

Vapour

The official E-Newsletter of the
Indian Society of Anaesthesiologists



HIGHLIGHTS

ISA ACTIVITIES

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PRACTITIONER'S PAGES

ART & LITERARY PAGES

Poems by Dr. AL Meenakshi Sundaram

&

Dr. Bhagirath Naganath

Kaleidoscope

ACADEMICS

Theme- Perioperative complications

Dr. Poonam Ghodki: Look Alike Sound Alike (LASA) Drug Error in Anaesthesia

Dr. Neeru Sahni: Perioperative acute kidney injury

Dr. Raksha Kundal: Mapping perioperative transfusion reactions

L† Col(Dr) Shibu Sasidharan: Management of Intraoperative bleeding

Dr. Ranganatha Praveen CS : Intraoperative anaphylaxis

Dr. Madhuri Kurdi: VIP syndrome

Dr. Milon Mitragotri: Chronic postoperative pain

Dr. Ridhima Sharma: Role of simulation in preventing perioperative complications

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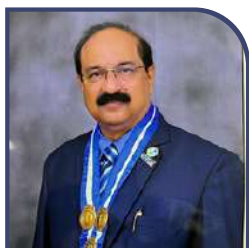
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EDITOR'S NOTE



Dear esteemed members,

**Warm greetings from Indian Society of Anaesthesiologists (ISA)
National Headquarters!**

The June-July issue of VAPOUR is here and it brings you the ISA activities conducted during the monsoon season of our country. And aptly enough, it has been raining ISA activities throughout the nation. Furthermore, this issue is based on the theme 'Perioperative Complications' and our authors have showered their articles on various perioperative complications in this issue with enthusiasm. The different perioperative complications and their varied presentations can clean bowl the most confident anaesthesiologist or can get him run out. Nonetheless, there are lots of perioperative complications and all of them cannot be covered in a single issue of VAPOUR. I thank all the authors of the articles and my editorial team for the compilation of the theme.

There is no dearth of scientific literature on perioperative complications, especially postoperative pulmonary complications and perioperative cardiac complications that can have a serious impact on morbidity and mortality.[1] The impact of the technique of anaesthesia, especially central neuraxial block versus general anaesthesia and other risk factors on postoperative outcomes has been extensively researched upon. Recent studies have even touched upon the role of the gender of the anaesthesiologist and the type of general anaesthetic including volatile anaesthetics versus Propofol on major complications and mortality after surgery. [2,3] We anaesthesiologists are always worried about the intraoperative and immediate postoperative complications. However, we must remember that it is not just immediate recovery but the long term patient recovery that is also very important.

Complications after surgery are not only distressing and unpleasant for patients, but they are also a burden on health system resources, and are the key factors that determine long term postoperative outcomes.[4] All of us are aware of the 'thirty day mortality' which is a commonly used metric of perioperative quality of care in research related to medical and surgical outcomes.[5] However, Fowler et al in a recently published observational study have put forth their perspective that the perioperative adverse events cast a longer shadow of increased mortality, much beyond the 30 day frame. The authors found that patients with postoperative complications are older and with greater healthcare use before surgery. There was a three-fold increase in the incidence of death within 2 years of major surgery in patients who experienced a postoperative complication such as wound infection, urinary tract infection, pneumonia, new stroke, and new myocardial infarction recorded

within 90 days of surgery compared with patients who experienced an uncomplicated recovery. [6] This study needs to be extended on to the intra and immediate postoperative period as well to find out the long term mortality in those who experience intraoperative and immediate postoperative complications. This means that our role as anaesthesiologists in long term patient recovery needs to be explored. Risk assessment tools need to be developed not only to predict immediate postoperative outcomes but also for long term outcomes. Though few models for predicting early-onset and late-onset postoperative complications have been developed, we need to develop more models with better validity and reliability.[7] We have not really completely understood the entity of postoperative recovery. The shower of articles on perioperative complications needs to be followed by the sunshine of research on the association between perioperative adverse events and postoperative recovery. Nevertheless, our prestigious body, the ISA is committed to the continual education of all its members to prevent, reduce and treat perioperative complications, and thereby improve patient safety and quality of care. After all this discussion, a thought slowly creeps into my mind.....Are we worrying too much about long term postoperative outcomes?

Happy reading! Thank you till we we meet again with the next issue of 'VAPOUR'.

Long live ISA!

Dr. Sukhminder Jit Singh Bajwa

Honorary Secretary, ISA National

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ISA NOTICE BOARD

CONFERENCE & CME CALENDER OF ISA (2024)

Conference/CME (Coming up)	Location	Organised by	Dates
RAJISACON 2024	Jodhpur	Dr. SN Medical College, Jodhpur & ISA Jodhpur city branch	13th to 15th September 2024
ISACON ODISHA	VIMSAR, Burla	ISA Sambalpur city branch & VIMSAR, Burla	14th , 15th September 2024
ISACON North zone 2024	Jammu	Govt. Medical College, Jammu, Jammu & Kashmir (UT)	20th to 22nd September 2024
ISA Tripura state conference	Agartala	ISA Tripura state branch	22nd September 2024
ISACON AP 2024	Tirupati	ISA Tirupati	27th to 29th September 2024
ISACON Puducherry	JIPMER, Puducherry	ISA Puducherry & Department of Anaesthesia & Critical Care, JIPMER, Puducherry	27th to 29th September 2024
ISACON Delhi 2024	Hyatt Centric Janakpuri, New Delhi	ISA Delhi branch	27th to 29th September 2024
ISACON GUJARAT 2024	The Deltin, Daman	ISA Gujarat state branch	28th to 29th September 2024
MPISACON 2024	Rewa, Madhya Pradesh	Shyam Shah Medical College, Rewa & ISA Rewa city branch	27th to 29th September 2024
ISACON Kerala 2024	IMA House, Cochin	ISA North Paravur City Branch of Kerala	18th to 20th October 2024
UPCZ ISACON 2024	Jhansi, Uttar Pradesh	MLB Medical College, Jhansi & ISA Jhansi city branch	25th to 27th October 2024
71 st ISACON 2024, Patna (National Conference of ISA)	Samrat Ashok Convention Center, Patna	Patna Society of Anaesthesiologists (PSA)	20th to 24th November 2024

Note: The dates mentioned in the above table are tentative & as per information received.
The list of upcoming conferences will be updated in subsequent issues.

ISA National PG online classes

These are being conducted regularly every Monday between 6.30 to 8pm. Experienced PG teachers are taking PG oriented classes including exam-oriented topics.

Indian Journal of Anaesthesia
The ISA-IJA REAP academic webinar series (fortnightly), is being conducted on Thursday between 5pm to 6pm.

ISA academic webinar series
The ISA conducts Clinical Practice oriented webinar series (CLIP) and Clinical Reasoning and Problem Solving webinar series (CRISP) on Thursdays between 6.30pm to 8.30pm.

71st Annual Conference of Indian Society of Anaesthesiologists

20th 21st 22nd 23rd 24th November 2024 Venue: **Samrat Ashok Convention Center, Patna**

REGISTRATION TARIFF

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	Conf	Conf + CME	PG Conf + CME	Conf	Conf + CME	PG Conf + CME			
Regular 01st Mar to 31st Jul 2024	₹ 12500	₹ 14000	₹ 11000	₹ 25000	₹ 28000	₹ 21000	₹ 8500	\$ 160	\$ 130
Late 01st Aug to 31st Oct 2024	₹ 15500	₹ 17000	₹ 13000	₹ 31000	₹ 34000	₹ 24000	₹ 9500	\$ 190	\$ 150
Spot Registration 01 Nov onwards	₹ 18000	₹ 19500	₹ 15000	₹ 36000	₹ 39000	₹ 29000	₹ 11000	\$ 220	\$ 160

**above rates are inclusive of GST 18%.*

Conference Workshops

Workshop Name	Course Director	Fees	Date
Comprehensive Cardiac Life Support	Dr. SSC Chakra Rao	5000	19 th & 20 th Nov 2024
Hemodynamic Monitoring	Dr. J. V. Divatia	3000	20 th Nov 2024
Practitioners Module: Managing the Common Crisis	Dr. Sukhminder Jit Singh Bajwa	2500	20 th Nov 2024
Regional Anaesthesia	Dr. J Balavenkata Subramanian	3000	20 th Nov 2024
Research and Publication	Dr. Rakesh Garg	2500	20 th Nov 2024
Interventions in Chronic Pain	Dr. Murlidhar Joshi	3000	20 th Nov 2024
Airway Management	Dr. Sheila Nainan Myatra	3000	20 th Nov 2024
TIVA and TCI	Dr. G.D. Puri	3000	20 th Nov 2024
Mechanical Ventilation	Dr. Pradip K. Bhattacharya	3000	20 th Nov 2024
ITLS- Immediate Trauma Life Support	Dr. Kajal Jain	3000	20 th Nov 2024
Leadership and Communication Skills	Dr. P. L. Gautam	2500	20 th Nov 2024
Simulation Based Perioperative Crisis Management	Dr. Vivek Chakole	3000	20 th Nov 2024
POCUS	Dr. Pankaj Kundra	3000	20 th Nov 2024



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ACADEMICS: SPOTLIGHT:

Theme- Perioperative complications

Look Alike Sound Alike (LASA) Drug Error in Anaesthesia: An Overlooked Perioperative Complication!

Dr. Poonam Ghodki

Consultant, Deenanath Mangeshkar Hospital & Research Centre, Pune

ISA No.G0985



Look alike sound alike (LASA) drug errors happen because of certain medications that share similarities in their written form (orthography) or in the spoken names (phonology). LASA error is said to be uncommon but that may be merely because it is underreported. In anaesthesia, most of the drugs are administered intravenous, their actions are rapid and diverse, thereby compounding the consequences of medication errors.[1] Administration of wrong drug especially through routes like intrathecal can be potentially dangerous, for example; tranexamic acid for spinal anaesthesia instead of bupivacaine.

The primary phenomenon leading to LASA error is the similarity in packaging of drugs. This could include similar presentation (labels font/shade, size), similar design (colour of the drug cap) and structure (ampoule/vial) of the product. Anaesthetists as professionals are unique because they are the ones who not only prescribe, but prepare and administer the medications to the patient themselves. Hence more than the phonetic confusion, it is the look alike drugs which pose a major problem in LASA errors. Common examples of LASA medication error are-Midazolam and Heparin vials, atracurium and distilled water ampoules, Mannitol and Dextrose bags, Tranexamic acid and Metoprolol ampoules, KCL and NaHCO₃ ampoules, etc (Figure1).



Fig 1: Examples of LASA drugs

A LASA drug error may be benign at other places, but given the high-stake nature in anaesthesia, most of the times the medication error can be life-threatening. The accidental injection of tranexamic acid instead of bupivacaine during spinal anaesthesia is reported to have caused seizures and neurological deficit in the patient, ultimately leading to death.[2] Therefore during procedures like central neuraxial block, it is recommended to read out loud the drug one is aspirating and confirming it with the assistant or associate.

Ideally, prevention of LASA errors should begin with the manufacturing process. And therefore, it is a difficult problem to even quantify because of the many production companies in market with no standardisation of drug presenting profile. Here the institute or the organisation may take control and ensure precise medicines are procured with responsibility. This can be done by incorporating LASA considerations and user testing into new product acquisition process. A timely review of the authority with the pharmacy and the end users is definitely desirable. Most of the times, nonetheless, we are left with modifying our practices in correct storage and usage of such drugs to circumvent LASA error. Over all the potentially potent (muscle relaxants/opioids) and vasoactive drugs should not be easily available to nursing or as over-the-counter drug without proper prescription. An approach that mitigates the risk of error is implanting multiple safeguards and blocking the pathway of error and preventing it from occurring. A change in typography in the form of Tall Man lettering has been studied by institution for safe medical process (ISMP) as an intervention in picking up the wrong drug.[3] Tall man letter linguistically involves use of both upper and lower cases, where the uppercase use highlighting the dissimilar letters in drugs having similar names, eg dexaMETHAsone and dexMEDETomidine. While this differentiation strategy is proposed to prevent errors, it may increase the latency for drawing a drug during emergency. For anaesthesia drugs, access to certain if not all medications should be controlled.

Security of medication storage should always be ensured, especially when licensed drugs are involved. Recently most of the institutions have implemented electronic prescribing systems as a contribution to decrease carbon footprint. Such systems produce computer-generated prescriptions or can electronically transmit the prescription directly to the pharmacy. This system eliminates the problem of illegible handwriting on prescription by automation and avoids usage of non-standardised abbreviations. Needless to say; the access of such systems should be prohibited for non anaesthetists.

At the operation room (OR) formulary, the drug storage should be well and intelligently organised. Alphabetised drug storage gives nidus to inadvertent mix-ups and hence is not recommended. Instead, separation of high alert LASA drugs is paramount, though use of prefilled syringes for emergency drugs like epinephrine may be more effective. A staff member should be assigned to routinely supervise and check the integrity of the formulary. Drugs requiring cold chain for maintenance should be appropriately segregated from the rest. Moreover, the drug storage should be in a well-lit area with shelves at eye level and clear labels facing forward. Despite of all this, medication error may still occur due to appearances of new drug in the market and acquiring them without scrutiny. Recently we noticed similarity between carbetocin (comparatively newer drug in market) and dexamethasone (Figure 2). Important here is to pick up the similarity earlier, before picking up (and administering) the wrong drug! Once a LASA category is identified, it should be immediately notified to the pharmacy and appropriate steps should be instituted to prevent the error from happening. The action taken by our pharmacy is depicted in the picture alongside (Figure 2). Carbetocin, which is a drug exclusively subscribed in the obstetrics unit will have a labelled sticker over the identical cap for its discrimination.



Fig 2: LASA category error aversion measures (Carbetocin and Dexamethasone). Carbetocin vial cap is covered with sticker to make it discrete

One should not just rely on visual recognition, location or other less specific cues as oversight is always a possibility. Reading the drug label before aspiration, labelling it correctly and re reading the label before actual administration is the epitome of safe anaesthesia practices. Subvocalisation is a good practice to inculcate here. The term subvocalisation describes the internal speech process where one silently reads and thinks about the words (drug and labels in this context) and hears them in the mind. In simple terms it encompasses reading out loud in one's mind where both visual and auditory processing are involved. The broken drug ampoule/vial should always be kept till the patient is under our care so that retrospection becomes possible in case of suspected drug error.

Anaesthesia Patient Safety Foundation (APSF) has studied and formulated various techniques to be incorporated in practice to eliminate drug related errors, use of prefilled syringes and

colour-coded labelling systems to name a few. [4] Technically, these systems will require well trained pharmacy backup or outsourcing the drug preparation altogether. The drawback of this technique is false reassurance to the anaesthetist about the content in the syringe drawn by someone else. In either situation; despite extreme caution, there may still be inadvertent syringe swap! After all colour coding relies upon human skills which is indisputably unreliable, hence the err. Probably the most practical solution to offset such human error is using a barcode system for scanning that will catch up the error of drawing up an incorrect drug.

Clear communication with colleagues/ trainees if more than one personnel is involved in patient care inside the OT becomes imperative. Sound alike drugs for eg, atropine/ atracurium (referred to as Atro/Atrac colloquially) can happen while communicating. Hence conveying the intended drug to be administered with precision and closing the loop of communication is vital.

Safety should not solely rely on human perfection, but rather focus on designing systems and processes that make it difficult for the health professional to commit the mistake in the first place. An international implementation of universal naming convention by drug industries is need of the hour, but that won't be possible until LASA errors are reported. Any new drug should be screened with the names of preexisting drugs in the formulary to avoid confusion before marketing. This will tackle the root cause of problem at its source. Incorporating education on potential LASA medications in the education curriculum and taking the pharmacist in loop for continuing professional development is the way forward. Administering wrong drug to the patient inside the OR will always be the anesthetist's onus. Hence the significance of self-vigilance and following the safety checklist (NABH) cannot be over emphasised. A strict scrutiny and stringent guidelines should be laid by every institution with provision for reporting of LASA errors to decrease the overall incidence.

Some of the safe practices for prevention of LASA errors inside OR- Syringes should be labelled clearly in bold letters as soon as the drug is drawn into it. If possible, every syringe should carry a sticker with patient's name. Medications should be prepared for an individual patient singularly and each drug administered should be put on record. Drugs that are used for regional anaesthesia (local anaesthetics) should be stored separately. Lines (central, peripheral intravenous, arterial) and catheters (extensions, epidural) should be diligently labelled. Infusions too should be prepared using the universal dilution technique and be labelled clearly.

Finally, one should not forget the 8R's of safety-

RIGHT medicine to RIGHT patient for RIGHT reason by RIGHT route at RIGHT dose at RIGHT time, observe the RIGHT response and do the RIGHT documentation!

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Perioperative Acute Kidney Injury: Prevention is the Key

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Acute kidney injury (AKI) in the postoperative period affects 18 to 47% patients, with even higher incidence in the patients undergoing emergency surgeries.[1] It worsens patient outcome in terms of increased length of hospital stay, progression to chronic kidney disease and even mortality. However, more often than not, it is managed by the surgical speciality unless the patient suffers from life-threatening complications like dyselectrolytaemia, fluid overload requiring ventilatory support or need for renal replacement therapy requiring intensive care unit (ICU) admission.

The diagnosis and management of various complications of AKI is extremely difficult, hence, preventing the development of AKI is the key to good surgical outcome. The prevention should be multimodal, beginning from identifying the individuals at risk, optimising the modifiable risk factors, setting up goals of intraoperative management for at-risk patients and close postoperative follow up.

The identification of patients at higher risk of AKI should be a separate entity during preoperative check-up while considering the risk factors like geriatric patients, obesity, chronic lung/liver or kidney disease, other conditions impairing renal blood flow like peripheral vascular disease, cerebrovascular disease, anaemia etc. The type of surgery is a major consideration too with cardiac, vascular, organ transplant, cytoreductive or emergency surgeries predisposing the patients to AKI.[2,3,4] Both the surgical and anaesthesia teams

should be aware of the at-risk patient and work in a synchronised manner and formulate the optimum perioperative management plan.

Amongst the interventions that can be done preoperatively, the modifiable risk factors such as anaemia (decreases oxygen delivery to kidneys), hypoalbuminaemia and hyponatraemia, should be optimised.[4] Prolonged use of nephrotoxic drugs like vancomycin (acute interstitial nephritis) and mannitol (osmotic nephropathy) should be avoided, especially in the patients with comorbid illnesses.[1]

The intraoperative management plan of the patient at risk should focus on curtailing the surgical time to minimum, especially the aortic cross-clamp or cardiopulmonary bypass time. The most important goal of management is to maintain the end-organ perfusion pressure avoiding any episode of prolonged hypotension. [2,3] The target for mean arterial pressure should be clearly communicated to the team with 65 to 70mmHg for patients without comorbidities undergoing at-risk surgeries and 80 to 85mmHg in patients with chronic hypertension and/or other comorbidities.[1] To achieve these targets, maintaining adequate intravascular volume is of prime importance. The preferred intravenous fluid is any balanced salt solution. While all types of intraoperative losses (blood, insensible, third spacing) as well as effect of positive pressure ventilation (decreased preload) should be carefully assessed, volume overload must also be prevented. The ultimate goal should be both preservation as well as augmentation of cardiac output with the use of drug infusions like

norepinephrine which is superior to phenylephrine or vasopressin which only increase systemic vascular resistance.[1]

While severe anaemia is a risk factor for the development of AKI, the transfusion of stored blood can also lead to inflammation and oxidative stress. Thus, both anaemia and blood product transfusion can be detrimental for oxygen delivery to kidneys. There is still a lack of consensus regarding the optimum value of target haemoglobin in this regard but 8gm/dl is the suggested target, especially in these patients with comorbid conditions.[1,2]

There are many other strategies for which there is no convincing evidence and hence, cannot be considered standard of care. Firstly, use of diuretics may decrease renal oxygen consumption but there is no literature documenting its beneficial effect in reducing the incidence of AKI. Also, hypovolaemia must be prevented when using diuretics. The available literature does not support the use of renal vasodilator therapy (dopamine, fenoldopam or levosimendan) in reducing the incidence of AKI. However, two meta-analyses have suggested that use of dexmedetomidine before cardiopulmonary bypass may be beneficial in the prevention of AKI.[5,6] Techniques like remote ischaemic preconditioning (inflating blood pressure cuff to suprasystolic pressure intermittently for 5 min) is another suggested modality with no proven benefits.

The AKI treatment bundle proposed by Kidney Disease Improving Global Outcomes (KDIGO) foundation includes various evidence-based practices such as maintenance of adequate volume status, perfusion pressure, euglycaemia (Blood sugar level less than 180mg/dl) and avoiding the use of nephrotoxic agents while closely monitoring serum creatinine and urine output.[1] However, serum creatinine levels and urine output monitoring are neither sensitive nor specific, despite all criteria to diagnose AKI (RIFLE, AKIN, KDIGO) relying on their values. Serum creatinine level is affected by factors such as intravascular volume status, nutrition, muscle mass/trauma. Moreover, it does not provide estimation of glomerular filtration rate (GFR) in

real-time as the rise in creatinine levels lags behind. Urine output may increase due to diuretic use or even decrease transiently due to effect of anaesthetics, hypovolaemia, release of vasopressin and aldosterone due to surgical stress.[2,3]

The current focus on diagnosing AKI is shifting to the use of various biomarkers. Serum cystatin C has been found to be a good predictor of mortality post cardiac surgery. Urinary neutrophil gelatinase-associated lipocalin (NGAL) does get excreted within a short time (3 hours) of injury although its use is limited in emergency surgery in patients with sepsis. Food and Drug Administration (FDA) has approved the use of urinary tissue inhibitor of metalloproteinases (TIMP) 2 and insulin-like growth factor-binding protein (IGFBP)7, now being marketed as Nephrocheck test and the validation tests for the same are ongoing.[1]

The discussion on perioperative AKI would be incomplete if the financial implications of some of the above suggested strategies (use of balanced salt solution, cardiac output monitoring, use of biomarkers) are not mentioned, especially in resource limited settings. May be the best approach is identification of at-risk patients, active management of modifiable risk factors and costlier interventions be reserved for sicker patients. Still, the feasibility of all these strategies should be explored in our respective workplaces.

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Mapping Perioperative Transfusion Reactions: Detection, Management, and Best Practices

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Blood is a potent therapy, not a standard treatment. Every transfusion should be carefully considered, as inappropriate use can result in serious consequences. Blood should be treated as a potent medicine, administered cautiously and accurately only when necessary. While blood transfusions can save lives during the perioperative period, they are not without risks. Despite thorough testing and careful administration, adverse transfusion reactions (TRs) can still occur, with some being severe or even fatal. Transfusion reactions are described as adverse events related to the transfusion of whole blood or its components. They can be acute reactions during or within 24 hours of transfusion or delayed reactions after 24 hours. It can extend up to days or weeks after transfusion.

Various transfusion-related reactions are:-

1. Haemolytic Transfusion Reactions

Haemolytic transfusion reactions (HTRs) are the most serious type of TRs, with possibly lethal consequences. They are primarily caused by ABO incompatibility, although they can also be caused by incompatibilities in other blood group systems, including Rh, Kell, Duffy, and Kidd. HTRs are acute or delayed, with intravascular (acute) or extravascular (chronic) haemolysis. Signs and symptoms may include fever, chills, back pain, chest pain, dark urine, hypotension, tachycardia, haemoglobinuria, and acute kidney injury (AKI).

Management: The transfusion should be stopped immediately, and the intravenous line should be kept open with suitable fluids (often 0.9% saline).

The patient's blood sample and the used blood

bag should be sent to the blood centre for cause analysis. Provide supportive treatment and maintain airway, breathing, and circulation. Patients should be kept well hydrated to avoid consequences caused by free haemoglobin in the bloodstream, such as acute renal injury or disseminated intravascular coagulation. Corticosteroids, antihistaminics and antipyretics are used for symptom management.[1]

2. Febrile non-haemolytic transfusion reactions

Febrile non-haemolytic transfusion reactions (FNHTRs) are the most common TRs, occurring in approximately one in every 200 transfusions. They are distinguished by a temperature rise of more than 1.8°F (1.0°C) above the pre-transfusion baseline during or within four hours after the transfusion. While most instances are mild and self-limiting, severe ones may include rigors and a considerable rise in fever. FNHTRs are primarily associated with the transfusion of cellular blood components such as red blood cells, platelets, and granulocytes. The underlying cause is assumed to be systemic inflammatory response syndrome, which occurs via traditional routes involving leukocyte-derived cytokines or non-classical mechanisms involving pyrogenic cytokines and other mediators found in stored blood components. Antipyretics are used to treat and prevent FNHTR cases with known history.[2]

3. Allergic Reactions and Anaphylaxis

Mild allergic reactions like itching and urticaria are caused by hypersensitivity to a foreign protein in the donor product. Anaphylactic reactions are similar to minor allergic reactions but are more severe. The fast onset of symptoms such as laryngeal oedema, tachycardia, hypotension, and

shock characterises anaphylaxis. This can happen when a patient with IgA deficiency produces alloantibodies against IgA and subsequently gets IgA-containing blood products.

4. Transfusion-Related Acute Lung Injury

Transfusion-Related Acute Lung Injury (TRALI) is a severe pulmonary complication of blood transfusion that can be fatal due to the development of noncardiogenic pulmonary oedema. The syndrome is caused by neutrophil priming and activation in the pulmonary microvasculature, which damages endothelial cells and increases capillary permeability. Symptoms often occur within six hours of the transfusion and include respiratory distress, acute hypoxaemia, rales on auscultation and bilateral lung infiltrates on chest X-ray. Usually, in such cases, pulmonary fluid is exudate type, pulmonary occlusion pressure is <18mmHg and brain natriuretic peptide (BNP) levels are <200pg/ml. Supportive measures may include oxygen, intubation, and careful fluid and vasopressor management to maintain haemodynamics.[3]

5. Transfusion-Associated Circulatory Overload

Transfusion-associated circulatory overload (TACO) occurs when the circulatory system is overwhelmed by the volume of transfused blood, resulting in severe respiratory distress, tachycardia, elevated blood pressure, and pulmonary oedema.

TACO patients have transudate-type pulmonary fluid, pulmonary occlusion pressure > 18 mmHg and BNP levels > 1200pg/ml. It is commonly encountered in people with reduced cardiovascular function and is treated with diuretics, oxygen and supportive treatment.[3]

6. Transfusion-associated Graft Versus Host Disease

Transfusion-associated graft versus host disease (TA-GVHD) is an uncommon but sometimes fatal complication in which donor T cells assault the recipient's tissues, causing severe bone marrow aplasia, pancytopenia, and multi-organ failure. It primarily affects immunocompromised people or those who receive blood from closely related donors. Irradiation of blood products is one type of preventative intervention.

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VIP syndrome: The syndrome of stars and of complications...

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The world of Medicine is full of syndromes. There is a syndrome from almost every alphabet. These syndromes keep bothering us anaesthesiologists. Whenever a syndromic patient is posted for surgery, we rack our brains, trying to recollect the components of the syndrome and of course then rush to go through published literature on the anaesthetic implications of the syndrome.

Many of us have heard of and encountered the entity known as 'VIP Syndrome'. I have always wondered whether such a syndrome really exists today or is it just a delusion and colloquial jargon? Are we not expected to treat all our patients with equal care?

Thinking that it is just a delusion is not really correct because people have reported their experiences of this syndrome and there is interesting literature including case reports, a narrative review, letters to the editor and an editorial that have been published on this syndrome.

What is the VIP syndrome?

The term 'VIP (very important person) syndrome' was introduced by Dr Walter Weintraub in 1964.[1] The VIP patient syndrome in Latin America is known as "The recommended patient syndrome." [2] Daniel et al have described the VIP patients in this syndrome as victims of multiple non-malicious complications, which originate in the desire of their health team trying to provide a closer, faster and more personalised attention outside of the guidelines of treatment. VIP syndrome in medicine refers to the tendency to treat

influential or famous patients differently. [3] It is described as a cycle of patient demands resulting in unsound clinical judgment in efforts to meet unrealistic expectations resulting in deleterious outcomes. The VIPs in this syndrome are prone to poor results when receiving medical treatment.[4]

Who is the 'VIP' in the VIP syndrome?

A VIP, by definition, is a 'special'/'famous'/'influential' person who is given special privileges in view of his or her status or wealth. Examples of VIPs include royalty, politicians, celebrities, religious leaders, corporate leaders, wealthy individuals, medical personnel or a patient who has an economic, social or family relationship with the doctors who treat him. [5,6] In fact, VIPs include all patients who deliberately or inadvertently, cause tension and anxiety in the staff treating them, creating pressure to give them 'special' treatment. Doctors and nurses are equipped with medical knowledge and when they become patients, they often create a tense atmosphere by making the healthcare staff feel that they are being observed and analysed.[4] Nevertheless, VIP hospitalisation causes a great deal of uneasiness amongst the staff members, especially of hospitals who do not routinely treat them. Also, VIPs and their health status are an object of the attention of mass media. They are therefore admitted in isolated areas where the curious public and overzealous news reporters cannot enter. Yet, inspite of taking the utmost precautions to prevent their pictures and information being taken, the personal

photographs of these celebrities do many a times make their way into social media groups to grab the attention of the public and the netizens.

Manifestations: Complications as major components

Whenever a VIP is hospitalised in a hospital, all the hospital staff starting from the medical superintendent to the class 4 workers are anxious and on high alert. They put on their most elite of mannerisms and are most punctual in their treatment of the patient. They are very careful in their treatment strategies. They try to adopt the most scientific guidelines, strictly follow the safety checklists and delve into the depths of their knowledge to manage the patient. No stone is left unturned in the patient management and there is turmoil in the hospital. However, inspite of taking the most meticulous precautions, complications start occurring in the clinical management of these patients. Many a times, one complication follows another in quick succession. This sets the health care team members swearing and declaring in despair that the dreaded and heavily disliked 'VIP syndrome' has struck.

The 'VIP syndrome' can strike anytime in the perioperative period starting from the preoperative period to the intraoperative period and might continue into the postoperative period till patient discharge from the hospital. In the preoperative period, post graduate residents and junior doctors often avoid asking the VIP patients direct questions regarding substance abuse. They often fail to obtain a good clinical history from the patient due to the fear and hesitation of asking questions to the patient that might invite the patient's wrath. Clinical examination involves the same hesitation and many important clinical findings can thus be missed. In addition to requesting unwise treatment, some celebrities have been known to pressure doctors to forgo invasive tests, or to not share information with colleagues to protect their privacy. [7] There are instances where the VIP patient's relative,

mostly a doctor insists on entering the operation theatre to 'console' and 'support' the patient. In the intraoperative period, the problems can start with the inability of the tensed up anaesthesiologist to secure an intravenous line, the cannula going out, the drug getting extravasated, difficult mask ventilation or laryngoscopy and intubation in an apparently normal airway, difficult or failed spinal, unilateral subarachnoid block, patchy epidural, failed peripheral nerve block, unusual allergic reactions, unexpected haemodynamic fluctuations, delayed recovery from general anaesthesia, re-intubation, bronchospasm, excessive postoperative nausea and vomiting, re-exploration and redo surgery. Most often, all hell breaks loose in a hitherto quiet and smoothly working environment. The carefully calculated 'safe' perioperative risk scores prove to be wrong. The sequence of events sets one thinking as to whether a VIP patient is anatomically and physiologically different from other patients.

Pathogenesis

The causative factors for this syndrome are many. They include 1) Increased anxiety levels in the doctor (anaesthesiologist/ surgeon) treating the patient leading to poor communication and errors in clinical judgement and interventions 2) Breakdown of the routine well-established system of rigorous coordination among the healthcare team members 3) the doctor feeling pressured to perform various tests or interventions that may not normally be done 4) Fearful and hesitant junior doctors who are forced by the VIP and the relatives to call on their seniors to deal with issues they would normally deal with themselves 5) Constant demanding behaviour of the patient and relatives leading to frustration, anger and loss of confidence in the treating team leading to errors in the performance and judgment of the team members [4] 6) treatment based on hierarchy and seniority rather than efficiency in clinical skills.

Ethical concerns

The patient's 'VIP' status can lead to deviations in usual clinical practices. Treating VIP patients differently from other patients can compromise care and raise ethical issues around autonomy, privacy and social justice (equitable distribution of resources). Sometimes, clinicians who are not on the treatment team come to visit the patient. Senior consultants who are not part of the patient's designated care team may write orders for tests and consults.[3] In cases where the patient is also a physician, professional roles can overlap, especially when the physician-patient holds a higher position within the hospital.[3] There may be an alteration in the usual care of the patient such that the decision is made to do fewer tests, diagnostic procedures, or therapeutic manoeuvres. This decision usually reflects the wish to save the VIP from pain. [8] The decision to forego the painful procedure often leads to a missed diagnosis. In contrast to this, there may be consultants who in their endeavour to be extra careful can order unnecessary tests and subject the patient to 'not really needed' painful and invasive clinical interventions. The dangers of treating VIPs are well known eg- the treatment of Michael Jackson which led to his death. It is said that America's first President George Washington died a gruesome death due to the errors in clinical judgement and management by his team of doctors comprising of Drs. Craik, Brown and Dick. [9] One cannot help but wonder whether President George Washington was a victim of the 'VIP syndrome'!

Prevention

Heightened communication is essential when caring for the VIP patient. At the start of patient management, the attending physician should explain to the patient and family the importance of standardised care. Usually, the VIP feels better if the treating physician states clearly, 'I am going to treat you as I would any other patient'. [10] This is especially applicable to doctors who are said to be the worst patients. In some hospitals, a specialised team for treating VIP patients is formed. It has been

suggested by some that medical education should include the opportunity to work with VIP patients.[11]

Nevertheless, VIP syndrome is a syndrome known and experienced by many. As doctors, we can become the 'VIPs' of the VIP syndrome or the treating doctors of the VIP. Whatever the situation, once experienced, the syndrome is unforgettable. I have witnessed the VIP syndrome. Have you?

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Management of Intraoperative Bleeding

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Intraoperative bleeding is a significant challenge faced by anaesthesiologists and surgical teams, with implications that range from increased operative time to severe haemodynamic instability and patient mortality. Effective management of intraoperative bleeding is crucial, requiring a multidisciplinary approach that encompasses timely diagnosis, appropriate surgical techniques, and optimal resuscitation strategies.

Pathophysiology of Intraoperative Bleeding

Intraoperative bleeding can be classified into several categories based on its aetiology, including surgical, coagulopathic, and haemodynamic causes.[1] Surgical bleeding typically results from injury to blood vessels. In contrast, coagulopathic bleeding may arise from pre-existing conditions such as haemophilia or disseminated intravascular coagulation (DIC) or be induced by factors such as massive transfusion or hypothermia. Haemodynamic causes are often related to factors such as hypertension, which can exacerbate blood loss during surgery.

The body's response to bleeding involves complex physiological processes, including vasoconstriction, platelet aggregation, and the activation of the coagulation cascade. However, during surgery, these mechanisms can be overwhelmed by the volume of blood loss, the effects of anaesthetic agents, and the body's altered physiological state, necessitating prompt and effective intervention.

Preoperative Assessment and Preparation

The management of intraoperative bleeding begins with meticulous preoperative assessment.

or those undergoing procedures with a high potential for blood loss, is critical. Preoperative laboratory tests should include a complete blood count, coagulation profile (including prothrombin time, activated partial thromboplastin time and international normalised ratio), and in certain cases, a thromboelastography (TEG) or rotational thromboelastometry (ROTEM) to assess the overall haemostatic function.[2]

Patients on anticoagulant or antiplatelet therapy may require modification of their medication regimen prior to surgery. For instance, vitamin K antagonists should be discontinued and reversed with vitamin K or prothrombin complex concentrates (PCCs) if urgent reversal is needed, while direct oral anticoagulants may be withheld based on their pharmacokinetic profiles and the timing of surgery. [3] The use of bridging anticoagulation with low molecular weight heparin may be considered for patients at high thromboembolic risk.

Intraoperative Management Strategies

The intraoperative management of bleeding involves a combination of surgical techniques, pharmacologic interventions, and careful fluid management.

1. Surgical Techniques:

The surgical approach to controlling bleeding includes direct methods such as vessel ligation, suturing, and the use of haemostatic agents like fibrin sealants and oxidised cellulose.

Electrocautery and laser coagulation can also be employed to achieve haemostasis. In more complex cases, particularly in liver surgery or trauma, techniques like Pringle manoeuvre or packing may be necessary to control bleeding. [1]

2. Pharmacologic Interventions:

- **Vasopressors:** Agents such as phenylephrine or norepinephrine may be used to maintain systemic vascular resistance and blood pressure during significant blood loss.
- **Antifibrinolytics:** Tranexamic acid (TXA) is widely used to inhibit fibrinolysis and reduce bleeding in major surgeries such as orthopaedic, cardiac, and trauma surgery. TXA should be administered early in the course of bleeding, with dosing tailored to the patient's condition and the extent of bleeding.
- **Desmopressin:** For patients with von Willebrand disease or mild haemophilia A, desmopressin can be used to enhance the release of von Willebrand factor and factor VIII, thus improving haemostasis. [2]

3. Blood and Blood Products:

Red Blood Cell Transfusion: The decision to transfuse red blood cells (RBCs) should be based on clinical judgment, considering factors such as ongoing blood loss, haemodynamic stability, and haemoglobin levels. Intraoperative transfusion protocols often target a haemoglobin level of 7-9g/dL in stable patients, although higher thresholds may be appropriate in patients with cardiovascular disease.

Platelets and Coagulation Factors: Platelet transfusions are indicated when platelet counts fall below 50,000/ μ L in the setting of active bleeding or when counts fall below 100,000/ μ L in surgeries involving critical areas such as the brain or spine.[4] Fresh frozen plasma or PCCs may be required for patients with coagulation factor deficiencies, particularly in the context of massive transfusion protocols.

Massive Transfusion Protocols (MTPs): Massive transfusion, defined as the replacement of more than one blood volume within 24 hours or the

transfusion of more than 10 units of RBCs in an adult, necessitates a well-coordinated MTP. The goal is to maintain haemostasis by balanced resuscitation with RBCs, platelets, and plasma, typically in a 1:1:1 ratio.[4] Early administration of fibrinogen, either as cryoprecipitate or fibrinogen concentrate, may also be essential in controlling bleeding.

Point-of-Care Testing: The use of point-of-care coagulation testing, such as TEG or ROTEM, allows for real-time assessment of the patient's coagulation status and guides the targeted administration of blood products and haemostatic agents. This approach can minimise the use of unnecessary transfusions and reduce the risk of transfusion-related complications.

Postoperative Considerations

Postoperative management focuses on monitoring and managing the consequences of intraoperative bleeding and transfusion. Haemodynamic stability should be closely monitored in the immediate postoperative period, with ongoing assessment of haemoglobin levels, coagulation parameters, and electrolyte balance. The patient's fluid status should be optimised, and any coagulopathy should be corrected promptly.

In patients who have undergone massive transfusion, the risk of complications such as transfusion-related acute lung injury, transfusion-associated circulatory overload, and electrolyte imbalances (e.g., hypocalcemia, hyperkalaemia) must be considered. Close monitoring and supportive care in an intensive care unit setting may be required for these patients.

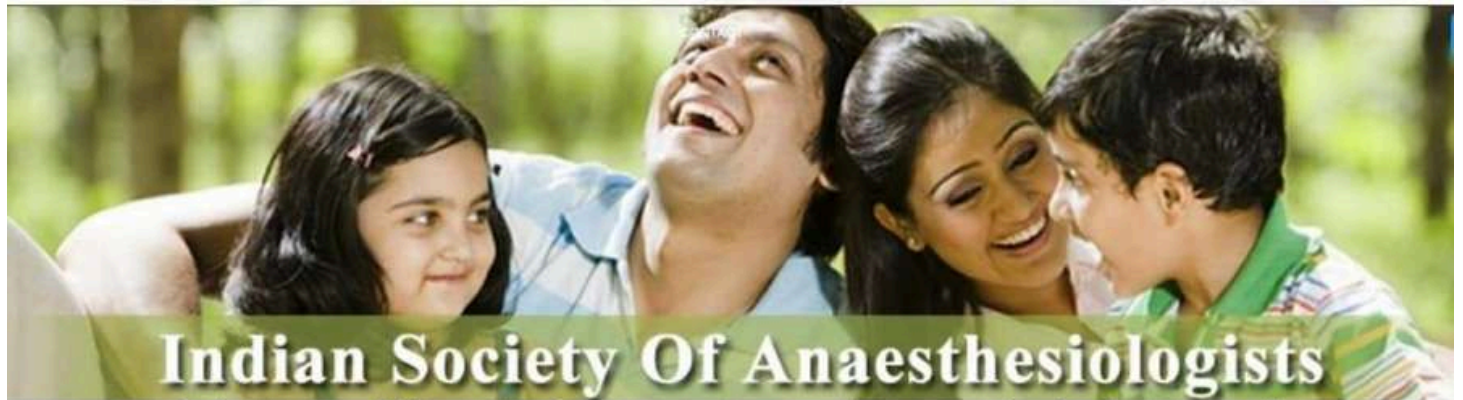
Additionally, patients with ongoing coagulopathy or bleeding may benefit from the continued use of antifibrinolytics or procoagulant agents, and their response to therapy should be closely monitored. The use of thromboprophylaxis in the postoperative period should be carefully balanced against the risk of re-bleeding, particularly in patients who have undergone major surgery or have significant comorbidities.

Conclusion

The management of intraoperative bleeding requires a comprehensive approach that integrates preoperative assessment, intraoperative vigilance, and postoperative care. By employing a combination of surgical techniques, pharmacologic interventions, and evidence-based transfusion strategies, healthcare providers can minimise the risks associated with intraoperative bleeding and improve patient outcomes.

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Cardiopulmonary Resuscitation in the Neurosurgical Patient under Anaesthesia



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INTRODUCTION

Cardiac arrest inside the neurosurgical theatre is a grave crisis that can end up in a remarkably high mortality rate. It is an uninvited crisis for both the neurosurgeon and the neuroanaesthetist. It has numerous causes and can happen during different kinds of surgeries along with positions. Management of cardiac arrests in neurosurgical patient population is a territory that is not well elucidated. Conventional advanced life support (ALS) protocols cannot be straightaway applied in neurosurgical patients at all times. With a good comprehension, practitioners can be better geared up to tackle unfavourable cardiac emergencies which can be gruelling to the whole neurosurgical team.

Cardiac arrest in non-cardiac surgery occurs with a documented incidence of 0.01–0.34%. [1–3] As per a Japanese research, the major origins of intraoperative cardiac arrest comprise of blood loss (31.9%), human errors (53%) and anaesthesia associated (22%). [4] The management of intraoperative cardiac arrest cases during neurosurgery has not been well defined since they are quite uncommon. Application of conventional resuscitation manoeuvres could be challenging because of various factors like surgical patient positioning and exposure, skull pin fixation, etc. This article focuses on outlining the different reasons of cardiac arrest during neurosurgery, and their management as per the scenario.

CARDIO PULMONARY RESUSCITATION (CPR) DURING NEUROSURGERY

Common causes of intraoperative cardiac arrest during neurosurgery are given in Figure 1.

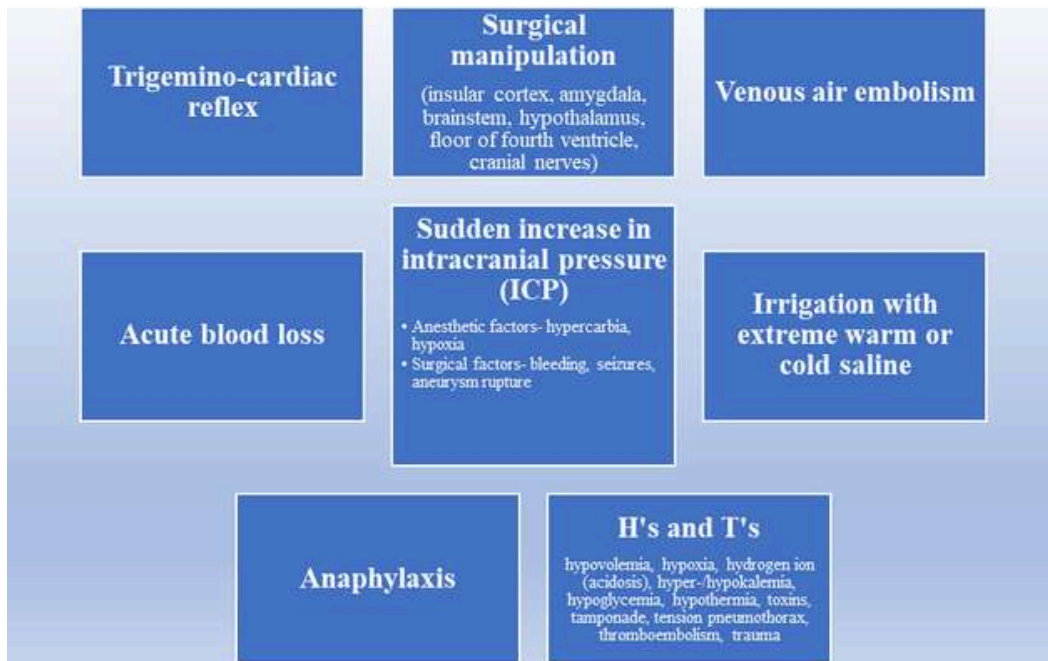


Figure 1: Common causes of perioperative cardiac emergencies during neurosurgery

In general, most of the subjects will be already on mechanical ventilation with end-tidal carbon dioxide (EtCO₂) monitoring and an invasive arterial line in situ. Both these monitors provide added advantage as they can be utilised to confirm cardiac arrest, act as a guide to the quality of cardiopulmonary resuscitation (CPR), and indicate the return of spontaneous circulation (ROSC).[5]

As soon as cardiac arrest is diagnosed, resuscitation should be initiated and simultaneously the following should be ensured-

1. Ventilation is maintained.
 - a. Rule out endotracheal tube obstruction, kinking, displacement or disconnection.
 - b. Provide 100% oxygen.
2. All drugs have been given correctly.
3. There has not been a sudden rapid massive blood loss.

Management of cardiac arrest can be guided by the proposed algorithm (Figure 2), aided by the latest ALS guidelines given by the American Heart Association (AHA).[5] As per the United Kingdom (UK) Resuscitation Council 2019, the sole difference from the ALS guidelines is that the starting dose of epinephrine should be given in increments (e.g. 50–100 µg) as per the response, instead of a 1 mg bolus.[6] It will help to prevent any rebound rise in blood pressure and the possibility of haemorrhage if resuscitation is successful in a short period. In case of no response even after a total of 1 mg epinephrine, the next doses of epinephrine 1 mg boluses are administered as per the usual ALS protocol. Identification and treatment of the underlying cause should be carried out simultaneously.

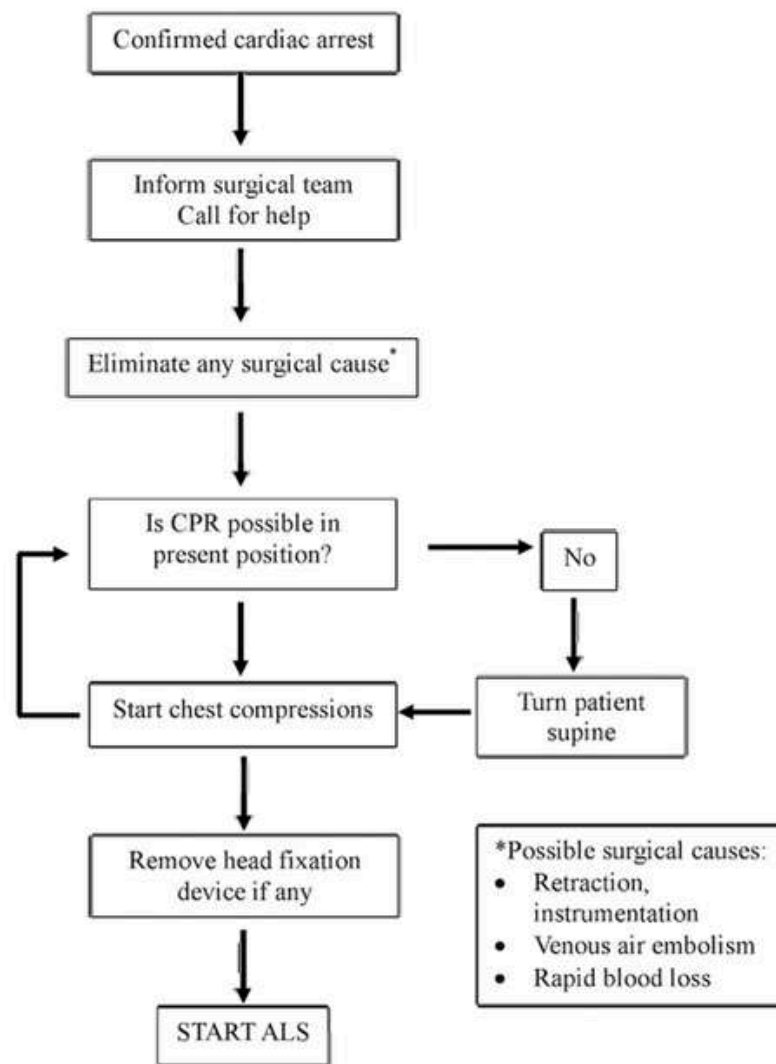


Figure 2: Cardiac arrest in neurosurgery algorithm

PECULIAR ELEMENTS AFFECTING INTRAOPERATIVE CPR DURING NEUROSURGERY

These can be classified as:

- 1.The surgical procedure.
- 2.The position of the patient.
- 3.CPR on a patient with an exposed wound.

1.The surgical procedure

Surgeries around the hypothalamus, brain stem, cerebellopontine angle, hypophysis, and fifth cranial nerve, neuro-endoscopic procedures, and the use of irrigation fluid of the incorrect temperature or pressure, can all lead to heart rate irregularities including severe bradycardia with associated hypotension or asystole. The most probable mechanism behind this is stimulation of the trigeminal-cardiac reflex. Usually, this will revert, after stopping the stimulus (e.g. surgical instrumentation or traction). If the bradycardia persists, atropine, epinephrine infusion are to be administered or transcutaneous pacing done as per the AHA ALS guidelines.[5] Usually, the pre-emptive use of anticholinergics is avoided as it might result in the loss of the indication of surgical encroachment on vital areas if the patient develops asystole. CPR is commenced as soon as possible.

2.The position of the patient (Table 1)

a.Supine position

Here the concern is that any effort to carry out chest compressions with the head of the patient attached to the head fixation device (Mayfield or Sugita) may cause damage to the scalp, skull and cervical spine. This may also happen due to involuntary movement due to defibrillation. Hence it is reasonable that the head of the patient should be detached from the fixation device before giving shock or chest compressions as soon as feasible. There also lies a possibility of defibrillation resulting in burn injuries at the site of insertion of the skull pins. However, no documentation is made in the literature of any evident damage due to burns at the point of pin entry. [7,8] CPR is started at the time the neurosurgeon holds the patient's head. Later on, the patient could be moved down the operation table so that a fixed rest is provided for the head.

b.Lateral position

Despite the fact that carrying out chest compressions with the patient in a lateral position has been documented, its effectiveness is not known.[9] Hence, the patient should be made supine as soon and safely as feasible. If defibrillation is needed, use of the anteroposterior paddle position is suggested; one paddle above the left precordial area and the other just below the left scapula. [10] There have also been cases reported in the literature where extracorporeal CPR was used to revive a neurosurgical patient in the lateral position. [11]

c.Prone position

Turning the patient supine is not always immediately possible, due to skull pin fixation, halo fixation, open surgical wounds, or protruding hardware. The time required for recruiting enough hospital personnel to place the patient back in the supine position safely approximately takes around 3 minutes which may cause significant delays in starting CPR.[12] There is no immediate need to turn the patient to the supine position; CPR can be started with the patient in the prone position used while preparations are being made to turn the patient supine. Compressions should be performed in the midline of thoracic spine between T7 and T9 using the same technique as during supine CPR.[13] The 2020 AHA guidelines also recommend that when the victim cannot be placed in the supine position, it may be reasonable for rescuers to provide CPR with the victim in the prone position. In patients with a midline surgical incision, prone chest compression with 1 hand on each side of the incision has been successfully used.[14] In some studies posterior compression generated higher mean arterial pressures than anterior compression.[15,16] The postulated mechanism is that since the abdomen is in contact with a solid surface, the movement of abdominal structures is restricted, making the compressions more effective.[12] Successful resuscitation following posterior chest compression has been reported. [17-19] As CPR is started, simultaneously remove any surgical instruments from the wound and pack the wound to reduce blood loss. If the patient's head is fixed in pins, they should be managed as described above. Few cases will be made prone with the help of a frame (e.g. Wilson frame, Relton-Hall frame) or pillows and bolsters. In such scenarios, chest compression may not be efficacious unless counter pressure from a solid surface is put in. For defibrillation, paddles can be kept either posterolateral (one in the left mid-axillary line, the other above the right scapula) or in the bi-axillary positions.[7] If chest compressions are not effective, the patient can be turned into supine position. Attaining this may be tedious, time-consuming, and risky because of the presence of an exposed surgical field or an unstable spine.

d.Sitting position

Although there is mostly access to the chest to allow defibrillation or cardiac massage, proper chest compressions are not feasible. Hence the patient needs to be made supine as quickly as possible.

Supine	Immediate chest compressions or defibrillation
Prone	Immediate chest compressions: apply compressions between shoulders with fist/support beneath sternum Immediate defibrillation if required Move to supine as soon as possible
Lateral	Begin chest compressions in lateral position: apply chest compressions to sternum while stabilising back (two-person technique) Immediate defibrillation Move to supine as soon as possible
Sitting	Start cardiac massage Immediate defibrillation if necessary; move to supine for chest compressions as soon as possible

Table 1: Management of cardiac emergencies in various positions

3.CPR on a patient with an exposed wound

All instruments should be taken out to stop incidental tissue injury. Also following successful resuscitation, achieving haemostasis may be problematic sometimes.[19]

POST-RESUSCITATION MANAGEMENT

- Quick haemostasis should be secured.
- Consider further surgical options which may include:
 - ▶ Carrying on the intended original surgical procedure.
 - ▶ Changing the goals of surgical procedure.
 - ▶ Abandoning the surgery.

ADDITIONAL POINTS TO CONSIDER

- Every member of the neurosurgical team (neurosurgeons, neuroanaesthetists and surgical staff) should be involved and well trained in the procedure of emergency repositioning of a patient.
- Prior to any case ideally, one should check and confirm the following:
 - the resuscitation trolley and defibrillator
 - a trolley or bed on to which the patient can be laid supine
- In cases with increased chances of an arrhythmia who are not supine or where access is limited, transcutaneous adhesive defibrillation pads can be put before the start of surgery.
- An accurate documentation of the event and measures taken should be made.
- Review of the event at a local morbidity and mortality meeting or equivalent should be done later on.

CONCLUSION

The neurosurgical patient population is unique in which the ALS protocol cannot always be employed conventionally during cardiac arrest, since it is affected by the position, the surgical procedure and the skull fixation devices used. Therefore, it is important to have a good knowledge of the underlying causes and their management. One should remember that managing such scenarios is always a teamwork involving the neurosurgeons, neuroanaesthetists and surgical staff. Resuscitation protocol is individualised as per the scenario and available resources. Training of the concerned operation theatre team including simulation should be done regularly.

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VENOUS AIR EMBOLISM

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This is an entity in which the air is entrapped into the pulmonary system or sometimes the systemic system causing various signs and symptoms. In this article, the causes, pathophysiology, diagnosis and management of embolism are discussed.

CAUSES

- 1) Sitting position (posterior fossa procedures, cervical laminectomy).
- 2) Tumours involving posterior part of sagittal sinus, parasagittal or falx meningiomas.
- 3) Pin being taken out in sitting position.
- 4) Deep brain stimulator placements.
- 5) Laparoscopic procedures.
- 6) Hysteroscopy procedures when fluid is filled under high pressure.
- 7) Shoulder surgery arthroscopy in sitting position.

SOURCES OF AIR ENTRY [1]

- 1) Cerebral venous sinuses (transverse, sigmoid, posterior half of sagittal sinus). All are non-collapsible due to dural attachments.

- 2) Emissary veins during cervical laminectomy.
- 3) Abdominal veins during laparoscopic surgeries.

Intraoperative signs

- 1) Fall in oxygen saturation.
- 2) Fall in end-tidal carbon dioxide (ETCO₂) levels.
- 3) Arrhythmias.
- 4) Hypotension.
- 5) Rise in airway pressures.

DETECTION OF VENOUS AIR EMBOLISM

- 1) High level of sensitivity.
 - 2) High level of specificity.
 - 3) Rapid response.
 - 4) Quantitative measure of the venous air embolism event.
 - 5) Course of recovery from the event.
- The two monitors together that fulfil these criteria are precordial Doppler and capnometer. Transoesophageal echocardiography is the gold standard (Figure1).

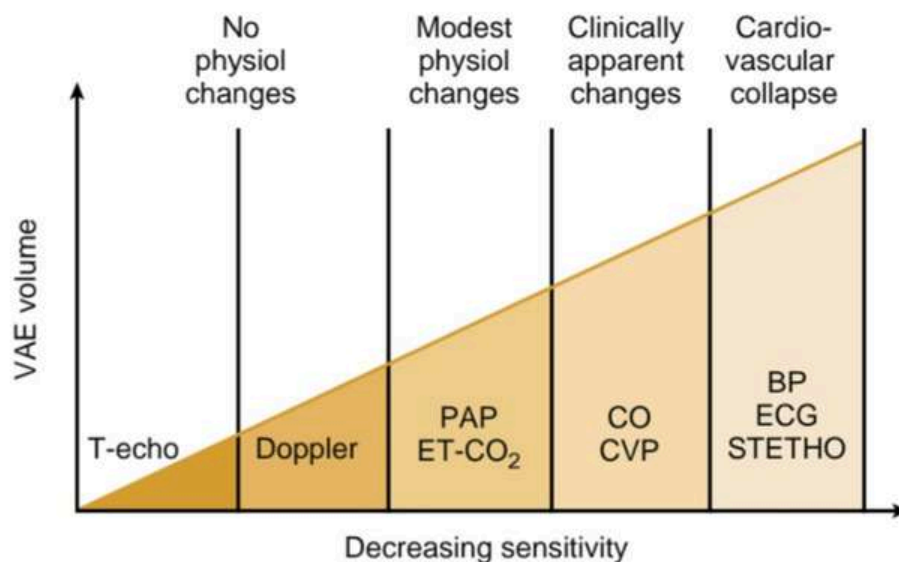


Figure 1: Various Monitoring Methods

BP: Blood pressure; CO: Cardiac output; ET-CO₂: End tidal carbondioxide; CVP: Central venous pressure; T-echo: Transoesophageal echocardiography; PAP: Pulmonary artery pressure; ECG: Electrocardiogram; STETHO: Stethoscope; physiol: Physiology; VAE: Venous air embolism

MANAGEMENT OF AIR EMBOLISM

1. Prevent further air entry
 - Notify surgeon(flood or pack surgical field)
 - Jugular compression
 - Lower the head
2. Treat the intravascular air
 - Aspirate right heart catheter
 - Discontinue nitrous oxide
 - Keep fractional inspired oxygen concentration 1.0
 - Pressors, inotropes
 - Chest compression

The most important part of the management is communication between the surgeon and anaesthesiologist. Normal saline being used for flushing the surgical field should be used religiously.

PRECAUTIONS

Placement of right heart venous catheter just after induction in all those procedures where there is a risk of air embolism. The location of right heart catheter is around 2cm below the superior vena cava (SVC) -atrial junction for multiorifice catheter and 3cm above the SVC-atrial junction for single orifice catheter.

Paradoxical Air Embolism [2]

A small patent foramen ovale (PFO) can lead to major cardiac and cerebral morbidity. The necessary gradient required to open the PFO is 5mm Hg. So avoidance of external positive end-expiratory pressure and liberal fluid administration keep the right heart pressure lower than the left and prevent embolism.

Conclusion

This is a very catastrophic intraoperative event and demands quick action by the surgeon and anaesthesiologist as a team. So, awareness and monitoring are important.

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Intraoperative hyperkalaemia within 24 hours post dialysis

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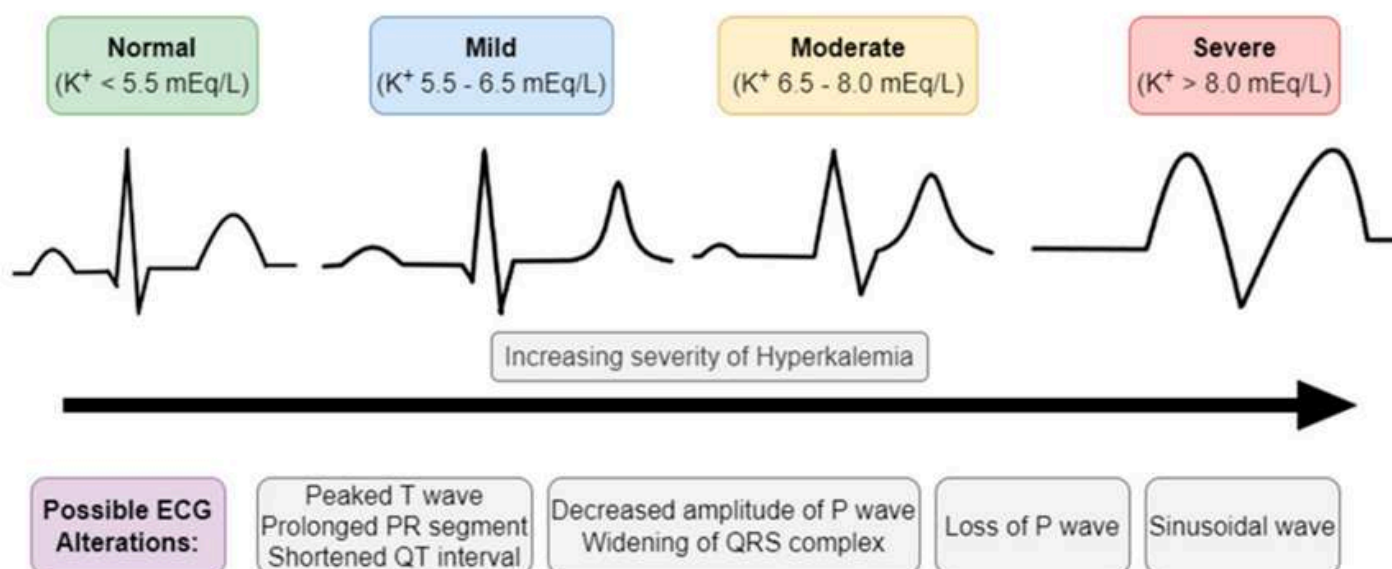
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Hyperkalaemia is defined as a serum potassium level more than 5.0-5.5 mEq/L. Levels higher than 7 mEq/L can result in haemodynamic and neurological effects. Levels more than 8.5 mEq/L can cause cardiac arrest.

Hyperkalaemia is one of the most common complications in patients with chronic kidney disease (CKD) and end-stage kidney disease (ESKD).[1] During haemodialysis in ESKD, serum potassium levels decrease by 1 mmol/L in the first hour, an additional decrease of 1 mmol/L in the next 2 h, and a gradual decline toward a dialysate potassium concentration in the remaining hours.

Patients with ESKD who are on maintenance haemodialysis, when posted for major elective surgeries are usually dialysed (preferably heparin-free) within 24 hours prior to the surgery and the serum electrolytes (mainly serum potassium levels) and renal function parameters are optimised. With this kind of prior optimisation and haemodialysis, the possibility of intraoperative hyperkalaemia is rare. [2]



Here is a report of two cases of intraoperative hyperkalemia. Both the patients were on maintenance haemodialysis for ESKD. Both received heparin-free haemodialysis one day prior to the surgery and the hyperkalaemia was treated similarly in the intraoperative period.

Case 1:

This was a 56 year old male patient with ESKD who was scheduled for elective exploratory laparotomy under general anaesthesia.

He was a known case of hypertension and CKD for 20 years and was under treatment for the same. He was on thrice a week maintenance dialysis for a few years. He was anuric and had history of recurrent episodes of breathlessness and fluid overload in the past which was treated with haemodialysis. He had no other comorbidities and his preoperative routine investigations revealed abnormal renal parameters. His other investigations were within normal limits. The patient received heparin-free dialysis, one day prior to the surgery. Post dialysis, his serum creatinine was 3.64mg/dl and serum potassium was 4.04 mEq /lit. He was given general anaesthesia with Injection (Inj.) fentanyl 2 µg/ kg and inj. propofol 2 mg/ kg. Inj. atracurium 0.8 mg/ kg was used for endotracheal intubation. Air-oxygen, desflurane (1 minimum alveolar concentration) and atracurium infusion was used for maintenance of anaesthesia. Normal saline was used as the maintenance fluid. In addition to standard monitoring, invasive blood pressure monitoring and central venous pressure (CVP) monitoring was done.

A baseline arterial blood gas (ABG) analysis was done which was within the normal range. After 2 hours, ABG analysis was repeated which revealed a serum potassium of 7.6 mEq / lit and all the other ABG parameters and serum electrolytes were within normal range. Since the values were alarmingly high, the ABG sample was repeated and the repeat

values were the same. Patient was vitally stable and all other parameters were within normal limits. The hyperkalaemia was treated with Inj. calcium gluconate 10 % diluted and given slowly over 10 min. Inj. sodium bicarbonate 7.5% - 25 ml was diluted and given slowly. 12 units human actrapid insulin was mixed in 100 ml 25 % dextrose and given over 20 min. Blood sugar was 186 mg/dl.

Slowly, serum potassium levels started coming down and after one hour of the above treatment, it was 5.6 mEq / lit. Blood sugar level was 316 mg/dl and the hyperglycaemia was treated with inj. insulin infusion 5 units / hour.

Case 2:

This was a 61 year old male posted for craniotomy. He was dialysed and optimised one day prior to the surgery. Intraoperatively, two consecutive ABG samples revealed a serum potassium of 6.49 meq/ lit and it was corrected and treated in a similar way as the first case.

Conclusion

Though intraoperative hyperkalaemia is a remote possibility in a patient dialysed a day prior to the surgery, we encountered hyperkalaemia in our ESKD patients. Careful attention to fluid balance and an awareness of the tendency of these patients to the development of electrolyte abnormality in the perioperative period warrants strict vigilance and the need to confirm the electrolyte status during the surgery.

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Chronic postoperative pain – the overlooked complication in surgical recovery

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Recollecting a chronic pain patient who visited our clinic, a 45-year-old woman suffering from post-mastectomy pain syndrome, I was struck by the severity of her condition. She endured excruciating pain in her chest, back, and right upper limb, to the point where she regretted ever undergoing the procedure. This highlights the profound impact that chronic postoperative pain can have, not only on patients but also on the morale of the surgical team. Addressing this complication with earnestness and care is not just prudent—it is essential.

Chronic postoperative pain (CPOP) as defined by Werner and Kongsgaard is “pain that lasts more than three months after surgery that was not present before the surgery or has different characteristics or increased intensity from the preoperative pain localised to the surgical site or referred pain.” [1] It is often neuropathic in nature. Its incidence varies based on the type of surgery from 10-50%. [2] Another study found that 11.8% of these patients had moderate to severe chronic postsurgical pain and 2.2% had severe pain with numerical rating scale (NRS) score >6. [1]

Not all surgical patients develop CPOP. A multitude of factors that be classed in the triad of patient factors, perioperative factors and preexisting patient condition factors are responsible for causing CPOP. Duration of surgery more than three hours, damage to nerves intraoperatively and presence of pre-existing pain has been found to positively correlate with the occurrence of CPOP. There is also some evidence for genetic polymorphism and psychological factors in its occurrence. Identifying these risk factors during the preoperative period can help us take appropriate steps in its prevention. However, these measures have not materialised due to lack of robust questionnaires yet to identify these patients.

The effects of CPOP are enormous considering the number of surgeries done nowadays. At-risk surgeries include herniorrhaphy, lower segment caesarean section, dental extraction, thoracotomy, radical mastectomy, hysterectomy, sternotomy, knee and hip arthroplasty, lower limb amputation and many more. One third of these will develop CPOP. Also the treatment of chronic pain as we know is very difficult and costly which will definitely have a huge economic burden on the society. It also leads to huge psychological trauma and functional limitation to the individual suffering.

Hence it is fit that we find all measures to prevent its occurrence. There is no definitive way to prevent CPOP. It is important that we identify at-risk patients and at-risk surgeries and applying prudent measures to treat the same (Figure 1).



Anaesthetic technique

- Use regional anaesthesia wherever possible
- Use adjuvant to prolong duration
- Use of preoperative antidepressants
- Good postoperative analgesia with PCAs or epidural analgesia



Surgical technique

- Minimally invasive technique
- Avoid excessive tissue damage or nerve damage
- Decreasing duration of surgery



Psychological Interventions

- Identifying at risk patients
- Treatment of preexisting anxiety, depression, fatigue, pain
- Psychological interventions including cognitive behavioural therapy introduced early to at risk patients
- Regular follow-up postoperatively

Figure 1 – Measures to prevent CPOP in at-risk patients and at-risk surgeries.

Management of patients coming with CPOP is complex. Medical management includes calcium channel antagonists, antidepressants, anticonvulsants, topical lignocaine, capsaicin. Symptomatic management with non-steroidal anti-inflammatory drugs (NSAIDs), paracetamol and weak opioids. Intravenous ketamine, lignocaine and clonidine are used in refractory cases. Interventions include use of pulsed radiofrequency ablation of nerve involved, repeated nerve blocks to the affected nerve to desensitise it, neuromodulation etc. Surgical management in few cases with post mastectomy pain has found results. Psychological treatment including cognitive behavioural therapy, physical therapy and lifestyle modification have been found useful.

Conclusion

CPOP affects more than half of surgical patients, making it one of the most feared complications for both surgeons and patients. While a definitive cure remains elusive, we are equipped with evidence-based measures that can significantly reduce the risk of its occurrence.

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Role of Simulation in Preventing Perioperative Complications



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Introduction

The “Father” of modern simulation, David Gaba, MD, puts it, "Simulation is a technique, not a technology." [1] The main focus of simulation sessions should be on the educational components rather than the tools (such as task trainers and mannequins), employed in the simulation sessions (Figure1). The vision for patient safety remarkably got noticed in 2001, after the landmark research by the Institute of Medicine (United States) titled ‘To Err is Human’. Ahead of getting widespread public recognition, the field of anaesthesia was considered at the forefront of patient safety with advancements in the field from the 1970s. The reverberations of this innovation included improved results, the development of standard care, and the formulations of patient safety organisations including the Anaesthesia Patient Safety Foundation in 1985. Notwithstanding, these advancements, perioperative adverse events continue to rank as the secondmost common category of adverse events that compromise patient safety.[2]

Traditional clinical training and medical education have emphasised an apprenticeship model under supervision. In this archetype, novices may manage clinical care or perform procedures, directly on the patients for the first time and eventually endangering them. [3]

Simulation-based education is a technique to revamp the traditional model through a real-time experience before encountering the actual clinical scenario, experiencing rare clinical scenarios, and learning teamwork with interprofessional colleagues efficiently. Furthermore, simulation can also aid in standardising educational skills across the world. Albeit, there exist a varied spectrum of fidelities including simple task trainers to high-fidelity manikin-based simulation. A verbal clinical scenario with, or without screen-based vitals is also considered under the simulation model. Despite the presence of these varied techniques, it can provide pertinent experience to the learners, before encountering the actual clinical scenario.

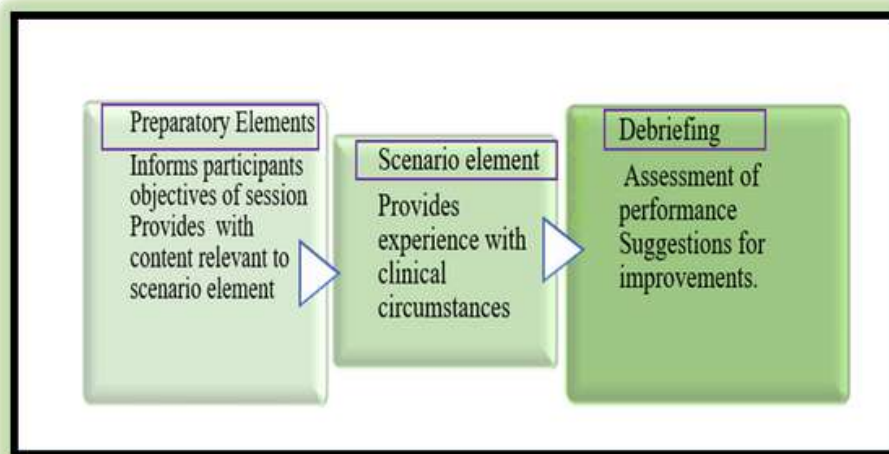
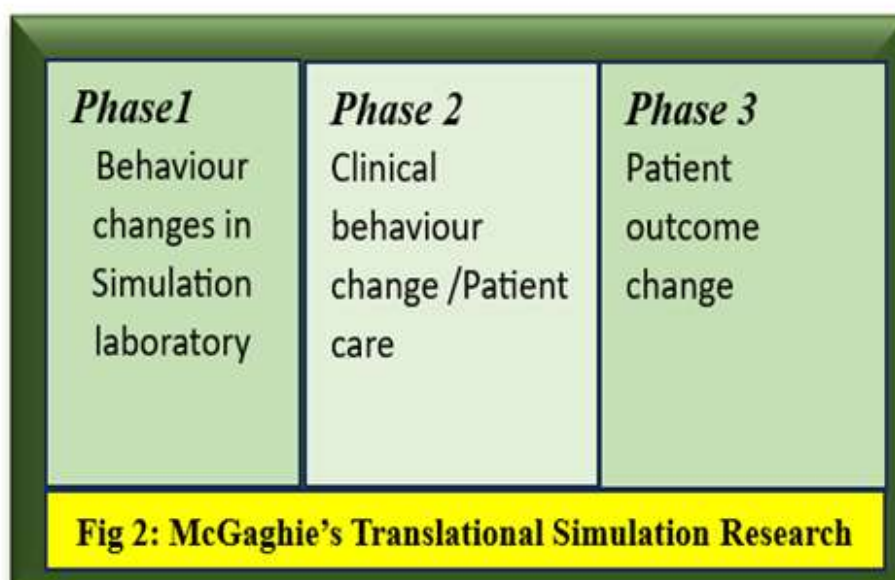


Figure 1: Simulation Session Framework

McGaghie's Framework of Educational Research

Simulation has demonstrated effective learning effects in comparison to non-simulation training, but the results become miniature when equated to non-simulation training. [4] The outcomes of various simulation research are often heterogeneous, causing difficulty in comparing various studies. McGaghie's framework for translational education research (Figure2) offers a valuable method for examining simulation education outcomes. It aids in mapping simulation outcomes to an adapted framework for translational clinical research. [5] The first phase of outcomes states changes in trainees' behaviour within the simulation laboratory, or more widely any change in skill, attitude, and knowledge. The second outcome denotes changes in clinical practice behaviour and patient care. The third effective outcome demonstrates changes in patient outcomes. Although all stages are important, changes in patient care and outcomes emerge as a panacea in medical education, nonetheless the most difficult part to demonstrate.



Technical Skill Drill

The objective of technical skills drill is to enhance psychomotor skills and medical knowledge for managing clinical scenarios. Technical skills training is commonly conducted for a single speciality and involves deliberate practice to improve and prepare for the real clinical situations. Low-fidelity part-task trainers, such as a gel central venous access trainer, or high-fidelity part-task trainers, such as a virtual reality-based fiberoptic bronchoscopy trainer are often used in procedural skills training.

Multiple research in anaesthesia has engrossed on outcomes in the simulation as illustrated by individual feedback from surveys post-simulation or skill changes while using a simulator. Various studies have shown changes in patient care after the simulation session. One study compared the task trainer model for refined manipulation of a bronchoscope with a lecture on fiberoptic intubation under anaesthesia. This research concluded patient care through a high grade of successful intubation, a better time to intubation in the simulation cohort. [6,7]

Non-technical Skill Drill

Aspects of medical care that are not directly related to procedural performance or medical knowledge are referred to as "non-technical skills." These skills are even more likely to cause morbidity and mortality than technical skills(Table1).[8,9] The safety of patients can be enhanced through appropriate utilisation of non-technical skills including; effective communication, speaking up and reporting errors

Non-Technical Skill
Situational awareness
Task management
Planning and Preparation
Teamwork
Communication
Decision-making

Table1: Non-Technical Skill

Crisis Resource management

Medical educationist David Gaba and his colleagues adapted aspects of crew resource management, that focused on non-technical aviation skills and coined the term “Crisis Resource Management (CRM)”. Dr Gaba being an anaesthesiologist adopted CRM particularly to anaesthesia and called it “Anaesthesia Crisis Resource Management (ACRM)”.



Figure 3: Key CRM components

Simulation and Anaesthesia Teaching Skill

The use of task trainers that are specifically designed to teach certain skills allows students to work through the necessary steps in a secure environment. While most beginners tend to concentrate on how to complete the given task, a successful simulation session should place the task in the context of patient care. The steps that must be physically completed to complete the procedure are not as important as the indications, contraindications, risks, benefits, alternatives, and justification for the procedure.

An effective simulation session, for instance, can teach a resident more than just where to put the needle if they want to learn how to insert a central line. In addition to the physical task, the session should cover other aspects of central line placement, such as the benefits and drawbacks of various catheter types and insertion sites, patient preparation and positioning, sterile precautions, landmark identification and confirmation of correct placement. The learner can practice purposefully with a central line task trainer. Teaching when to perform the procedure—that is, under what conditions it should be performed—is just as crucial as teaching how to perform it.

Interprofessional Approach for Team Training

Interprofessional simulation is special because it can be used to test new protocols or clinical environments, identify latent safety threats, and improve systems in addition to offering educational benefits for attending learners in team training.[10,11] Before clinical implementation with actual patients, defects in protocols or settings may be found and fixed by employing simulation as a testing modality. Anaesthetists who collaborate with other medical specialities or professions must cultivate a culture of patient safety.[12] By defining team roles, encouraging speaking up, to prevent medical errors without fear of reprisal, and reinforcing familiarity with team members, interprofessional simulation helps improve patients' safety culture. One major obstacle to the adoption of the simulation's recommended behaviours is safety culture.

Interprofessional simulation outside the operating theatre

In a study designed to determine the impact on patient outcomes after the formulation of a 'difficult airway response team' (DART) programme, [13] the researchers focused on collaboration between anaesthesiologists, otolaryngologists, trauma surgeons, emergency medicine physicians, and risk managers for airway emergencies. Teams showed enhanced collaboration, communication, and quicker reaction times for definitive airway management following the simulations. 360 patients with difficult airways were managed over the course of five years following the start of a DART education programme; of these, 23% required surgical airways, and 17% needed stabilisation and transport to the operating room for additional airway management. Positive changes were observed in patient outcomes over the course of the study period about sentinel events, deaths caused by airway management, and malpractice claims about airway management.

Future Direction

Dame Sally Davies, Chief Medical Officer, 2011 said that simulation offers an important route to safer care for patients, and must be more fully integrated into the health service.[14] Standardised, context-specific simulation training should be implemented for medical professionals from all backgrounds. The simulation-based education adoption and its sustainability is perhaps the biggest challenge. Furthermore, multiple educational organisations and regulatory agencies that commission and oversee the quality and delivery of training for healthcare professionals are struggling to provide a uniformity of ambition or clarity of curriculum requirements.

Conclusion

Anaesthesiologists can take pride in developing and using simulation-based training in health care to improve the education and training of all medical professionals and thereby, promote

the integration of human factors methodologies in the design of safer systems. The novel educational tools now available are creating extraordinary flexibility in the development of innovative learning opportunities in clinical care and quality improvement. As a profession, we are perfectly placed to amplify the benefits of advances in simulation through collaborative research into training interventions and systems design that demonstrate a clear impact on patient outcomes and organisational resilience. We must continue to lead in this domain.

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Preventing Complications: Role of WHO Surgical Safety Checklist

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ISA No. S3544



Everything in life is a checklist, whether it's building a birdhouse or building a kitchen. If you don't have a checklist, you're much more likely to forget something.....

-Brian Tracy

In 2009, the World Health Organization (WHO) emphasised Surgical Safety Checklist (SSC) implementation to improve intraoperative patient care and safety based on positive outcomes found in multiple studies.[1,2] The use of incorporating checklist as a strategy to abort mishaps dates back to its introduction in the aviation industry after an accident in the early thirties where human error was identified as the reason. With the introduction of checklist, human forgetfulness and complexity of aircraft systems were taken care of.

In 2001, the lessons learnt from the aviation industry were extended to health care by Peter Pronovos, a physician at Johns Hopkins Hospital. The 10-day catheter-related blood stream infection went down from 11% to 0 when a checklist was followed for central line insertion. Incorporation of timely delivery of antacid and 30 degree head-up position in mechanically ventilated patients in the intensive care unit showed a drastic fall in the incidence of ventilator-associated pneumonia. Under the policy 'Safe Surgery Saves Lives', the SSC was found to decrease the rate of complications from 11 to 7% and in-hospital mortality from 1.5 to 0.8%.

A checklist can be defined as a tool involving series of priority checks to be done ensuring higher standard of baseline care and enabling members of the surgical team to focus on

patient care and procedure. The SSC used globally aims to prevent surgical site infection by timely administration of appropriate antibiotics, limit avoidable errors like wrong site and wrong patient surgery and improve effective communication and team work among surgeons, anaesthesiologists and nursing staff in the operating room environment. Surgical briefing was found to be associated with 50% reduction in miscommunication events. Due to the enormous diversity among hospitals and within different departments of a hospital, the checklist can be tailored according to local and environment factors. [3]

Though implemented globally, the use of SSC in low to middle income countries presents with both challenges and opportunities. In India, the use of SSC is practiced in only few tertiary hospitals while others are either unaware or do not use it and its applicability is very low for emergency surgeries. Failure to complete or non-compliance from lack of time as a large number of patients are being operated daily, fatigue, stress; lack of adequate manpower and high turnover; lack of uniformity and a mental barrier to universally accept and use the SSC are major hurdles that need to be overcome. This leads to a negative impact on outcome by lowering performance quality and predispose to critical errors. Moreover, about 70% of errors have been found outside the operating room requiring incorporation of preoperative and postoperative Surgical Patient Safety System (SURPASS) to further reduce readmissions and reoperations.[4,5]

Few recommendations to ensure compliance with SSC include

1. Proper training and workshops to make the team aware of its positive impact and also how a proper conduct of a checklist is done.
2. Inculcating the culture of safety among operating room personnel.
3. Accountability of each team member by making them updated about their responsibilities which will encourage effective communication.
4. Leadership by senior staff as local champions.
5. Regular audits and feedback of team members to modify the checklist accordingly.

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Intraoperative Anaphylaxis : Anaesthesiologist's nightmare

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ISA No. R 3189



Anaphylaxis is defined as an acute, rapidly developing and progressive allergic manifestation which can cause dysfunction of multiple organs and can be life-threatening unless managed timely.[1]

Anaesthesiologist and Anaphylaxis

Medications (antibiotics, succinylcholine, rocuronium, atracurium, chlorhexidine, sugammadex, opioids), radiocontrast agents and blood products used by anaesthesiologists either during surgery, at trauma emergency, intensive care units and for magnetic resonance imaging (MRI) anaesthesia can potentially cause

anaphylaxis.[1]

Incidence of Perioperative anaphylaxis

- 1 in 353 to 1 in 18,600 procedures with mortality of 1.4% to 6%.[1]

How does intraoperative Anaphylaxis occur?

- It is Ig E mediated in 60% percent of the cases with previous history of allergy to medications. [1]
- Direct/non specific mast cell and basophil activation (antibiotics, morphine, atracurium), are seen in other 40% of them without prior allergic history to medications. [2]

Activated mast cells /basophils → serotonin, histamine, tryptase → prostaglandins and platelet-activating factors → vasodilation, airway oedema, bronchospasm, vasoplegia, reduced cardiac afterload, distributive shock with hypovolaemia.

How severe is this anaphylaxis and how do we address it ?

Grade I - generalised erythema, urticaria, angioedema, Grade II - hypotension, tachycardia, cough and managed by cessation of the suspected allergens, intravenous (IV) crystalloids, chlorpheniramine maleate and hydrocortisone. Vasopressor boluses and nebulisation of β_2 -agonists might sometimes be required.

Grade III - cardiovascular collapse, tachycardia, bradycardia, arrhythmias, Grade IV - cardio-respiratory arrest. These symptoms are life threatening and require immediate management with 100% oxygen and endotracheal intubation, IV epinephrine boluses (10 to 50 μ g per bolus) followed by continuous infusion, IV crystalloids up to 20 to 30 ml/kg. Cardiac arrest requires cardiopulmonary resuscitation/pacing, with vasopressin or norepinephrine infusions for refractory hypotension and extracorporeal membrane oxygenation for refractory cardiac arrest.[1]

Intraoperative anaphylaxis and anaesthesiologist's nightmare

- Our experience in an American Society of Anesthesiologists (ASA) physical status-I middle aged lady (without allergic history) for surgical clipping of an unruptured cerebral aneurysm is narrated. After 30 minutes of uneventful intubation, a sudden increase in peak airway pressure (from 15 to 31), tachycardia (heart rate from 76 to 118) followed by bradycardia (44), systolic blood pressure (BP) reduction from 130 to 60 mmHg, with pulse pressure variation from 10 to 24 occurred - all within a minute time, correlating with the start of fentanyl and atracurium infusion which was immediately stopped. After seeking for help and rushing the ongoing crystalloid, an IV bolus of 100 μ g adrenaline was administered, followed by betterment of all the parameters with systolic

BP of 150mmHg. [2] Adrenaline infusion was continued, surgery (which had not begun) deferred and patient was further assessed and extubated in the ICU.

- Reaction time for adrenaline administration was less than a minute within which bronchospasm, vasovagal reaction, tension pneumothorax, vasoactive drug overdose, cardiogenic shock had to be ruled out, to avoid a catastrophe. Sudden abnormal BP surge after adrenaline bolus would have landed us in a nightmare secondary to the brain aneurysm rupture.

What next after intraoperative anaphylaxis?

Surgery can be resumed following identification and cessation of causative agents in Grade I and II, while it is preferred to be postponed following Grade III and IV anaphylaxis. Further allergy skin tests (for all the anaesthetics and medications) are sought for. Allergy tests to muscle relaxants have a negative predictive value of 95% with anticipated detection failure for some medications.[1,2]

Conclusion

- Intraoperative anaphylaxis can occur even without the history of allergy or previous exposure to anaesthetics. Hence, obtaining a preprocedural consent for anaphylaxis is always preferred.
- Also, it would be important to perform allergy tests for various perioperative medications whenever a history of allergy to food or medications is elicited.

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ISA ACTIVITIES

ISA Miraj-Sangli Branch

(1st June 2024)

An offline CME on Neuroanaesthesia was held at Shree Siddhivinayak Ganapati Cancer Hospital. It was inaugurated by ISA National GC member Dr. Manisha Katikar and Executive director of Shree Siddhivinayak Ganapati Cancer Hospital Sangli.

aved to this PC SOCIETY OF ANAESTHESIOLOGIST
MIRAJ-SANGLI BRANCH

1 MMC
Credit points
granted

Invites you for
CME
On
Neuroanaesthesia

Organized by -
ISA MIRAJ-SANGLI BRANCH

Venue : Shree Siddhivinayak Ganapati Cancer Hospital, Miraj.
Date : Saturday, 1st June 2024 Time : 7.00 pm

DR. PRAKASH C. BHARAMAGAUDAR
DR. MANISHA D. KATIKAR
DR. VIKAS KARNE

Organizing Committee

DR. MANISHA PATIL
DR. RAHUL SARGUR
DR. MANISHA PATIL
DR. SHILPA GAWADE

CME on
Neuroanaesthesia

Shree Siddhivinayak Ganapati Cancer Hospital, Miraj.
Saturday, 1st June 2024

SCIENTIFIC PROGRAMME

TIME	TOPIC	SPEAKER	CHAIRPERSON
7.00 pm	Welcome & Inauguration		
7.30 pm	Anaesthetic Management of Traumatic Brain Injury	Dr. Prakash Bhramagaoudar	Dr. Pradeep Raut Dr. Sunita Shende
8.00 pm	Neuromonitoring & Recent Update	Dr. Vikas Karne	Dr. Jyotsana Paranjape Dr. Ravikiran Thote
8.30 pm	Postoperative Cognitive dysfunction and Prevention	Dr. Manisha Katikar	Dr. Ullhas Mical Dr. Manohar Mane
9.00 pm	Panel Discussion		
	How do I manage?		
	Panelist		Moderator
	Dr. Manisha Katikar Dr. Prakash Bhramagaoudar Dr. Vikas Karne		Dr. Ravikiran Thote Dr. Manohar Mane
9.30 pm	Vote of Thanks		
9.45 pm	Dinner		

REGISTRATION DETAILS

- Registration is free for ISA Miraj-Sangli Branch members
- For others fee - Rs. 200/-
- Please share screen shot of Transaction to Dr. Manisha Patil - 9284295871

2/2

QR Code

REGISTER HERE

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COLS and BLS activity were conducted by ISA Miraj branch in association with IMA Miraj branch at IMA hall. This activity was attended by about 80 nursing staff of private hospitals of Miraj and BHMS practioneers.

(8th June 2024)



World Environment Day Observed (8th June 2024)

ISA Miraj-Sangli branch members conducted tree plantation at village level, city level and in their own houses. 100 tree plantations were done at Bisur. These trees included Tamarind, Indian blackberry, Ashoka tree, Kadamba etc. Second place was in Wanlesswadi, Shivnagar where 20 plants were planted.



ISA Miraj-Sangli branch organised a webinar on Anaesthesia for Reconstructive surgery.
(24th July 2024)

 Indian Society of Anaesthesiologists, Miraj- Sangli Branch In Association with Society of Anaesthesiologists Maharashtra State (SAMS) Anaesthesia for Reconstructive Surgery 24th July 2024, Wednesday, 7:00 PM onwards Register Now  Rs. 100/- for Non-ISA MI-SA members			
Sr. No.	Time	Speaker	Topic
1	7:00 PM To 7:05 PM	Dr. Vasudha Jadhav	Welcome Address
2	7:05 PM To 7:30 PM	Dr. Ganesh Gangakhedekar	Anaesthetic Consideration in Free Flap Surgery
3	7:30 PM To 7:55 PM	Dr. Anita Nahata	Anaesthesia for Cleft Lip and Palate ... An Update
4	7:55 PM To 8:20 PM	Dr. Sanjaygita Naik	Anaesthetic Consideration in Chronic Burn Patient Posted for Aesthetic Surgery
5	8:20 PM To 8:45 PM	Dr. Rajendra Nahata	Reconstructive Surgery: Surgeon's Perspective
6	8:45 PM To 8:55 PM	Dr. Rupali Gargile	Vote of Thanks
Moderator			
Dr. Poonam Ghodaki		Dr. Sujata Zine	
SAMS Office Bearers		ISA Miraj- Sangli Office Bearers	
Dr. Balaji Aasgaonkar President, SAMS	Dr. Rajesh Tagadpalle Secretary, SAMS	Dr. Vasudha Jadhav President	Dr. Rupali Gargile Secretary
Dr. Avinash Bhoale Vice-president, SAMS	Dr. Anita Nahata President elect, SAMS	Dr. Sarika Kulkarni Vice-president	Dr. Shilpa Gaikwad Clinical secretary
Dr. Vikas Karne Treasurer, SAMS	Dr. Parna Thakkar News Editor, SAMS	Dr. Vinayak Patil QC Member	Dr. Manisha Patil Treasurer
Please share screenshot of payment to 9273971267 - Dr. Rupali Gargile. Free for ISA MI-SA members & Rs. 100/- for non-ISA MI-SA members.			

COLS and BLS activity was conducted by Dr. Ganesh Limaye sir of ISA Miraj-Sangli Branch at Nandadeep Eye Hopital, Sangli. This activity was attended by around 35 nursing staff and 5 consultants.

(27th July 2024)



ISA Malappuram city branch (June 2024)

The ISA Malappuram city branch in association with the Department of Anaesthesia, MES Medical college organised “MISACON 2024” - an obstetric anaesthesia update: enhancing maternal and fetal outcomes at IMA House, Perinthalmanna on 2nd June, 2024. Ten faculties from Malappuram city branch delivered informative lectures on obstetric anaesthesia topics which was attended by around 75 delegates. The conference was followed by a general body meeting of ISA Malappuram city branch for the month of June.

On 7th June, 2024, the ISA Malappuram city branch and the Moulana hospital jointly organised Emergency care and Life Support Training for the B Pharma students of Moulana Institute of Pharmacy. Around 65 students were trained.

On 28th June, 2024, Dr. Sasidharan P in association with the ISA Malappuram city branch conducted Child, Infant and Newborn CPR workshop for the nursing students which was attended by 75 of them.

On 30th June, 2024, the 3rd Governing Council Meeting of the ISA Kerala state was hosted by ISA Malappuram city branch at VAVAS MALL, Perinthalmanna. Around 25 state officials attended the meeting.



MISACON 2024 (02/06/2024)



Emergency care and Life Support Training (28/06/2024)



Child, Infant and Newborn CPR workshop (30/06/2024)

ISA Kolhapur Branch

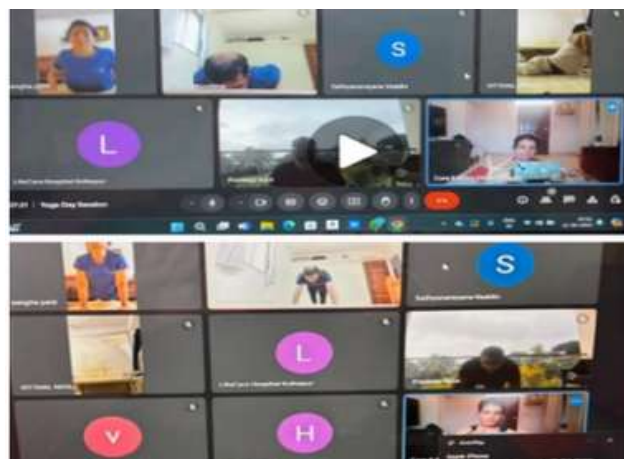
Sensitisation workshop (20th June 2024)

by Kolhapur Municipal corporation, Kolhapur Obstetric and Gynecology society, Society of Anaesthesiologist Kolhapur and Kolhapur Paediatric association for all Asha workers, sisters and Medical officers of Kolhapur Municipal corporation regarding plan to decrease maternal death rate, Family planning and Vasectomy, Child death rate, Jeevan Sanjeevani, Immunisation, Dengue Surveillance, Iodine deficiency, NTEP, Immunisation



Online Yoga Session (21st June 2024)

Members with their family participated in this programme. Yoga Teacher Miss Siddhi Ingale demonstrated and guided all the yoga asanas very enthusiastically



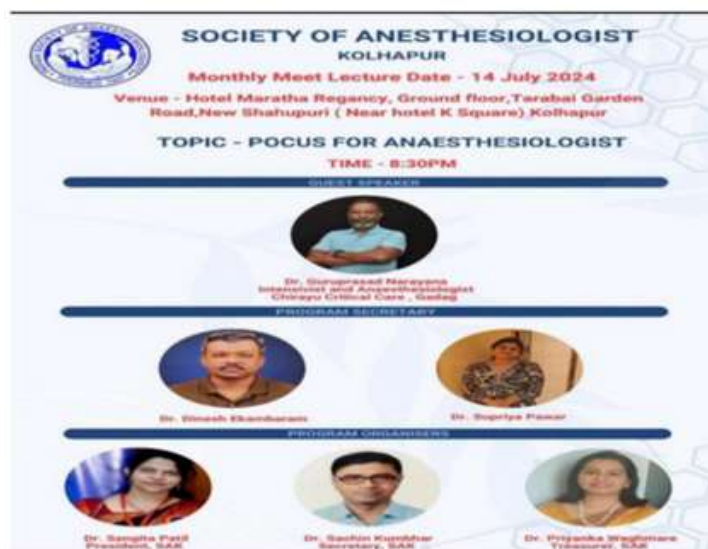
Arts exhibition and IT tournament (1st July 2024)

SAK in association with KMA celebrated "Doctors' Day" for all doctors at KMA hall Kolhapur. Blood Donation Camp was also held on the same day, which received great response from members.



Guest lecture on "Point of care Ultrasound "(14th July 2024)

Society of Anaesthesiologist Kolhapur in association with Aster Aadhar hospital and Team B Brown Conducted workshop on " Regional Anaesthesia and POCUS" in presence of eminent Faculty Dr. Sandeep Diwan, Dr. Guruprasad and Dr. Ashit Mehta. Dr.Pravin Chavan and Dr Supriya moderated the session. 30 SAK members attended and enthusiastically participated in the discussion.



COLS demonstration done at Athaayu Hospital Kolhapur (19th July 2024) by Dr Tina Gandhi to a group of around 30 people.



COLS programme by Dr Abhijit Gavali at Ghali High school, Gadhinglaj, Kolhapur for teachers and staff

Number of participants: 200



ISA Trivandrum branch

(20th, 21st June 2024)



The organisation has been actively promoting membership registration among postgraduates from various colleges in Thiruvananthapuram (TVM) city and providing technical assistance as needed. The updated website has received positive feedback.

A core committee meeting took place at Hotel Horizon on June 20, 2024, to discuss future plans, including the agenda for the Malappuram General Council (GC) meeting. The organisation also supported Abbott Health Care in conducting a Continuing Medical Education (CME) event at Hotel Hyatt Regency on June 21, 2024. The CME that focused on academic topics, was inaugurated and moderated by Dr. B Radhakrishnan, the Past ISA National President, with 117 ISA members in attendance.

Topics covered in the CME included:

- "Evaluation of Better and Safer Practices in Anaesthesia" by Dr. Saneesh P. J.
- "Stress and the Anaesthetist" by Dr. Sivakumar R Pillai.
- "Importance of Medicolegal Aspects in Anaesthesia" by Dr. Binil Isac Mathew, with panelists Dr. Rupa Sreedhar and Dr. Sajeesh Gopalan.

Additionally, the nomination for the Lifetime Achievement Award for Padmasree Dr. M. R. Rajagopal was forwarded to the State Secretary and the ISA National Headquarters.



Veterans of Core Committee {First Row (Seated), from left to right: Dr Sudharshan, Dr B Radhakrishnan, Dr TP Rajashekharan, Dr Suneel PR, Second Row (Standing), from left to right: Dr Unnikrishnan, Dr Jayaprakash, Dr Sajeesh G}

ISA Visakhapatnam branch(28/06/2024)

Monthly academic meet of Visakhapatnam city branch was conducted. Pro and cons session was conducted with participation from three medical colleges and one institute.



Gayatri Vidya Parishad Medical College organised Hands-On workshop on "TIVA and TCI" (7th July 2024)



ISA Guntur branch (28th June 2024)

June month Academic meet : Talks on 1. Patients with history of Glanzmann Thromboasthenia.
2. Anaesthetic implications in placenta accreta.



ISA Bangalore Metro Branch (28th June 2024)

Four lectures on complications faced in Anaesthesia were presented at API Bhavan. This was hosted by Department of Anaesthesia, Prakriya hospital, Bangalore. It was attended by 100 members.



ISA Nagpur City Branch(29th June 2024)

The ISA Nagpur City Branch celebrated its Annual Day on 29th June 2024, at Hotel Ashok, Nagpur. Dr Sukhminder Jit Singh Bajwa, Honorary Secretary ISA National, delivered Dr E.G. Tambe Memorial Annual Oration.



It was followed by an Award ceremony, the ISA NCB newsletter 'E-Sense' release, and a cultural program. The city branch also conducted an academic programme on World Environment Day, during which a lecture on 'Carbon footprint - Anaesthesiologists' perspective' was delivered. Further, a CME and a workshop on trauma and anaesthesia challenges were conducted. The city branch also conducted COLS and First Aid training at RA Chemical Pvt Ltd., Mauza, Khapri. Also, the same was conducted for Bahunan Hitaay Sangh, Maharashtra Officers Forum, Rotary Club, Nagpur, and Maharashtra State Sales Executive Association members.

The 9th Executive Committee Meeting was held at the branch office on 10th June 2024. The city branch member, Dr Umesh Ramtani, was invited as faculty for the SAMS online webinar on Recent Advances in Anaesthesia on 26 June 2024. The CME and Workshop-related news and interviews were telecasted on Awaz India Channel and local newspapers. Mrs Kamalbai Deshpande Memorial Life Time Achievement Award was conferred to Dr Vilas Tambe, a senior Anaesthesiologist and Mentor at ISA NCB, Pioneer in Intensive care in Nagpur.



ISA National Sponsored CMEs & Workshops

ISA Hubballi-Dharwad City branch

CME & workshop on Lung Isolation (16th June 2024)

It was inaugurated by Chief guest Dr Sukhminder Jit Singh Bajwa. It was well attended by about 200 delegates including senior and young Anaesthesiologists and postgraduates. Faculty included Anaesthesiologists from Kidwai Memorial Hospital and Sri Sathya Sai Institute of Medical Sciences Bengaluru, Tata Memorial Hospital, Mumbai and AIIMS, Nagpur. Workshop was conducted in the afternoon for 80 delegates on manikins.



ISA Siddipet branch

CME on Obstetric & Orthopaedic Anaesthesia (2nd June 2024)



ISA Hassan branch

CME on Critical Care

(30th June 2024)



ISA Jhunjhunu Branch

CME & Workshop on Mechanical ventilation

(13th & 14th July 2024)





Yuva Parnika (Youth Zone)



Public Awareness Vs Revelation :

Maintaining a fine balance

Dr. Aseem Sharma

Assistant Professor

Anaesthesiology, MGM Medical College

Indore

ISA No. A3321



Anaesthesiology has always been thought of as a cryptic and mystic field of medical science. People, including medical graduates, have a very meagre understanding of the details of this less known clinical branch. The little awareness they possess comes from whims and fancies. They hardly come across any authentic source to make them acquainted with the job of an anaesthesiologist. Making them aware is crucial and a job that has to be accomplished by anaesthesiologists themselves. Social media, having the deepest penetration can serve as a useful tool to fulfil this purpose.

Nevertheless, we human beings are notorious for transcending the safe limits of any privilege granted to us. There is a high probability that in the process of spreading awareness about the field of Anaesthesiology among the masses, we might intentionally or unintentionally disseminate more than what is needed. We might bare ourselves and spoon-feed all our precious knowledge, gained over a long, strenuous period of time to the common folk. In this world of cut-throat competition, the easy access to the details of giving anaesthesia might be exploited by the quacks and the presumptuous, underqualified class of graduates for their own benefit.

In this process, we might be unknowingly digging our own grave. The exclusivity of doctors is getting slayed. Of late, the internet is flooded by video lectures that serve the entire medical curriculum “on a plate” to the common people on the pretext of “spreading awareness”.

Besides theoretical lectures, videos demonstrating the anaesthetic techniques being performed by trained anaesthesiologists are openly displayed for public viewership on the internet. The privacy of an operation theatre is thrown open to the mercy of any random browser.

Are we heading in the right direction? Definitely not. Then, what needs to be done?

1. Spreading awareness is not synonymous with sharing all the necessary details of an anaesthetic technique. For instance, making people aware about spinal anaesthesia should not involve revealing the exact method and dosages of the drugs involved. Similarly, spreading awareness about general anaesthesia does not necessitate the need to mention the exact dose of propofol and atracurium to the common people.
2. A line must be drawn emphasising the limit of knowledge to be shared for “public use”. The entire canon of Anaesthesia should not be uncovered for public display. It should be reserved for the postgraduates who enrol for a professional course in Anaesthesiology.
3. Dissemination of knowledge on social media must be regulated. Injudicious and unregulated outflow of esoteric and recondite knowledge will only render it worthless in no time, especially when social media is accessible to every human being in this world.
4. Public awareness programmes about Anaesthesiology must be accompanied by a disclaimer that the concerned topic is meant to be practised only by a professional in a hospital setup.
5. Legal actions must be initiated against anyone disturbing the delicate ecosystem in which anaesthesiologists thrive. Our own people who advocate indiscriminate spread of the subject matter for the sake of getting “likes” and “subscribers” must be barred from practising Anaesthesiology. In this era of ever-increasing struggle for survival, strict set of rules need to be implemented to ensure the safety of anaesthesiologists and integrity of Anaesthesiology.

CROSSWORD

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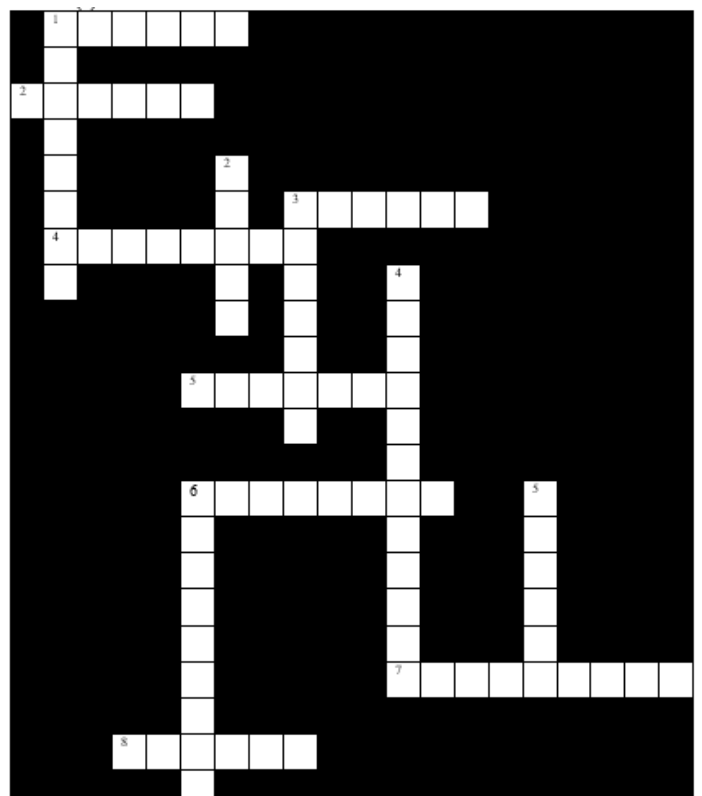
THEME: Peri-operative Complications

ACROSS

1. Acute adrenal insufficiency (6)
2. Bilateral pressure application on the mastoid processes at the level of styloid processes (6)
3. Placenta implants in advance of the foetal presenting part (6)
4. Patient-completed questionnaire which gives a subjective percentage score of level of function in daily activities (8)
5. Harsh, high-pitched inspiratory sound post operatively (7)
6. Produced by degradation of volatile anaesthetic agents in the presence of desiccated CO₂ absorbents (8)
7. Demonstrated that the sequelae from the aspiration of liquids were more severe clinically and pathologically when the liquid was highly acidic (9)
8. Method used to arrive at a consensus and create a protocol for diagnostic and treatment plans based on literature review, existing guidelines and discharge targets (6)

DOWN

1. The most widely used comorbidity index used to determine survival rate (1year and 10years) in patients with multiple comorbidities (8)
2. Surgical categories according to the standardised classification system (5)
3. Cause of hypercarbia (7)
4. Hypermetabolic state caused by an acute exacerbation characterised by high levels of circulating catecholamines (12)
5. The three Rs in the management of failed spinal: repeat, recourse and (6)
6. Depressed contractility of the right ventricular (RV) free wall compared to the relative sparing function of the RV apex (9)

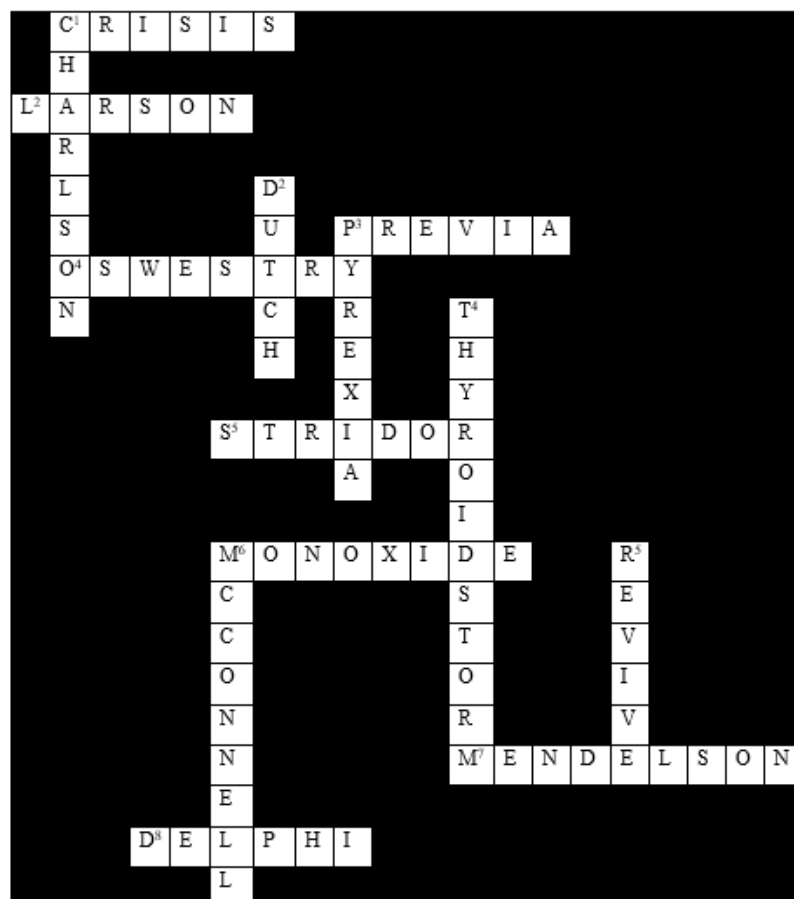


ACROSS

1. Acute adrenal insufficiency (ADDISONIAN CRISIS)
2. Bilateral pressure application on the mastoid processes at the level of styloid processes (LARSON Manoeuvre)
3. Placenta implants in advance of the foetal presenting part (Placenta Previa)
4. Patient-completed questionnaire which gives a subjective percentage score of level of function in daily activities (Oswestry Disability Index)
5. Harsh, high-pitched inspiratory sound Post operatively (STRIDOR)
6. Produced by degradation of volatile anaesthetic agents in the presence of desiccated CO₂ absorbents (CARBON MONOXIDE)
7. Demonstrated that the sequelae from the aspiration of liquids were more severe clinically and pathologically when the liquid was highly acidic (MENDELSON)
8. Method used to arrive at a consensus and create a protocol for diagnostic and treatment plans based on literature review, existing guidelines and discharge targets (DELPHI)

DOWN

1. Most widely used comorbidity index used to determine survival rate (1year and 10years) in patient with multiple comorbidities (Charlson Comorbidity Index)
2. Surgical categories according to the standardised classification system (DUTCH)
3. Cause of hypercarbia (PYREXIA)
4. Hypermetabolic state caused by an acute exacerbation characterised by high levels of circulating catecholamines (THYROID STORM)
5. The three Rs in the management of failed spinal ; repeat, recourse and (Revive)
6. Depressed contractility of the right ventricular (RV) free wall compared to the relative sparing function of the RV apex (McConnell sign)



Quiz (Multiple Choice Questions on Perioperative Complications)



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GC Member, ISA

&



Dr. Abhyuday Kumar
Associate Professor,
Anaesthesia
AIIMS, Patna

1. Evidence of an anaphylactic reaction to atracurium 1 to 2 hours after the episode could be best established by measuring blood levels of

- A. Tryptase
- B. Laudanosine
- C. Histamine
- D. Bradykinin

Answer: A

2. A patient having which of the following conditions is LEAST likely to develop DIC?

- A. Severe preeclampsia
- B. Placenta praevia (bleeding)
- C. Placental abruption
- D. Dead fetus syndrome

Answer: B

3. Initial bolus dose of 20% intralipid for the management of local anaesthetic systemic toxicity is:

- A. 0.25 ml/ kg
- B. 1 ml/ kg
- C. 1.50 ml/ kg
- D. It should only be given in infusion

Answer: C

7. Direct current(DC) cardioversion is not useful and, therefore, NOT indicated in an unstable patient with which of the following?

- A. Supraventricular tachycardia in a patient with WPW syndrome
- B. Atrial flutter
- C. Multifocal atrial tachycardia
- D. New-onset atrial fibrillation

Answer: C

4. As per ACLS 2020 guidelines, the bolus dose of atropine for persistent bradycardia with hypotension in adults is:

- A. 0.5 mg
- B. 0.6 mg
- C. 1 mg
- D. 1.2 mg

Answer: C

5. Lee's Revised Cardiac Risk Index to predict major cardiac complications includes all except:

- A. Ischaemic heart disease
- B. History of cerebro-vascular diseases
- C. Diabetic patient on insulin
- D. Cardiac arrhythmia

Answer: D

6. Durant position used in the management of accidental air embolism is:

- A. Trendelenburg and left lateral decubitus position
- B. 30 to 45 degree head up position
- C. 30 to 45 degree leg up position
- D. Right lateral position

Answer: A

8. Intraoperative allergic reactions are LEAST common after patient exposure to

- A. Ketamine
- B. Latex
- C. Muscle relaxants
- D. Hydroxyethyl starch

Answer: A

Poster: Perioperative anaesthesia complications

Perioperative Anaesthesia Complications

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AIRWAY



1. DIFFICULT AIRWAY
2. AIRWAY OBSTRUCTION
3. AIRWAY TRAUMA
4. ASPIRATION
5. AWARENESS AT INTUBATION
6. HOARSENESS

EQUIPMENT MALFUNCTION



1. ANAESTHESIA MACHINE
2. OPERATING ROOM FIRE
3. MONITORING DEVICES RELATED

CARDIOVASCULAR



1. HYPOTENSION
2. ARRHYTHMIAS
3. ACUTE MYOCARDIAL INFARCTION

BLOOD TRANSFUSION RELATED



1. ANAPHYLACTIC REACTION
2. ACUTE LUNG INJURY (TRALI)
3. CIRCULATORY OVERLOAD
4. ELECTROLYTE IMBALANCE

PULMONARY



1. OPIOID INDUCED POST OP RESPIRATORY DEPRESSION
2. PULMONARY OEDEMA
3. PULMONARY EMBOLISM

NEUROLOGICAL



1. POST OP DELIRIUM
2. HYPOXIC BRAIN INJURY
3. TRANSIENT MUSCLE WEAKNESS

POSITION RELATED



1. NERVE INJURY
2. PRESSURE SORES
3. BACKACHE

REGIONAL ANAESTHESIA RELATED



1. POSTSPINAL HYPOTENSION
2. NAUSEA & VOMITING
3. URINARY RETENTION
4. POST DURAL PUNCTURE HEADACHE
5. EPIDURAL HAEMATOMA

DRUG RELATED



1. ALLERGIC DRUG REACTION
2. ANTICOAGULANT DRUGS RELATED BLEEDING
3. ANTIHYPERTENSIVE MEDICINE RELATED HYPOTENSION

TEMPERATURE MANAGEMENT



1. HYPOTHERMIA
2. HYPERTHERMIA

Prize-Winners of Quiz held in ISA National PG online class

Congratulations !

Prize Winners of Quiz conducted during ISA National PG Online Class on 'Arterial Blood Gas Analysis' held on 20th August 2024

- Dr Nirupama Bansal
- Dr Muskan
- Dr Kichulu
- Dr Bhanu Gaur
- Dr Seema Maheshwari
- Dr Manjeeb Singh Arora
- Dr Muthukumar
- Dr Devrat
- Dr Pankaj Punj
- Dr Runjhun Jain
- Dr Ruchi Gupta
- Dr Gulam Moinuddin
- Dr Kiran Hirurkar
- Dr Jayanti Bhatia



ChatGPT and scientific research: beyond artificial intelligence!



&



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Chat-generative pre-trained transformer (ChatGPT-3, San Fransisco, USA), an artificial intelligence (AI) large language model (LLM) tool that emerged in the latter half of 2022, evolved as a coherent assistant to physicians across various arenas of medical practice like patient education; decision-making based on the most recent evidence; triaging in an emergency; monitoring and maintenance of the medical records; and, efficient conduct of telemedicine. [1] Meanwhile, the ever-so-dynamic and complex medical speciality provides colossal opportunities and considerable potential for AI; [2] the fraternity needs to focus on the concerns such modern-day tools concurrently that have recently spawned. The extensive database of text (approximately 570 GB) within ChatGPT and its' inherent ability to create logical content continue to be utilised by many authors to either complement or replace academic writing.

Of note, however, Májovský et al., in their proof-of-concept study, found that ChatGPT can generate a persuasive yet fraudulent original article on neurologic surgery within the structured format of introduction, methodology, results, discussion, and references.[3] The fact that this seemingly flawless and sophisticated research output could be generated within a time frame of 1 hour, that too alongside supporting meta-data, only goes on to highlight the extent to which AI-driven instruments and methodologies can, at times, be misleading in research, in the name of an enhanced proficiency. Moreover, such text can supersede a regular plagiarism check, compromising scientific acumen. Indeed, such instances and contextual intricacies have compelled many publication houses to introduce an explicit statement to be declared by the authors on using AI for manuscript drafting.

Delving deeper into the details of the matter, acknowledging co-authorship with AI tools is simultaneously not free from concerns because the International Committee of Medical Journal Editors (ICMJE) emphasises that ChatGPT does not truly classify as an author as it neither can take accountability for the content generated nor can approve it for the eventual submission. [4] Further, 'AI hallucinations' refers to a peculiar ChatGPT-generated reference output where the software provides real author and title names despite such citations being virtually non-existent. Such citations that AI tools generate are equally disturbing to the integrity and transparency of the core concept of disseminating knowledge.[5] Nevertheless, while a ChatGPT-developed manuscript may elope a formal plagiarism check, AI-detector software like the GPTZero® captures attention because of its ability to detect technology-assisted writing. Herein, it is again reaffirmed that novelty, trust, and truthful reporting are the building blocks of research reporting in any capacity or form. Given that an AI-developed manuscript is prone to falsification and fabrication, the authors must carefully address the ethical challenges before finalising and publishing the research work.

The contribution of AI to medical education, especially the depiction of case-based scenarios to improve problem-solving skills, formatting a personalised text for easy learning of concepts, summarising a particular topic, and creating a list of diagnostic possibilities based on the input of a pool of patient symptoms, shall remain the sought-after positive contributions of ChatGPT. [6]

Its' utility in formatting a referral letter, medical discharge summaries and preparation of laboratory reports remarkably save physicians' time. That said, the moral and ethical obligation that the authors owe to scientific writing and publishing should be deemed non-negotiable and unwavering, no matter how alluring the capabilities demonstrated by AI and LLM. The former attains even more relevance with newer ChatGPT (GPT-4) versions, claiming an enhanced ability to handle complex inputs. Hence, we should be mindful of the technical constraints while not overlooking the real-world research complexities at hand, thereby maintaining our poise to better guide and regulate the ever-so ardently sought-after transformative shift.

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Perioperative Complications

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"Anaesthesia is the single largest blessing ever given to surgery"- Crawford Long

Anaesthesia, like most fields of medicine has evolved with time and has now become evidence-based. It dates from prehistoric times in the form of opium and the first documented recipes recorded by the ancient Egyptians to the birth of modern anaesthesia in 1846 when William Morton publicly administered ether in the Massachusetts General Hospital. However, his first ever attempt to publicly demonstrate anaesthesia was complicated by failure to induce anaesthesia. This shows that no procedure in medicine is free from complications.

Perioperative complications signify any untoward events that might arise during the time of surgery-preoperative, intraoperative and postoperative. With the evolution of anaesthesia from nearly anyone being able to "drop ether" induction to the super speciality practice that we undertake today, anaesthesia and its related complications have also escalated. These complications include a wide range of unwanted events under its umbrella which can arise from the administration of anaesthesia alone, some related to surgery or due to complex interaction between anaesthesia, surgery, patients' conditions and human factors. A prompt recognition and swift action becomes a key to rescue as the anaesthesiologist has been considered 'THE CAPTAIN OF THE SINKING SHIP'.

It is an onerous task to classify and discuss this comprehensive matter but it can be broadly classified into - airway complications, cardiovascular mishaps, respiratory complications, equipment malfunction and injuries and drugs toxicities. 'Can't intubate can't oxygenate' is the most dreaded nightmare for any anaesthesiologist. Thus, different societies and their guidelines have been adopted to tackle airway emergencies. Different kinds of airway strategies have been incorporated to aid to the rescue including surgical approach as the last resort. With the advent of awake fiberoptic intubation and newer generation of supraglottic airway devices, it has become easier to address the anticipated difficult airway. Herewith, it is also essential for an anaesthesiologist to be well trained in the infra-glottic surgical approach in case all the rescue-aids fail. Airway management plans should emphasise the need to get help, to limit airway trauma by making best of each intervention, to re-appraise the situation at regular intervals and abandon the procedure before serious harm can occur as difficult airway accounts for 30% of the deaths due to anaesthesia.

Anaesthesia and surgery have a wide range of both short-term and long-term effects on the cardiovascular system. It is a widely accepted fact that the "window for cardiovascular risk" might extend till the post-operative period in some patients. The catastrophe might range from minor haemodynamic disturbances due to haemorrhage or regional anaesthesia to major

adverse cardiac event (MACE) including arrest. Thus, guidelines and scoring systems have been introduced to identify MACE and anticipate the risk-benefit ratio of the procedure. Meticulous understanding of associated physiology of increased metabolic demands due to surgical stress and its implications on different systems along with diligent knowledge of pharmacological interventions is necessary to dodge complications. Moreover, every professional should be well versed with the importance of cardiopulmonary cerebral resuscitation and should go through extensive training of the same.

Likewise, the pulmonary complications run the gamut from benign self-limiting basal atelectasis to serious life-threatening acute emergencies such as bronchospasm, laryngospasm and tension pneumothorax. Pre-existing patient factors such as obesity, upper respiratory tract infection, smoking, long term chronic illness such as bronchial asthma or previous history of tuberculosis or pneumonia seem to be few of the many pre-requisites for compromised respiratory system. Moreover, intraoperative ventilation-perfusion mismatch due to improper ventilation or perfusion also pose a threat. Understanding the complexity of gas exchange and different respiratory capacities is important to assess these emergencies and act briskly. Thus, the significance of preoperative identification of risk factors and optimisation of the same with drugs together with careful intraoperative vigilance and post operative ventilatory care if required becomes paramount for the prevention of respiratory complications.

Complications due to equipment failure such as ventilator malfunction due to misassembled

tubes and connections or faulty devices such as inadequacy of laryngoscope bulbs or video or failure of epidural catheters due to kinking etc is a long-known fact. It is a widely acknowledged fact that majority of equipment failures occur at the human-equipment interface. Thus, primary prevention should include proper training of the anaesthesiologist to identify the loopholes and proceed accordingly. Moreover, the anaesthetic techniques and equipment used might also cause injury to the patient such as dental and oesophageal injury due to intubation, pressure injury due to positions during surgery, peripheral nerve injury due to regional anaesthesia etc.

Finally, drugs used for administering anaesthesia might also cause different complications, local anaesthetic systemic toxicity being the most important of these. An extensive knowledge of various drug interactions with their effects on different systems, mechanism of action, metabolism and excretion is essential to make informed decisions about the drugs to be used.

Perhaps, as the notion goes – ‘Primum non nocere’ (first do no harm), the importance of prevention should be considered for complications. A cumulative aspect of high-quality education and training, appropriate knowledge, cooperative efforts of subordinates and seniors, right attitude towards patient, work and team, and effective departmental governance is all necessary to avoid mishaps. Lastly, the art of maintaining calmness during adrenaline rush plays the most important role in making decisions during emergencies.

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Preventing perioperative complications: All roads lead to Rome

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The era of anaesthesia: Painless surgery but at what cost?

Modern anaesthesia, as practised today, started with a public demonstration of ether anaesthesia by WTG Morton on October 16th, 1846- a landmark event in medical science. Before this, surgery was considered a last resort and was linked to unspeakable agony and suffering. However, the use of anaesthesia came with its setbacks. The first mortality related to anaesthesia use was in a girl who was administered chloroform on January 28, 1847 for a surgery to remove a toe nail. Barton used ether for amputations in the Mexican War in 1845 but with limited success with deaths linked to its use. Similarly, during the American Civil War of 1861-65, there was widespread use of ether and chloroform,[1] yet there remained a significant number of voices opposing its use owing to safety concerns and belief in the traditional “biting the bullet” or “getting rip-roaring drunk” before going under the surgeon’s knife. Regional anaesthesia started with the use of cocaine for ophthalmological procedures in 1884, and spinal anaesthesia in particular was widely used during World War I for trauma of the extremities.[1] It was recognised that improper administration of spinal anaesthesia caused worsening of shock in hypovolaemic patients. Intravenous (IV) anaesthetics were introduced into the mainstream in 1934 by John Lundy with the use of thiopental. [1] The portability, non-flammability and lack of need for specialised ancillary equipment meant that anyone who could secure an IV cannula and push the plunger of a syringe could administer the anaesthetics. This led not only to its instant popularity but also,

its near downfall, since the pharmacology of these drugs was still poorly understood and inappropriate dosage led to widespread complications, so much so that barbiturate anaesthesia was widely considered ‘dangerous’. It was only much later that it was realised that the problem was not with the anaesthetic agents but the lack of equipment to administer oxygen, the importance of resuscitation before surgery, the need for artificial ventilation, proper dosage and continuous monitoring. Fast forward to the 21st century, Anaesthesiology is recognised as a leader in the field of medicine in addressing patient safety[2] with the incorporation of cutting-edge technology, basic minimum safety guidelines mandatory for all, advanced monitoring, robust incident reporting, documentation and a host of fail-safe measures to counteract human errors.

There are no safe anaesthetic agents or safe anaesthesia procedures, only safe anaesthetists.

Many have drawn parallels between the practice of anaesthesia to the aviation industry, with anaesthetists being akin to pilots. Both require high vigilance and unwavering attention to identify the smallest deviations from normal because situations often escalate within seconds and make even simple, routine steps feel herculean. Fortunately, errors from the past have been accounted for, almost to excruciating detail and fail-safe methods have been incorporated right from the time the patient first meets the anaesthetist in the preoperative period. Pre-anaesthesia checkups (PAC) include documenting anticipated complications, optimisation of co-morbidities and having an airway management and anaesthesia plan that leaves no room for surprises later on the

day of surgery. Theatres have become a haven of engineering marvels; a classic example is the system of gas connectors that prevent a gas hose or cylinder from being installed improperly and the safety measures that the anaesthesia machine provides to avoid delivering a hypoxic gas mixture to the patient. Crash carts are kept ready with emergency drugs, syringes labelled with the name and concentration of medications used and look-alike sound-alike drugs (LASA) kept separately. Medications administered, airway management, lines secured, intraoperative haemodynamic monitoring and complications are noted in the anaesthesia record. Minimum mandatory safety standards laid down by the World Health Organization (WHO), World Federation of Societies of Anaesthesiologists (WFSA) and American Society of Anesthesiologists (ASA) including the presence of a qualified anaesthetist; continuous monitoring of tissue oxygenation and perfusion clinically as well as on pulse oximetry; monitoring blood pressure intermittently; confirmation of correct placement of an endotracheal tube by auscultation and end-tidal carbon dioxide level monitoring, the use of the WHO Safe Surgery Checklist are ubiquitously followed and uphold the principle of *primum non nocere*—first do no harm.[3] Post anaesthesia care units (PACU) with trained nurses and residents take care of the immediate post-operative needs and patients are discharged from care only when specific criteria are met. Handovers of the theatre team to the intensive care team, especially when a patient is critically ill are much akin to Formula 1 pit stops where various treating specialists (anaesthesiologists, surgeons and staff) perform as a single unit to safely and effectively transfer all equipment and information regarding the treatment of the patient to the next team. Monthly audits and mortality meet-ups provide further insights into improving patient care by addressing unintentional omissions and commissions. Despite all these safety measures, the ultimate

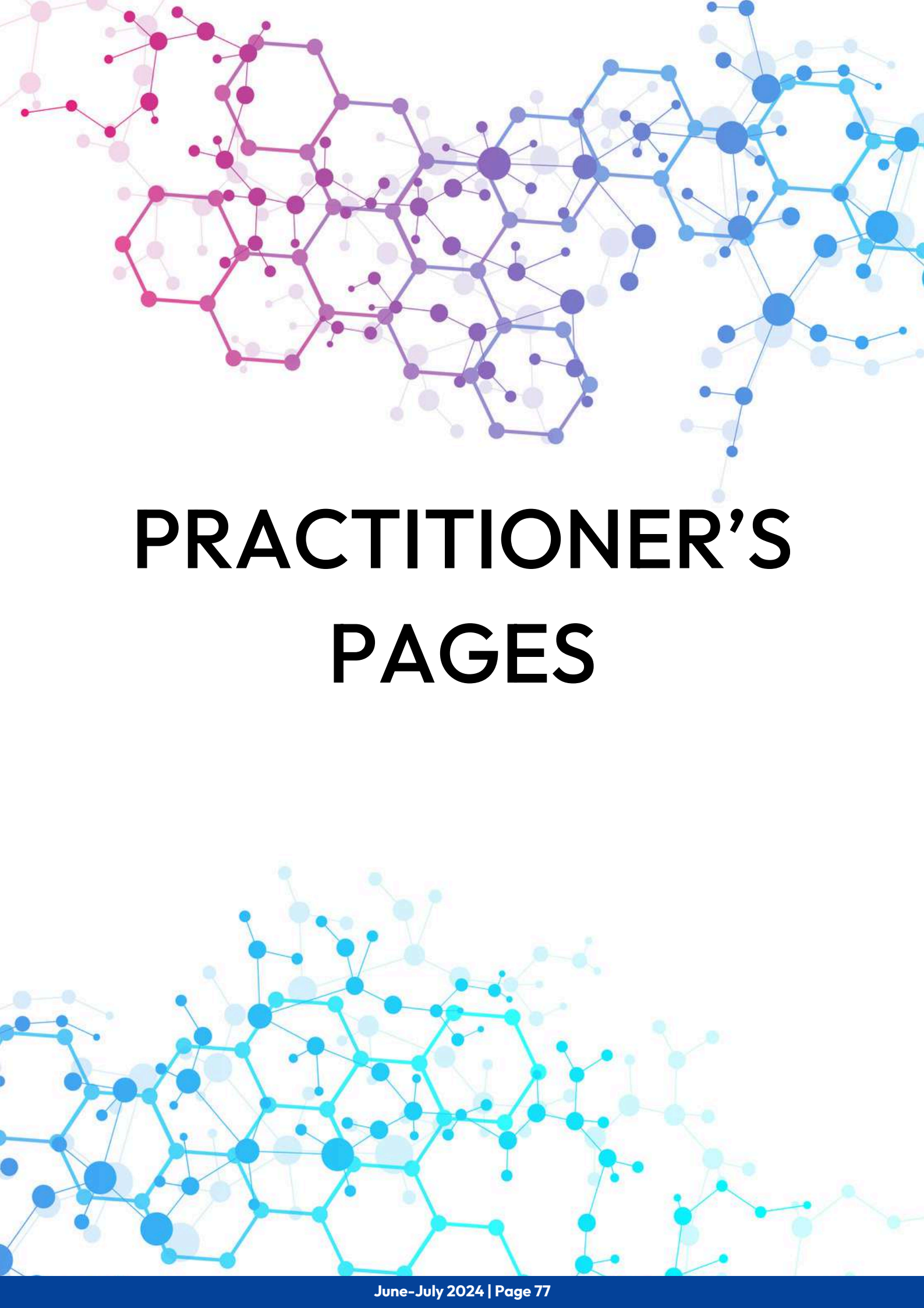
responsibility lies with the treating anaesthesiologist to make sure that all the screws of the fail-safe are oiled well and are working in sync.

Eyes into the future

High-reliability organisations (HROs) are organisations that function in hazardous, fast-paced, and highly complex technological systems while operating with no errors for long periods and it is hardly an exaggeration to designate the practice of anaesthesia as a HRO.[4] To ensure that this HRO scales further heights of efficiency, it needs a shift from blame-centred medicine to a culture where error reporting is encouraged. Inadequate manpower, infrastructure and fatigue especially in developing countries need to be accounted for. Simulation-based training for the most common perioperative complications and their management, especially for the first responders is paramount. Digitisation and adoption of anaesthesia information management systems provide customised access to patient records and hold promises for the future. As we transition into the safest epoch for the practice of anaesthesia, we need to recollect the words of Dr Ellison Pierce during the Emory Rovenstine 34th lecture: “Patient safety is not a fashion nor a preoccupation of the past. It is not a problem that has been solved, but rather an ongoing requirement.”

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An abstract graphic featuring a complex network of interconnected nodes and lines, resembling a molecular structure or a data network. The nodes are represented by circles of varying sizes, and the lines are thin, connecting the nodes in a web-like pattern. The color palette includes shades of pink, purple, blue, and teal, with some nodes highlighted in larger, more prominent circles. The overall effect is a sense of dynamic connectivity and complexity.

PRACTITIONER'S PAGES

Down the memory lane (Mein aur meri tanhai!)

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Induction

We all know that as doctors we can serve the society in various ways, be it a government service, semi-government/corporate world or a private sector. I always wanted to be in private practice even before choosing Anaesthesia. So, after completing my post-graduation I was ecstatic about my career and looking forward to take tiny steps in the world of private practice.

Hubballi is a place where I grew up and spent most of my academic years. Naturally I wanted to start my career at this place. It had many private nursing homes and a prestigious medical college at that time. Most of the hospitals were family owned and the corporate style of hospital management was unheard of. But now things have changed a lot over a period of 20 years or so.

During my post graduate days, I had seen some of the consultants using pagers. By the time I began my practice, pagers had given way to mobile phones. Nokia was the buzzword. When I was a registrar at Sion hospital Mumbai, immediately after my post-graduation I saw many consultants and residents using mobile phones. So, when I came back to Hubballi to begin my professional career, I already had a Nokia 5510 handset with me. After mobile phone, the next thing I wanted to have was a set of visiting cards so that I could flash one of them to any doctor I meet and say 'Here is your future anaesthesiologist!' A couple of days later, I had a box full of visiting cards mentioning my name and phone number.

I started meeting consultants and handed them my visiting cards. Meanwhile I joined a hospital

for the night shifts in the intensive care unit (ICU). This arrangement not only provided me financial freedom but also kept me free during the day time so that I could accept anaesthesia calls. I was happy and confident and started dreaming about either calls or cars (Hyundai Accent to be precise!)

Days eventually turned into weeks and to my utter surprise, I realised that I had received not a single call from any hospital. This could not be happening! Was my phone alright? Of course it had to be, because I was getting calls from friends and family. I was paying for the incoming calls too. What's wrong with these people, or me? This was totally a new experience. I was clearly out of my comfort zone, probably for the first time in my life. Restlessness soon followed. Something had to be done. So, I met some senior anaesthesiologists. They told me to attend monthly Indian Society of Anaesthesiologists meetings so that others would come to know about me and they would help me in one way or the other. So, I started attending the meetings and met few senior colleagues. It is at that time I realized that nobody would change their regular anaesthesiologist just because a newcomer had approached them. I had to wait for my turn.

Meanwhile I started to attend calls from the same hospital where I was doing night shifts. I had a 'Splendour' bike now and was enjoying the bike rides. Things seemed to be improving as I started getting calls from other hospitals.

Gradually, I left the night shifts and joined another hospital on salary basis as their regular anaesthetist. By now, I had a fair idea of what or how my practice would be. Meanwhile I got

married to Arathi. She had just joined MD training in the same medical college where we studied.

Coma

Everything was fine to begin with but slowly the practice started appearing monotonous. When I had work it felt to be repetitive when I had no work, I was upset. I wanted to do something more. This led me to think about the opportunities in England. At that time, everybody was dreaming about working in the UK/US. Some of my friends were already working there. So, I thought of going to England for a couple of years and then come back to Hubballi.

I cleared the mandatory IELTS and PLAB exams and landed at London. Within a few days, I realised (to my horror) that the number of applications had gone up to hundreds per post from 5-10 applications per post. I could see lot of fresh MBBS graduates not only from India but also from other Asian countries. Everybody appeared to be applying for post of Senior Health Officer (SHO) in Anaesthesia! There was no way I could get a post in that mad rush. Many considered me too old for the post. I got plenty of Clinical Attachments but none were turning into real opportunities. I was losing hope but kept on sending my applications and working on my curriculum vitae.

My father underwent by-pass surgery while I was busy filling the application forms and shuffling around in England. Dark clouds were looming large over my UK dreams. By now it was evident that I would never get a job there. Although friends and family were quite supportive, I decided to come back to India.

When I returned, I felt a lot better in the company of near and dear ones. I informed the hospital that I was back. After two minutes I got a call for a case and I was back in business! I resumed visiting the consultants again and they were quite sympathetic. They too had heard the difficulties that Indian medical graduates were facing abroad. Somehow everyone knew about me when I wasn't around. I think my UK trip did a much better job than my visiting cards! By now, I was a freelancer and UK memories were fast fading away. Meanwhile, my wife completed her MD and

next year Disha came into our lives.

Maintenance

My brief stints in Mumbai and UK did not fetch me much financial gains nor did they add to my practice years. But I learnt so many things. I travelled, made new friends, saw many gadgets and techniques in anaesthesia. Those experiences cannot be measured by any financial yardstick.

As my work picked up, I started visiting other hospitals and rubbing shoulders with the senior colleagues. I replaced some in new hospitals, someone replaced me in my previous hospitals. But I made sure that my work gave me confidence and satisfaction. I avoided bad hospitals and walked away from a few consultants. I also realised that honesty and modesty carry more weight than competency alone. Being courteous to patients and other supporting staff also plays a great role in shaping us into a better doctor. I am sure few surgeons are very happy to leave their patients under my care now. I am no better than the anaesthesiologist next to me but I like the fact that some prefer me over others. When the OT staff say 'Sir, Are you here for all the cases? Great! We can go home early today' or when they say 'Sir was insisting for you yesterday' I feel a sense of achievement.

Recovery

Life has been a thoroughly enjoyable journey since then. It has always bestowed upon me more than what I deserve. Life has even made me a partner in one of the prestigious private hospitals. Of course, I brooded over my practice during those early days. I felt poor professionally when I didn't get any calls. Although there are few tricks to remain in the market, I can't play all those tricks to perfection. Instead, I choose to have moderate work and get plenty of 'my time' for myself and family. Those occasional 'No cases today' days do not upset me anymore. In fact, I enjoy these days tending to other chores, reading, writing, watching movies etc. For this alone, I thank my profession and feel proud to be a freelance anaesthesiologist.

Long live ISA!



ART & LITERATURE PAGES

Compression Only Life Support

Dr. AL Meenakshi Sundaram

Thanjavur

Former Director of Medical Education,

TamilNadu

ISA No. S1417



முதலுதவி

(Compression Only Life Support)



இருதயம் ஒன்று

இனிதே இயங்க

இளரத்தம் ஒடுதம்மா

எழுச்சியும் பிறக்குதம்மா

இருதயம் அதுவும்

இயங்காது போனால்

மாரடைப்பு என்றிடுவார்

மருத்துவரை நாடிடுவார்

விரைவில் உதவி கிடைத்தால்தான்

வியப்புறவே நோய்தீரும்

நேரம் கடந்து சென்றாலோ

மரணம் வந்து நமைச்சேரும்

ஆழ்மனதில் இக்கருத்து

அனைவருக்கும் சென்றால்தான்

பாழாய்ப் போகும் பலஉயிர்கள்

பாரில்மீள வழியுண்டு

Just to make the heart functioning,
the blood is running to it

If the heart is not functioning, it is called heart attack and the
people seek doctors help

If the help is taken immediately, treatment is possible and if
delayed death is certain.

If this point reaches the depth of the heart, many lives in this
world would not be wasted.

If there is no medical help, even the bystander can become a
doctor.They can work fearless as it is an emergency .

If there is no functioning of the heart -no consciousness, no
briskness.

Tap the shoulder and arouse the unconscious person. If no
response immediately help.

Alert the Emergency team, call the ambulance. Compress the
lower part of the chest.

If the heart is functioning with the help of your two hands , it will
receive appreciation clap with two hands. If you press with two
hands there is a possibility for the heart to function.

For every minute press hundred times. If you press twenty more,
even that would be better.

Without frustration. learn the compression support and save many
lives.

Press the lower part of the chest bone.Compress to the depth of 5
cm and help.

When you compress with two hands, keep the elbow straight. Use
the weight of the body and the press with fisted palm.

If you are hesitant about mouth to mouth breathing, fearing
infection.

Then help them very easily. Press the lower part of the chest.

To help sleep...

Dr. Bhagirath. S. Naganath
Associate Consultant in Anaesthesia
Sakra World Hospital, Bangalore
ISA No. B1247



*Amidst the chorus of pain,
amidst the cacophony of suffering,
amidst the din & noise of endless strife.*

*Against the humdrum of monotony,
against the rigour of repetition,
endurance finds expression,
perseverance finds reason.*

*To fight these many battles, none in vain
to prevail upon life, when death lurks around
the corner
to be grounded, to be focussed, amidst all this
to silently bear guardian witness to all that shall
come to pass,
to be silent sentinels in a spirit of eternal
vigilance*

*to subjugate one's ego, to make way for better
judgment
to hold hands and to guide through a maze of
facts
to persuade reason, to emphasise sense, and
often sensibility*

*A million thoughts at any given moment
almost all concerning a soul not one's own
every passing hour, every passing minute, every
second*

*to be ever watchful, to be all embracing
that indeed is a leap of faith, of love and
compassion
for such noble pursuits call for intense passion
in our chosen forte, in our chosen vocation
that of lulling troubled souls and embittered
minds
into an ethereal, almost healing slumber
if this not be a spiritual calling,
then one wonders, what else can be?
No accolades, no praise, a few of moments of
glory
the work, they say is it's reward
no recognition need ever be sought
selflessness must be one's sole purpose and
essence
for that which we do is but divine bidding
we are only tools in his hands
to ferry forth his flock from shore to shore
through troubled waters, still and deep
ever so easy to mistake the woods for the trees
to feel dismayed and burdened with toils
and yet, the reminder that, it is His will we
serve
shall in the end be justification enough
to endure and continue this holy toil
to ensure that all, in the end, is done for the
greater good.*



Water-Colour Paintings

By **Dr. Maya Bhalerao**

Consultant anaesthesiologist

Pimpri Chinchwad, Pune

ISA No. M1208



Paris Landscapes

Kaleidoscope

A tryst with

Dr. B. Ranjith Karthekeyan

Senior Consultant Cardiac Anaesthesiologist,
Professor & Head of the Department of Cardiac Anaesthesia,
Sri Ramachandra Institute of Higher Education and Research
Porur, Chennai, Tamil Nadu.
(ISA No. R1197)



Hello Sir!

Warm Greetings to you from the editorial team of VAPOUR!

You are a renowned cardiac anaesthesiologist and a well-known post graduate (PG) teacher. You have written books on Cardiac Anaesthesia and are a promoter of E-Learning. We are privileged to have you with us on the sets of 'KALEIDOSCOPE'.

1) Tell us something about yourself. Why did you take up Anaesthesia? Why did you take up Cardiac Anaesthesia?

Back in 1995-96 when I was at the crossroads to choose a specialty, Anaesthesia intrigued me. It was a field that had somehow escaped the glamour and attention of other, more popular surgical fields, so to say. However, it was a field that was of such critical importance that it formed the foundation itself to all the other specialties! Anaesthesia is unique and special – it is the only specialty that encompasses all other fields, be it surgery or medicine. I was hooked! As I dove into it, I developed the inclination towards Cardiac Anaesthesia because of its significance and the sheer aura of it!

A single mistake in Cardiac Anaesthesia can endanger or even cost the patient's life. That makes the field even more challenging. Challenges motivate me. Hence, I took to it like duck to water! Everybody selects a profession which is close to their heart, and in Cardiac Anaesthesia, you are not only close to it, but deal with it as well! Other fields of Anaesthesia do not have the access to see the naked heart – Cardiac anaesthesiologists can not only see the heart live, they can also stop the heart from

beating and revive it at will! The visual impact of such pharmacology and physiology is privy only to Cardiac Anaesthesia. Hence, my decision to take up Cardiac Anaesthesia.

2) There is a dearth of cardiac anaesthesiologists in several areas of our country. What are the challenges that face cardiac anaesthesiologists and cardiac surgeons today?

Anaesthesia has taken several developmental strides in the last decade or so. It was the Late Dr. Kalyan Singh and Dr. I S Naidu who started its popularity in India. Later, great doyens from different parts of our nation took cardiac anaesthesia to the proverbial next level in the country. I was fortunate to be trained by some of the very best in the field – Prof. Vijayalakshmi Kamat, Prof. Mahesh Vakamudi and Dr. Suresh Rao.

Cardiac Anaesthesia started becoming popular only in the late 90s, thanks to such great teachers who have achieved so much in their careers that their experiences themselves can be made into text books for students of the current generation to follow. This luxury was something that wasn't available to my generation of anaesthesiologists. But now that we all possess the expertise in our field, the means of sharing this with the next generation of aspirants is lacking. But, this, I am sure, is only temporary, and in its due course of time, even this hurdle will be addressed.

A cardiac anaesthesiologist, in addition to all other expertise of the field, also has to be technically very, very sharp and competent, particularly with invasive lines. He (or she) has to be functioning at

the top of his (or her) expertise every moment of his career. He needs to be ready at all times to take life-saving, or threatening, decisions and he cannot do that unless he keeps himself constantly updated with the changing dynamism of knowledge.

Cardiac Anaesthesia is a field that flirts with danger as a hobby! Even a single inconspicuous mistake can actually snuff out the life of a patient. After all, it is only the cardiac anaesthesiologist who wields the power to send to or awaken the patient from a death like situation (CPB)!

In Anaesthesia in general, you contribute to finding a solution rather than just managing the problem symptoms. More often than not, you are confronted with situations you would only have read about in your education, never experienced. As a cardiac anaesthesiologist, you have to be absolutely spot on with your knowledge and the action plan to overcome sudden complications in procedures. There are challenges that a cardiac anaesthesiologist faces as a part of daily routine, but which to others, would appear like a catastrophe! The role of a cardiac anaesthesiologist is greatly challenging indeed.

3) Do you think that the current PG teaching-learning methods are in tune with the times? What are the lacunae in teaching that are seen in current Anaesthesia education in medical colleges and hospitals?

Anaesthesia is practically one of the more dynamic fields and is constantly getting upgraded with new discoveries, inventions and concepts. Though teaching methods too are getting updated from time-to-time, there is a lot that can be introduced in the teaching methods such that a PG student exits his course fully equipped with up-to-date theoretical knowledge of the field.

We take pride in being a conservative country, and rightly so. Having said that, we are certainly not resistant to change, or updating our methods. In fact, we are the flag-bearers of change to the world. Remember, we literally

invented unified payments interface (UPI) during coronavirus disease (COVID)-19 times and gave it to the world to adopt.

Likewise, PG teaching methods too can reinvent themselves to be abreast of the times. We are largely a textbook based teaching society currently – our methods need to develop with the times and transform into a computer and artificial intelligence (AI)-based teaching. We have the required wherewithal for that and simply need to implement and adapt it.

For example, simulation-based teaching has to be introduced into the curriculum to a great extent. The student needs to thorough himself with multiple attempts in the simulation modules such that he goes into his practice knowing exactly what complications he could encounter and how to overcome them.

Likewise, animations of surgical procedures, nerve blocks, invasive lines, etc., if made available in the curriculum, would impart such proficiency to the student to such a level that practical procedures would feel all too familiar to him!

Anaesthesia teaching, no doubt, has progressed at a far greater pace than have other fields. Which is why India perhaps, is home to some of the very best anaesthesiologists in the world. However, updating our methods of teaching with more modern technology is lacking. I am sure this is a work in progress and the field will soon integrate theory with enough animation and videos in the coming days. Integration of real-time videos and surgical scenarios with textbook teaching is something that can be implemented immediately. A picture speaks a thousand words, they say. A video speaks a million! Hence, this is a gap that can quickly be plugged.

Further, disciplines of Anatomy, Physics, Physiology and Pharmacology pertaining to Anaesthesiology should be far more aggressively taught to PGs such that they acquire practical knowledge on the field to base their life-saving decisions upon during their times of need.

4) Do you think that the Competency Based Medical Education (CBME) curriculum for undergraduates and postgraduates that has been rolled out by the National Medical Commission is feasible in our nation? Will it become successful?

Like I have said, keeping ourselves updated and abreast with the times in our field, is of paramount importance. This is the entire essence of medicine. The CBME is a step towards that. It facilitates, and to an extent, ensures, uniform patient-centred outcomes across the student fraternity. It is a step in the right direction and both patients and doctors will benefit from this method.

5) Do you think that blended learning is better than pure E-learning and face-to-face traditional classroom teaching? Should all universities and medical colleges in our nation incorporate newer teaching-learning methods in their curriculum?

Definitely yes. Imagine times of the past when concepts had to be learnt only through theories, diagrams and verbal teaching. Compare this against now where every concept can be taught with AI-based 3D visual animations and supplements of today's times! A student is taught the concept and shown the procedure as well. This would be the ultimate method of teaching. E-learning integrates book knowledge, online videos and live surgical experiences to complement classroom teaching, thus forming a holistic approach to education.

Add to this, video demonstrations with explanations of all instruments associated with medicine, including something as simple as an Endotracheal Tube, or as complicated as a Ventilator, have a far greater impact on the mind of the student.

Students would grab such teachings much faster and way more accurately, thus resulting in making better doctors.

6) What do you think about the current assessment methods for MD and DNB in

Anaesthesiology? Should we go in for newer methods of assessment and how?

The current assessment methods are okay, no doubt. However, they do leave some scope for being even better. For example, the assessment method must be able to gauge the simulation and practical aspect of a PG student- whether he is ready to be given practical responsibilities or not, etc. Further, a PG should be made to work atleast a year as an intern such that he learns even more under a guide in practical surgical scenarios. The ultimate goal, needless to say, is to make the PG a safe anaesthesiologist!

7) Do you feel that today's PG teachers in anaesthesia are equipped to gear up to the rising and changing demands and environment of healthcare, medical education and technology? Is the role of the medical teacher changing?

Technology is always evolving. No one can actually be adept at it at all times. Especially not in our field where the priority is uncompromised safe anaesthesia, not technology upgradation! However, the quality of our teachers is unquestionable. It is sublime. This quality alone is most of the time enough to serve the large purpose. However, coupling this sublime quality with some amount of technological expertise would be a winning combination to both teacher and student! This is the sphere where there is some amount of space for innovation and development. It would do a world of good for teachers to spare some amount of time and effort in keeping abreast with advancing technology and adapting it into their teaching styles. Now, that would be a winning combination!

8) Should one join as a faculty in a medical college only if one has a passion for teaching? What is your advice to the modern PG teachers?

Teaching is not often an inborn talent. It blossoms with practice. Hence, it is very difficult

to say whether a person is a born talent for teaching or not at the outset. It is only with experience that can one really gauge if he/she likes to teach and is up for it. I strongly advocate that everyone should teach. In one way or the other, on one platform or the other, in one context or the other. Teaching develops not only the student, but the teacher too. My word to today's young teachers would be this – teach unto others as you have never been taught unto! Keep updating and upgrading yourselves to remain relevant with the changing times and the ever increasing expectations of the coming generations!

Like the great Late President, Hon. Abdul Kalam once said, 'Learning gives Creativity. Creativity leads to Thinking. Thinking provides Knowledge. And Knowledge make you Great!'

9) What is your message to the PG students of today?

Hard work, acquiring knowledge, passion for teaching, technological empowerment and financial stability should be the mantra of every PG student. Times are fast changing. COVID-19 ensured that. It is very important to predict the future of medicine and the challenges the future would have in store for it.

Hence, soak up knowledge in these formative years. Just soak it up. It does not matter where it originates from, what matters is what is being taught! So, learn, learn and learn! Knowledge gathered during these times will hold all the youth in good stead over the coming years. It is better to have the extra knowledge and perhaps not even need it in the future, rather than need it and not have it at hand!

Life itself is like an echo – what you give, you get! So, once you have reached that level, don't forget to make the effort to give back the knowledge you acquired and you will end up gaining even more knowledge!

Swami Vivekananda said, "Arise, awake, and stop not till the goal is reached!". The goal of every PG student should be to work hard and be the best and the safest in their field.

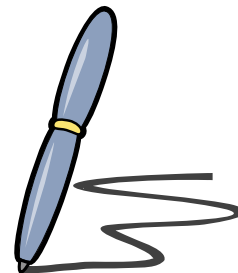
Sir, you have changed the lives of many PG students with your innovative teaching. You are a true inspiration to young teachers as well. Thank you for sharing your valuable thoughts on medical education.

Many, many thanks!

The Editorial team, VAPOUR



INVITATION TO CONTRIBUTE



‘Vapour’, the official newsletter of the Indian Society of Anaesthesiologists invites contribution of articles originally written by ISA members(Life and associate). The articles can be in the form of interesting case reports for discussion, articles on topics of current clinical relevance, photo-essays, articles on medicolegal /health/ financial/extracurricular issues of interest to the anaesthesiologists. Original literary works such as poems, funny cartoons or paintings on topics of anaesthesia are also welcome. Information about extraordinary achievements /experiences of ISA members, book publication can be sent.

The articles should be brief and written in font Times New Roman 12-14 size and presented in Microsoft office word document (rtf/doc files). Plagiarism and violation of copyrights should be strictly avoided. The articles should be e-mailed to isanhqvapour@yahoo.com with a covering letter addressed to the Honorary Secretary ISA National.

Dr Sukhminder Jit Singh Bajwa
Honorary Secretary ISA National

&

Editor-in-Chief

VAPOUR

(The official newsletter of the ISA National)

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