vascular structures like Inferior thyroid /cervical /vertebral/carotid vessels and identification of esophagus are easily done on ultraound. Ultrasound block is easier in obese patients and safer in patients with deranged coagulation.





Near Misses during Awake Craniotomy

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ABSTRACT

The key to successful management of neurosurgical cases is early recognition of complications and its successful management. Brain is a vulnerable organ and even a seemingly innocuous insult could be devastating. Awake craniotomies poses special challenges for neuroanesthesiologists and are not free of complications. Respiratory compromise, seizures, brain bulge and loss of patient cooperation always remain a concern while managing these patients. Airway management may be challenging, especially if the stereotactic head frames are in place. As in any other neurosurgical case, venous air embolism is always a possibility during awake craniotomy. Despite utilization of intraoperative cortical and subcortical mapping, there remains a risk of postoperative neurologic deficits. Agitation, somnolence, restlessness and intraoperative events may lead to loss of cooperation from the patient. Postoperative analgesia and treatment of nausea and vomiting are very important. Carefully selected and well-informed patients are likely to tolerate awake craniotomy well and this is crucial for a successful outcome.

Ketamine: myths, controversies and emerging evidences in neuroanaesthesia

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Presentation type: Oral

ABSTRACT

Introduction: Traditional teaching discouraged the use of ketamine in patients with intracranial pathologies because of concerns of elevating intracranial pressure (ICP). As newer evidences emerge, this opinion has been challenged.

Discussion: Ketamine is a widely used anaesthetic with myriad uses. However, some early studies suggested that ketamine increased regional cerebral blood flow, oxygen consumption, cerebral blood volume and ICP. Based on these suggestions of adverse impact on cerebral haemodynamics, its use in neurosurgical anaesthesia was restricted for several decades. Newer basic and clinical research point at several useful attributes of the drug. It is believed to offer neuroprotection and some recent studies have found favourable outcomes when used in ischaemic stroke, refractory status epilepticus and delayed cerebral ischaemia. There are also beneficial effects when used in neurosurgical anaesthesia for traumatic brain injury, epilepsy surgery, intraoperative neuromonitoring, and analgo-sedation regimens in neurocritical care units. Its use has also expanded for the treatment of central neuropathic and other chronic pain syndromes that are refractory to conventional treatment modalities.

Conclusion: The use of ketamine in neuroanaesthesia is contentious, but emerging evidence support using it in different clinical settings. Its usage continues to rise in both neurosurgical operating rooms and neurointensive care units. Future studies should provide more concrete evidence both in normal and injured brain, as basic science research continue to expand our understanding of various excitatory and inhibitory neural networks, neuro-inflammatory mediators and pharmacologic interactions in these cascades.

Anaesthesia for Neuroendoscopic Procedure

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ABSTRACT

Introduction: Improvement in the imaging, computing and surgical instrumentation have advanced the field of minimal access surgery and in last 10 years a major shift is focused on minimal access neurosurgical procedures. These subsets of surgeries present with their unique anaesthetic consideration and specific risks and needs the modification in anaesthetic technique.

Indications of Neuroendoscopic procedures:

- **Diagnostic**

1. Ventriculoscopy
2. Spinoscopy
3. Biopsy of intracranial tumors

- **Therapeutic**

1. Hydrocephalus
2. Removal of intra/periventricular tumors
3. Evacuation of intracranial haematomas
4. Subacute or chronic brain abscess
5. Fenestration of loculated intraventricular cysts
6. Chroid plexus coagulation
7. Endocavitatory syringostomy
8. Retrieval of misplaced shunts
9. Management of CSF rhinorrhea
10. Clipping of aneurysm

Preoperative evaluation and preparation

The age group of patient range from infants to geriatrics. The common problems associated are:

- "Association of other congenital defects, urinary tract infections and impaired renal function
- "Hypovolemia secondary to emesis,use of diuretics decreased intake
- "A thorough preanaesthetic assessment be done to rule out decrease cerebral perfusion and ischemia. Special attention should be placed on state of consciousness, posturing and papillary signs.
- "The use of sedative premedication should be avoided in infants less than 6 months of age and adults with increased ICP
- "Use of anticonvulsants be continued in the pre and perioperative period.

Anaesthetic Considerations:

The patients presenting for endoscopic procedures range from preterm infants to geriatrics.Endoscopic Third Venticulostomy(ETV) is the common procedure performed for management of infants /children with aqueduct stenosis or hydrocephalus.

- The anaesthetic management is dictated by factors such as age of patients,neurological status,underlying disease process,associated medical illness and current health of the patient.
- The anaesthetic goals are to ensure immobility of patients intraoperatively and to have an awake neurologically assessable patient after the procedure.
- In infants and neonates due to non fusion of sutures lead to increased head circumference and fewer sign of increased ICP. The cerebral blood flow in adults is 50ml/100gm/min ,newborn 23-40ml/100gm/min and even less in premature infants. The range of autoregulation is shifted to the right in infants thus maintaining CBF at lower arterial pressure.The CMRO2 is high in infants and children to the tuno of 5.2 ml/100 gm/min, therefore the oxygenation requirement mandates careful attention to avoidance of hypoxia.
- There are chances of increased intracranial pressure during the procedure due to the use of irrigating fluid either too fast, if outflow tract is occluded or with insufficient space between the endoscope and introducer sheath. Use of PIN index correlates with ICP.
- Sudden increase in ICP may elicit Cushing reflex ie bradycardia and hypertension that may be preceded by tachycardia

- Brady arrhythmias may be precipitated due to distortion of autonomic nuclei in the hypothalamus on the floor of IV ventricles. This may even lead to cardiac arrest.
- As a result of ependymal irritation or manipulation of hypothalamus central hyperthermia may result.Irritation of some areas of brain during ETV may precipitate seizures.
- As the tip of endoscope is near the basilar artery trauma to same leads to torrent haemorrhage.
- Use of normal saline as the irrigating fluid may precipitate systemic hypertension and in volumes more than 500 ml may cause CSF acidosis.similarly use of ringer lactate may precipitate postop hyperkalemia.

Choice of anaesthetic agent /induction:

Eneral anaesthesia is an essential requirement along with endotracheal intubation for securing airway and controlled ventilation.

Induction of anaesthesia can be achieved with intravenous administration of thiopentone or propofol and inhalational induction with sevoflurane in children.Non depolarizing muscle relaxants are used to facilitate endotracheal intubation.Maintainence of anaesthesia is done with NDMR ,short acting opioids like fentanyl and inhalational agents like sevoflurane/ isoflurane.Use of nitrous oxide is associated with increase in ICP .Use of moderate hyperventilation should be avoided during ETV as it may decrease the size of ventricle and make the procedure more difficult for the surgeons.

It is imperative that the patient lie immobile during the procedure .The tip of endoscope is frequently near the critical structures such as basilar artery .Unexpected movement may result in severe neurological injury or life threatening haemorrhage.Neuromuscular blocking agents should therefore be used throughout the procedure and an adequate depth of anaesthesia be maintained.

Monitoring during neuroendoscopy:

- Standard monitoring such as electrocardiogram, non invasive blood pressure ,pulseoximetry, capnography be applied in all the cases.
- Invsive blood pressure monitoring by arterial cannulation is essential in such cases.
- Measurement of intracranial pressure bu Codman sensors and use of Pressure inside Neuroendoscope(PIN) are essential to maintain the cerebral perfusion pressure above 40 mm Hg.

Potential Complications during endoscopic procedures:

A. Due to sudden CSF drainage or decompression of ventricles

- Sudden intracranial hypotension leading to bradycardia and even cardiac arrest
- Entrainment of air leading to pneumatoventricle and pneumocephalus
- Sudden collapse of ventricles may lead to difficulty in visualization

B. Due to instrumentation

- Major haemorrhage
- Inadvertent injury to brain tissue
- Infection

C. Due to use of irrigation fluid

- Local or systemic hypothermia
- Movement of irrigant into the periventricular tissue leading tro tissue damage.
- Toxic reaction- fever ,headache,neck stiffness and increased cell count in CSF.
- " Increase intracranial pressure due to inadequate venting resulting in severe bradycardia and asystole.

Postoperative Concerns:

- Common problem in immediate postoperative period is delayed emergence, hyperkalemia, confusion, transient papillary dysfunction, transient hemiplegia and memory loss
- Transient neurological deficiet is the most common complication.
- Respiratory arrest is common in infants during first hour after neuroendoscopy
- Postoperative monitoring of serum electrolytes is warranted because of diabetes insipidus and hypothalamic dysfunction are reported.
- Late complications include meningitis and ventriculitis.

Conclusion: Neuroendoscopy surgeries are relatively safe. A careful choice of patient, scrupulous planning and basics of neuroanaesthesia makes the procedure safe. Close monitoring of patients and good communication with the surgeon prevents various complications both perioperatively and postoperatively.

Evidences in Traumatic Brain Injury

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ASBTRACT

Introduction: Traumatic brain injury (TBI) has been defined by the Center for Disease Control and Prevention (CDC) as a disruption in the normal function of the brain that can be caused by a bump, blow, or jolt to the head, or penetrating head injury. People of all age groups are at risk of TBI, especially children and older adults. 1 The disease burden is an even greater problem for resource-challenged countries like Nepal.

Discussion: Neurotrauma is a critical public health problem. This is a health community concern that needs serious attention to decrease mortality and morbidity. Research has also highlighted that TBI usually requires long-term care with huge economic cost to health systems.[2]

Guidelines for the management of severe TBI, Fourth Edition, was published by the Brain Trauma Foundation on September 2016, which consists of 189 publications used for evidences - 5 Class 1, 46 Class II, 136 Class III studies, and 2 meta-analyses.[3] These evidence-based recommendations for treatments include decompressive craniectomy, prophylactic hypothermia, hyperosmolar therapy, cerebrospinal fluid drainage, ventilation therapies, anesthetics, analgesics and sedatives, steroids, nutrition, prophylaxis for infection, deep vein thrombosis, and seizure. Further, it discusses different types of monitoring

that can influence patient outcomes like intracranial pressure (ICP), cerebral perfusion pressure monitoring (CPP), and advanced cerebral monitoring (ACM). Threshold values for blood pressure (BP), ICP, CPP, and ACM have been highlighted to increase the probability of positive outcomes and trigger a change in treatment.

In pediatric population, the Third Edition Guidelines have been recently published by the Brain Trauma Foundation in 2019.[4]

Conclusion: TBI cause enormous losses to individuals, families, and communities including large number of deaths and impairments leading to permanent disabilities. Proper preventive measures as well as prompt management are crucial for good outcomes following TBI.

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Anaesthesia for Cardiac transplantation-an update

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ABSTRACT

Heart transplantation is an emergency procedure. Ischemia-reperfusion time of the donor heart should be less than six hours. A close communication between the harvesting and recipient teams is essential. Arterial cannulation, central venous cannulation and pulmonary artery catheterization are done. Aseptic precautions are followed and Special antibiotics given as these patients are immunosuppressed. Transesophageal echocardiography is used. External defibrillator patches are applied. Pacemakers or cardiac defibrillator devices are turned off to avoid electrocautery interference. Patients on warfarin may have an elevated INR. Previous exposure to aprotinin increases the chance of anaphylaxis. Redo surgery lengthens the time and increases the risk of bleeding. Rapid sequence induction is performed. Etomidate, vecuronium/ rocuronium, fentanyl and sevoflurane are the preferred anaesthetic agents. Hypotension during induction is treated with alpha agonists or inotropic agents. Antifibrinolytic therapy (aprotinin or aminocaproic acid) is started. Heparin is administered before vascular cannulation. Isoprenaline is used to treat bradycardia and Amiodarone for arrhythmias. Patients may require permanent pacemaker implantation for bradycardia and to over pace arrhythmias. Protamine is given to reverse heparin. Right ventricular failure is the most common cause for failure to wean from CPB. Hyperventilation with high FiO2 is used to reduce PAP. Vasodilators (nitroglycerine, sodium nitroprusside, prostaglandin E1, prostacyclin) are infused to reduce pulmonary vascular resistance. Inodilators (milrinone, amrinone) increase contractility and decrease PVR. Noradrenaline or vasopressin is used to improve systemic arterial pressure and coronary perfusion when not responsive to catecholamines. Iloprost is more effective than Nitric oxide in decreasing PVR without decreasing systemic blood pressure. Mechanical assist devices like Intra-aortic balloon pump, Ventricular assist devices or Extracorporeal membrane oxygenation may be needed. Patients with post-bypass coagulopathy require transfusion of platelets, cryoprecipitate, or fresh frozen plasma. Acute rejection is best diagnosed by endocardial biopsy. Antirejection therapy is continued in the post-operative period.

Anaesthesia for Liver Transplant: An update

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ABSTRACT

Liver transplantation is the treatment of choice for end-stage liver disease (ESLD). There are four types of grafts utilized commonly: donation after brain death, donation after cardiac death, living related donation and split liver donation where a cadaveric graft is divided for two recipients.

Two commonly used scoring systems assess the severity of liver dysfunction- Child-Turcotte-Pugh (CTP) classification and Model for End-stage Liver Disease (MELD) score. In 2002, the MELD score replaced the CTP score for liver allocation. It is a better predictor of 3-month waitlist mortality and is less subjective. In 2016, serum sodium was added to the MELD score for liver allocation, now called the MELD-Sodium.

Pathophysiology of ESLD and perioperative management of the liver recipient

System	Disorder	Perioperative management
Cardiovascular: cardiac function, systemic and splanchnic circulations	- Disturbed nitric oxide (NO) production and consequent peripheral vasodilation with reduced systemic vascular resistance (SVR) - Increased ejection fraction and cardiac output, often	- PA catheter and/or trans-oesophageal echo - Balance preload + vasoconstrictors (vasopressin, terlipressin, or norepinephrine) - If renal or cardiac dysfunction, consider caval

	with impaired diastolic function and contractile response to increased afterload - Increased chamber sizes - Prolonged QTc - Cirrhotic Cardiomyopathy (esp. alcohol, amyloid, Wilson's, haemochromatosis) - Increased splanchnic blood volume +/– flow - Reduced systemic blood volume +/– flow - Activation of compensatory responses (SNS, RAAS, endothelin) - Intrahepatic vasoconstriction aggravates portal hypertension and varices - Autonomic neuropathy (mild in cirrhosis, marked in amyloid	preservation technique or venovenous bypass - Pacing wire if amyloid polyneuropathy
Cardiovascular:	- Porto-pulmonary	- PPHTN: pre-op right heart

pulmonary circulation	hypertension: PA mean > 25 mm Hg - PVR > 250 dyn/s/cm - Hepato-pulmonary syndrome (HPS): hypoxaemia from pulmonary micro- or macrovascular shunting	catheter if Doppler PA systolic > 40 mm Hg (to differentiate from high-flow state/ overload); defer transplant and treat if PA mean > 35 mm Hg (and PVR raised) or RV impaired; intraoperative PA catheter +/– TEE essential if pulmonary hypertension suspected - HPS: bubble echo to exclude atrial shunt, chest CT to exclude other causes and treatable macrovascular lesion; increase FiO2; 'lung-protective' ventilation
Respiratory	- Restrictive defect (ascites and/or hepatic hydrothorax) - Flow-related or anatomical intrapulmonary shunting (HPS - Non-cardiogenic	- FiO2 >= 0.5, 'lung protective' ventilation (tidal volume 6–8 mL/kg, PEEP 4–6 cm H O, regular recruitment manoeuvres - Drain large effusion early intraop (beware re-

	pulmonary oedema (fulminant hepatic failure) - Obstructive airways disease (esp. cystic fibrosis, alpha-1 antitrypsin deficiency) - Interstitial lung disease (primary biliary cirrhosis)	expansion pulmonary oedema, especially at reperfusion
Renal	- HRS (prerenal failure from neuroendocrine activation: splanchnic 'steal') - Acute tubular necrosis from sepsis, hypovolaemia - Tacrolimus/ ciclosporin-related renal impairment - Renal tubular acidosis	- Preoperative renal replacement therapy if K > 5.5; stand-by otherwise - Maintain arterial pressure: adequate volume plus norepinephrine, vasopressin, or terlipressin - Maintain haemoglobin > 9 g/L (haematocrit > 27) - Caval preservation technique or venovenous bypass
Electrolytes/ metabolic	- Hyponatraemia - Hypomagnesaemia - Hyperkalaemia - Metabolic acidosis - Hypoglycaemia in	- Defer transplant if high surgical risk *and* Na < 122 - Treat hyperkalaemia if pre-anhepatic > 5.0 or rapid anhepatic rise

	fulminant liver failure - Hyperglycaemia and insulin resistance common after reperfusion	- Wash bank blood using red cell salvage device if pre-existing renal failure or K > 5.0 - MgSO4 if any arrhythmia - Consider THAM; intraoperative haemodiafiltration if acidosis severe - Close monitoring and treatment of hypo-/ hyperglycaemia
Haematological/ Coagulation	- Anaemia, thrombocytopaenia, leucopaenia (hypersplenism and marrow depression) - Impaired vitamin K absorption - Reduced liver synthesis of clotting factors - Hyperfibrinolysis - Reduced synthesis of anticoagulants (proteins C and S, antithrombin) and	- Consider prophylactic tranexamic acid or EACA if high bleeding risk and no prothrombotic history - Assess coagulation clinically before treatment (cannulation sites, surgical field) - Treat clinical coagulopathy according to thromboelastography and laboratory data (plasma, platelets, cryoprecipitate,

	reduced clearance pro-coagulants (extrahepatic Factor VIII and vWF) often preserve haemostasis and may cause pathological - thrombosis	factor concentrates, antifibrinolytic) - Maintain normothermia - If loss > 2 blood volumes, consult haematologist and activate massive transfusion protocol
Central nervous system	- Encephalopathy - Cerebral oedema with intracranial hypertension	- Avoid/minimize benzodiazepines - In fulminant liver failure with grade III/IV encephalopathy consider ICP monitoring; maintain cerebral perfusion pressure > 60 mm Hg (norepinephrine) +/– mannitol/ hypertonic saline/ thiopental to control ICP

Surgical phases of liver transplant procedure and common anaesthetic problem

Phase	Surgical details	Common anaesthetic problems
Pre-anhepatic	- Inverse T or extended/bilateral subcostal incision - Mobilization of the structures around the	- Haemorrhage from dissection, varices, and adhesion - Haemorrhage exacerbated by pre-existing coagulopathy - Cardiovascular instability

	liver and porta hepatis - Hepatic artery and bile duct divided	from ascitic decompression - Low SVR state causes hypotension, exacerbated by maldistribution of blood away from central compartment towards splanchnic circulation - Over-treatment with fluid, blood components, or both may cause splanchnic congestion and exacerbates bleeding
Anhepatic	- Portal vein and hepatic veins divided - Explantation of native liver IVC preparation for implantation - New liver inserted - Caval and portal anastomoses fashioned	- No production of clotting factors, fibrinogen deficiency, and worsening coagulopathy - Progressive hypocalcaemia - Absent citrate/lactate metabolism, reduced gluconeogenesis, increasing serum lactate - Worsening metabolic acidosis Surgical haemorrhage
Neo-hepatic	- Graft reperfusion - Hepatic artery anastomosis Biliary reconstruction - Good graft function suggested by production of bile, decreasing serum lactate, normalization of serum calcium and resolution of CVS instability	- Hypotension and further decrease in SVR - Sudden preload increase at reperfusion - Abrupt K+ increase at reperfusion with possible arrhythmia or cardiac arrest

There are 3 basic venous reconstruction techniques for liver transplant:

1. Total occlusion of the vena cava and the portal vein ("full clamp")- results in a severe reduction in venous return to the heart during the anhepatic phase
2. "Piggy-back" technique: The inferior vena cava is only partially occluded with a side-biting clamp
3. Venovenous bypass: Venous blood from the inferior vena cava and femoral vein is returned into the internal jugular vein using extracorporeal venovenous cannulas and a centrifugal pump.

Postoperative management

- Consider fast tracking
- Watch for complications:-

Early

1. Bleeding
2. Primary allograft dysfunction
3. Primary allograft non-function
4. Thrombosis of portal vein
5. IVC and hepatic vein thrombosis
6. Biliary tree obstruction
7. Hepatic artery thrombosis
8. Acute kidney injury
9. Sepsis
10. Cardiovascular events

Late

1. Immunosuppressant-related side effects
2. Infection
3. Graft rejection
4. Recurrent primary disease
5. Biliary tree obstruction

Closely monitor for early signs of liver dysfunction, renal dysfunction, and immunosuppressive drug levels

Living Donor Liver Transplantation

Dr. Yoon Ji Choi

ABSTRACT

I work at an 800-bed university hospital in Ansan, South Korea. Our hospital is not large, but we are performing liver transplantation and would like to talk about our experience with living donor liver transplantation.

In the United States, liver biopsy is only about 10-15% of the time, but in Korea, it is a common procedure for liver transplantation with 85%. Liver transplant surgery requires several specialist surgeons. For this reason, three doctors in three branch hospitals have teamed up to divide the donor and the recipient team into one hospital to perform the operation. And we have an anesthesiologist who specializes in liver transplantation, and a scrub nurse for liver transplantation.

When choosing a transplant recipient, we consider the blood type, age, body size, and infection, and consult a psychiatrist. Because of the inconsistent donor and recipient blood type in the recent liver transplantation, preoperative plasmapheresis and rituximab were used. In addition, preoperative ICG test was performed to confirm the liver function and determine the operation method. In the case of a recent liver transplantation, ICG test result was 14.9%, so we decided to perform left hepatectomy.

Anesthesia was performed with an inhalation anesthesia using desflurane and with rocuronium and remifentanil during anesthesia. An air warmer and a fluid warmer were used for heating. During the operation, the Levin tube was performed to reduce the stomach volume.

We checked the level of fatty liver during the operation and weighed the liver after resection and confirmed the volume of the remaining liver. After the operation, SugarMadex was used to reverse the muscle relaxation and to perform tube extubation in the operating room. PCIA was performed to reduce postoperative pain. Intermittent pneumatic compression (IPC) devices were used for the prevention of thrombosis. Ambulation was performed on the 1st postoperative day.

Case series of external iliac artery dissection in Renal transplant recipient

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ABSTRACT

Introduction: Kidney transplantation is the treatment of choice for end-stage renal disease. Despite the improvements in surgical techniques vascular complications consists a significant and sometimes life-threatening problem. According to literature incidence of vascular complication is 10-20% of patients where as incidence of renal vein and artery thrombosis is ranging from 0.4% to 6%.

Discussion: Renal transplant is regularly done at TUTH for the last 10yrs. Anastomosis of donor kidney to right external iliac artery in recipient is a routine practice. So far 5 cases of external iliac artery dissection has been detected which is a rare vascular complication during renal transplant. Though the condition is rare if diagnosed early, it is reversible and life saving.

External iliac artery dissection is suspected when there is drastic decrease urine output, no arterial pulsation in ipsilateral leg, development of severe acidosis and if abdomen is still open bluish discoloration of transplanted kidney. Diagnosis is established by colour flow Doppler study. Arteriography is recommended only when really needed and when it does not delay revascularization process. Thrombosis due to external iliac artery dissection extend to arterial anastomosis level compromising donor kidney and ipsilateral leg.

Treatment is high degree of suspicion of external iliac artery dissection, laparotomy, thrombectomy and ultimately a graft nephrectomy, high dose of heparin, resection of the affected artery, replaced with an arterial prosthesis. Reanastomose the kidney to other side internal iliac artery or external iliac artery or to ipsilateral internal iliac artery.

Immediately after reperfusion, measure potassium as hyperkalaemia is favored by acidosis or renal failure.

Conclusion: Awareness for early post-operative complications like external iliac artery dissection, renal vein and artery thrombosis could save allografts and patients. WE need early clinical suspicion, timely imaging, and prompt intervention.

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" PECs block just some fancy ultrasound guided intervention or a boon for breast surgery patients ?"

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ABSTRACT

Perioperative pain management for breast surgeries has traditionally been managed with multimodal analgesia along with thoracic epidural or paravertebral block. Although these techniques are indeed effective they are technically challenging and definitely has a list of some grave complications like sympathectomy & pneumothorax etc. PECs block a relatively new ultrasound guided intervention for breast surgeries is equally effective, has a short learning curve and has minimal complications. Ultrasound being the standard of care in regional anaesthesia currently, PECs block could be a good alternative for perioperative pain management in breast surgery.

Spine: sonoanatomy and real time epidural

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ABSTRACT

Thoracic epidural analgesia is the standard and reliable technique of intraoperative and postoperative pain relief for patients undergoing abdominal and thoracic surgeries. The conventional method of placement of epidural catheter and spinal is dependent on the use of surface anatomical landmarks. But in Obstetrics and paediatric patients relies on the palpation of anatomical landmarks that are not always possible especially at thoracic level, in obese, kyphoscoliosis patients. Relying on surface anatomy alone can lead to incorrect identification of the targeted thoracic interspace. In paediatric patients the all epidural is performed under general anaesthesia so there is always fear of complications that's why this technique is not popular in this age group. Due to comparative thinner and softer ligamentum flavum and narrow space in paediatric age group especially in thoracic region, there are higher chances of dura puncture in blind landmark technique. With the use of ultrasound the correct level of insertion, best intervertebral space, angle of insertion and depth of epidural or intrathecal space can be determined. USG minimizes chances of complications and failure of the procedure.

Preprocedural imaging, however, still requires blind advancement of the epidural needle and does not reduce the time or number of needle redirections required to place a thoracic epidural catheter. Interest in using real-time US visualization during needle advancement to improve rates of catheter placement at the lumbar spine has recently developed.

Technique
After confirmation of appropriate level with curvilinear or linear probe of ultrasound in longitudinal plane on the midline of the patient's back in lateral position of patients, in paramedian sagittal oblique transverse process view the lamina, ligamentum flavum, anterior and posterior dura complex is visualized.

The ligamentum flavum appear as shiny structure on USG deep to the shadow of lamina. Tuohy needle will be advanced until the epidural space will identified with LOR to air or pierces the ligamentum flavum. On injection of drug in epidural space the dura will move downward and there will be widening of the epidural space, which will further confirm the space.

Role of regional anesthesia in enhanced recovery after surgery(eras)

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ABSTRACT

Enhanced Recovery after Surgery (ERAS) has become a standard approach to surgical care as a means of reducing length of stay with similar or improved outcomes compared to traditional strategies. Multimodal analgesia (MMA) is a mainstay of ERAS and Regional anesthesia (RA)offers the ability to both reduce the need for general anesthetics, opioids and improve postoperative pain management, decreased Post-operative nausea, vomiting and return to both physical and bowel function. In the era of Ultrasonography, the Regional anesthesia technique is emerging and has become an integral part of MMA. When the western world is suffering from Opioid crisis, Nepal is facing opioid scarcity and the role of Regional anesthesia as a part of MMA is ever increasing. Further studies however is warranted to see the specific measures and outcome of RA beyond analgesia.

Comparison of safe apnea duration of continous positive airway pressure versus normal pre-oxygenation during general anesthesia

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ABSTRACT

Introduction: Pre-oxygenation with 100% oxygen results in development of atelectasis within minutes of induction of anesthesia. Preventing the formation of atelectasis during preoxygenation of general anaesthesia may increase the duration of non-hypoxic apnea which in turn will increase the margin of safety during period of endotracheal intubation. Application of continuous positive airway pressure during preoxygenation prevents atelectasis in the basal areas of the lungs and thereby increases the safe apnea time. The aim of the study was to compare the safe duration of apnea with or without application of continuous positive airway pressure during pre-oxygenation.

Materials and methods: Sixty patients scheduled for elective surgeries under general anesthesia with endotracheal intubation were enrolled in this prospective, single-blinded, randomized control interventional study. Patients were randomly allocated into two groups of 30 patients in each. Group A pre-oxygenation with 100% O2 without CPAP and Group B pre-oxygenation with 5cm of H2O positive pressure application for 3 minutes. Tracheal tube was left open in room air following intubation and patient allowed to remain apneic until SPO2 fell to 93%. Time duration from injection of Succinylcholine to fall in SPO2 up to 93% was noted. Monitoring of vitals was done every 2 minutes after initiation of pre-oxygenation till saturation fall to 93%. ETO2 was recorded at the end of pre-oxygenation in both the group.
Results: The safe duration of apnea with continuous positive airway pressure of 5 cm of H2O during pre-oxygenation was 248.27±80.43 seconds in Group A and 335.63±68.19 seconds in group B. The p-value is 0.000 which is significantly more in Group B ($p<0.05$)
Conclusion: There is significant increase in safe duration of apnea during pre-oxygenation with continuous positive airway pressure.

Comparison of intraperitoneal instillation of ropivacaine with and without tramadol for post-operative analgesia in laparoscopic cholecystectomy

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ABSTRACT

Background: Post- operative pain is the main obstacle for rapid recovery of patients undergoing laparoscopic cholecystectomy (LC). Patients undergoing laparoscopic procedures do experience post-operative pain. Intraperitoneal (IP) injections of local anaesthetics have been proposed to minimize postoperative pain after laparoscopic surgery. This study aims to study the post-operative effect of Ropivacaine with and without Tramadol when instilled IP in patients undergoing LC.

Methodology: A total of 80 patients undergoing elective LC were randomized in 2 groups, one receiving 18 ml of 0.5% Ropivacaine with 2 ml of normal saline (NS) and other 18 ml of 0.5% Ropivacaine with 2 ml of Tramadol (100 mg) at the end of surgery intraperitonealy before the removal of trocar. Pain score was monitored using numerical rating scale (NRS) scoring system every half hourly for first four hours and then at 6th, 12th and 24th hour. We observed the time for first rescue analgesia, total analgesic consumption and incidence of side effects like nausea, vomiting and shoulder tip pain in both the groups.

Results: A total of 80 patients were evaluated in this study. The severity of pain score evaluated by NRS score was less in tramadol group in comparison of the normal saline group and the difference was significant after 2.5 hrs onwards after the surgery till 24 hrs (p=0.005). Only 17 patients (42.5%) in tramadol group demanded for rescue analgesia as compared to 30 patients (75%) in normal saline group (p=0.003).The total analgesic consumption was also significantly reduced in tramadol group (785 mcg) compared to ropivacaine group (1800 mcg) with p value of 0.002. No significant adverse effects like nausea, vomiting and shoulder pain are found in any group.

Conclusion: From the results obtained in the current study, it is concluded that intraperitoneal instillation of ropivacaine (90 mg) in combination with tramadol (100 mg) in elective laparoscopic cholecystectomy significantly reduces the post-operative pain and analgesic requirement in post-operative period as compared to ropivacaine without tramadol combination.

Key words: Intraperitoneal, laparoscopic cholecystectomy, post-operative pain, ropivacaine, tramadol.

Comparison of prophylactic low dose ketamine and ondansetron in prevention of intraoperative shivering after spinal anesthesia

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ABSTRACT

Introduction: Shivering after spinal anesthesia is a common complication and can occur in as many as 40%–60% of patients after regional anesthesia and it is very distressing. The aim of this study was to compare the effectiveness of Ketamine with that of Ondansetron and placebo in the prevention of postspinal shivering.

Materials and methods: This was a double blind, interventional comparative study.Patients were randomly divided into three groups of 57 each ; Group A patients received inj. Ketamine 0.25 mg/kg , Group B patients received inj. Ondansetron 4mg and the Group C patients received Normal Saline just after spinal anesthesia. The temperature of operating room was maintained at 24-26˚C. Incidence and severity of shivering, nausea and vomiting, sedation score, axillary and tympanic temperature and hemodynamics were recorded. ANOVA test was used to compare continuous variables. Chi square test was applied to compare ASA grading, shivering score and sedation score. P value of less than 0.05 was considered significant.

Results: Shivering was witnessed in 36 patients (63.1%) in Saline group, 22 patients (38.6%) in Ondansetron group and in 23 patients (40.4%) in Ketamine group (p value=0.001). Post hoc analysis showed that ketamine (p=0.001) and Ondansetron (p= 0.006) were effective in reducing the incidence of shivering compared to Normal saline but there was no statistical significant difference between Ketamine and Ondansetron (p=0.861). On comparing the severity of shivering, we found that four patients in Normal Saline group developed grade 3 shivering. None of the patients in Ketamine and Ondansetron developed shivering above grade 2. Sedation score was significantly higher in Ketamine group (P<0.05) than other groups. All the groups showed the similar drop in core (p=0.204) and peripheral temperature .

Conclusion: Ketamine and Ondansetron were effective in preventing post spinal shivering.

A comparative study of hemodynamic changes during orotracheal intubation using video laryngoscope and direct laryngoscope.

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ABSTRACT

Introduction: For nearly a century, direct laryngoscopy has been the standard technique for tracheal intubation. Alternatively, indirect techniques for tracheal intubation have been developed that do not require direct vocal cord visualisation. Lagyngoscopy is mostly associated with sympathetic stimulation and catecholamines release which causes changes in hemodynamics. Thus, this study aims to compare the difference between hemodynamic changes with video and direct laryngoscope devices.

Methods: A prospective clinical study was conducted which involving patients of 100 ASA PS Class I and II, dividing 50 in each group, with group V(Video laryngoscope) and group D(Direct laryngoscope) undergoing elective surgeries
under general anaesthesia with endotracheal intubation. All patients were included for airway assessment of Mouth opening, Modified Mallampati Test, Thyromental distance, Protruded Incisors, Edentulous, Neck mobility, Prognathic ability. The baseline vitals of these patients were recorded.

Results: There was no significant difference between Video laryngoscopy and direct laryngoscopy with respect to blood pressure. However, significant differences were found in heart rate immediately after intubation (110.40 beats per minute for direct laryngoscopy vs 105.02 beats per minute for video laryngoscopy) and 1 minute (109.30 for direct laryngoscopy vs 106.20 for video laryngoscopy) after intubation ($p<0.001$). Also the intubation time was longer for the video laryngoscopy group (22.80 seconds) compared to direct laryngoscopy group (26.54 seconds; $p<0.05$).

Conclusion: This study concluded that video laryngoscopy causes lesser hemodynamic changes compared to direct laryngoscopy.

Keywords: Video laryngoscopy, Direct laryngoscopy, Hemodynamic changes

Sonographic measurement of optic nerve sheath diameter pre and post carbon dioxide pneumoperitoneum in patients undergoing laparoscopic cholecystectomy under general anaesthesia

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ABSTRACT

INTRODUCTION: Laparoscopic cholecystectomy is a routinely performed surgery these days. The creation of pneumoperitoneum during laparoscopic surgeries may have various systemic effects including rise in intracranial pressure. The sonographic measurement of optic nerve sheath diameter as an indirect measure of raised intracranial pressure has been well described. The purpose of this study was to measure the optic nerve sheath diameter using ultrasound before and after carbon dioxide pneumoperitoneum in laparoscopic cholecystectomy.

MATERIALS AND METHODS: This is a prospective observational study performed using a convenience sampling. The optic nerve sheath diameter was measured by ultrasonography in 55 ASA I–II patients at various time points during laparoscopic cholecystectomy: pre-induction, after intubation, 5, 10 and 20 minutes after carbon dioxide pneumoperitoneum and after the release of pneumoperitoneum. Ultrasound imaging was performed using linear probe of frequency 7.5 MHz. Repeated measures ANOVA or linear mixed model was used to determine the change in the optic nerve sheath diameter, mean arterial pressure and peak inspiratory pressure at various time points.

RESULTS: The baseline mean optic nerve sheath diameter was 5.12 ± 0.54 mm. Twenty minutes after pneumoperitoneum the optic nerve sheath diameter increased to 7.01 ± 0.50 mm. The mean values of the optic nerve sheath diameter at all the time points before the release of pneumoperitoneum were significantly increased compared to that of baseline values. The mean optic nerve sheath diameter after the release of pneumoperitoneum was 5.86 ± 0.50 mm. There was no significant relation between baseline ONSD and age, gender and weight ($p > 0.05$).

CONCLUSION: There was 26% increase in the ONSD 20 minutes after pneumoperitoneum compared to the baseline values. There was 16% decrease in ONSD after the release of pneumoperitoneum compared to values at 20 minutes of pneumoperitoneum.

KEYWORDS: Laparoscopic cholecystectomy, CO2 pneumoperitoneum, Optic nerve sheath diameter

Comparision of dexmedetomidine and fentanyl for attenuation of the hemodynamic response to laryngoscopic endotracheal intubation

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ABSTRACT

Introduction: Laryngoscopy and intubation are two of the most consistent maneuvers that lead to significant increases in blood pressure and heart rate. These responses may not be significant in otherwise normal individuals but deleterious for patients with cardiovascular compromise like hypertension, ischemic heart disease and cerebrovascular diseases.

Materials and Methods: 60 patients of ASA physical status I and II scheduled to undergo elective surgeries under general anaesthesia with endotracheal intubation were included in this prospective randomized double blind study and randomly divided 30 in each group with envelop method. Group D received 0.5 mcg/kg of dexmedetomidine over 10 minutes and group F received fentanyl 2mcg/kg before induction. Hemodynamic variables i.e. heart rate , and mean arterial blood pressure were recorded at baseline, after giving study drug , 1, 3 and 5, 10 minutes of endotracheal intubation.

Results: Heart rate and mean arterial pressure at baseline and after giving study drugs was comparable between the groups. Heart rate (HR) attenuated significantly in group D (p value <0.001 in 1, 3 and 5 and 10 minutes intervals respectively after laryngoscopy and intubation) as compared to group F. There was significant decrease in MAP, 5 and 10 minute after laryngoscopy and intubation in Group D as compared to Group F (p value of 0.01 and 0.04 respectively) but clinically it was not significant. The incidence of hypotension and bradycardia was significantly different in between the groups. Hypotension occurred 10 in group D as compared to 1 in fentanyl group (p value=0.012) and bradycardia in 9 patients in dexmedetomidine and 1 in group F (p value=0.002).

Conclusion: The use of dexmedetomidine 0.5μg/kg produces a more favorable hemodynamic profile while fentanyl 2μg/kg is found to be less effective for the attenuation of the pressor response to laryngoscopy and endotracheal intubation. However, further larger studies are required to strengthen these conclusions.

Ultrasound for management of Airway

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ABSTRACT

Ultrasound as emerged as versatile tool for various specialities of medicine. Ultrasound has found exit from its radiology suites and from the mastery of radiologist to real bedside tool for diagnosis and intervention in real time. Its benefits, in general, includes easy easily available, low running cost, portable, availability of different types of probes and non-invasive. Ultrasound has emerged truly as point of care tool for the perioperative care and in also for critically ill patient. Its use has been not only for diagnostic purpose but also for real time therapeutic intervention tool as well.

Ultrasound has an emerging role in airway armamentarium. It has its role not only for assessment of the airway but also aids the real time airway management. Ultrasound has emerged as an important tool for bedside and also real time assessment for the airway. It has advantages of its repeatability and real time management as well. The airway assessment may be done with linear array probe usually but at time curvilinear probe may be required for specific evaluation. Assessment and evaluation of airway and pre tracheal structure before intubation increases the probability of detection of difficult airway. Suprahyoid and infrahyoid structures are visible in medial, sagittal or transverse view. Thyroid cartilage, cricoid, epiglottis, and vocal cord, sub glottis and tracheal rings are observed Ultrasound detects subglottic stenosis and prediction of paediatric endotracheal tube and double-lumen tube (DLT) size. Sublingual ultrasound examination is new in the assessment of airway.

Ultrasound is also useful for surgical airway. It helps in assessing the correct landmark like cricothyroid membrane, tracheal rings and presence of any aberrant vessels.

Ultrasound can be used for detection of extubation success or failure. Strength of diaphragm is directly related to the extubation success. Downward displacement of liver and spleen due to diaphragmatic movement predict the success. Ultrasound image air column width in vocal cord can be used for predicting post extubation stridor.

Real time dynamic endotracheal intubation can be done. Ultrasound confirm correct endotracheal and bronchial tube placement easily through direct visualisation of tube going through vocal cord or in oesophagus, diaphragmatic movement or lung sliding sign. Direct visualisation of intra tracheal tip is difficult in adult but in neonate it can be visualised and it can be confirmed. Oesophagus is seen as a cauliflower shape structure in posterolateral to trachea in the transverse view, deglutition confirm this as peristalsis is seen in ultrasound image.

Ultrasound has found its role in assessing the correct placement of supraglottic devices as well.

Percutaneous dilatational tracheostomy and cricothyroidotomy can be performed under ultrasound guidance with fewer complications compared to blind technique. Tracheostomy is done between 2nd and 3rd tracheal ring most commonly. With the use of ultrasound tracheal rings and vessels are identified and high placement of the tube, vessel puncture avoided by guiding the needle and guide wire in real time. Guide wire and final tracheal tube positions were immediately verified with bronchoscopy further enhance the surety of correct level. Patients with morbid obesity, sub-optimal palpable neck anatomy, previous tracheostomy or cervical spine injury can also tracheostomised with use of ultrasound successfully.

To conclude, ultrasound is emerging tool for perioperative airway management. Its future requires more robust evidence and appears it would become an important armamentarium in the management of airway.

Role of endotracheal tube size on nasal and laryngeal morbidity during awake nasotracheal intubation: a randomized controlled trial.

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ABSTRACT

Introduction: Awake fibreoptic nasotracheal intubation (AFNI) is associated with adverse airway and hemodynamic complications. The aim of this study was to evaluate the role of endotracheal tube (ETT) size on nasal and laryngeal morbidity during awake fibreoptic guided nasotracheal intubation.

Materials and Methods: Eighty patients scheduled to undergo AFNI were randomly allocated to Group C (standard size ETT) and Group S (small size ETT followed by exchange to standard size using Airway Exchange Catheter under general anesthesia) after obtaining institute ethics committee approval and informed patient consent. Olfactory acuity using serial dilution of butanol and mucociliary clearance using saccharin clearance time were assessed pre and postoperatively. Patient discomfort during the AFNI was assessed using grimace score and hemodynamic parameters were recorded. Postoperatively, the incidence of nasal and laryngeal injury was recorded using nasendoscopy and telelaryngoscopy respectively.

Results: Demographic profile between the two groups was comparable. Epistaxis was noted in 47.5 % of patients in group C as compared to 12.5% in group S. Postoperative olfactory acuity was decreased (2 vs 4) and saccharin clearance time was prolonged (314s vs 134s) in Group C than Group S. (p-value < 0.001) Higher grimace score (2 vs 1) and increased hemodynamic response was demonstrated in Group C. (p-value < 0.001) Incidence of nasal injury (2 vs 1) and laryngeal injury (1 vs 0) were also more in Group C as compared to Group S.

Conclusions: AFNI with small size ETT followed by exchange to standard size under general anesthesia reduces nasal, laryngeal and hemodynamic complications.

Perioperative medicine
Emergency laparotomy: improving patient outcome

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Summary
In England and Wales, around 30,000 emergency laparotomies are performed every year. Many of these patients are at high risk of death and complications, and require highly skilled multidisciplinary team, delivering high quality safe and effective care throughout their journey.

Following an evidence of a high incidence of death, and a wide variation in the provision of care and mortality in different NHS hospitals, National Emergency Laparotomy Audit (NELA) was commissioned in 2013. It looks data at Structure, Process and Outcome measures for the quality of care, and compares against standards of care such as: NCEPOD reports, 'The High- Risk General Surgical Patient: Raising the standards' (RCSE 2011and 2018).

On line prospective data are collected from patients over the age of 18 years, undergoing general surgical emergency laparotomy from 183 NHS hospitals in England and Wales, and reported on: patient characteristics, key process measures (risk assessment, consultant input before and during surgery, CT scan, timeliness of care for patients with peritonitis and sepsis, timeliness of arrival in theatre, critical care and care of the elderly) and patient outcome.

Two organisational audit reports (May 2014 and Oct 2017) and four patient audit reports (June 2015, July 2016, Oct 2017 and Nov 2018) have already been published. So far, this is one of the biggest data collected from patients undergoing emergency laparotomy (90,000 patients).

NELA provides data for each hospital which allow clinical teams to assess and benchmark their care against national standards, actively encourages teams to use their own data to drive quality improvement (QI), and also raises awareness of QI methodology (e.g. by sharing learning resources on website and running a series of regional workshops for multidisciplinary teams).

Since 2013, national 30- day mortality has fallen from 11.8% to 9.5% and the length of hospital stay from 19.2 to 16. 6 days.

News scoring system in emergency abdominal surgeries.

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ABSTRACT

Emergency abdominal surgeries especially emergency laparotomy are the high risk surgical cases. They have high rates of morbidity and mortality especially if present with co-morbid diseases and old age , which further gets complicated by sepsis. EWS(Early Warning score) has been incorporated in the first step in the patient assessment in the ELPQuIC (Emergency Laparotomy Pathway Quality improvement Bundle). NEWS is the new early warning score. This includes the simple six physiological parameters like respiratory rate, oxygen saturations, Temperature, Systolic blood pressure, Pulse rate and the level of consciousness. The aggregate NEWS score of 1-4 is low clinical risk. The score of 5-6 or any individual parameter scoring 3 or Red score is medium clinical risk. The score of 7 or more is high clinical risk. This helps in "early track and trigger" response. Hence this NEWS scoring system helps in the initial risk assessment of the emergency cases and in deciding the appropriate level of care needed by the patients.

Besides, this can be used as a simple peri-operative risk assessment tool for early detection of the clinical deterioration and the timely response for the intervention. This can reduce the morbidity and mortality in the emergency abdominal surgeries.

Life saving peripheral nerve blocks (PNB) in Trauma

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Introduction:

- Trauma causes significant health problem in developing countries, involving mainly the age group of middle age. Trauma causes significant metabolic, endocrine and inflammatory response. Systemic changes may be aggravated by use of systemic analgesics in the form of opioids. Opioids have got significant deleterious effects on the systems. So far trauma patients received OLIGOANALGESIA. As a strategy to facilitate painless surgery, RA is well validated and continues to retine.
- So far, barriers for regional anaesthesia/peripheral nerve blocks are, multiple or relative contraindications to RA, competition with resuscitation, analgesia is given lower priority in acute management. And also lack of appropriate equipment and training ,improvements in safety profile of GA
- Now, because of increased reliability and safety of neural block, greater recognition of pain as a disease process, short comings and side-effects of systemic analgesics and publication of guidelines RA/PNB has taken a front role in trauma patient management.
- RA/PNB offers many attributes of an ideal analgesic in the form of superior analgesia, attenuation of stress response, increased alertness, patient cooperation, facilitating ease of transport and chronic pain protection

Histroy:

- Walter Reed Army Medical Centre(WRAMC), studied extensively on use of RA/PNB in Vietnam war from the year 2003 to 2007. 1287 patients underwent operative care under RA including single shot, CPNB, Continuous epidural infusions, more than 900 operations performed before arrival, under RA/PNB
- A Review of Traumatic Injury Patterns and Anesthesia Techniques for Disaster Relief after Major Earthquakes showed the beneficial effects of RA/PNB in multiple trauma patients following the earth quake for the last 20 years.
- Many of the published studies showed the beneficial effects like anti inflammatory effects, cardiopulmonary protective effects of PNB in trauma patients.
- RA/PNB helps in early recovery of the patients and fulfils early recovery protocols.

Peripheral Nerve Blocks:

- Among the Regional Blocks the central neuraxial blocks have more sympathetic blockade, more haemodynamic disturbances and sometimes catastrophe like haematoma or abscess formation.
- In the last decade or so, PNB became very popular but there remained hesitancy to use. Now lesser use of intravenous opioids in PNB, the incidences of nausea, sedation, pruritis, respiratory distress, urinary retention is negligible.
- The use of nerve stimulators,USG and nerve catheters have made this a more acceptable mode of postop pain reliefmodality either as bolus injection or continous infusion, prolonging the duration.

For upper extremity:

- Brachial plexus blocks: Interscalene,Supraclavicular,Infraclavicular,Suprascapular,axillary and individual nerve blocks

Trunkal Blocks:

- Paravertebral, Erector spinae plane block, TAP block, Quadratus Lumboram Block, PEC I & PEC II blocks

For lower extremity:

- Lumbar Plexus block, Sciatic block, femoral block, Facia Iliaca block, Adductor Canal Block, popliteal block

Controversies :

- With the advent of better infrastructure the chances of intraneural injection, intravascular injection or pneumothorax are negligible. But still our surgical colleagues still request not to use in some cases like compartment syndromes. The recent studies shows PNB is not a contraindication for that, and lower concentration of drug is used. Another field of concern is with patients receiving anticoagulants, we have to be careful in such cases.

Conclusion:

- Trauma represents a considerable, increasing, demand on health care resources.
- Innovations are challenging attitudes to pain relief in trauma
- PNB is more versatile and reliable than ever before
- The role of PNB is likely to expand further to meet the growing burden of trauma
- It can be concluded that PNB is a very safe and acceptable mode of anaesthetic management in trauma patients.

Anaesthesia in mobile surgical camps

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Oral presentation

ABSTRACT

Introduction: Mobile medical and surgical camps are one of the means of providing medical and surgical facilities to people living in rural areas of developing country like Nepal.

Methods: An observational cross-sectional retrospective study was done collecting data from surgical camps done by Nepal army in a five years period from 2013 to 2018 AD. Total number of surgical cases requiring anaesthesia along with type of anaesthesia, American Society of Anaesthesiologist physical status classification and anaesthesia related complications were collected. All surgical cases requiring local anaesthesia were not included in the study.

Results: In a five year period, total number of nine mobile surgical camps was conducted by Nepali Army. Out of which, one was done in collaboration with Ministry of Health, Government of Nepal. Total number of 134 surgical cases requiring anaesthesiologist services was conducted. Out of which, 13 cases were done in general anaesthesia, 84 cases were done in spinal anaesthesia and 37 cases were done in total intravenous anaesthesia. There was no intraoperative or postoperative anaesthesia related complications were noted and none required blood transfusion.

Conclusions: Providing safe anaesthesia in a mobile surgical camp remains a challenge. Proper screening of camp areas, appropriate selection of surgical cases, transportation of logistic equipments, utilization of available resources and preparation of operation theatre as well as postoperative recovery room or wards are some of the considerations before conducting such camps. Regional anesthesia is the preferred anaesthestic technique for providing safe anaesthesia.

Keywords: Anaestheisa, surgical camps, safety

Recent NPO guidelines and preoperative hydration in paediatrics

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ABSTRACT

Patients are kept fasting to reduce the risk of aspiration and post operative nausea and vomiting .Fasting for 2, 4 and 6 hours is the standard practice for Paediatric population scheduled for any surgical procedure under GA, regional anaesthesia or sedation. This guidelines suits for the first case in the list. As the fasting hour prolongs there is more chances of dehydration, hypoglycemia, hypotension, irritability in subsequent cases. So in recent guidelines 0 , 4 and 6 hours is recommended but clinical adoption is slow and inconsistent.

Anaesthetic Neurotoxicity in Paediatric Patients

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ABSTRACT

In 2009, it was reported in Anesthesiology that the incidence of learning disability was greater in children who had undergone general anaesthesia (GA) more than twice by the age of 3 years than in chdilren who had never undergone GA or had undergone GA only once. Before that article was published, many animal studies had revealed neurotoxicity of anaesthetic drugs including volatile anaesthetics in young rats or other species. Furthermore, a large-scale study that included more than 30,000 children who underwent anaesthesia before 4 years of age revealed that exposure to anaesthesia has a slight association with later academic and cognitive performance in adolescence. In another cohort study, it was shown that the hazard ratios for behavioral disorder, mental retardation, autism, and language/speech problems in children who had undergone anaesthesia by the age of 3 years were two-times higher than those in children who had not undergone anaesthesia. Since those studies were retrospective studies, there were many confounding factors other than GA affecting the incidence of neurological consequences. Anaesthetic neurotoxicity in the developing brain has various adverse outcomes. Maladaptive behavior, delirium, sleep disorder, enuresis, adaptation disorder, and learning disability are all considered to be consequences of GA. However, these adverse events are also well known to be caused by perioperative anxiety, pain, surgery itself, and environment. In fact, multiple episodes of early hospital admission are associated with later behavior and learning disturbance even without surgery and anaesthesia. A GAS study was conducted to answer to the clinical question “Does general anaesthesia affect neurological development in infants?” That study included approximately 700 infants who underwent inguinal hernia repair. The participants were randomly assigned to a GA group (sevoflurane) or a spinal anaesthesia group (bupivacaine) in a 1:1 manner. Bayley scale was measured to assess cognitive and language development, and emotional and behavioral development was also assessed. There were no statistical differences in neurodevelopment at the age of 2 years. However, possible effects of environmental factors could not be excluded in that study. The GAS study also cannot answer the question “Is duration of anaesthesia for 3 hours safe for infants?” However, the GAS study will provide information in near future on neurocognitive function of the participants at 5 years of age.

Subarachnoid block as a sole anaesthesia for high risk former preterm infants.

Dr. Anju Gupta

Introduction: Anaesthetic management of preterm infants is considered challenging due to increased prevalence of multiple comorbidities and their increased tendency for apnoea and bradycardia. General anesthesia (GA) has been shown to be associated with an increased incidence of postoperative adverse events in this population. After enjoying initial success and enthusiasm in the paediatric anaesthesia practise, subarachnoid block faded in popularity in the middle of the 19th century due to various reasons. It was later reintroduced by Abajian et al for anaesthetizing preterm infants as a safer alternative to general anaesthesia to reduce the postoperative complications such as apnoea, bradycardia and desaturation which are prevalent in this population. Several reports followed, all supporting the use of awake spinal anaesthesia over general anaesthesia (GA) for this group of patients and it has been termed as the 'gold standard' technique of anaesthesia for preterm infants undergoing inguinal herniorrhaphy. However, there is still a lot of hesitation in the routine use of this technique probably due to lack of awareness or fear of adverse consequences.

The incidence of postoperative apnoea is inversely proportional to post-conceptual age (PCA) in premature infants. The incidence of apnoea is maximum till 48 weeks PCA (45%) but elevated risk is believed to persist till 60 weeks PCA. In addition, other important risk factors are history of preoperative apnoeic episodes, bronchopulmonary dysplasia, and anaemia. However, postoperative apnoea can occur without any preceding history of apnoea. Hence, elective surgical procedures are preferably delayed beyond this period and sole regional anaesthesia is advocated for these former PT infants within this window to decrease the incidence of postoperative apnoea, bradycardia and desaturation.

Young infants have a narrow thecal sac (6-8mm) and low CSF pressure. Hence, performing the subarachnoid block requires greater precision and failure rates are higher.2,9 Both sitting and lateral positions (with slight head extension to avoid airway obstruction) have been described to be effective. Sitting and lateral position (with head-up tilt) have been suggested to improve success rates by increasing hydrostatic pressure of CSF. The recommended size of the spinal needle in these patients is 25-30mm. EMLA cream is preferred for local anaesthesia of the lumbar puncture site but it is not licenced for use in preterm infants below 37 weeks. CSF volume in more in infants and hence the requirement of drug for subarachnoid block is more and

the duration of block is shorter in this population. The recommended dose of bupivacaine for SAB in preterm infants range from 0.6-1mg/kg. Shenkman et al demonstrated 90% satisfactory SAB in preterm infants using 1mg/kg bupivacaine as compared to 79% in a study by Frumiento et al who had administered 0.5mg/kg dose for SAB. The use of higher dose had eliminated the need for sedative supplementation in their study.

Kurth et al studied 47 preterm infants undergoing surgeries under GA before 60 postconceptional weeks and found that 18 of the patients had prolonged (> 15 seconds) apnoea. They recommended that preterm infants younger than 60 weeks PCA should be monitored for at least 12 hrs postoperatively using pulse oximetry, respiratory rate and electrocardiography. Use of these standardized postoperative monitoring is of utmost importance to prevent life-threatening events from occurring as concluded in a recent multicentric trial by Davidson et al. Hence, these patients should be kept under full monitoring (ECG, pulse oximetry and respiratory rate) along with overnight oxygen supplementation. Any brief periods of apnoea generally resolve spontaneously with no associated bradycardia or need for any intervention other than occasional tactile stimulation by the caregivers.

Previous large series on use of spinal anaesthesia in preterm babies have reported high success rates, low incidence of postoperative pulmonary complications, reduced duration of postoperative fasting and increased OR turnover rates.

However, there are certain limitations to the use of spinal anesthesia for preterm infants. First, the failure rate is significant i.e., 19% percent in a recent large study. Secondly, the duration of block is limited and is even shorter for younger infants (60-75 min). Hence, it is not suitable for longer duration procedures and there is inadequate postoperative analgesia A paracetamol suppository/peripheral nerve block/ caudal block can be supplemented for postoperative analgesia. An experienced surgeon should perform the surgery to reduce the surgical duration. In addition, sedation may be required to avoid patient movement during the block procedure or during surgery. In former preterm infants, sedation may increase the incidence of apnoea. However, a recent evidence suggests that incidence of apnoea after RA with sedation is similar to that of RA alone and is better than GA. Intraoperatively babies are generally calm, due to the sedation consequent to the deafferentation following the sensory block.

Hence, to conclude, spinal anaesthesia is a safe and effective anaesthetic modality for former preterm infants for short lower abdominal surgeries provided vigilant intra and postoperative monitoring is maintained.

Comparative study of crystalloid (ringer's lactate) and colloid (hydroxy ethyl starch) as preloading fluids in prevention of spinal hypotension in patients undergoing lower limb surgeries

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ABSTRACT

Introdcution: SA induced hypotension is one of the important complications that develops after SA.
Several techniques have adapted for prevention of SA induced hypotension. Preloading with IV fluids and vasopressors has been used.

Main purpose of this study is to find out which solution could be better in order to prevent spinal induced hypotension in patients undergoing lower limb surgeries.

Materials and Methods: 120 patients belonging to ASAPS I and II, age between 18 to 65 years of either sex, planned for lower limb surgeries, were randomized into two groups of 60 each. Group A received infusion RL 15ml/ kg over 10 minutes and group B received infusion HES 5ml/ kg over 10 minutes. The solution was given 10 to 15 minutes prior

to spinal. SBP, DBP, MAP and HR were assessed at 0, 5, 10, 15 and 20 minutes. The incidence of hypotension after SA and requirement of 250ml of RL as bolus dose, injection Mephentermine and injection Atropine also recorded

Results: The incidence of hypotension in group B was significantly lower than in group A 21.67% vs 50%. MAP was significantly higher in group B at 5, 10, 15, and 20 mins but not significantly different at 0 min. The bolus use of 250ml RL was lesser in group B than in group A 21.67% vs 50%. The use of injection Mephentermine was lower in group B compared to group A 15% vs 24%. The use of Atropine in group A was higher when compared to group B. 11% vs 5% mean HR was increased in group B at 15 and 20 mins with 86.93bpm and 81.57bpm and in these mins HR of group A was 80.05bpm and 77.80bpm respectively.

Conclusion: Preloading of HES 5ml/ kg is more effective than RL in preventing hypotension after SA in patients undergoing lower limb surgeries.

Key words: Lower limb surgeries, Hypotension, RL HES, Mephentermine, Atropine, SA

An ultrasound guided identification of level of lumbar puncture used for subarachnoid block in elective cesarean delivery

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Background and Objective: An imaginary line connecting both iliac crests is used to determine the vertebral level for spinal anesthesia. This line crosses the spine at the level of L4or L4-L5space. Though spinal anesthesia is a safe technique for cesarean deliveries but errors in the judgment of puncture mark during spinal anesthesia can leadto significant complications. Palpation methodusing anatomical landmarks is shown to be inaccurate at identifying lumbar vertebrae and their corresponding interspaces.Ultrasound identification of lumbar intervertebral space has been seen to be more specific in many studies. The objective of this study was to determine if the identification of the lumbar intervertebral space by palpationdiffers from that of the corresponding ultrasound image in theparturient.

Methods: Thisobservational study was conducted in 281parturients undergoing elective caesarean sectionunder spinal anesthesia. One anaesthesiologist marked intervertebral space using palpation method and performed spinal anesthesiaand then it was followed by ultrasonographic assessment of intervertebral space by another anaesthesiologist who wasunaware of the level estimated for the mark by the first anaesthesiologist.

Results: The correlation between intervertebral space determined by palpation and that determined by ultrasonography was poor (correlation coefficient r=0.288). The level of intervertebral space determined by palpation wasactually found to be a more cephaladintervertebral space during ultrasonographic examination in60.49%of patients. While in 37.7% of the parturient, the determination of intervertebral space matched between two methods. And the intervertebral space identified by palpation was in fact more caudal during USG examination in 1.81% of patients.

Conclusions: There is significant disagreement between assessment of intervertebral space by palpation and USG.

Single versus double syringe technique for intrathecal administration of bupivacaine and fentanyl to prevent hypotension in patients undergoing elective caesarean section

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Introduction: The main objective is to compare the incidence of hypotension after intrathecal administration of hyperbaric bupivacaine and fentanyl in two different syringes against standard injection of mixed fentanyl with hyperbaric bupivacaine.

Materials and methods: One hundred and seventy four term pregnant women were enrolled in the study and were allocated into two groups S and D, each group with 87 participants. The study is prospective, comparative, randomised, double blinded and was conducted at Paropakar Maternity and Women's Hospital in three months period. In the study, group S was given the spinal anaesthesia with conventional 2.2 ml of mixture of 0.5% hyperbaric bupivacaine 1.8 ml and fentanyl 0.4 ml in a single syringe whereas group D was given the spinal anaesthesia with 2.2 ml with 0.5% hyperbaric bupivacaine 1.8 ml in one syringe and 0.4 ml fentanyl in another syringe. Haemodynamic effects and characteristics of block were monitored and recorded and compared between the two groups.

Results:
The incidence of hypotension was almost similar in the two groups but the drop in SBP and MAP at 5 minutes and 7.5 minutes after subarachnoid block was significant in group S as compared to group D ($p<0.005$ and $p<0.005$ respectively).

Conclusion: Hyperbaric bupivacaine with fentanyl, which when injected separately without mixing, is associated with lesser incidence of hypotension following subarachnoid block.

To study the perfusion index derived from pulse oximeter in predicting hypotension during spinal anesthesia for cesarean section

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ABSTRACT

Background: Spinal anesthesia is one the safest and most widely used anesthetic techniques performed for Cesarean Section delivery. The most common clinical problem observed with spinal anesthesia is hypotension. Perfusion index (PI), derived from pulse oximeter, is a non-invasive measure of peripheral perfusion. The purpose of this study was to see if baseline perfusion index derived from a pulse oximeter can predict hypotension after spinal anesthesia for Cesarean delivery.

Methods: After the approval of Institutional Review Board and written consent, this prospective observational study was performed. 84 parturient were involved in this study. Pulse oximeter was used to measure the baseline perfusion index on both upper and lower limbs, and at the interval of every 5 minutes until the end of surgery. Other vital signs were also recorded. The sensitivity and specificity of both upper as well as lower limb PI was derived and compared with hypotension, to see its predictive value.

Results: Out of all the parturient, 16 were excluded due to high block. 46 out of 70 developed hypotension, 40 of them having a baseline lower limb PI >3.5, predicting hypotension with a sensitivity of 86.9%. Similarly the baseline PI of upper limb had a specificity of 83.3% ($p < 0.05$).

Conclusion: Baseline PI of upper limb can predict hypotension in a patient undergoing Cesarean Section under spinal anesthesia with a high specificity, whereas the PI of lower limb can predict hypotension with a high sensitivity.

Ultrasound versus chest x-ray for confirmation of central venous catheter tip position: a comparative study.

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ABSTRACT

Introduction: Both chest radiography and sonography are used for confirmation of tip position of central venous catheter after cannulation of central vein. Ultrasound has been found to be as accurate as chest radiography. However sonographic confirmation is radiation free and it takes less time to allow early and safe use of catheter without delay as compared to radiographic confirmation. Besides, real time sonography during insertion of central venous catheter has reduced the number of attempts for insertion and helped early identification of complications like pneumothorax at the bedside. The purpose of this study was to determine accuracy and rapidity of ultrasound with reference to chest X-ray for confirmation of central venous catheter tip position.

Methods: This diagnostic accuracy study was approved and a total of 109 patients of 15-65 years of age were enrolled for this study. Written informed consent was taken before enrollment. Bubble study was used for sonographic confirmation of central venous

catheter tip position. Chest X-ray was used for radiographic confirmation of its tip position. Interpretation of tests and time taken by tests were noted. Radiographic confirmation and sonographic confirmation were compared using sensitivity, specificity, predictive value, interrater reliability, and percent agreement. Mean time of confirmation for sonography and radiography were also compared.

Result: Sensitivity, specificity, positive and negative predictive value for ultrasound were respectively 91.6%, 96.91%, 78.57%, 98.95%. Interrater reliability (kappa, k) was 0.82. Percent agreement between the results of sonography and radiography was 96.30%. Mean time of confirmation for ultrasound was 88.29 minutes sooner than that for chest X-ray.

Conclusion: Sonographic confirmation of central venous catheter tip position by visualization of saline flush was accurate, and it was sooner than that of radiographic confirmation by chest X-ray.

Key words: catheter tip position, chest X-ray, ultrasound.

Effectiveness of dexamethasone as an adjuvant to bupivacaine in supraclavicular brachhial plexus block

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ABSTRACT

Introduction: Supraclavicular Brachial Plexus block is a simple and effective technique of providing anesthesia for elbow, forearm and hand surgery. Various adjuncts are added to local anesthetics in brachial plexus block to achieve quick, dense and prolonged block but the results are either inconclusive or associated with side effects. This study investigated the onset of sensory and motor blockade and duration of analgesia after addition of dexamethasone with bupivacaine in supraclavicular brachial plexus block.

Materials and methods: An observational, comparative study was performed at Bir Hospital and National Trauma Center, Kathmandu. Forty patients undergoing surgery of elbow, forearm and hand under Supraclavicular Brachial Plexus Block, with 0.25% bupivacaine with normal saline (n = 20) in I group versus 0.25% bupivacaine with dexamethasone (n = 20) in II group with equal volume of 30 ml in each group. Randomization was done with lottery system using sealed envelope. Onset of sensory and motor blockade and duration of analgesia was compared in both the groups.

Results: The time to onset of sensory block in group I (505.50±72.52) seconds compared to group II (249.75±78.36) seconds was higher and statistically significant (P<0.001). Time to onset of motor block in Group I (792.00±89.94) seconds compared to bupivacaine with Group II (506.25±94.35) seconds was also statistically significant (P<0.001). Time to first rescue analgesia in group I (537.00±162.25) minutes compared to Group II (1371.00±282.95) minutes was faster and also statistically significant (P<0.001).

Conclusion: Time to onset of sensory and motor block was significantly faster and duration of analgesia was significantly prolonged in bupivacaine with dexamethasone group compared to bupivacaine only group in patient undergoing surgery of arm, forearm, and hand surgery under supraclavicular brachial plexus block.

Fontan physiology: anaesthetic implications for electrophysiological study and catheter ablation: a case report.

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ABSTRACT

Introduction: Advancement of medical therapy and surgical techniques has improved the survival of patients with complex congenital cardiac abnormalities, resulting in more adult patients with Fontan physiology presenting for non-cardiac surgery.

Case report: A 34 years old male weighing 71 kg had Blalock-Taussig shunt performed as a neonate and further at the age of twelve, modified Fontan's procedure was accomplished. At the age of thirty, he developed intermittent palpitations with chest discomfort that was increasing in frequency, occurring a few times a month despite being on bisoprolol and digoxin. Holter showed atrial tachycardia, and he was planned to undergo electrophysiological study and catheter ablation.

Anaesthetic management: Our monitoring included arterial line, Central Venous Catheter, standard monitoring and transesophageal echocardiography. After adequate preloading, anaesthesia was induced with midazolam, fentanyl and etomidate titrated to effect. Intubation was facilitated after curarization using rocuronium. Maintenance was with sevoflurane in oxygen-air mixture & low dose remifentanil infusion. We maintained

tidal volume of 6ml/kg and respiratory rate of 12-14 to achieve normocapnia. Transesophageal echo probe was inserted and structure, function of the heart was assessed. During the procedure intravenous heparin was given to maintain activated coagulation time between 250- 300 secs. Mapping showed 3 different foci causing atrial tachycardia.2 foci successfully ablated and while ablating 3 foci patient developed severe tachycardia with hypotension and desaturation and rise in pulmonary arterial pressure. So, procedure stopped, and patient shifted to intensive care unit after stabilization.

Discussion: An imbalance between systemic vascular resistance, pulmonary vascular resistance, preload, cardiac rhythm and left ventricular function may result in poor haemodynamics in these patients presenting for non-cardiac operations.

Conclusion: Learning points are:1) Importance of having knowledge on Fontan physiology & peri-procedural complications for such patients presenting for interventional cardiac & non-cardiac surgery.2) Adequate optimisation of filling status and maintenance of systemic vascular resistance & pulmonary vascular resistance.3) Perioperative prophylaxis of infective endocarditis.4)Familiarity with the electrophysiological study lab set up & issues related to remote location anaesthesia.5) Good communication amongst the various members of the healthcare team and prior contingency planning is also paramount in management

Airway diversity encountered in pediatric ophthalmic anesthesia

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ABSTRACT

Introduction: Pediatric airways have their own significant challenges. Securing an airway is a vital task for any anesthesiologist. "Safe anesthesia, Safe surgery, Safe patients" is the moto of all anesthesiologist.

Subtle anatomical variation, syndrome and path-physiological process affect the airway which can land routine airway securing to difficulty airway. Goldenher syndrome, Down syndrome, Post-electric hypertrophied scar, Unilateral facial hyperplasia,?? Treacher Collins syndrome, Cleft Lip and Palate are routinely encountered.

Failure to secure pediatrics airway lead to devastating to fetal consequences; bradycardia, hypoxemia, cardiac arrest, resulting to brain injury to death. Simple patient positioning airways at adjuvant and surgical airway becomes handy in such situations.

Conclusion: "Forewarned is Forearmed" so a detail pre anesthetic checkup is a crucial step for safe anesthesia.

Anesthetic management of eclampsia in remote high altitude: an audit study in 14 cases.

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ABSTRACT

Introduction: Eclampsia is one of the common causes of maternal mortality in developing countries like Nepal. Incidence of eclampsia is even higher in high altitude like Jumla, Kalikot and Dolpa than in low altitude due to hypoxia leading to vasoconstriction. Aim of this case series is to find out the incidence of eclampsia in high altitude of Nepal and characterize the present perioperative anesthetic management in the cases of eclampsia in remote area with limited setup.

Methodology: Retrospective study done after local ethical clearance by collecting information on 14 parturient that underwent caesarean section for Eclampsia from 13th April 2016 to 13th April 2017. Data was taken from our recorded data in record section of Karnali Academy of Health Sciences, Jumla.

Results: Most were young primi with incidence of eclampsia 2%. Among total 14 cases four were in status epilepticus other had brief seizure or controlled with Midazolam and all given MgSO4. All managed with emergency LSCS; six cases provided General Anesthesia with Endotracheal intubation and eight cases under spinal anesthesia. No maternal mortality but four prinatal mortality.

Discussion and conclusion: Incidence of Eclampsia is high in high altitude of Nepal. Even with minimum setup in remote locations if early delivery of fetus and placenta helps in improving maternal outcome. With proper care of neonate also can improve the neonatal outcome achieve the national goals.

Key Words: Eclampsia, high altitude, obstetrics anesthesia.

Intraoperative accidental bronchus rupture in infant during oesophageal repair: anaesthesiologist's nightmare.

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ABSTRACT

Introduction: Iatrogenic tracheobronchial injury is rare. Limited data is available on such injuries in infants and management of these is extremely challenging.

Case Report: A seven-month old male child weighing 7 kg, operated case of type C trachea-oesophageal fistula was scheduled for thoracoscopic repair of oesophageal stricture. With standard monitoring, anaesthesia was provided with propofol, fentanyl, atracurium and intubated with 3 mm internal diameter (ID) micro-cuffed endotracheal tube (ETT). Infant was positioned in left semi-prone position and partial lung collapse achieved with CO2 pneumothorax at 5 mmHg. Pressure control ventilation was initiated. During mobilization of oesophagus, sudden drop in ETCO2 was observed with inadequate ventilation. Suspecting there was a tracheal tear, ETT was pushed inside to bypass the rent. Subsequently patient had episodes of desaturation and bradycardia. Right sided Intercostal drain was inserted for pneumothorax. Fibre optic bronchoscopy did not reveal any tracheal rent but there was injury to right main bronchus. Fogarty catheter (5 Fr) was attempted through thoracoscopically and through ETT to isolate the lung but both approaches were unsuccessful. Thoracoscopy was abandoned and repair was done by open thoracotomy. Left sided one lung ventilation was achieved with 2.5 mm uncuffed ETT by pushing it to the left bronchus blindly. After surgical repair of the rent, ET Tube was pulled back in trachea and two lung ventilation was resumed. Patient was shifted to NICU for further management.

Conclusion: Iatrogenic tracheobronchial tear is a life threatening complication of paediatric thoracoscopic surgeries. Intraoperative lung isolation may fail due to narrow airway calibre and airway oedema. Lung isolation from the beginning would have made this injury go unnoticed intraoperatively.

Laparoscopic surgery in patient with coronary artery disease

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ABSTRACT

Introduction: Patients with coronary artery disease for non cardiac surgeries are at high risk for developing complications like myocardial ischemia, cardiac arrythmias, conduction abnormalities, heart failure which increases perioperative morbidity and mortality.

Materials and Methods: A 68 year old female with diagnosis of coronary artery disease for six months with hypertension and type 2 diabetes mellitus underwent laparoscopic cholecystectomy under general anesthesia. Thorough preoperative evaluation and work up was done prior surgery. Coronary angiogram showed triple vessel disease (left anterior descending artery : 70 % stenosis, Left circumflex artery: 60 % stenosis, right coronary artery : 60 % stenosis). She was medically managed with antiplatelets, nitrates, beta blockers, antihypertensives, oral hypoglycemic and insulin.

Results: Laparoscopic cholecystectomy was done under general anesthesia. Perioperative period remain uneventful.

Conclusion: It is well known that laparoscopic surgeries can compromise the cardiovascular and respiratory status. But with proper evaluation, adequate optimization, choice of anesthethic techniques , monitoring, surgical expertise and postoperative management, successful outcomes can be achieved in patients with cardiovascular disease.

Keywords: Anaesthesia, Coronary artery disease, Laparoscopic surgery

Perioperative management of carotid body tumor: an anaesthetic challenge

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ABSTRACT

Introduction: Carotid body tumour (CBT) is a rare neoplasm arising from the bifurcation of carotid artery. It is a key structure for adaptation to fluctuating concentrations of oxygen, carbon-dioxide and pH.

Case Report: 55year old female presented with soft, slow-growing swelling on left side of the neck without compressive symptoms or pain. She had previously undergone splenectomy: biopsy showed inflammatory pseudotumor. General physical examination showed HR-86bpm and BP -130/80mmHg. On local examination 5x3 cm soft, compressible, non-pulsatile and non-tender swelling found on left side of the neck. Systemic and airway assessment was unremarkable.

Preoperative blood and cardiac investigations were normal. CT-Angiography showed a 4x2.7x6.2 cm lesion at bifurcation of the left common carotid artery, splaying and partially encasing the left internal and external carotid arteries.

Patient received routine fasting orders and aspiration prophylaxis. Standard ASA monitors connected. Opening ECG rhythm showed ventricular bigeminy which subsided spontaneously. Anaesthesia induced with intravenous midazolam, fentanyl and propofol. Airway secured after NMB with atracurium. Right IJV cannulated and radial arterial line secured. Intraoperatively, haemodynamic fluctuations were treated with IV vasopressors and inotropes. Analgesia was given with IV morphine, IV paracetamol and local infiltration. Blood loss was approximately 550mL. Mild hypothermia maintained. MABP was targeted at 60-70 mmHg. At the end of surgery, NMB was reversed and patient extubated in deep plane. On video laryngoscopy left VC paucity noted. Post-operative period uneventful.

Conclusion: The successful and safe anaesthetic execution of excision of CBT requires careful vigilance and monitoring. Haemodynamic monitoring, monitoring of blood loss and neuroprotective strategies remain the goals of smooth anaesthetic management.

Congenitally corrected transposition of great arteries with complete heart block in a parturient for emergency lscs – anaesthetist caught off guard.

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ABSTRACT

Introduction: Congenitally corrected transposition of great arteries (CCTGA) is a complex congenital heart disease where there is both atrioventricular and ventriculoarterial discordances, usually accompanied by other cardiovascular malformations. Complete atrioventricular block occurs in 1/3 of patients.

Case Report: A 24 year old primigravida known case of CCTGA at 37 weeks of gestation was referred to our hospital for safe delivery. Her ECG showed HR-40 /pm, ECHO showed Ejection Fraction of 65% and CCTGA. Temporary pacemaker was inserted by cardiologist in CATH lab, before giving trial of labour in view of complete heart block. She was planned for normal delivery, but emergency LSCS was planned due to non-reassuring foetal CTG.

Pre – op vitals showed PR-50 bpm with temporary pacemaker, BP- 110/70 mmHg, SpO2 -99% on room air. NPO was inadequate. Patency of two peripheral IV cannula checked and left radial arterial line secured. Epidural Anaesthesia was planned and catheter was placed at L2 -L3. Test dose was given, Anaesthesia was provided with 5ml + 5ml of 2% Lignocaine with 25 mcg Fentanyl and further 2.5Ml of 0.5% Bupivacaine was given to achieve a sensory level of T6.

LSCS was performed and baby was delivered. Cautery was avoided during this procedure. IV Oxytocin (15U) was added to 500 mL of RL. Hypotension was treated with phenylephrine boluses. Patient was shifted to post-operative care unit and later to HDU for monitoring. Post op vitals remained stable. Temporary pacemaker was removed after 24 hours of surgery. Her post-operative period was uneventful and discharged from hospital.

Conclusion: Rare congenital cardiac disorders require detail knowledge of pathophysiology and associated comorbidities with the disease. Meticulously planned and carefully titrated neuraxial techniques will be beneficial for such cases.

Hemorrhagic shock in an emergency lscs done for fetal bradycardia due to uterine rupture.

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ABSTRACT

Introduction: Rupture of the uterus is an uncommon yet potentially devastating complication of pregnancy. The incidence of uterine rupture varies from 0.3 – 1.7% in women with previous uterine scars and 0.03 – 0.08 % in a previously unscarred uterus.5 Early diagnosis and prompt treatment plays affects maternal and fetal outcome. The maternal mortality rates are reported to be 0 -2 %.5 The fetal mortality varies from 0 – 20%.5

Methods and materials: A 36 year old G5P1 at 38 weeks period of gestation on regular ANC visits and with no significant antenatal history, was planned for emergency LSCS for fetal bradycardia (FHS- 60-90bpm). Preoperatively the patient was well oriented with Blood Pressure of 135/85mm of Hg; Heart Rate in the range of 110-120bpm with no other significant systemic or airway examination findings. Modified rapid sequence induction and intubation was done in this patient with inj Propofol 70mg iv, inj Ketamine 30mg iv, inj Fentanyl 100mg iv (with inj Naloxone on hand) and inj Succinylcholine 100mg iv. The patient was intubated with 6.5 mm ID ET tube and anaesthesia was maintained with Isoflurane, oxygen and IPPV. When the uterus was opened the baby was found lying posterior to the uterus in the abdominal cavity via a large posterior uterine rupture. The patient's hemodynamic parameters started deteriorating with MAP falling <60mm Hg, and heart rate in the

range of 130-140bpm. Wide bore iv access was obtained in both arms and she was resuscitated with crystalloid 2 liters, colloid 1 liter, two pints of whole blood along with inotrope support (inj Noradrenaline) to keep MAP>65mm Hg. A central venous access was obtained in the right IJV. The surgery lasted for 2 hours during which she passed 250ml of urine. After surgery she was transported electively intubated to the ICU where noradrenaline was continued and two more pints of whole blood were transfused. She was uneventfully extubated after 4 hours. Her post operative investigations were within normal range without evidence of coagulopathy. She was transferred out of the ICU the next day vitally stable. The baby however had to be intubated immediately after birth and he passed away on the third day of life.

Discussion: Uterine rupture though uncommon can have potentially fatal complications for both mother and fetus.6 This emergency LSCS was done for fetal bradycardia which sometimes is the only symptom of uterine rupture. We conducted the case under GA for fetal bradycardia which was a fortunate choice since uterine rupture was diagnosed only after laparotomy. GA allowed us better control over the patient's hemodynamic parameters. Prompt treatment of hemorrhagic shock with wide bore iv access and early use of inotrope led to complete resuscitation of the mother.

Conclusion: Early diagnosis with a high index of suspicion and prompt resuscitation and treatment of uterine rupture can prevent maternal and fetal mortality.

Keywords: hemorrhagic shock, LSCS, uterine rupture

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Anaesthetic management of a patient with sickle cell anaemia with dilated cardiomyopathy undergoing caesarean section

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ABSTRACT

Caesarean section in patient with Sickle Cell Anemia and Cardiomyopathy poses major anesthetic challenges. Different anesthetic techniques have been described among which Combined Spinal Epidural Anaesthesia (CSEA) is one of preferred technique in relatively stable hemodynamics.

A 24 year old primigravida at 24 weeks of gestation complained of intense bilateral leg pain. On examination, she was pale and her hematological investigations revealed sickle cell anaemia. At 37 weeks of gestation, elective caesarean section for Cephalo-Pelvic Disproprtion (CPD) was planned under combined spinal epidural anaesthesia. Pre anesthetic check up was normal except for Echocardiography findings which revealed Dilated Cardiomyopathy with Ejection Fraction 45%. In addition to basic standard monitoring, invasive blood pressure monitoring was also done. Surgery was performed successfully without any significant haemodynamic changes. Postoperatively, her ICU stay was uneventful.

Pulmonary hypertension, arrhythmias and cardiomyopathies are usual findings in longstanding Sickle Cell Disease. The major concern for anesthesiologist in such patient is to do close monitoring, to maintain hemodynamic goals and to prevent life threatening events. For this, CSEA is better alternative as it permits gradual and controlled induction with minimal variation in hemodynamic parameters with judicious use of intravenous fluids.

Keyword: Sickle Cell Anemia, Dilated Cardiomyopathy, Combined Spinal Epidural Anaesthesia

Anesthetic management of a patient with Xeroderma Pigmentosa

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ABSTRACT

Xeroderma Pigmentosa (XP), a rare autosomal recessive disease, characterized by skin hypersensitivity to ultra violet radiation, presents with multiple skin tumors and progressive neurological complications. We report the case of xeroderma pigmentosa, a 13 year old male child with diagnosis of multiple noduloulcerative BCC with xeroderma pigmentosa planned for wide local excision with forehead flap was anesthetized with TIVA using dexmedetomidine, propofol and fentanyl. We want to highlight the perioperative management of such patients requiring shielding the patient from ultraviolet radiations (such as OT lights) by using clothing, sunscreen, avoidance of volatile anaesthetic agents and muscle relaxants. Due to atrophic and neoplastic involvement of skin, contracture of joints and neuronal dysfunction, we must be prepared for difficult mask ventilation, difficult intubation along with difficult iv access, prolongation of neuromuscular blockade effect.

Key Words: basal cell carcinoma, dexmedetomidine, inhalation agents, muscle relaxants, ultraviolet light, xeroderma pigmentosa

Spinal Anaesthesia For Caesarean Delivery In A Lady With Situs Inversus With Dextrocardia

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ABSTRACT

Subarachnoid block has been a choice of regional anaesthesia for conducting caesarean delivery since its advent in around 1900A.D. We performed subarachnoid block for conducting elective caesarean section in 29 years G3A2 lady at 38+6 weeks of gestation with situs inversus with dextrocardia with congenitally corrected transposition of great arteries for cephalopelvic disproportion. A total of 2.2 milliliters of 0.5% hyperbaric bupivacaine was injected at L3L4 subarachnoid space in sitting position, midline approach with 27G Whitacre spinal needle and upper dermatomal anaesthetic level attained was T4. After delivery, post syntocin infusion there were three episodes of hypotension treated with injection mephentermine 18milligram and injection phenylephrine 50 microgram intravenously. There were no other significant intraoperative adverse events and total duration of surgery was 50 minutes. Hence, caesarean delivery was successfully conducted under spinal anaesthesia without adverse events. However, there are certain anaesthetic issues related to situs inversus with dextrocardia.

Management of a case of intraoperative anaphylactic shock in a patient scheduled for excision of mass in right parieto occipital region with split skin graft(ssg)

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ABSTRACT

Anaphylaxis is a type 1 hypersensitivity reaction involving cardiovascular, respiratory system with or without skin manifestations. Prevalence of anaphylactic reactions under general anaesthesia varies from 1 in 1250 to 1 in 13000. Anaphylactic reactions in perioperative period are often serious and potentially life-threatening condition. History of atopy and presence of drug or food allergy should be carefully assessed during pre-operative anaesthetic evaluation. Proper documentation in anaesthesia note and preservation of records for future reference is necessary. Here we present a case of a 47year old female weighing 56 kg with multilobulated swelling in right parieto-occipital region with excoriated surface scheduled for excision of mass with SSG developed bronchospasm, skin rashes, hypotension after induction and addition of muscle relaxant. We want to highlight the management of intraoperative anaphylactic shock with adrenaline, hydrocortisone, and fluid.

Keywords: adrenaline, anaphylactic shock

Management of Airway via Fiberoptic intubation in a patient with suicidal cut throat injury

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ABSTRACT

Cut throat injuries are one of the emergency conditions. If not treated in time, they may lead to death via airway compromise and excess bleeding. Prevention of these complications depends on immediate resuscitation by securing the airway by intubation and tracheostomy. Proper examination of extend of injury with airway examination and proper management plan in necessary for such patient. Here we present a case of 30 yrs old male weighing 54 kg with self inflicted lacerated wound of around 4×2 cm present at the level of hyoid bone with breach on thyrohyoid membrane with air leak and no active bleeding. We want to highlight the management of airway in patient with cut throat injury, fiberoptic intubation.

Keywords: cut throat injury, fiberoptic intubation

Unsuccessful nasal intubation with fiberoptic bronchoscope in a patient with severe TMJ Ankylosis

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ABSTRACT

Introduction
Difficult airway has always been challenge for anesthesiologists. Various guidelines have been proposed and updated. However, we still face difficulty in establishing the airway now and then.

Case Summary: 15years old male presented with difficulty in mouth opening since late childhood compromising oral intake of food and was planned for distraction of mandible. Patient could take fluids and some solid food through a broken tooth gap. There was no association with congenital syndromes nor any infections in the past. History of trauma couldnot be ruled out. Airway evaluation revealed restricted mouth opening (<1cm) with receding mandible and severely deviated mentum to the left. Bilateral nasal patency and neck movement normal. Mallampati score couldnot be assessed. Investigations were normal.Patient and patient party counselled about requirement of awake nasal fiberoptic bronchoscopy. Consent for tracheostomy taken.

The operating room was prepared for difficult airway. ENT team was ready for emergency tracheostomy. Patient placed in head up position. Nasal preparation

with phenylephrine drops and xylocaine jelly done. Injection glycopyrollate 0.2mg iv given.Airway reflexes blunted using 1% lignocaine. Injection Dexmedetomidine and propofol given for sedation. Nasal fiberoptic bronchoscopy proceded but was difficult to get through epiglottis as it was very floppy. Three attempts were done, unsuccessful at every attempt. Bag and mask ventilation done in between with no any hypoxemic events. Tracheostomy was done. After confirming airway patency, muscle relaxant given. Surgery was commenced which was intended for lengthening mandible unilaterally on left rather than relieving ankylosis. Hence even after surgery, mouth opening would not have been improved. Intraoperative period uneventful. After surgery,reversal given, placed under tracheal mask and shifted to ICU for observation.

Conclusion: Fiberoptic bronchoscope is not an answer to all cases of difficult airway. Detailed preoperative assessment, preparation, machine performance and experience in handling and individualization of every patient is a key to success.

Comparison of bupivacaine and ropivacaine in caudal block for post operative analgesia in paediatric population undergoing herniotomy

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ABSTRACT

Introduction: Herniotomy is common procedure in paediatric population for the management of inguinal hernia. Post operative pain may persists for several days after the surgery. Various methods such as local anaesthetics used in local infiltration, nerve blocks, caudal blocks are used. In addition to this, opioids, non-steroidal anti-inflammatory drugs (NSAIDs), and acetaminophen are used for post operative pain management. In different studies caudal block was found to be better than nerve block for post operative pain management. Caudal block with local anaesthetics may be used in inguinal hernia for post operative analgesia. Bupivacaine is commonly used in caudal block but it causes motor block so there was a need to study a drug which has adequate analgesia with less motor block. The objective of the study was to compare the duration of post operative analgesia and motor block between Bupivacaine and Ropivacaine group.

Materials and methods: The study was randomized, double blind, prospective, interventional study. Children between 5 to 16 yrs of ASA PS I and II class undergoing unilateral or bilateral herniotomy were included in the study. The duration of study

was 1 yr. Preoperatively patients weight was taken and children were shown Wong Baker pain scale to familiarize them with the scale. Herniotomy was performed under general anaesthesia using laryngeal mask airway. Fentanyl was administered at 2mcg/kg in both the groups. In addition to general anaesthesia, caudal block was given for post operative analgesia. Group A received caudal Bupivacaine 0.25 % at 0.75ml/kg whereas group B received Ropivacaine 0.25% at 0.75ml/kg.

Results: The duration of absolute analgesia is the time taken from arrival of patients in post operative care unit to administration of 1st rescue analgesia which was 253.51 ± 11.48 minutes in Bupivacaine group and 258.1 ± 12.10 minutes in Ropivacaine group. The median duration of motor block was 180 minutes in Bupivacaine and 30 minutes in Ropivacaine group. The grade of motor block was found to be higher in Bupivacaine group than Ropivacaine group.

Conclusion: Caudal Ropivacaine at concentration of 0.25 % at 0.75ml/kg provides similar duration of analgesia with less motor block than Bupivacaine at same dose.

Key words: Bupivacaine, Caudal, Post operative analgesia, Ropivacaine

Severe mitral stenosis for emergency laparatomy for ruptured ectopic pregnancy- a case report.

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ABSTRACT

A 38 years female, a known case of rheumatic heart disease with severe mitral stenosis with the mitral valve area of 0.7 cm2, with NYHA grade 2 and METS of 3, presented to the emergency with the history of pain in lower abdomen for 1 day and per vaginal bleeding for the same duration. She had missed her periods by two (by date 6 weeks) and was positive results on the urinary "hCG dipstick test. She had a positive fast scan with aspiration of frank blood from the peritoneal cavity. On arrival at ER ,she had unrecordable BP and feeble pulse .Pt was pale and tachypneic .She was resuscitated with II pint of RL and I pint of blood was transfused at ER (BP rise to 90/60) and the diagnosis of ruptured ectopic pregnancy in haemorrhagic shock with severe mitral stenosis was made and she was posted for emergency exploratory laparotomy. Our goal was to set heart rate below normal and kept A-line at Right radial artery , started phenylephrine infusion (advantage of maintaining BP and avoid tachycardia) and induced with etomidate and blood transfusion was continued, general anaesthesia with endotracheal intubation was instituted and the surgery conducted. Heart rate was maintained at 70-80bpm and bp to 110-120/70-80).Bilateral transverse abdominal plane block was administered under ultrasound guidance at the end of surgery for post operative pain management and the patient was extubated on table. She was monitored in the cardiac care unit post operatively and successfully discharged from the hospital. At discharge, she was referred to the cardiology unit for further management of the mitral stenosis.

Key words: etomidate, mitral stenosis, phenylephrine, ruptured ectopic pregnancy, transverse abdominal plane block.

Anaesthesia for a case of 24 years Primigravida at 35 weeks of Gestation with Pentalogy of Fallot Planned for Elective LSCS

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ABSTRACT

Introduction: Pentalogy of fallot is a variant of TOF with coexisting ASD. Patients with pentalogy of fallot are at risk of cardiovascular complications during pregnancy and delivery.

Methods: 24 years primigravida at 35 weeks of gestation with pentalogy of fallot diagnosed 10 years back had a SPO2 0f 80-85% with pansystolic murmur and had no any signs of failure. Echo showed cyanotic congenital heart disease with pentalogy of fallot with left to right shunt. Consultaion with cardiac team was done and CCU bed was arranged. Patient party was counseled and high risk informed consent was taken. Arterial line was secured in left radial artery and central venous catheter was secured in right IJV under USG guidance. Foleys catheter was secured. Preloading was done with 300 ml ringers lactate. Precautions were taken with no air in IV lines to prevent paradoxical air embolism. Phenylephrine infusion was started and titrated to maintain SBP OF 100- 110 mm of Hg. Target heart rate was < 100 bpm. Combined spinal epidural anesthesia with test dose of 3 ml of lignocaine with adrenaline for epidural and 1.2 ml of hyperbaric bupivacaine with 25 mcg of fentanyl for spinal anesthesia was given. Sensory level of T6 and motor of modified bromage III was achieved. 1100 grams baby was delivered with APGAR of 5/10 and 7/10 and kept in NICU. 5 IU of oxytocin in 20 ml NS was infused over 5 minutes after baby was delivered. Intra operative blood pressure was maintained with titration of phenylephrine infusion. 800 ml of ringers lactate was given intraoperatively with urine output of 250 ml and blood loss of 300 ml. intraoperative and post operative ABG was done. Postoperative she was kept in CCU with post operative analgesia via epidural at 8 ml/hr of 0.1% ropivacaine was given along with paracetamol 1 gm QID.

Conclusions: Pentalogy of fallot is a rare variant of TOF. Adverse maternal events are related to the magnitude of right to left shunting which accentuates arterial hypoxemia. Conditions which exacerbate right to left shunt include decrease in systemic vascular resistance and increase in pulmonary vascular resistance. The case was conducted successfully under combined spinal epidural anesthesia.

Ultrasound Guided Estimation of Skin to Subarachnoid Space Depth in Patients Scheduled for Elective Surgeries under Spinal Anesthesia

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ABSTRACT

Introduction: Spinal anesthesia is one of the commonly used techniques of regional anesthesia. An accurate placement of spinal needle is crucial while injecting the drugs. Use of Ultrasound (USG) has become very popular worldwide. Its use has been known to improve block success and decrease complications making it popular among anesthetists. Its use for spinal anesthesia is very less. Pre-procedural ultrasound scanning improves the first needle attempt success, decreases redirection or further attempts, gives better patient satisfaction.

Materials and methods: This was a prospective, observational study conducted at National Academy of Medical Sciences, Bir Hospital, Kathmandu among the patients undergoing elective surgeries under spinal anesthesia. Skin to subarachnoid space depth (SSD) was measured after performing a lumbar ultrasound using a Sonosite 2-5 MHz curved array probe after which under all aseptic precaution, subarachnoid block was performed and the length of spinal needle outside the skin was measured using a low heat sterilized scale and that length was subtracted from the standard length of needle.

Results: Total patients included in the study was 36 with 28 males and 8 females. The mean age was 41.6 years (+/-17.22), mean height 158.13 cms (+/-13.85) and weight 58.30 kgs (+/-9.9). The USG guided SSD was found to be 4.24 cms (+/-0.49) and the SSD using length of needle was 4.24 cms (+/-0.46). A significant correlation r=.096 ($p<0.005$) was found between USG guided SSD and length of needle inserted with significant correlation between these values and weight of the patient (r=0.46, p value<0.005).

Conclusion: This study supports the idea that the US transversal plane allows the identification of axial anatomical structures and provides physicians with efficient information to perform spinal anesthesia.

Anaesthesia for Caesarean section in patients with Rheumatic heart disease.

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ABSTRACT

Pregnancy is complicated by 1-3% of cardiovascular disease. Rheumatic Heart Disease (RHD) approximately constitutes 90% of cardiovascular disease in pregnant women in low income countries. The perioperative management of pregnant women with RHD poses a unique challenge to an anaesthesiologist with regard to altered physiology of pregnancy, pathophysiology of underlying cardiac disease and impact of altered physiology of pregnancy on hemodynamic response to patient's cardiac lesion. We present here a case of 22 years Primigravidae at 39 weeks of gestation with known case of RHD status post PTMC planned for emergency Lower Segment Caesarean Section for Thick Meconium Stained Liquor under combined spinal epidural anaesthesia.

Keywords: Caesarean section, Pregnancy, Rheumatic heart disease, Combined spinal epidural anaesthesia.

Spine surgery during early infancy and anaesthetic concern

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ABSTRACT

Introduction: Meningomyelocele, a type of neural tube defects, is one of the most common congenital abnormalities requiring definitive surgery in early infancy. Owing to physiologic and pharmacologic peculiarities and position required for spine surgery, infants are considered high-risk for anaesthesia.

Summary: A three month male with meningomyelocele with suspected neurologic deficit was planned for surgery. He had a huge swelling in the lower back since birth which precluded him to sleep in supine position. Mother had usual antenatal Folic acid supplement and ultrasound was seemingly normal. Baby had a term delivery at home. No other illness and syndrome was obvious in preanesthetic evaluation.

In operating room baby was placed in right lateral position. Monitors were attached and he was wrapped in cotton rolls. Intravenous fluid (Ringer's lactate 475 ml + 50% Dextrose 25 ml) was started via 26G cannula (100ml for 1st hour). After induction with Ketamine 7mg, Propofol 7mg, Fentanyl 5mcg and Vecuronium 0.5mg he was intubated with 3 mm ID flexometallic tube while being lifted in the air. Anaesthesia was maintained with Halothane via Jackson-Rees circuit. Surgery was performed in prone position that lasted for 2.5 hours and was uneventful. After reversal, extubation was done in lateral position. He was shifted to ICU after being awake and was kept in a heated cot. After three hours baby started crying inconsolably and had a heart rate of 230/min, respiratory rate of 55/min and temperature of 103.5 °F. Baby was removed from cot, cold sponged and given paracetamol. Vitals normalized within next one hour.

Conclusion: The differences in anatomy and physiology of neonates and infants provide a unique set of anaesthetic challenge. Due to potential difficulties with management of drug dosing, airway, temperature and fluid every case should be meticulously planned and closely monitored peri-operatively for a positive outcome.

Anaesthetic management of a case of juvenile respiratory papillomatosis: an experience

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ABSTRACT

Juvenile Respiratory papillomatosis is a rare benign condition of the respiratory tract which is usually characterized by presence of multiple papillomas/growth over the respiratory tract usually confined to the larynx. Debulking surgeries of the laryngeal papilomas has always been challenging for both the anesthesiologist and the surgeons with regards to the encroachment of the same surgical field and the chances of airway hazards. With this regards, the use of apnoeic oxygenation during surgery has been a good alternative in providing adequate ventilation and oxygenation to the patient, taking into consideration the chances of hypercapnea. Here we present a case of a 5 year old Female child with history hoarseness of voice since past 5 months associated with noisy breathing and occasional difficulty in breathing planned to undergo Endoscopic Debulking surgery of the papilloma under Apnoeic oxygenation technique.

Key words: Apnoeic technique, endoscopic debulking, hypercapnea, Juvenile respiratory papillomatosis.