



ISA
Indian Society of
Anaesthesiologists
Delhi Branch

ISA Delhi YUVA CON 2024



ISA DELHI

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President (ISA Delhi Branch message)

Dear Friends

Greetings

Thank you for making Yuvacon 2024 a true success by actively participating i thank you each individual & all the institutions who have actively participated in sports, cultural activities & academic activities making it memorable & successfull.

Now we have to gear up for annual ISA Delhi confence. I request participation from various institutions as your involvement will add to the success of these events. Your support and commitment are key to turning this dream into a reality.

The first five monthly meeting at Akash Hospital Dwarka, Rajeev Gandhi Super Speciality, Tahirpur, AIIMS, VMMC & SJH, MAMC, New Delhi were well attended.

Best Wishes to all.

Long live ISA.

Dr. Lokesh Kashyap

Professor and Head

Department of Anesthesiology, Pain Medicine and Critical Care
AIIMS, New Delhi



Vice President (ISA Delhi Branch message)

Respected Delhi ISAains,
Warm Greetings.

Our annual event “YUVACON 2024” was organized on 6th and 7th of April 2024 at Maulana Azad Medical College (MAMC). Yuvacon 2024 was huge success, well attended by more than 400 delegates with amazing participation of young anesthesiologists. ISA Delhi is organizing various academic programs with other activities. CME on obstetric Anesthesia was organized by Maulana Azad Medical College (MAMC), which was well attended and appreciated.

Medico legal and ethics cell of ISA Delhi has been created to discuss and help various medico legal problems of all ISA Delhi members.

ISA Delhi has launched “ISA Delhi academic series”, has been huge success as more than hundred anesthesiologists including PGs, senior faculty and Consultants participated in webinars.

Next monthly ISA Clinical meet will be on 22 May 2024 at ESI Hospital, Basaidarapur. I request all to attend these clinical meetings in large numbers.

Best Wishes to all.

Long live ISA.

Dr. Arvind Arya
Vice President Delhi ISA



Honorary Secretary (ISA Delhi Branch message)

Dear Delhi ISAIans,

Greetings from ISA Delhi Headquarters,

April is the month of nation's rich cultural and religious diversity. It also marks the gradual transition from spring to summer. We celebrated Baisakhi, Poila Boishakh, Bihu, Puthandu, Gudi Padwa, Good Friday, Mahavir Jayanti and Ram Navmi. All of them brought communities together in celebration and reverence.

Governing council of ISA Delhi is taking pride in apprising you all that ISA Delhi YUVACON 2024 on 6th & 7th April 2024 at Maulana Azad Medical College was a grand success. It was attended by over 450 participants across country. It was all possible because of constant encouragement and support of our fellow ISAIans and ISA Delhi YUVA wing co-ordinators. My special thanks to Dr. Munisha Agarwal, Organising Chairperson for her mentorship and steadfast encouragement. I also thank Dr. Rajiv Gupta and Dr. Lokesh Kashyap for strategic vision and meticulous planning. My heartfelt thanks to Dr. Abhijit Kumar, honorary treasurer who was the soul of YUVACON. Whether it was his brainstorming ideas, resolving challenges or co-ordinating logistics and finances, his support was valuable at every step.

I congratulate Department of Anaesthesiology, MAMC under leadership of Dr. Munisha Agarwal for organising 5th CME cum monthly clinical meet on 26th April 2024, which was attended by record breaking 250 delegates. Starting from visioning leadership and high quality PPTs, amazing quiz and buffet spread during high tea, everything was worth appreciation.

ISA Delhi Academic series is gaining popularity with each session. We are also in process of launching ISA Delhi Ethical and Medicolegal cell very soon.

I once again request all my teachers and seniors to keep blessing us with your ideas and experiences. I also urge my YUVA ISAIans to please come up with new ideas & suggestions for our 63rd Annual Conference ISACON Delhi 2024.

Dr Amit Kohli

Honorary Secretary
ISA Delhi



Honorary Treasurer (ISA Delhi Branch message)

Dear ISA Delhi members,

Greetings from the treasurer's desk.

As we navigate the vibrant season of the Indian Premier League (IPL), it is evident that the energy and enthusiasm of this beloved sport reflects the dynamic spirit of our country. Just like cricket, team ISA not only brings us closer in celebration, but also serves as a reminder of the power of teamwork and strategy clearly evident from the humongous success of YUVACON 2024.

As the season of IPL and the Lok Sabha elections passes by, we are laying the seeds for ISA Delhi ISACON 2024, set to flag off on 27th September 2024. Please keep the spirits high and participate in the forthcoming ISA Delhi activities in massive numbers.

We have already launched ISA Delhi branch YouTube channel where you can revisit the recorded version of newly launched academic series and soon coming up with other social media platforms as well. Keep a watch and please maximize your engagement.

Before I conclude, It is my humble request to exercise your right to vote and contribute to a better future for our nation.

Long live ISA.

Jai Hind.

With regards,

Dr. Abhijit Kumar

Honorary treasurer, ISA Delhi.



Editor (ISA Delhi Branch message)

Dear ISA Delhi Members, Greetings!

It is with immense pleasure that we present to you the 5th issue of our monthly newsletter.

The newsletter contains recent advances, unknown topics, current opinions, relevant but less practiced guidelines, historical aspects with current relevance, sections of long case questions, quiz and crosswords.

We extend an invitation to all hospitals to submit case reports, review articles and studies for potential inclusion in the newsletter. We encourage all members to keep the articles coming, contributing to the richness of our community. Active participation from all members is encouraged to enrich the diversity and depth of our community's content.

In our pursuit for academic excellence, we welcome constructive criticism for improvement.

Long Live ISA! Long Live ISA Delhi!

Dr. Puneet Khanna

Additional Professor

Department of Anaesthesiology, Pain Medicine and Critical Care
AIIMS, New Delhi

LIST OF HOD

NAME	HOSPITAL	MOBILE	EMAIL
Dr. A Tilak	Forits Vasant Kunj	9810234015	
Dr. Anil Thakur	ESI Basaidarapur	9350103337	
Dr. Aparna Sinha	Max Institute of Laparoscopic Endoscopic and Bariatric Surgery, Max Saket, New Delhi	9810035503	aspin@hotmail.com
Dr. Arun Puri	Max Superspeciality Hospital, Patparganj, Delhi	9811074379	dr.arunpuri7@gmail.com
Dr. Arvind Arya	IHBAS Institute	9868396825	drarvindarya@gmail.com
Dr. Arvind Chaturvedi	AIIMS, Department of Neuro anaesthesiology & Critical Care, New Delhi	9871045824	c.arvind61@yahoo.in
Dr. Arvind Prakash	National Heart Insititute East of Kailash	9811650846	Prakash_arvind1(@rediffmail.com
Dr. Beena Haridas	Manipal Hospital.Dwarka	9871110983	
Dr. Binod Kumar Lal	Swami Dayanand Hospital	9810476209	binodkumarll66@gmail.com
Dr. Daljeet Kaur	Dr. N C Joshi Memorial Hospital	9958938488	daljeetkak@gmail.com
Dr. G S Popli	CK Birla Hospital	9871557556	popligurpreet@gmail.com
Dr. Geeta Kamal	Chacha Nehru Bal Chikitsalya	9643308229	kmlgeeta@rediffmail.com
Dr. Jayashree Sood	Sir Ganga Ram Hospital New Delhi	811294608	drjayashreesood@gmail.com
Dr. Kharat Mohd.Butt	Hamdard Institute of Medical Science & Re-search, New Delhi	9622457554	khairatm@gmail.com
Dr. Lokesh Kashyap	AIIMS New Delhi	9873531192	lokeshkashyap@yahoo.com
Dr. Mahesh Kumar Arora	Institute of Liver and Billiary Sciences, Vasant Kunj	9811365293	mkarora442@gmail.com
Dr. Maitree Pandey	Lady Hardinge Medical Collage and Assosiated Hospital New Delhi	9810570515	maitreepandey@gmail.com
Dr. Mangwana	Chanan Devi hospital	9810956411	
Dr. Meera Kharbandal	Indraprastha Apollo Hospital New Delhi	9810063988	meera.kharbanda@yahoo.com
Dr. Monika tandon	GB Pant Hospital, New Delhi	97185 99408	
Dr. Munisha Agarwal	Maulana Azad Medical college, Delhi	9968604216	munisha.agarwal@gmail.com
Dr. Namita Sharma	Akash Hospital,Dwarka	9899521048	
Dr. Navdeep Sethi	Yashoda Superspeciality & Cancer Hospital Ghaziabad (NCR)	9873029832	drnavdeepsethi@gmail.com

LIST OF HOD

Dr. Neerja Banerjee	Dr. RML Hoispital	9810517575	neerja.banerjee@gmail.com
Dr. Neeta Taneja	Sir Balaji Action Medical Institute	9811032535	Taneja57@gmail.com
Dr. Nidhi mathur	Sardar Vallabh Bhai Patel Hospital	9873143460	Dr. idhimathur67@gmail.com
Dr. Nymphia Kaul	Sanjay Gandhi Memorial Hospital	847734430	Dr. aul99@gmail.com
Dr. Pavan gurha	Batra Hospital & Medical Research Delh-110062	9811088632	pavan_gurha@yahoo.com
Dr. Pradeep sharma	Goyal Hospital	9999009114	pradeepsharma2982@gmail.com
Dr. Puneet Sharma	Max Shalimar Bagh	8368696269	
Dr. R S Rautela	University College of Medical Sciences & GTB Hospital, Delhi		rsramb@gmail.com
Dr. Ragi Jain	Rajeev Gandhi Super Speciality Hospital	9811820246	
Dr. Raj Tobin	Head, Max Super-Speciality Hospital, Saket	9810507165	rajtobin@gmail.com
Dr. Rajiv Gupta	Maharaja Agrasen Hospital	9810101445	Rajiv_rita@yahoo.com
Dr. Reeta Chawla	Sita Ram Bhartia Insititute	9818836084	Reeta.chawla30@gmail.com
Dr. Sameer Mehta	Venkateshwar Hospital,Dwarka	9810763074	
Dr. Sandeep Chauhan	Department of Cradicia Anaesthesia AllMS New Delhi	9873729366	
Dr. Sanjeev Kumar	LBS Hospital	9582500336	drsankumar@gmail.com
Dr. Sarika	Bhagwan Mahavir Hospital	9818987995	
Dr. Seema Kalra	ESI Hospital Jhilmil, Delhi	9810960596	Kalraseema1965@gmail.com
Dr. SL Bakshi	Metro Hospital		
Dr. Slinand	Jagpravesh Hospital		
Dr. Sujata choudhary	VMMC & SJH	99990 51546	
Dr. Sunil Gupta	Sant Parmanand Hospital	9810156812	
Dr. Sunita Bhatt	Hedgewar Hospital		
Dr. Surendra K Arora	Delhi State Cancer Institute	8800190660	surendra_arora@yahoo.com
Dr. Sushma Bhatnagar	Institute Rotary Cancer Hospital, All India Insti- tute of Medical Science New Delhi	9811326453	Sushmabhatnagar1@gmail.com
Dr. Sushmita Sarangi	DDU Hospital	9718990113	

LIST OF HOD

Dr. U K Valecha	BLK Superspeciality Hospital	9810001903	
Dr. Umesh Deshmukh	Fortis Shalimar Bagh	981010445	
Dr. Vandana Chugh	Ambedkar Hospital , Rohini	7290095540	
Dr. Vicky Jaiswal	Max Superspeciality Hospital, Vaishali	9582265897	Vikkyjaiswal34@gmail.com
Dr. Vivek Gupta	Saroj Hospital	9810020953	vivekg117@gmail.com

In case of any discrepancy in names or credentials please inform ISA Delhi Secreteriat at isadelhiexecutive@gmail.com/ dramitkohli@yahoo.com/9818073402

ISA DELHI YUVACON 2024

Our world is evolving at an unprecedented pace and at the core of this transformation is our “Youth”. Our Yuva are the innovators, the changemakers and leaders of tomorrow. Keeping their thoughts in mind ISA national has created a Youth Club in 2019 and thereafter organized first ISA National YUVACON on virtual platform in 2021 which was very well attended by ISAIans across nation. Your own ISA Delhi Secretary and Treasurer happened to be in core organising team for the event. Following the footsteps of ISA national, ISA Delhi has also organised first ISA Delhi YUVACON in 2022 at GIPMER. Second YUVACON was organised in 2023 by team RML.

Third ISA Delhi YUVACON 2024 was organised on 6th and 7th April 2024 at Maulana Azad Medical College, New Delhi. It was preceded by ISA Delhi Annual Sports Meet on Sunday, 31st March 2024 at AIIMS Gymkhana. This conference was not just meeting of intellectual minds but also was a confluence of dreams and aspirations.

ISA Delhi wishes to thank all teachers, seniors for guiding us throughout the conduct of event and encouraging YUVA ISAIans for active participation. ISA Delhi also expresses its gratitude to Dr Munisha Agarwal, Head Department of Anaesthesiology, MAMC and Dr Rajiv Gupta, Head Department of Anaesthesiology, Maharaja Agrasen Hospital for their mentorship and steadfast encouragement as organising chairpersons of the event. It was the vision and ideation of ISA Delhi President Dr Lokesh Kashyap, team could sail through without hurdles.

ISA Delhi YUVACON was started with ceremonial flag hoisting in the presence of ISA National, ISA Delhi office bearers and other dignitaries. ISA Delhi feel proud in informing ISAIans that for the first time in history, it was well attended and appreciated by more than 450 participants, not only from Delhi but we got good response from Haryana, Uttar Pradesh, Rajasthan, Maharashtra, Tamil Nadu, Gujarat as well.

Elaborate scientific program was well appreciated by all delegates which included short talks, panel discussions and pro-con sessions.

We wish to share another landmark response with you all. Organising team received record breaking 110 entries in competitive paper category and 104 entries in competitive E- poster category. Both competitive sessions (14 each) were conducted quite smoothly throughout two days. ISA Delhi thanks lead faculties involved in them - Dr Lalit Gupta, Dr Aayushi Mahajan, Dr Karthik Raman, Dr Rinki Chaudhary, Dr Rahil Singh, Dr Nitin Choudhary, Dr Ankita Verma, Dr Shruti kumari, Dr Jyoti Rana along with YUVA ISAIans from different institutions of Delhi.

In addition to academic activities other star attractions were Art competitions, literary

ISA DELHI YUVA CON 2024

competitions, cultural competitions, Photography competitions, Extempore and Quiz. The enthusiasm and joy of participation amongst YUVA ISAians had spread positive vibes throughout. ISA Delhi expresses gratitude to all coordinators- Dr Anshu Gupta, Dr Farah Husain, Dr N Shivpriya, Dr Ramita, Dr Raghav Gupta, Dr Nishant Kumar, Dr Ishtiaque, Dr Sandeep Kumar, Dr Ranju Singh, Dr Geetanjali Chilkoti, Dr Abhishek Nagarajappa, Dr Bhavya Krishna, Dr Isha Yadav, Dr Sukhyanti kerai, Dr Snigdha Singh, Dr Santavana Kohli, Dr Neha Pangasa, Dr Rohan Magoon along with enthusiastic YUVA coordinators. Detailed report of these events is also published in this edition.

ISA Delhi wishes to extend heartfelt thanks to all YUVA coordinators especially Dr Ashwin C S, Dr Vimaljeet Singh, Dr Rinki Chaudhary for months of hard work in planning and execution.

Inauguration ceremony of ISA Delhi YUVA CON 2024 was graced by Honorary Secretary ISA National Dr Sukhminder Jit Singh Bajwa (Chief guest); Dr Anil Agarwal (Dean, MAMC) and Dr Suresh Kumar (MD, Lok Nayak Hospital) along with ISA Delhi office bearers and organising committee members.

In the end, Valedictory Ceremony was preceded by Dr Munisha Agarwal, Dr Rajiv Gupta, Dr Lokesh Kashyap, Dr Arvind Arya, Dr Amit Kohli, Dr Abhijit Kumar and Dr Puneet Khanna along with GC members of ISA Delhi where glittering trophies and medals were distributed with applauds and blessings.

The unique part of ISA Delhi YUVA CON 2024 was that the organising committee of various activities along with session hosting all was done by YUVA ISAians of different institutions of Delhi rather than just host institution.

Looking forward for such amazing participation in upcoming ISA Delhi event as well. Till then stay happy, stay safe.....

Author

Dr Abhijit Kumar

(Honorary Treasurer, ISA Delhi)

Dr Amit Kohli

(Honorary Secretary, ISA Delhi)

ISA DELHI YUVA CON 2024



YUVACON ARTS COMPETITION

The world always seems brighter when you have just made something that wasn't there before. And the premises of YUVACON did indeed become brighter and more colorful as young and enthusiastic anesthesiologists registered for fun filled art activities. The results of their creativity became a treat to the eyes of passersby.

Organizing Team

The YUVACON Arts Team was led by Dr Anshu Gupta, Professor Lady Harding Medical College; Lead Faculty Dr Farah Husain, Senior specialist, Lok Nayak Hospital and Maulana Azad Medical College; Dr P N Shivpriya Associate Professor, Atal Bihari Vajpayee Institute of Medical Sciences (ABVIMS) and Dr RML Hospital; Dr Ramita Kashyap Assistant Professor, MAMC; Dr Nidhi Pathak, Assistant Professor, ABVIMS and Dr RML Hospital; and the YUVA coordinators Dr Ankush from GangaRam Hospital and Dr Nimish from Lady Hardinge Medical College.

Activities

Day 1

Graffiti on the wall: The students were asked to create their own designs using fabric, acrylic paints on canvas rolls that were provided and the theme was “anesthesia and graffiti”

T shirt Designing: Small, medium and large sizes of white cotton T shirts were provided to the students. They were asked to paint and create their own T shirts on “anesthesia theme” which they were allowed to take back home.

Day 2

Cartoon Making: The students were given 4 different themes to choose from and make a cartoon of their choice. The themes were as follows:

- (i) The anesthesiologist's swagger
- (ii) Anesthesiologist versus the surgeon
- (iii) Intubating the obese patient
- (iv) The emergency call finally ends

Complete the sketch: The organizing team had selected three different sketches that were partially complete and the students were given a choice to complete anyone using pencil

The enthusiastic participation in all categories, indeed revealed that there exists a lot of hidden art talents in the YUVAS, and YUVACON gave a wonderful platform to their creativity. With over 20-25 entries in almost each category for T shirt painting, sketching, graffiti and cartoon making, the arts corner was always a busy spot to be seen during the conference.

YUVACON ARTS COMPETITION



YUVACON ARTS COMPETITION



YUVACON ARTS COMPETITION



YUVACON ARTS COMPETITION



Author

Dr Farah Husain

Specialist Anesthesia

Lok Nayak Hospital & Maulana Azad Medical College

YUVACON LITERARY EVENTS

The Yuva ISAIans event, held on the 6th and 7th of April 2024 at the Maulana Azad Medical College in New Delhi, marked a significant convergence of young and seasoned professionals in the field of anaesthesiology. Organized by the ISA Delhi Branch, the event aimed to foster collaboration, knowledge sharing, and innovation in anaesthesiology practice and research. With a rich scientific program, engaging activities, and esteemed speakers, Yuva ISAIans emerged as a platform for intellectual exchange and professional development within the anaesthesiology community.

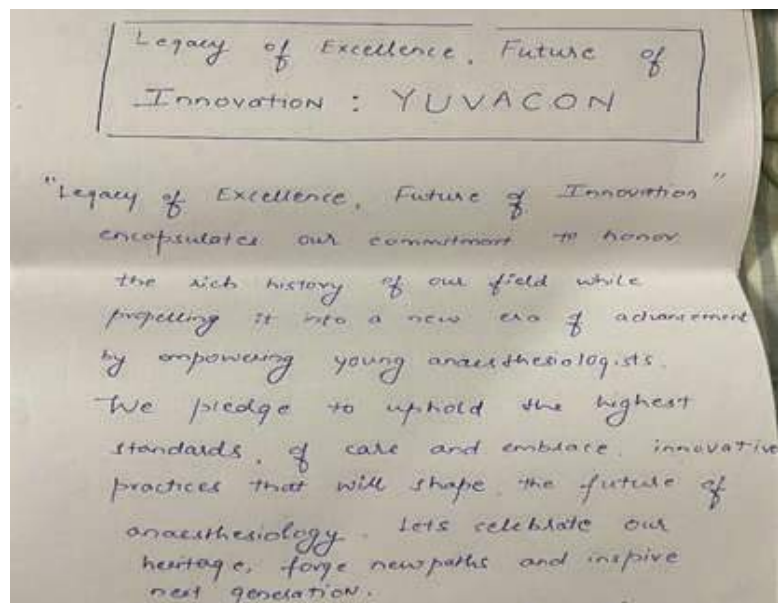
Organizing Team

The YUVACON literary team was led by Dr. Anshu Gupta and Dr. Farah Husain. The team was ably supported by Dr. Raghav Gupta, Dr. Namita Saraswata, Dr. Renu and Dr. Anil Kumar. The success of the event owes much to the dedicated efforts of the whole team. The collective efforts of the entire team and ISA Delhi leadership ensured the seamless execution of Yuva ISAIans.

*Literary Competitions added an element of excitement and camaraderie to the event, showcasing the diverse talents of participants and fostering a spirit of healthy competition.

1) Bollywood Parody: Dr. Milti Manoj's creative rendition of a Bollywood classic left the audience in stitches, showcasing his talent for witty wordplay and comedic timing. His performance captured the essence of the competition, blending humor with a keen understanding of popular culture.

2) YUVACON Slogan: Dr. Prateek Maurya's thought-provoking slogan resonated with the audience, encapsulating the spirit of Yuva ISAIans and the importance of youth empowerment in shaping the future of anaesthesiology. His succinct yet impactful slogan stood out among the entries, earning him well-deserved recognition.

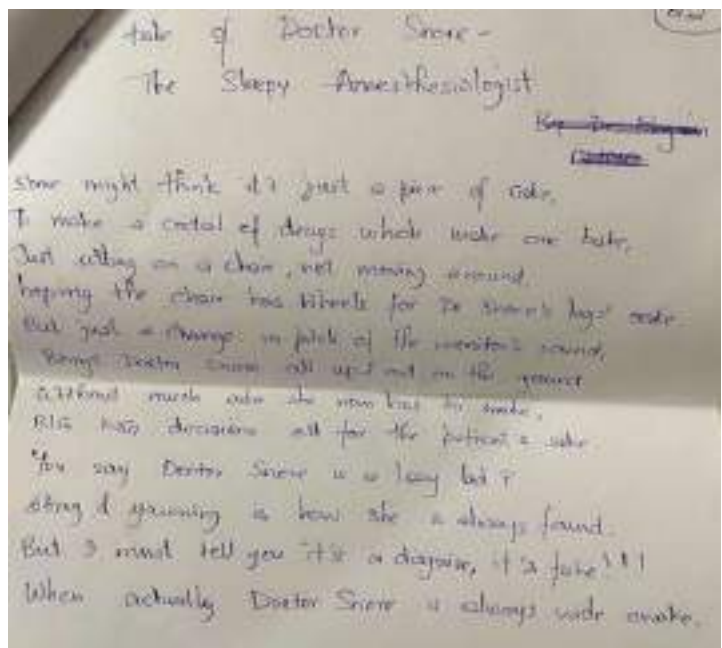


YUVACON LITERARY EVENTS

3) Prose with Purpose Essay: Dr. Vikas Kalra's essay eloquently addressed a pressing issue in anaesthesiology practice, demonstrating his ability to convey complex ideas with clarity and conviction. His insightful analysis and persuasive argumentation impressed both judges and audience members alike, making him a worthy winner of the competition.

4) Limerick Writing: Dr. Rigzin Angmo's clever limerick showcased her talent for poetic expression and wit, earning her acclaim from both judges and fellow participants. Her ability to craft a humorous yet meaningful verse demonstrated her creativity and linguistic skill, making her a standout performer in the competition.

Judges for the event were Dr Nitin Choudhary, Dr. Abhishek Nagarajappa, Dr. Santvana Kohli, Dr. Ritika Gandhi and Dr. Punit Khanna. Results reflect the culmination of talent, creativity, and dedication showcased by participants across various competitions. The expertise of the judges ensured fairness and impartiality in the evaluation process, contributing to the overall success of Yuva ISAians.



Author
Dr Raghav Gupta
AIIMS New Delhi

YUVACON CULTURAL EVENTS

The cultural activities of ISA Delhi YUVACON 2024 comprised of cultural evening programme on 6th April 2024 and Antakshari competition on 7th April 2024. The participations received for the cultural evening was overwhelming and humongous and to the extent that accommodating maximum participation over the designated time duration became a herculean task.

There was a magnificent display of talent by the YUVAS that included resident doctors and young faculty members. The singing and dance participations were shortlisted and coordinated by our YUVA faculty coordinators i.e. Dr Abhishek and Dr Bhavya Krishna, respectively. We had seven melodious singing performances including both solo and group and few on the spot performances. In dance performances, there were five rocking dance performances again both solo and group and ranged from classical to foot tapping hip-hop. All dance performances were alluring, flawless, synchronized and exemplary. Following the singing and dance performances, VIBGYOR, a fashion show organized by LHMC under the direction of Dr Ranju Singh was the show-stopper performance of the evening. In the cultural evening, all the performances were impeccable and captivating, the show was flawless and everything was spot on. The enthusiasm and participation of the YUVAS was an absolute delight. The Antakshari competition on 7th April 2024 was conducted by Dr Isha Yadav and myself.

There were five shortlisted teams for final round of antakshari. These were teams from LHMC, MAMC, UCMS, AIIMS, VMMC. The antakshari rounds were made interesting and innovative. The participation of the audiences was the highlight of the show. The team UCMS won the First prize and team VMMC & SJH bagged the second prize. Special thanks to Dr Ranju Singh and all office bearers of ISA Delhi YUVA Wing for their untiring support and enthusiasm throughout the event. We had an astonishing experience conducting these cultural activities.

The exhilarating enthusiasm of the participants and the audiences was a sheer joy. Looking forward to have more of such activities in future.....



YUVACON CULTURAL EVENTS



YUVA CON CULTURAL EVENTS



Dr Geetanjali T Chilkoti
Coordinator-Cultural club
GC-East zone

YUVACON PHOTOGRAPHY CONTEST

There are many aspects to creativity and expression. Art, literature and performing arts such as music and dance have been a part of our cultural heritage since times immemorial. History has also been unearthed and preserved by murals and drawings from millions of years ago, capturing moments and important events.

In the modern world, with advancement of technology and miniaturisation of optical and electrical components, photography has become a preferred mode of preserving memories and capturing events as they occur for posterity. Just like art, each photograph provides an individual viewpoint of the same event or monument, playing with light and shadows, and capturing what they want to emphasise. With all these nuances, the YUVA PHOTOGRAPHY CONTEST was included as a part of two day celebration of youth- DELHI YUVACON held on 6th and 7th of April, 2024 at MAMC, New Delhi.

E and print photographs were invited under three categories:

- 1) Delhi- My City, My Pride
- 2) Nature and Wildlife
- 3) A day in the life of anaesthesiologist.

We received 12 entries for each category. The event was organised under the guidance of Dr. Nishant Kumar (LHMC), Dr. Ishtiaque (SGRH) and Dr. Sandeep Kumar (ABVIMS & RMLH). Distinguished photographers Dr. Sanjay Solanki (SGRH) and Dr. Souvik Maitra (AIIMS) graciously consented to judge the photographs. Winners and runners up were adjudged for each of the categories. The photographs were also put on display which were much appreciated by all with many lamenting that they too should have participated in the event. The winning entries are displayed below:

Delhi - My City My Pride

Winner



Dr. Sonali Samant (ABVIMS)

Runner Up



Dr. Hemant (VMMC)

YUVACON PHOTOGRAPHY CONTEST

Nature & Wildlife

Winner



Dr. Harsha S Suvarna (AIIMS)

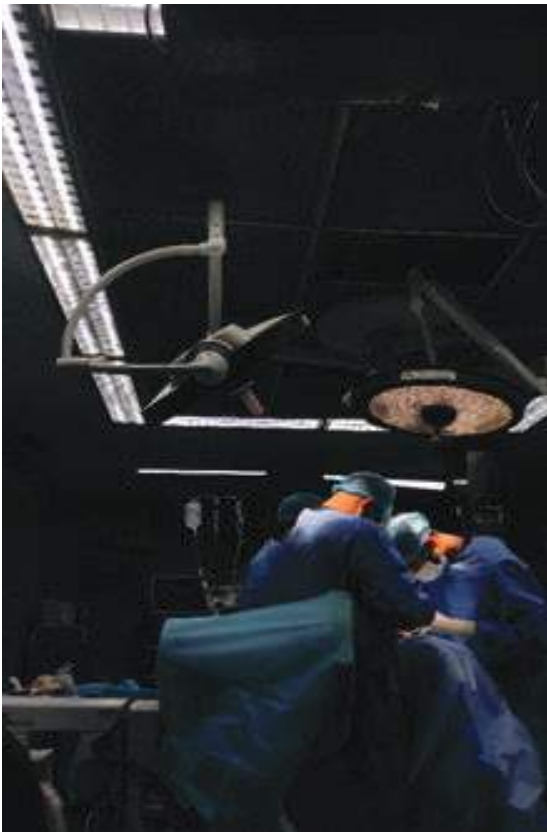
Runner Up



Dr. Kshirabdhii Tanaya Mohapatra (SMS, Jaipur)

A Day in the life of an Anaesthesiologist

Winner



Dr. Mebetsaphi Nonglait (ABVIMS)

Runner Up



Dr. Priyanka (MAMC)

Author
Dr. Nishant Kumar
Professor, LHMC

Winners for ISA Delhi YUVACON 2024

On behalf of ISA Delhi, we are thrilled to announce the winners of our recent conference, ISA Delhi YUVACON 2024. Here are our outstanding winners.

Literary event:

1. Bollywood Parody: Dr Milthi Manoj
2. YUVACON Slogan: Dr Prateek Maurya
3. Prose with Purpose essay: Dr. Vikas Kalra
4. Limrick writing: Dr. Rigzin Angmo

Arts Event

T-Shirt Designing

- 1st: Dr Harsha Suvarna
2nd: Dr Maria Joby

Graffiti on the wall

- 1st: Dr. Talia Afreen (UCMS)
2nd: Dr Hemant (VMMC)

Cartoon Making

- 1st: Dr. Talia Afreen (UCMS)
2nd: Dr Pooja Panwal (MAMC)

Complete the Sketches

- 1st: Dr Pooja (LHMC)
2nd: Dr Talia Afreen (UCMS)

Photography event

A day in life of anaesthesiologist

- 1st- Dr Mebetsaphi Nonglait
2nd- Dr Priyanka

Poster presentation

Delhi - my city my pride

- 1st - Dr. Sonali Samant
2nd- Dr. Hemant Beniwal

Nature and wildlife

- 1st - Dr Harsha S Suvarna
2nd- Dr Kshirabdhi Tanaya

Extempore

- 1st - Dr Vikas Kalra
2nd - Dr Darshna Kumari & Dr Niharika Das

Cultural

Antakshari competition

- 1st - Dr. Priyanka Kumari Singh
2nd - Dr Kanika & Dr Milthi

Quiz competition

- 1st - Dr. Niharika Das & Dr. Gajalakshmi
2nd - Dr Arti Kumari & Dr Diksha Shivwal

Session	1 st Prize	2 nd Prize
1	Dr Shunmugun	Dr Soumya Goel
2	Dr Priyanka Tyagi	Dr Meena K S
3	Dr Keshav Ram S	Dr Abhishek
4	Dr Sai Deepika	Dr Vilash Raj
5	Dr Kushan Faris	Dr Harsh Mittal
6	Dr Amala Tom	Dr Kashish Chawla
7	Dr Pendum Chindu	Dr Himanshu Garg
8	Dr Gautam R	Dr Avinika & Dr Harshita
9	Dr Sashi Singh	Dr Anuradha
10	Dr Nishtha Narang	Dr Sumit Singh
11	Dr Ruchi Goel	Dr Kiran
12	Dr Nimish Agarwal	Dr Prateek Maurya
13	Dr H D Leshinai Agnes	Dr Vaithi Viswanath K
14	Dr Vadher Raj	Dr Madhu

Winners for ISA Delhi YUVACON 2024

Paper presentation

Session	1 st Prize	2 nd Prize
1	Dr Nithish V	Dr Sanya Alex
2	Dr Gajalakshmi	Dr Ashwin
3	Dr Lalatendu Das	Dr Aman Shukla
4	Dr Shreekara	Dr Mansi
5	Dr Lokesh	Dr Sanjana
6	Dr Sunil	Dr Vikraman
7	Dr Shweta	Dr Sipali
8	Dr Rupal	Dr Lalthazuali
9	Dr Shivani Jain	Dr Shivang Kaushal
10	Dr Manisha Krishnan	Dr Nivedita Dagar
11	Dr Gohar Hayat	Dr Ganesh Kumar
12	Dr Prateek	Dr Gowtham
13	Dr Pushpa	Dr Annu
14	Dr Niharika	Dr Nishitha

Congratulations to all the winners. Your hard work and commitment have truly enriched our conference experience.

Please contact Pooja Sharma on +91-9627475770 if have not received prizes and certificates for your exemplary performance.

A big thank you to everyone who participated and made this event a success. Your enthusiasm and expertise have made ISA Delhi YUVACON 2024, the one to remember.

Compiled by

Dr Amit Kohli

Honorary Secretary, ISA Delhi

Dr. Abhijit Kumar

Honorary Treasurer, ISA Delhi

Fifth Monthly Clinical Meet

The fifth clinical meet of Delhi state chapter of ISA was held at Maulana Azad Medical College and Lok Nayak Hospital, on Friday, 26th April 2024. Dr. Divya Gahlot, Assistant Professor Anesthesia and Executive Member for ISA Delhi from MAMC was the convenor for the meet. The meeting began with a welcome address by kind host, Dr. Munisha Agarwal, Head of Department of Anesthesia and Intensive Care. The meeting was attended by over 250 anesthesiologists from across the city which included stalwarts from the specialty, many head of departments, senior faculties and residents. The senior dignitaries were invited for lamp lighting after which President ISA Delhi, Dr. Lokesh Kashyap, Vice President Dr. Arvind Arya, Honorary Secretary Dr. Amit Kohli addressed the gathering. Dr. Amit Kohli shared information about the forthcoming ISA activities.

The academic sessions were conducted by Dr Munisha Agarwal which included a CME topic, an original research and two case series. This was followed by an engaging discussion and an interesting quiz comprising of 8 pictorial questions. Thereafter ISA Delhi Editorial Board members in the presence of senior faculty members released the YUVACON sports special edition of the ISA Delhi Newsletter for the month.

Summary of academic sessions at the meet

Session 1: Evaluation of ultrasound guided recruitment manoeuvre on perioperative atelectasis in patients undergoing laparoscopic cholecystectomy

Presenters: Dr. Sajid KP

Moderator: Dr. Munisha Agarwal, Dr. Kapil Chaudhary

Summary: Perioperative atelectasis is a frequent complication during laparoscopic abdominal surgery under general anaesthesia and can lead to postoperative pulmonary complications. We conducted a prospective randomised controlled study on 28 healthy adult patients undergoing laparoscopic cholecystectomy under general anaesthesia to evaluate the effect of ultrasound guided lung recruitment manoeuvre on perioperative atelectasis. Lung ultrasound and lung ultrasonography score were used to detect and assess the degree of atelectasis perioperatively. It was found that ultrasound guided recruitment manoeuvre can significantly reduce perioperative atelectasis without any significant hemodynamic instability or desaturation, compared to a conventional PEEP of 5 cmH₂O alone.

Session 2: CME Topic -Tracheomalacia following thyroid surgery: A stitch in time saves nine

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Presenter: Dr. Priyanka, Dr. Kirti

Moderator: Dr. Bharti Wadhwa, Dr. Ankita Verma

Summary: Post-Thyroidectomy Tracheomalacia (PTTM) is often misdiagnosed and can lead to disastrous consequences if not identified promptly. We presented a case of a 48 year old female with a large, long-standing thyroid mass, exhibiting symptoms of hoarseness and dysphagia. High suspicion for PTTM led to confirmation using gold standard flexible fiber optic bronchoscopy and cuff leak tests as an adjunct. Management involved elective mechanical ventilation with regular monitoring, based on literature review. We discussed the potential of airway ultrasound in future for planning extubation post-thyroid surgeries.

Session 3: Receptive Music therapy for awake fibreoptic intubation: A safe sedation technique

Presenters: Dr. Tanvi Goel, Dr. Kanika Chauhan

Moderators: Dr. Sonia Wadhawan, Dr. Farah Husain, Dr. Sukhyanti Kerai

Summary: Managing an awake fibre-optic intubation (AFOI) for a patient with difficult airway is challenging since a fine balance between patient comfort and safety has to be maintained. AFOI using a flexible fibre-optic bronchoscope is a safe and reliable technique for the anticipated difficult airway. Ideal sedation should ensure good patient comfort, smooth intubating conditions, and stable hemodynamic parameters without respiratory depression. Receptive music therapy (MT) is an innovative technique being regularly used during awake procedures to improve patient comfort and reduce their anxiety. We have used the instrumental version of Indian Raga Hamsadhwani in five cases of anticipated difficult airway planned for AFOI as sedation technique. The results of our case series revealed cooperative and sedated patients (RSS of levels 2-3) during AFOI, making the first attempt at securing the airway successful and easier without any episodes of desaturation.

Session 4: Foam Sclerotherapy: Should anaesthesiologist be concerned?

Presenter: Dr. Harshita

Moderators: Dr. Gunjan Manchanda, Dr. Kapil Chaudhary, Dr. Divya Gahlot

Summary: A new modality using foam sclerotherapy for venous malformations has come up where foam increases the contact time and contact surface area of sclerosant. We report two such cases of a 4-year-old male and a 1-year-old female patient of AV malformation of right and left hand respectively using foam-based sclerotherapy. Foam sclerotherapy increases the chances of micro emboli thus, general anaesthesia with definitive airway gave a better control of

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airway and ventilation. To prevent small microbubbles coalescing and form large bubble N₂O was avoided and Tourniquet applied. Preoperative 2D ECHO evaluation to rule out patent foramen ovale must be considered in lesions such as cervical malformation where tourniquet application is not possible to prevent foam microbubble entering into circulation and for lesions at other locations 2D ECHO can be considered. Thus, general Anaesthesia with tourniquet application, adequate hydration and preoperative 2D ECHO evaluation is advocated in such cases.

At the end of the presentations, ISA Delhi next monthly meet announcement was done. Dr Munisha Agarwal delivered the vote of thanks and invited everyone for high tea and snacks.

Author:

Dr. Divya Gahlot

MAMC, New Delhi



Recent Advances in Ultrasound Guided Regional Anaesthesia: A Narrative

Introduction

“The technology you use impresses no one. The experience you create with it is everything.”- Sean Gerety

William S. Halsted when in 1884 performed the mandibular nerve ‘conduction’ block for tooth extraction, little did he know he was opening the doors of regional anaesthesia (RA) practices. Regional anaesthesia as we know today is all about the science of selectively blocking the sensory and motor functions of a particular body part with local anaesthetic(LA) agents. Nevertheless, RA techniques seldom gained the momentum as a sole anaesthetic technique over general anaesthesia (GA) since more skill is required to deposit the drug around the nerve/s of interest. In addition the peer pressure for giving a safe block in high risk patients and all the accompanying expectations of an effective success in initial attempts only, made RA practice altogether a less favoured one. Though general anaesthesia (GA) and RA, developed hand in hand, GA gained popularity with development of newer anaesthesia machines, medicines (inhalation agents, opioids or muscle relaxants) and methodology, while the role of RA was limited only to spinal or epidural anaesthesia. Till now, regional anaesthesia techniques have been practiced only by a small number of RA enthusiasts; yet RA strives to reach its real potential with the advent of innovations such as ultrasound guidance developed over the last two decades.

The USGRA Era

Ultrasound-guided regional anaesthesia (USGRA) is the new standard-of-care. When we apply our Ultrasonography (USG) knowledge to the conventional landmark guided approaches for performing a RA block, the situation improves dramatically. It’s like an eye for the blind or a light in the dark. Our present day USG machines are not only technologically tuned with advanced software or probe functioning, but they are much more compliant and user friendly. Though in black and white, we can now visualize our anatomical knowledge in different planes with precision.

The omnipresence of hand-held or bluetooth enabled portable ultrasound systems has further contributed to increased RA practice. This USGRA growth is at a time when there is a need to re-evaluate opioid use as a mainstay for anaesthesia and acute postoperative pain management. Regional analgesia definitely reduces perioperative opioid use, however it should not be seen as an alternative to GA, but as an adjunct to GA, for an overall multimodal anaesthetic strategy. With increasing role of USG applications like POCUS, E-FAST, FATE and RA, it has become an integral part for anaesthesiology and its allied sciences like intensive care, pain and palliative medicine. The advances for USGRA can broadly be classified into development of anatomical knowledge and new concepts for RA, prolongation of block duration,

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enhanced safety protocols and ultrasound technology.

1. Advances in anatomical knowledge and newer concepts for RA blocks

There is a growing trend for review of human anatomy with cadaveric dissections and dye studies on pertinent nerve blocks carried out in the last two decades. This has not only improved our understanding of anatomy and related sonoanatomy but also paved the way for new USGRA techniques especially the fascial plane blocks and more specific targeted blocks like superior trunk, intermediate cervical plexus and pericapsular blocks. These blocks have become safer, effective and easier. Recently a lot of new USGRA blocks have been described not only for thorax and abdomen but also for neck and extremities, so much so that ASRAESRA Delphi consensus study was published in 2020 to standardize the nomenclature for abdominal wall, paraspinal and chest wall blocks.

Fascial Plane Blocks

Fascial plane block deposits the local anaesthetics in between the fascial planes in which the nerves traverse, instead of depositing directly over the nerves. Fascial plane blocks are easy to perform, safe and less technical, and allow continuous catheters to be placed in these planes with safety and certainty. They started with TAP block and now variants of TAP block including rectus sheath block, quadratus lumborum block, PENG block, erector spinae plane block, and other are currently being practiced with great enthusiasm.

This methodology is so effective in analgesia for abdomen and thorax, that it is concomitantly being explored for other areas too like neck and thighs. The effectiveness of this approach is comparable to the paravertebral and epidural analgesia used for thoracic and abdominal surgeries.

Spine Sonoanatomy

Spine sonoanatomy is another scanning technique which is gaining popularity not only among the chronic pain physicians but also amongst USGRA enthusiasts for its application in paraneuraxial blocks as well as its advantages in difficult spinal and epidurals.

Phrenic Nerve Sparing Blocks

Superior trunk, costoclavicular, axillary, suprascapular nerve and retroclavicular approaches to the infraclavicular region (RAPTIR) and C7 root blocks are advised nowadays in various combinations for providing anaesthesia as well as continuous postoperative analgesia without compromising the functioning of phrenic nerve.

2. Enhanced Safety Protocols

USGRA reduces the risk of local anaesthetic systemic toxicity (LAST) due to the

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associated reduction in minimum local anaesthetic dose requirements and incidence of accidental vascular puncture. Lipid emulsion is now an established and effective treatment for LAST. As per expert opinion anyone involved with local anaesthesia: dentists, plastic surgeons, and even paramedics, should be able to identify LA toxicity symptoms and follow LAST protocols. Site of Injection Coming on to the microanatomy of plexus and nerves, it has always been a matter of debate for the site of injection: should it be within the sub-epinural space which produces rapid and deep block or paraneural space which produces slow, but intense block. The consensus presently is towards paraneural since it does not compromise the integrity of nerves. Intrafascicular injections should always be avoided at all costs.

Injection Pressure Monitors

The drugs during local infiltration should not exceed a pressure of 15 psi. Injection Pressure monitors are devices to monitor and prevent applying high pressure on injections. They can be divided into three classes: first is based on Boyle's Law with which the the clinician limits the compression pressure of a known quantity of drug in the syringe and thereby prevents a corresponding increase in site pressure, the second are the electronic pressure manometers present in syringe pumps, and third are recent specialized in-line devices like the BSmart and the NerveGuard to warn about or prevent high injection pressures.

3. Prolongation of Duration of Blocks

To prolong the duration of blocks is one of the major challenges for the single injection technique in postoperative pain relief. Despite the novel LA preparations, adjuvants and continuous catheter technique, one of the major challenge that remains is how best to prolong postoperative analgesia for more than 24-72 hours without incurring undue harm and still improve patient comfort, both in hospital/clinics and at home care settings. This aspect is especially important for major laparotomies, joint replacement surgeries or painful daycare surgeries like hernia repair where the duration of pain is far beyond the hospital stay. They are also useful for the centers where patient controlled analgesia pumps are not available.

Pharmacological Advances

Liposomal bupivacaine is a commercially available sustained-release formulation of bupivacaine for peripheral nerve blocks. It is approximately 200 times more expensive than plain bupivacaine. Its present use, as per US FDA, is limited to surgical site infiltration, TAP block and interscalene block only.

In addition adjuvants like adrenaline, dexamethasone, dexmedetomidine, clonidine and others are added perineurally to prolong the duration, but the analgesic effect is limited between 14-18 hours only, because the duration of analgesia also relies on the volume,

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type and the concentration of LA used for the block, along with patient factors, such as diabetic neuropathy.

USG Compatible Catheters

Another solution to prolong the duration of regional anaesthesia, apart from pharmacological adjuncts or sustained-release single-injection local anaesthetic techniques, is by employing continuous catheters, perineural or interfascial plane catheters. It definitely has a role but it lasts only for a few days. Moreover, cost and availability of patient controlled analgesia pumps is another issue.

4. Advanced Software for USG Machine and Probes

USG Machine

Our present day USG machines are not only technologically equipped with advanced softwares in their probes, but are also much more compliant and user friendly. Apart from the four basic modes of ultrasonography namely B-Mode, M-Mode, colour Doppler and pulse wave Doppler, the machines available in the Indian market are usually incorporated with advancements like gain settings, focus point, needle enhancement, steer imaging, probe frequency adjustments and others. By conglomeration of pre-scanned images for a specific and advanced nerve identification techniques as mentioned above, ultrasound machine is capable of automatically identifying the nerve and color it for us upon scanning. They help visualise not only the nerves but needle path as well. The simplest USG available worldwide is only a hand size probe attached to our mobile phones via Bluetooth, in which one side of the probe acts as linear and other side works as curvilinear probe. It is not available in India because of PCPNDT restrictions.

USG Needle

Regional anaesthesia needles are being made more echogenic by using surface refraction principle to improve its visibility under USG. In order to further increase visualization the needle tip-tracking technology using optical or acoustic fibers at the needle tip is presently under consideration. The future of needle visualization is going to be a three and four dimensional ultrasound, electromagnetic or GPS systems, augmented (virtual) reality, optical tracking, robotic assistance, and automated (computerised) needle detection systems. As USGRA continues to develop further with advances in needle imaging technology, it will translate into augmented periprocedural accuracy, ease of performance, reduced block procedure time and enhanced safety, even for a novice anaesthesiologist.

USG Transducer Technology

Currently, single crystals with ultra high piezoelectricity have been invented with excellent sonologic properties, paving the way for micro-ultrasound technologies to

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optimize the device structure ergonomically.

Artificial Intelligence

The focus of new innovations for USGRA is towards utilizing bio-markers or physical properties of tissues like optic, acoustic, elastic, pressure and electrical properties that not only help to differentiate between neural and non neural tissues, but detect needle tip position all along with the visualisation of the target nerve.

Micro-ultrasound transducer using frequencies of around 40 MHz, can strikingly give us high resolution images of nerves with clear distinction between perineurium, inner epineurium and outer epineurium. This will prevent nerve injuries. Shear wave and strain elastography can also be used to delineate between neural and non-neural tissues. Photo acoustics using pulsed laser light emissions, has better resolution and less inter-observer variability than elastography.

The Future of Regional Anaesthesia in Acute Pain Management

We are still growing, innovating and refining ourselves on software, needles, technologies, teaching modules and learning objectives. The future will bring small, portable, simple, wireless, touch screens enabled & hand held USG devices for us. USG can become the new stethoscope. One practical issue which needs to be addressed is the limitation posed by PCPNDT law in India (though it is useful in another aspect) which is limiting the accessibility of USG for the anaesthesiologist and intensivist. Hope we will be able to find a middle path between the law and technology.

Conclusion

Over the past few years technical advances have been made in USG machines for higher resolution, and nerve and needle localization. Simultaneously needles and catheters has been modified to enhance their visualisation under ultrasound beam. We are also increasing our technical skills via various online and offline RA learning programmes, both in India and abroad. These collective efforts are well appreciated and outcomes well deserved as USG is becoming quintessential for perioperative care. What can be envisaged is that regional anaesthesia in perioperative care and pain management will only get strengthened over the years to come.

Author

Dr. Manish Kohli

Sir Ganga Ram Hospital, New Delhi

Failed Spinal

Two conditions are, therefore absolutely necessary to produce spinal anesthesia: **puncture of the dura mater and subarachnoid injection of an anesthetic agent.'**

Gaston Labat,1922

Spinal anaesthesia is one of the core skills for all anesthesiologists. It is a preferred choice of anesthesia over general anesthesia because of its simplicity, minimal drug use, reduced intraoperative blood loss, maintenance of cardiac and pulmonary function, prevention of pulmonary aspiration, and avoiding airway complications. It is the main bread-and-butter for free-lancing anaesthesiologists working in small centers in our country. However, despite being a simple technique compared to other types of regional anaesthesia, it sometimes does not provide adequate surgical conditions. The term failed spinal is used to describe failure to obtain CSF with a spinal needle or "partial block, block of insufficient height or duration, patchy block or no block at all" following intrathecal injection of local anaesthetic (LA) drug. The reported failure rate of spinal anaesthesia varied from 1-17% in the literature.

Spinal anesthesia's success depends on the operator's experience, proper patient positioning, and errors in dose selection and injection of an LA drug. Most difficulties are attributable to a lack of adherence to basic rules while performing this procedure. As described by Labat, the causes of failed spinal can broadly be classified as failure to obtain CSF or errors while injecting the drug intrathecally. In the following section, we will describe the various etiologies for failed spinal and measures to prevent them.

I. Failure to obtain CSF

1. Improper patient positioning: Proper positioning of the patient during spinal anaesthesia is crucial for its success. Improper positioning can result in multiple attempts or failure of spinal anaesthesia. Traditionally sitting or lateral position of the patient is used for spinal anaesthesia. To facilitate entry of the spinal needle into the subarachnoid space, flexion of the back and neck of the patient is needed to overcome the lumbar lordosis. The hips and scapula must be at the same level to avoid rotation and tilting of the spines. Inadequate positioning can also result from a patient's anxiety or pain such as a patient with a fracture of the femur or a laboring parturients. Small doses of anxiolytics or analgesics can facilitate positioning in these patients. Certain pathological abnormalities of the spine such as ankylosing spondylitis can pose difficulty in positioning of patient. As the condition like this are non-modifiable operators need to adopt different strategies for the success of spinal anaesthesia.

2. Spine abnormalities: Some anatomical abnormalities such as kyphosis, scoliosis, or previous spine surgeries can pose technical difficulties in performing successful lumbar puncture.

Failed Spinal

3. Difficulty in identification of landmarks: In conditions such as obesity, and generalized edema, the intervertebral spaces are difficult to palpate. In these scenarios, the use of ultrasound can facilitate the identification of spaces.

4. Spinal Needle patency problems: This possibility is unlikely with modern spinal needles. However, the needle and stylet should be checked for the correctness of fitting before insertion and the needle should never be advanced without stylet as blood and tissues can easily obstruct the lumen.

5. Problems during spinal needle insertion: With the midline approach, insertion should start precisely in the mid-line, mid-way between the posterior spines, with the needle shaft at right angles to the back in both planes. If resistance is encountered, the angle of needle insertion should be adjusted. Therefore, good knowledge of the anatomy of the spine is a must. to appreciate where the needle tip lies and the adjustment direction needed.

II. Errors during injection of the drug:

Achieving an adequate block for surgery requires accurate dose calculation, preparation, and administration of LA into the intrathecal space.

1. Loss of injectate: Leakage of the drug due to loose attachment of the hub of the spinal needle with the syringe containing the injectate. To avoid this, the syringe containing the injectate must be inserted very firmly into the hub of the needle, and a subsequent check must be made that no leakage occurs.

2. Misplaced injection: After obtaining a clear flow of CSF displacement of the needle tip still occurs during aspiration to check and if a forceful injection of the drug is performed. In some cases of failed spinal, the dura mater can act as a flap valve during injection. Initial CSF flow can occur, but on injection, the dura may move forward, causing a portion of the solution to flow into the epidural space. Sometimes unintended subdural placement of the drug can also cause spinal anaesthesia.

III. Inadequate intrathecal spread

1. Abnormality of spine: Abnormal spine curvature such as scoliosis, kyphosis, spinal stenosis, or other pathologies of the spine can affect the intrathecal spread of LA.

2. Baricity of LA and patient positioning: A good understanding of the baricity of LA drug with patient position is important for adequate intrathecal spread. For example, maintaining the patient in a sitting position for a long time after intrathecal injection of

Failed Spinal

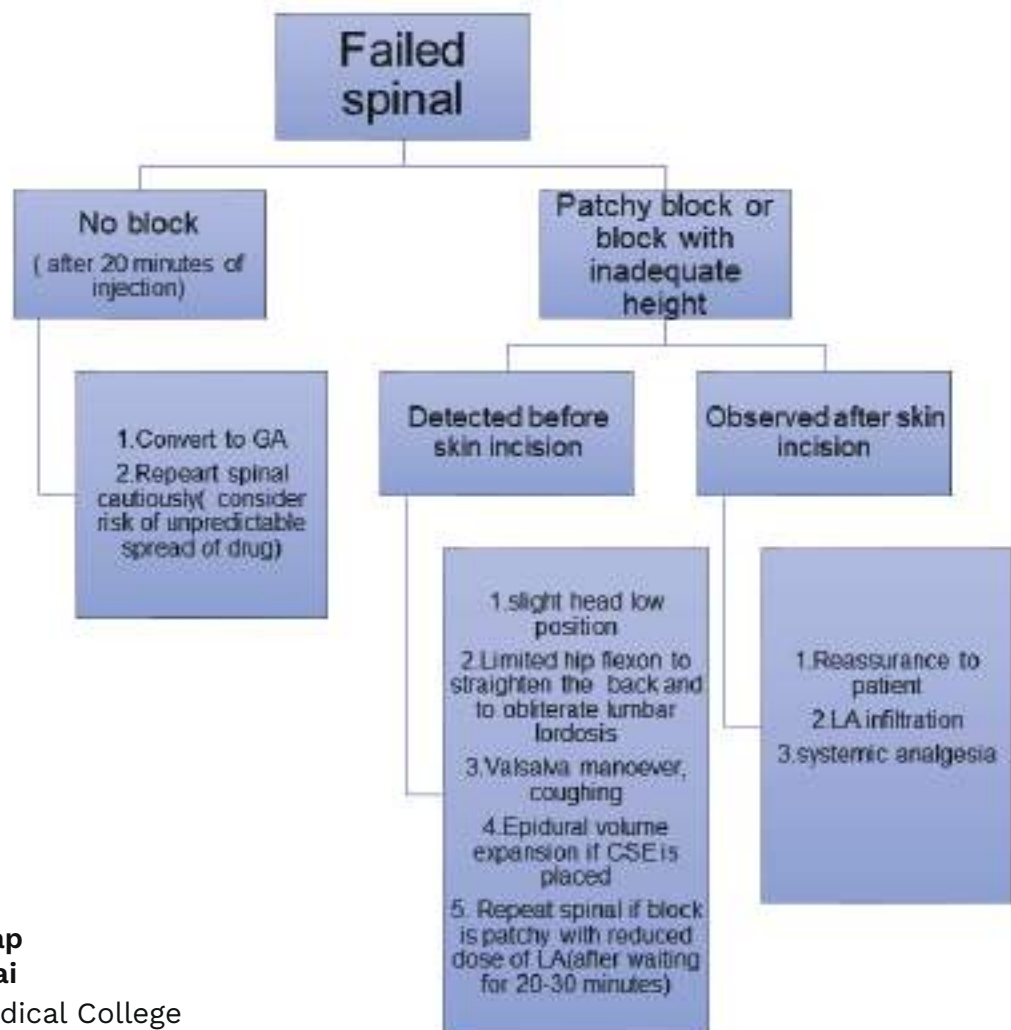
hyperbaric LA can result in saddle anaesthesia.

IV. DRUG FAILURE:

After a successful dural puncture, adequate drug delivery, and normal anatomy, the final possible cause of an ineffective spinal is a failure of the drug to exhibit a block on the neural tissue. The following causes can be related to this step of the procedure-injection of the wrong drug (drug error), an expired drug that can be an inactive LA solution., and resistance to local anaesthetics caused due to repetitive administration leading to desensitization of the drug.

Management of failed spinal:

The failure of spinal anaesthesia may range from no block at all to a patchy block or block with inadequate height which is unsuitable for surgical anaesthesia. Depending upon the type of blockade achieved, management varies accordingly. Further management should take into account the patient's preference and surgical requirement. The following algorithm summarises the management of failure of spinal anaesthesia.



Authors

Dr Preeti Labani

Dr Ramita Kashyap

Dr Sukhyanti Kerai

Maulana Azad Medical College

Learning Experiences- Early detection & timely intervention

Watchful monitoring is essential in ensuring patient safety as they are anesthetized. If we are able to detect any deviation from normal course of events during the conduct of anesthesia, we can prevent unforeseen and unexpected catastrophes. One of the most dreaded problems that we may encounter during anesthesia is loss of airway and ventilation, that can lead to hypoxia and even death. I wish to share a few incidents related to airway related complications that became learning experiences as timely intervention saved the patient.

The pedunculated vocal polyp

A 50 years old female teacher presented with hoarseness of voice since past one year with no history of difficulty in breathing. Indirect laryngoscopy revealed a pedunculated vocal cord polyp with an adequate glottic chink and mobile vocal cords. After optimization, the patient was taken up for excision of vocal cord polyp under general anesthesia. Patient was preoxygenated with 100% O₂ for 3 min and anesthesia was induced with propofol, check ventilation was done which was suboptimal, so a lubricated appropriate size oropharyngeal airway was introduced, and the ventilation improved. We decided to use a short acting muscle relaxant, suxamethonium for neuromuscular blockade. Mask ventilation further deteriorated despite adequate depth of anesthesia, neuromuscular blockade and oropharyngeal airway. Immediately laryngoscopy with C Mac was performed which revealed a pedunculated polyp covering the glottic chink which was resulting in near total airway obstruction. A 4.5 mm cuffed MLS tube with stylet was inserted after deflecting the polyp gently using a Magill's forceps. Although the trachea was successfully intubated, the polyp got partly avulsed in the process and was removed by us using the forceps. The rest of the procedure was uneventful.

Retrospectively, we realized that in pedunculated polyps an awake fiberoptic intubation would have been the safest means of securing the airway, since the loss of muscle tone under general anesthesia may lead to airway obstruction

A mobile foreign body in bronchus

A 3 years old boy with foreign body right bronchus was admitted with respiratory distress. A small cylindrical metallic bead had been aspirated and was lodged into the right main bronchus. General anesthesia was administered and muscle relaxation was achieved with atracurium. The pediatric surgeon used a rigid ventilating bronchoscope along with a grasper to bring out the foreign body while the child was being ventilated by the side port of the bronchoscope. The surgeon had held on to the foreign body with a grasper and was trying to remove the assembly together. Suddenly, ventilation became grossly suboptimal with minimal chest rise and the airway pressure also increased. A check bronchoscopy revealed that the foreign body had now come into the trachea and was almost completely blocking it. The surgeon tried to hold the foreign body with the grasper but it slipped back into the trachea again and the oxygen saturation started dropping rapidly. We suggested to the surgeon to immediately try and push the foreign body back into the right main bronchus. The surgeon agreed to do so and this led to a marked improvement in

Learning Experiences- Early detection & timely intervention

ventilation and saturation picked up. This provided the surgeon time to plan the next step. Subsequently, a better grasper was arranged and the foreign body was successfully removed.

Quick thinking on our part during an ongoing complication involving the airway saved us from a catastrophic situation.

Snoring in a child with TM joint ankylosis post preoperative sedation

An 8 years old girl presented with bilateral TM joint ankylosis for corrective surgery under general anesthesia. Since the child had a mouth opening of 3-4 mm, securing the airway by direct laryngoscopy was not possible. It was decided to induce the child with inhalational induction and intubate the child using a flexible fiberoptic bronchoscope. 1mg midazolam and 1mcg/kg of fentanyl was given preoperatively. However, 5 minutes post sedation the child started snoring and desaturating on room air. Oxygen supplementation was started and saturation picked up. After the child became more alert, she was counselled and the decision was now modified to secure the airway with fiberoptic intubation under dexmedetomidine (opioid free sedation) with oxygen supplementation and airway preparation.

We decided to change our plan since under general anesthesia, there was a possibility of the patient going into complete upper airway obstruction as partial upper airway obstruction was already observed right after the preoperative sedation given to the child earlier.

A happy ending

In order to ensure a happy ending to these complicated airway stories, whenever we face the challenge of losing the airway, our critical assessment of the situation and a timely change of plan is of utmost importance. In all three cases, even though our anesthesia plan was well thought out, we decided to troubleshoot and create a new plan as we went along the way.

Author

Dr Sonia Wadhawan

Maulana Azad Medical College

Potential Anti-Cancer Effects of Anaesthetics

Introduction

The surgical removal of primary tumor remains the cornerstone of cancer treatment, but it can inadvertently disperse neoplastic cells into the bloodstream and lymphatic system. The fate of these dispersed cells depends on various perioperative factors, including the surgery itself, certain anaesthetics, acute postoperative pain, and opioid analgesics, as well as the patient's immune status. This perioperative period is a critical period, where factors like inflammation, immunosuppression, hypothermia, angiogenesis, and high adrenergic states can promote the growth of minimal residual disease and the seeding of circulating tumor cells. Modulating these factors significantly could potentially impact cancer progression and metastasis formation.

Anaesthetic agents show promise in a new area by potentially suppressing tumor growth. They might block cancer cells' ability to resist treatment, slow their spread, and ultimately prevent tumor growth. Recent studies [1,2,3] underscore the potential of anaesthetic agents in this regard

Mechanism

Surgery plays a complex role in cancer progression. One explanation is its ability to induce immunosuppression that is proportional to the extent of tissue damage. The stress response triggered by surgery can suppress natural killer (NK) cell function, leading to increased tumor growth and metastasis. Major surgery has been linked to a severe defect in T lymphocyte proliferation and cytokine secretion, further contributing to immunosuppression. Other factors like hypothermia, transfusion, and activation of the hypothalamic-pituitary-adrenal axis by postoperative pain can also contribute.

Neovascularization is another factor that promotes cancer cell proliferation and recurrence. Key mediators of this process include vascular endothelial growth factor (VEGF) and transforming growth factor (TGF) β . Studies have shown that VEGF levels increase during the postoperative period, particularly at the surgical site, correlating with the extent of tissue damage.

Anaesthetics may exert anti-cancer effects through various mechanisms, including regulation of the cell cycle to inhibit cancer cell proliferation, induction of apoptosis (programmed cell death), inhibition of angiogenesis, and modulation of the immune system as shown in Figure 1.

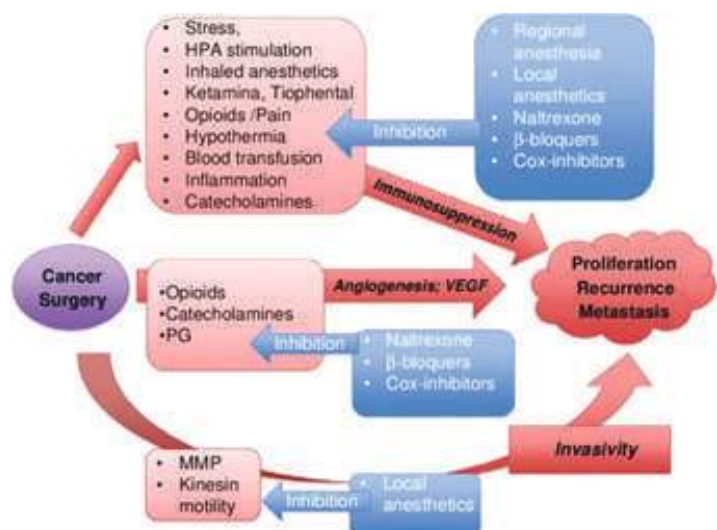


Figure 1: Mechanism of Anti-Cancer effects of Anaesthetics

Potential Anti-Cancer Effects of Anaesthetics

Anaesthetics and their anti-cancer effects

Propofol: can improve the sensitivity of cells to a variety of chemotherapeutic agents and may be effective in cancer patients receiving chemotherapy interventions. It plays an important role in the tumor cell cycle, proliferation, apoptosis, EMT, migration, metastasis, and angiogenesis [4].

Propofol exerts protective effects through various mechanisms, including anti-inflammatory effects, COX-2 inhibition, and reduced PGE-2 levels. It also weakly binds to β -adrenoreceptors, enhances antitumor immunity, and preserves NK cell function. It conjugates inhibit cellular adhesion and migration, and induce apoptosis in breast cancer cells. Studies demonstrated that propofol reduces cytokine concentrations (IL-1, TNF- α , and IL-6) and stimulates neutrophils to increase nitric oxide synthesis. [5,6] No definitive evidence exists to recommend one type of anesthetic over another, but the experimental evidence is strongest in favor of propofol for induction and maintenance for oncosurgeries. Opioids: There is ongoing controversy regarding the immune-modulatory effects of opioids. Fentanyl and morphine are considered more immunosuppressive compared to oxycodone/hydromorphone, buprenorphine, and even tramadol, which appears to boost Ncell proliferation. Mu-opioid receptors (MORs) are over-expressed in certain cancers and opioids can inhibit cell-mediated and humoral immunity. They also promote tumor cell migration, proliferation, and cancer gene expression in human cells in vitro, as well as facilitate angiogenesis.

Morphine has direct antiproliferative and proapoptotic effects on various cancer cells. In mouse models, repeated administration of morphine inhibited tumor growth and lung metastasis, suggesting a potential dual role in relieving cancer pain and inhibiting tumor progression. In the perioperative period, morphine reduced the tumor-promoting effects of surgery and decreased surgery-induced corticosterone levels in rats. However, morphine's effects on tumor progression may vary depending on the tumor type and stage. Studies suggest that morphine analgesia may inhibit surgery-induced metastasis, and in breast cancer cells, it may inhibit progression. [7] However, morphine has also been reported to have a tumor-promoting effect, which may be related to different tumor types and stages.

Inhalational agents: They affect tumor progression by inducing apoptosis and inhibiting the proliferation of immune cells like T lymphocytes and NK cells, possibly alters the activity of leucocytes and are associated with induction of apoptosis in lymphocytes in vitro [8]

Nitrous oxide: Trials like ENIGMA-II and others found no evidence of an aggravating effect relating to cancer recurrence or mortality. [9,10] Clinical data surrounding N₂O seems to be inconclusive regarding safety in cancer surgery.

Potential Anti-Cancer Effects of Anaesthetics

Isoflurane: Isoflurane controls tumor cell proliferation, immune and inflammatory responses, cell migration, metastasis, and angiogenesis. It can alter the mitochondrial membrane potential of glioma cells, inducing mitochondrial damage and apoptosis [11]. Studies have shown that isoflurane suppresses proliferation, migration, and invasion, and promotes apoptosis in colorectal cancer cells [12] But, there are studies that found that isoflurane significantly increased the expression of IGF-1 and IGF-1 receptors, cell cycle progression, and cell proliferation in certain cancer cells. It also led to increased expression of angiogenic markers VEGF, angiopoietin-1, and angiogenesis. There was also enhanced cell migration of cancer cells. [13]

Sevoflurane: It has been demonstrated to promote proliferation, migration, invasion, and angiogenesis in a variety of cancer cell types [14]

Dexmedetomidine : A meta-analysis shows intraoperative use of dexmedetomidine infusion increases the numbers of NK cells, B cells, and T cells indicating that it can protect the immune function of surgical patients.

Role of pain management, use of local anaesthetics and regional anaesthesia

Animal studies indicate that inadequately treated postoperative pain suppresses NK cell activity and promotes metastasis, pain has been described as a potent mediator of carcinogenesis in animal experiments.

Tramadol: Tramadol, an atypical opioid analgesic, demonstrates antitumor effects in breast cancer cells both in vitro and in vivo. Its mechanism involves suppressing colony formation, inducing cell cycle arrest, and promoting apoptosis through extracellular signal-regulated kinases. Tramadol also reduces the expression of inflammatory cytokines like IL-6 and TNF- α , associated with tumor growth and invasion.

Unlike morphine, tramadol may enhance NK cell activation in patients undergoing surgical tumor resection. NSAIDs/COX inhibitors: COX is overexpressed in numerous cancers, and prostaglandins (PGs) derived from COX activity can inhibit NK cell cytotoxicity and alter the tumor microenvironment. Long-term use of COX inhibitors has been associated with a reduced incidence of cancer. A recent systematic review and meta-analysis focusing on animal studies concluded that NSAIDs, including COX inhibitors, are highly effective in reducing tumor metastases in experimental animal models.

Additionally, large-scale epidemiologic trials have shown that long-term use of COXIBs (COX-2 inhibitors) can prevent the progression of colorectal adenomas. [15]

LAs block voltage-gated sodium channels (VGSCs) which are crucial for cancer cell

Potential Anti-Cancer Effects of Anaesthetics

function. Lidocaine, ropivacaine, levobupivacaine, procaine and bupivacaine, have been proven to reduce tumour growth, proliferation, and metastasis [7] Both lidocaine and bupivacaine in clinically relevant concentrations have been shown to induce apoptosis in human breast cancer cells and therefore may be ideal infiltration anaesthetics in breast cancer surgery [16,17] .Role of local anaesthetics and their potential anti-cancerous properties are given in Table2. Regardless of the local anaesthetic agent employed, retrospective clinical studies have found an association between the use of regional anaesthesia and reduced cancer metastasis as it is associated with decreased activation of the stress response. [18] A recent systematic review and meta-analysis of experimental studies showed that the provision of effective analgesia reduces both the number and incidences of metastases in experimental cancer models. Poorly managed pain can suppress immune function and promote metastasis according to animal studies. Effective pain management, therefore, might be crucial for better outcomes. [19]

Table 1: Local anaesthetics and their anti-cancer properties

Drug	Current evidence
Lignocaine	Intravenous lidocaine is currently being investigated for its potential to reduce cancer recurrence in patients undergoing breast cancer surgery (NCT01204242)
Bupivacaine	Has shown anticancer effects against: melanoma cells , colon cancer cells, gastric cancer , human thyroid cancer cells, ovarian and prostate cancer, and pancreatic cancer
Ropivacaine	Has cytotoxic potential,at clinically relevant doses has been shown to exert tumor suppression and inhibiting tumor growth in vitro
Levobupivacaine	Exerts potent antiproliferative effects on human prostate cancer cells in vitro by multisite inhibition of adenosine triphosphate (ATP) production

In addition to choice of anaesthetics, other peri-operative factors like blood transfusion, psychological stress, and hypothermia can also play a role. Blood transfusion have been associated with increased risk of cancer recurrence and reduced survival. Psychological stress and hypothermia may contribute to immunosuppression, potentially hindering the body's ability to fight cancer cells.

Conclusion

While early studies suggest some anaesthetics might have anti-cancer effects, the evidence in humans is inconclusive. This highlights the complex role of anaesthesia in cancer surgery. On one hand, surgery itself can suppress the immune system and aid

Potential Anti-Cancer Effects of Anaesthetics

tumour progression and on the other hand, they may even promote cancer growth. Combining regional anaesthesia with analgesics like NSAIDs and opioids, and use of propofol over volatile anaesthetics appears beneficial, potentially reducing stress and improving outcome. Future large-scale trials are needed to definitively determine the impact of specific anaesthetics on cancer.

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Soundness of Mind for The Keepers of Consciousness: The importance of Mental Health among Anaesthesiologists

Anaesthetists, realmed as the silent guardians of the perioperative period, hold the crucial thread of patient safety amongst the ever dynamic perioperative scenarios. With these unsung heroes, who work vigilantly but hidden “behind the curtain” often remains hidden the profound truth: the physically, mentally and emotionally absorbing nature of anaesthesia as a speciality. And thus comes into importance of mental health amongst the practitioners of this seemingly stoic yet demanding profession.

The practice of anaesthesia requires a unique amalgamation of physical fitness, mental acuity and emotional resilience. Anaesthetists must maintain a keen alertness to navigate swiftly evolving intraoperative scenarios. The variability of cases, often involving multidisciplinary teams, necessitates adaptability and seamless communication within the operative milieu. Operating theatres are often seen as arenas where moments of tranquility are juxtaposed with instances of intense scrutiny and decision-making. Aptly described into the common phrase for anaesthesia “Hours of boredom with moments of horror” requires brisk reflex response with quick and correct decision making which requires nonetheless than high levels of mental well being. The adage "Savdhani hati, durghatna ghati" (caution prevents mishaps) epitomizes the ethos of the constant vigilance ingrained in their practice.

All these roles and responsibilities often comes at the cost of inherent and continuous stress amongst the anaesthetists. Their daily practice unfolds in an environment characterized by unpredictability and dynamism, where each decision holds the potential to alter a patient's outcome. The pressure to execute flawlessly, coupled with the ever-present risk of adverse events, can exact a toll on their mental health.

Existing literature reports high prevalence of mental health issues amongst the anaesthetists, an area often overlooked. Alarmingly rising rates of burnout, stress, anxiety, depression, psychological distress, and insomnia have been reported amongst the anaesthetist that underscore the profound impact this profession can have on their psychological well-being. Burnout, marked by emotional exhaustion, depersonalization, and diminished personal accomplishment, not only affects individual anaesthetists but also poses risks to patient safety.^(1,2) Studies have linked burnout and poor well-being among healthcare professionals with compromised work performance, impaired decision-making, increased medical errors, and reduced patient safety.^(3,4) Moreover, the ramifications extend beyond the professional realm, encompassing depression, suicidal ideation, sleep disturbances, substance abuse, and attrition from the field.^(5,6)

However, the challenges extend beyond the confines of the operating theatre. Anaesthetists encounter complex cases in critical care, chronic pain management, and palliative care settings. In critical care, they confront the stark realities of terminal illness,

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dealing with the emotional toll of providing care amidst inevitable outcomes. (7) Chronic pain management necessitates not only pharmacological expertise but also empathetic counselling, adding another layer of responsibility to their already demanding role. (8) Oncological patients and those in palliative care present distinctive challenges, requiring a delicate balance between clinical proficiency and emotional support. The ability to dissociate emotions while delivering compassionate care speaks volumes about the mental load demanded by this profession. (8)

Thus, the importance of a good mental health and emotional wellbeing amongst anaesthetists cannot be emphasized more. The journey towards preserving mental health among anaesthetists lies in acknowledging and addressing the systemic factors contributing to burnout and psychological distress. Implementation of strategies such as peer support programs, mindfulness training, and access to mental health resources can cultivate resilience and mitigate the risk of burnout. Moreover, fostering a culture of open dialogue and destigmatizing discussions surrounding mental health is imperative. Anaesthetists must feel empowered to seek assistance when needed, free from the fear of judgment or reprisal.

In conclusion, the significance of mental health among anaesthesiologists cannot be overstated. As custodians of patient safety and well-being, their own well-being must be safeguarded. By prioritizing mental health initiatives and cultivating a supportive work environment, we can ensure that anaesthetists continue to deliver exceptional care while nurturing their own well-being. After all, a healthy anaesthetist is instrumental in safeguarding the health and safety of us all.

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Author

Dr Sakshi Duggal

AIIMS, New Delhi

Applying for International Anaesthesia Fellowships United Kingdom Edition

As Indian medical professionals, many of us have thought about exploring new avenues of knowledge, especially during our residency. Studying abroad is not only a great way to add additional academic skills to one's profile, but it also gives one an edge over others in job options and interviews. On top of this, it is one of the best ways to learn about other cultures and explore new places. Working and learning in a new environment helps develop new skills, broader outlook, and new connections, which in turn can pave the way for a successful future.

United Kingdom (UK) has been amongst the top choices for many doctors, especially anaesthesiologists for higher education. The first pre-requisite to study or work in the UK is to pass a **standardized English certification examination** such as academic-level International English Language Testing System (IELTS), Occupational English Test (OET) for healthcare professionals or Test of English as Foreign Language (TOEFL). Most English exams contain four sections. Each section covers one of the following topics—listening, reading, writing, and speaking. IELTS or OET are preferably recognized in UK.

To practise as a doctor in the UK, one needs to hold a licence to practice with the General Medical Council (GMC). The GMC is an independent regulator of doctors in the UK. There are various avenues via which a medical professional can register with the GMC.

1. Professional and Linguistic Assessments Board test (PLAB)

This examination, designed and conducted by the GMC, can be given by all qualified international medical graduates. This exam only provides an entryway for GMC registration and does not hold much weight part from that. It leaves one at the same level as a Foundation doctor in UK. The PLAB has two parts – the first consists of MCQs and the second follows the format of an objective structured clinical examination (OSCE).

The PLAB Part 1 is held quarterly at locations within the U.K. and other countries. To schedule an exam, an individual must show proof of their medical degree, provide passing IELTS or OETS scores, and have an active online account with the GMC, required for payment for the test. Because the PLAB Part 2 requires a good deal of simulation equipment, there is only one exam center located in Manchester, U.K. These exams are offered multiple dates throughout the year. Part 2 is more costly than part one, especially if IMGs factor in their travel to take the exam and housing while in Manchester. To take Part 2 of the PLAB, one must have passed Part 1 within the last two years.

After passing both parts of PLAB, the graduates can apply for Foundation Year (FY1 and FY2) in NHS. During these years, one can undertake a range of specialties, of which one may be anaesthesia.

For further information on PLAB, the following links may prove useful.

<https://www.gmc-uk.org/registration-and-licensing/join-the-register/plab/a-guide-to-the-plab-test>

<https://blog.amopportunities.org/2020/05/06/becoming-a-physician-in-the-u-k-postgraduate-education>

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2. Medical Training Initiative (MTI) by Royal College of Anaesthetists (RCoA)

MTI is a UK government scheme designed to train doctors in Anaesthesia/Intensive Care/Pain Medicine from low and middle-income countries for a maximum period of two years. RCoA acts as the 'professional sponsor' and is responsible for issuing the Tier 5 Certificate of Sponsorship, which enables an applicant to apply for their Tier 5 visa. The Tier 5 visa is issued for a maximum period of two years. During this period, the training follows the CCT (Certificate of Completion of Training) Curriculum. This gives one the eligibility to sit for all parts of FRCA examinations while working with the NHS, which eventually paves the way to become a consultant in the UK.

The following link takes us to the MTI guide on the RCoA website.

<https://www.rcoa.ac.uk/about-us/global-partnerships/overseas-doctors-training-uk/medical-training-initiative>

3. European Diploma in Anaesthesia and Intensive Care (EDAIC)

EDAIC is a two-part multilingual examination that covers anaesthesiology. It is a qualification intended to be held at the end of anaesthesiology/intensive care training, and its completion shows high levels of anaesthesiology knowledge and the ability to work as an anaesthetist at a senior level. Like PLAB, it can also be used for GMC registration, but this proves a greater level of experience. Post EDAIC, one can begin their career at a senior level, whether as a registrar, specialist, specialty doctor, or consultant anaesthesiologist.

To apply for Part 1 of EDAIC exam, one only needs to be a medical graduate or a trainee in anaesthesiology. But to apply for Part 2, the candidate either needs to be a certified anaesthesiologist in any country or needs to be in the final year of anaesthesiology training in a European member country and should have cleared Part 1.

The following links may prove useful for more information on EDAIC.

<https://esaic.org/wp-content/uploads/2023/11/diploma-guide-english-2023.pdf>

<https://www.bdiresources.com/img-media-hub/blog/edaic-or-plab-for-img-anaesthetists/>

Once the relevant degrees are in order, certain documents are required to apply for full registration with licence to practice with GMC. These include – proofs of identity, residence and date of birth, valid passport, MBBS marksheets, internship completion certificate, graduate and post graduate degrees, registration with state/national medical council, and a certificate of good standing from the medical council. Letters of recommendation from seniors and previous employers are also given weightage. The following link may prove useful for online registration.

<https://www.ecfmg.org/psv/instructions-gmc.html>

A provisional registration is granted online, with final confirmatory registration upon document presentation in person in London, UK.

Once a candidate is registered with the GMC, he/she is eligible to apply for anaesthesia

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posts within the NHS. The commonly used websites to hunt for jobs are – NHS Jobs, BMJ careers, NHS health careers, The Lancet careers.

FRCA EXAMINATION

The official exam for UK Anaesthetics is the Fellowship of the Royal College of Anaesthesia (FRCA). There are 2 stages of the exam, each with multiple components:

- **Primary FRCA** – This exam has 2 components
 - (1) Multiple Choice Question examination (MCQ) – can be given by UK or overseas trainees.
 - (2) an Objective Structured Clinical Examination (OSCE) and a Structured Oral Examination (SOE) – candidates need to be working in NHS for 6 months and require Temporary Examination Eligibility (TEE).
- **Final FRCA** – Candidates need to be working in NHS for a minimum of 12 months. This exam has 2 components:
 - (1) Final FRCA Written examination
 - (2) the Structured Oral Examination (SOE)

BECOMING A CONSULTANT IN THE UK

To be recognised as a Consultant Anaesthetist in the UK, and be eligible to apply for permanent Consultant posts in the NHS, one needs to be on the GMC specialist register. There are 3 possible routes to enter the specialist register:

- 1. CCT** - This route involves completing both a UK core training (CT) and the higher specialty training (ST) – that is 7-8 years in total. Upon completion of the programme, a Certificate of Completion of Training (CCT) in Anaesthesia is awarded. The CCT route is best for new graduates or those who have less than 18 months experience in Anaesthesia.
- 2. CESR-CP** – International medical graduates with more than 18 months of experience or training in anaesthesia may skip the CT programme and may move straight to ST programme. They are then eligible for Certificate of Eligibility for Specialist Registration - Combined Programme (CESR-CP) route.
- 3. CESR (Certificate of Eligibility for Specialist Registration) ROUTE (aka ARTICLE 14)** – A candidate may be recognised as a Consultant without undergoing UK residency programme, by providing proof (ie. documentation) of equivalent experience and training from overseas, from the UK, or a combination of the two. The CESR route is best for those who have completed training and have been practising as a consultant for at least a few years, or those who have completed residency and fellowship overseas and do not wish to repeat their training.

For a more detailed understanding of working in the UK, the following link may be useful.

<https://thesavvyimg.co.uk/anaesthetics-anaesthesiology-img-guide-uk/>

Dr. Santvana Kohli

VMMC & Safdarjung Hospital, New Delhi

Myasthenia Gravis for Thymectomy

1. Describe the pathophysiology of Myasthenia Gravis (MG) and how it relates to neuromuscular junction dysfunction.
2. What are the clinical features and classification systems used for Myasthenia Gravis?
3. Describe modified Osserman grading and MGFA clinical classification.
4. What are the primary pharmacological interventions used in the medical management of Myasthenia Gravis, and how do they aim to achieve disease control prior to surgical intervention?
5. Describe the roles of plasmapheresis and intravenous immunoglobulin in the management of patients with MG.
6. How do corticosteroids contribute to the management of Myasthenia Gravis, and what strategies are employed to minimize their adverse effects?
7. What are the main surgical options available for the treatment of Myasthenia Gravis, and how do they differ in terms of approach, invasiveness, and outcomes?
8. How do you differentiate between a myasthenic crisis and a cholinergic crisis in a patient with Myasthenia Gravis, and what clinical manifestations and diagnostic criteria help in making this distinction?
9. What are the suggested preoperative investigations for the patient with myasthenia gravis?
10. What are the preoperative patient-related factors that serve as predictors for prolonged postoperative ventilator support in Myasthenia Gravis patients undergoing VATS thymectomy?
11. What are the primary goals of preoperative stabilization and optimization for Myasthenia Gravis patients scheduled for VATS thymectomy, and how do you tailor these goals based on the patient's disease severity and comorbidities?
12. What strategies do you employ to minimize the total dose and duration of neuromuscular blockade in Myasthenia Gravis patients during VATS thymectomy, balancing the need for adequate surgical conditions with the risk of postoperative respiratory compromise?
13. What are the implications of residual neuromuscular blockade in Myasthenia Gravis patients post-VATS Thymectomy?
14. What are the different lung isolation techniques and devices available for use in VATS thymectomy procedures?
15. Describe a comprehensive pain management plan for a patient with Myasthenia Gravis undergoing VATS thymectomy.
16. How do you manage intraoperative fluid administration in Myasthenia Gravis patients undergoing VATS thymectomy to optimize hemodynamic stability while minimizing the risk of fluid overload and postoperative complications?

Myasthenia Gravis for Thymectomy

17. What are the potential causes of hypoxemia during VATS Thymectomy, and how do you approach the diagnosis and management of hypoxemic episodes?
18. Explain the mechanism and physiological significance of hypoxic pulmonary vasoconstriction (HPV). Describe the perioperative modifiers of HPV.
19. Describe the ventilatory strategies for one-lung ventilation (OLV). 20. Describe the role of fiberoptic bronchoscopy for positioning DLTs and bronchial blockers.
21. What are the advantages and disadvantages of robotic thoracic surgery?
22. Describe the anaesthetic implications in robotic thymectomy in a patient with myasthenia gravis.
23. What are the advantages and limitations of uniport VATS compared to multiport VATS in the surgical management of thoracic diseases, and how do you adapt anesthesia techniques and perioperative care to optimize outcomes for patients undergoing uniport VATS procedures?
24. Outline the perioperative care pathway for thymectomy patients following an ERAS protocol, including preoperative counseling, intraoperative interventions, and postoperative management strategies aimed at minimizing complications and promoting early mobilization and oral intake.
25. Outline the key components of postoperative management following thymectomy, including pain control, respiratory support, wound care, ambulation protocols, and surveillance for complications, with emphasis on optimizing recovery and facilitating early discharge within an ERAS framework.

Suggested readings:

Peter Slinger: Principles and Practice of Anesthesia for Thoracic Surgery

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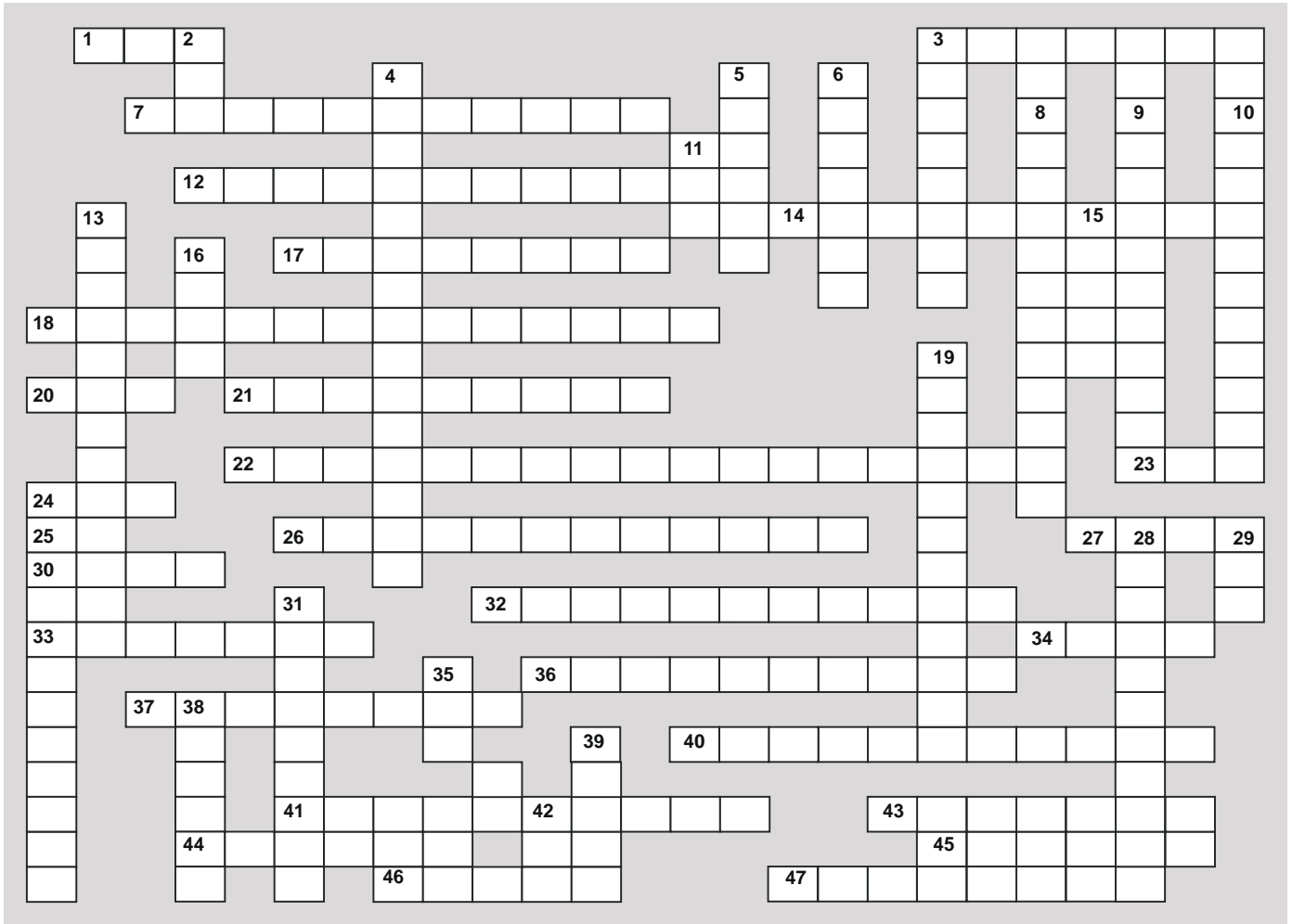
Authors

Dr Gurudarshan

Dr Puneet Khanna

AIIMS, New Delhi

Crossword



ACROSS

1	Nerve block commonly performed for pain management in abdominal surgeries (3)
3	Monitoring system for cardiac output (7)
7	Antipsychotic-Antiemetic drug (11)
12	Condition characterized by air in the chest cavity (12)
14	Local anaesthetic commonly used in medical procedures (10)
17	The nerve carries motor and sensory axons arising from the ventral rami of the sacral spinal nerves S2-S4 (8)
18	Class of drugs used to treat neuropathic pain and seizures (14)
20	It monitors the integrity of motor pathways during surgical procedures involving the brain, spine, and aorta. (3)
21	Ultrashort-acting, non-barbiturate hypnotic intravenous anaesthetic agent (9)
22	Deepest back muscle originating from the iliac crest and inserting on the transverse processes of lumbar vertebrae and the lower part of the twelfth rib (17)
23	Ratio of oxygen saturation as measured by pulse oximetry/ FiO_2 to respiratory rate (3)
24	Point-of-care Coagulation monitoring test (3)
25	Device used for selective lung isolation during anesthesia (2)
26	Common side-effect of opioid medications (13)
27	Exaggerated defense response of the body to a noxious stressor to localize and then eliminate the endogenous or exogenous source of the insult (4)
30	Multimodal perioperative care pathways designed to achieve early recovery after surgical procedures (4)
32	Common complication of coeliac plexus neurolysis. (12)

Crossword

33	Most abundant circulating protein found in plasma. (7)
34	Exercise test measuring cardiovascular and pulmonary function. (4)
36	Technology that utilizes flexible glass or plastic fibers to transmit light for visualization or illumination purposes, commonly used in medical procedures such as endoscopy or intubation for enhanced visualization. (10)
37	Condition in which blood flow (and thus oxygen) is restricted or reduced in a part of the body. (8)
40	N-acetyl-para-aminophenol. (11)
41	Atypical (second-generation) antipsychotic that exerts its action primarily on dopamine and serotonin receptors.(10)
43	Fluid build-up caused by tissue leakage due to inflammation or local cellular damage .
44	Region of the spine located in the lower back. (6)
45	Organs of the respiratory tract that allow airflow during ventilation. (6)
46	Novel technique delivering chemotherapy into the abdominal cavity as an aerosol under pressure. (5)
47	2,6-diisopropylphenol. (8)

DOWNWARDS

2	Method of pain control allowing patients to self-administer analgesia, often used postoperatively. (3)
3	Potent opioid analgesic commonly used for acute and chronic cancer pain management. (8)
4	Sedative-analgesic agent commonly used in cancer surgeries for sedation and analgesia. (15)
5	Complete deprivation of oxygen supply to body tissues. (6)
6	Class of drugs that derive from, or mimic, natural substances found in the opium poppy plant. (7)
8	Surgical airway management procedure which consists of making an incision on the anterior aspect of the neck and opening a direct airway through an incision in the trachea. (12)
9	Neuromuscular monitoring technique, crucial in ensuring proper muscle relaxation during surgeries (11)
10	It begins when an organism successfully enters the body, grows and multiplies. (9)
11	It is defined as the percentage of the inhalational anaesthetic agent needed to prevent 50% of patients from moving in response to a surgical stimulus. (8)
13	Wedge-shaped space located on either side of the vertebral column. (12)
15	Type of Bronchial Blocker. (5)
16	Administration of a sustained airflow at a uniform pressure to mitigate airway collapse and sustain optimal oxygenation levels. (4)
19	Least potent of the anaesthetic gases, having a MAC of 104. (12)
25	Competitive antagonists blocking adrenergic receptors, preventing the binding of endogenous catecholamines such as epinephrine and norepinephrine in the sympathetic nervous system. (11)
28	This block involves injecting medication beneath the ribs to alleviate pain in the chest or upper abdominal area. (11)
29	Predictor of fluid responsiveness. (3)
31	Common position during surgery. (9)
35	This offers a direct assessment of the patient's level of consciousness and provides insight into the impact of anesthesia on the brain. (3)
38	This block delivers anesthesia to the perineum, coccyx tip, medial and lower buttocks, and the posteromedial region of the thighs. (6)
39	It is a form of hyperthermia therapy utilized alongside surgery for the management of advanced abdominal cancers. (5)
42	It is an organization comprised of physicians dedicated to advancing the standards of anaesthesiology practice through education, research, and scientific endeavours, all aimed at enhancing patient care. (3)

Monthly Meet Calender

Sr No	Month	Institution/ Venue	Contact Person
1.	December 2023	West zone at Aakash Health care	Dr Anshu Gupta(GC) & Dr Namita sharma
2.	January 2024	East zone at RGSSH	Dr Arvind Arya and Dr Geetanjali(GC)
3.	February 2024	AIIMS	Dr Lokesh Kashyap, Dr Puneet Khanna & Dr Nishkharsh Gupta (GC)
4.	March 2024	VMMC & Safdarjung Hospital	Dr Sujata Choudhary & Dr Nishkharsh Gupta (GC)
5.	April 2024	MAMC	Dr Munisha Agarwal & Dr Ridhima Sharma(GC)
6.	May 2024	ESIC Group of Hospitals	Dr Prasad CGS & Dr Sudhir Gupta
7.	June 2024	Sir Gangaram Hospital	Dr Jayshree Sood & Dr Ridhima Sharma (GC)
8.	July 2024	LHMC	Dr Maitree Pandey & Dr Ridhima Sharma (GC)
9.	August 2024	UCMS	Dr R.S. Rautela & Dr Geetanjali (GC)
10.	September 2024	PGMER & RML	Dr Neerja Banarjee & Dr Ridhima Sharma (GC)



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