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THE EUROPEAN SOCIETY OF REGIONAL ANAESTHESIA & PAIN THERAPY

Welcome to ESRA Updates

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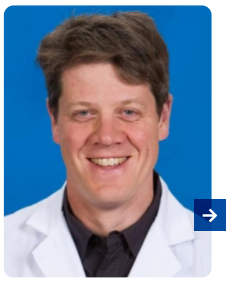

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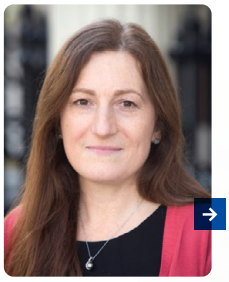

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Season Greetings

Thomas Volk (ESRA Past-President, Germany) @ThomasVolk16

" It's been a crazy and unprecedented year for all of us, where the spotlight shone brighter than ever on the importance of research and collaboration. "

Dear Colleagues and friends,

A huge dose of joy and happiness is what we all need right now!

It's been a crazy and unprecedented year for all of us, where the spotlight shone brighter than ever on the importance of research and collaboration.

Now that the year 2021 is coming to an end, it is not too much to recognize and thank our members, faculty, sister societies and sponsors for their unconditional trust and support.

ESRA is stepping into a new year being stronger than ever. Despite all the adversity, we managed to organize: ESRA's webinars, ESRA Virtual congress, ESRA Monothematic meeting in Algarve and ESRA's cadaver workshops in Budapest and Witten. All of them were successful and appreciated by all involved.

ESRA never had so many members as today! We are a community with more than 6000 members all over the world! Registration will open in January 2022, click here to join or renew your membership. ESRA will not stop! And we are preparing the upcoming new year with virtual and presential events, with high expectations on the ESRA Annual meeting, in Thessaloniki in June! We hope to find you there!

Finally, may this holiday season be one of the most memorable ones.
Merry Christmas and a Happy New Year to you and your family!

Welcome to ESRA International Committee members

Clara Lobo (Editor of ESRA Updates; Cleveland Clinic Abu Dhabi, UAE) @claralexlobo

"ESRA Major Officers and Board are very excited with this new internal organization and have the best expectations from all the members involved."

ESRA is proud to be an open society to change, difference and innovation!

Our community has grown steadily with members from all over the world. For the second consecutive year we have surpassed the 6000-member mark.

As an ESRA Major Officer, I want to congratulate and thank to all who have been working hard to make ESRA a role model and an example of an inclusive, open and free society at the forefront of knowledge and scientific education.

The feeling shared by all of us inside the society is to maintain this rise and recruit more and more members from all corners of the Earth.

After 2 years since its ideological conception, the ESRA International Committee is here!

It was easy for ESRA Board and Council of Representatives to accept the inclusion of non-European members within the society. There were several debates and exchange of ideas to develop it in the most natural, unanimous and inclusive way, keeping the ESRA spirit.

Patrick Narchi and Alain Delbos, ESRA's Ambassador and Past President respectively, will co-chair this committee, including all the representatives of non-European countries with more than 30 members. We hope ESRA International becomes a big (increasing year after year) and active committee.

ESRA Office will start the process of setting up the committee, facilitating the choice of the representative of each non-European countries among its national members, in 2021.

The call for nominations will start early in January 2022, the candidates for each non-European Country will be announced the 21st of January. The election will take place during the following week and the voting results will be announced the 1st of February 2022. Only ESRA members with a 2022 membership can apply and vote!

After its constitution, this Committee will meet, hopefully in person, during Annual ESRA congress in Thessaloniki in June 2022.

If you are from a non-European country and want to have a closer interaction with ESRA, keep an eye on your mailbox and apply to be part of this Committee!

ESRA will be thrilled to welcome its new ESRA International Committee members!

New scoring system for EDRA Part 2 exam


Morné Wolmarans (Norfolk and Norwich University Hospital, UK) @docmorne


Peter Merjavy (Craigavon Area University Teaching Hospital, Northern Ireland, UK) @PeterMerjavy


Narinder Rawal, MD PhD (University Hospital of Örebro, Sweden)


Barbara Breebaart (UZA Edegem, Belgium) @BBreebaart

The Covid pandemic has caused academic institutions and societies to reconsider how to examine candidates. The EDRA and ESRA board also embraced a new format of online examination for the EDRA examinations. Furthermore, the international demand of the EDRA diploma and the number of candidates required to be examined at the annual congress has dramatically increased. It would therefore be impossible and impractical to examine 150 candidates at the annual congress for a 45-minute examination. The logistics would be very challenging for both the examiners and candidates.

Therefore, the EDRA Part 2 examination is now split into two sections: EDRA II section A and EDRA II section B

Section A of the Part 2 examination can be done online at scheduled examination dates as notified on the EDRA-ESRA website.

The ESRA and EDRA boards are exploring potential alternative venues for section B of the Part 2 examination.

In the **virtual exam room** there may be one or two observers present as examiner candidates or inspectors of international educational committees. The exam duration is approximately 25 minutes and you'll be expected to answer 2 sets of questions with two examiners

EDRA Part 2 section A consist of an online viva examination which will involve two questions.

Question 1: Discussion of a clinical case

A common clinical case will be discussed. Different plans for anaesthesia and perioperative analgesia (including both systemic and regional techniques) must be presented and the advantages and disadvantages of each must be discussed.

Question 2: Problem-solving of a regional anaesthesia-related complication

A typical regional anaesthesia-related case will be discussed. Candidates must be able to recognise the problem from the case presented, make a differential diagnosis, and present the strategies for problem-solving including a treatment plan and an outcome estimation.

EDRA Part 2 section B: will only be possible to take at the ESRA annual conference each year or some of the other events organised by ESRA. Section B of EDRA Part II is approximately a 25-minute examination, therefore 12-13 minutes for each demonstration, with two examiners and occasionally an observer.

Evaluation (scoring system) for EDRA Part 2 exam (sections A&B)

Section A and B of the part II examination will be evaluated separately. If a candidate fails either section A or B of the Part II examinations, they will have the opportunity to retake only the section that they failed at the next available opportunity. Maximum amount of attempts for each section of the EDRA 2 exam is three. This mean, that the candidate can take up to three attempts for section A and further three attempts for section B.

Every question will be graded by a competency based system as follows:

Fail (0 points): competencies of participant do not met acceptable standard on competency matrix

Borderline (1 point): competency standards are met by a small margin based on the competency matrix

Clear Pass (2 points): shows satisfactory or good competency standards

Excellent pass (3 points): participant shows outstanding or excellent competency standards

In order to pass EDRA Part 2 exam a total of at least 7 points is required for section A and B, of which only one score "borderline" is allowed.

- For example when a candidate has one pass (2) and one borderline (1) question in section A (3points), all questions in part B must have at least a clear pass (4 points).
- If the candidate scores 3 points (2+1) in section A and 3 points (2+1) in section B, he/she will not pass the EDRA Part 2 exam. One of the sections (A or B) has to be retaken in order to pass the EDRA exam.
- A second example: when the participant scores borderline for both questions in section A, (2 points), this part has to be retaken since only one borderline grade is allowed.
- Mark "fail" (0 points) in any of the question for section A or section B result in fail of that particular part of the exam. For example if candidate scores in section A exam excellent (3 points) for the first question and fail (0 points) for the second question, he/she will fail the section A of the EDRA 2 exam and has to repeat the section A.

All venues and dates for the different sections of the examination will be advertised on the *EDRA – ESRA website.* Candidates can also visit *EDRA frequently asked questions (FAQ)*.

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ESRA Sunny Autumn Meeting 2021


Nuala Lucas (Co-Editor of ESRA Updates, Norwick Park Hospital, Harrow, UK) @noolslucas


Andreas Kostroglou (ESRA Fellow, Liverpook Women's Hospital NHS Foundation Trust)

"The ESRA Monothematic meeting goes from strength to strength, offering innovative and engaging continuing professional development."

After a long 18 months of the pandemic, with all face to face meetings having been cancelled, there was a huge sense of anticipation about the 5th ESRA Monothematic meeting, held in Portugal in early October. It was fully booked soon after registration opened! With a combination of engaging faculty, enthusiastic delegates and a beautiful setting, the meeting exceeded expectations!

From left to right: Eva Roofthooft, Clara Lobo, Chris Elton, Sarah Devroe, Nuala Lucas

The scientific focus of the meeting was obstetric anaesthesia. This has been a challenging area during the pandemic as, by necessity, it has had to be 'business as usual' in all our maternity units. The Monothematic meeting provided an exciting opportunity to update our knowledge in this vital area of regional anaesthesia and, of course, a chance to recharge our batteries.

Marc Van de Velde and Nuala Lucas developed a programme that covered a discussion of the full range of obstetric anaesthetic practice. Pre-pandemic, the European faculty were due to be joined by some colleagues from the States, but with the ongoing travel restrictions, our American colleagues were unable to join in person. Nevertheless, with event expertise developed during the pandemic, the US faculty delivered their contributions virtually.

The meeting ran over five days; following the introductory session on Monday evening, the rest of the educational content was delivered on the mornings of Tuesday to Friday. Each session comprised lectures and panel discussions. Plenty of time was allowed for questions, and there was fantastic engagement from delegates with lots of lively debate. Following the drought of face to face contact imposed by the pandemic, there was an almost celebratory feel in the desire of all participants to share their experiences and knowledge on obstetric anaesthesia. Lunch for faculty and delegates was held on the ground's of the hotel every day and was universally a friendly and warm occasion where family, including little ones, joined.

«Each session comprised lectures and panel discussions. Plenty of time was allowed for questions […]»

It is difficult to pick out particular highlights, but some elements and contributions to the meeting deserve mention. The panel discussion with Marc, Nuala, Eva Roofthooft and Chris Elton about neurological problems in obstetric anaesthesia – an essential but often neglected area; Clara Lobo's entertaining and thought-provoking talk about women's role in anaesthesia and finally, congratulations to the poster winners Dr Gillian Crowe and Dr Catarina Pinto.

The meeting was supported by the wonderful ESRA team with fantastic onsite support from the unflappable Beatrice Torri.

The ESRA Monothematic meeting goes from strength to strength, offering innovative and engaging continuing professional development. We are already excited about the 2022 Monothematic meeting, which will be held on 3-7th October 2022!

ESRA Day 2022!


Clara Lobo (Editor of ESRA Updates; Cleveland Clinic Abu Dhabi, UAE) @claralexlobo


Sébastien Bloc (Claude Galien Private Hospital – Quincy Sous Senart – Paris, France) @sebebloc


Julien Raft (Institut de Cancerologie de Lorraine, Nancy, France) @RaftJulien

"The European Day Committee worked hard to find the perfect programme to suit the needs and expectations of our members."

Dear colleagues and friends,

COVID-19 has done it again!
We are facing a new wave of this terrible pandemic all over Europe.

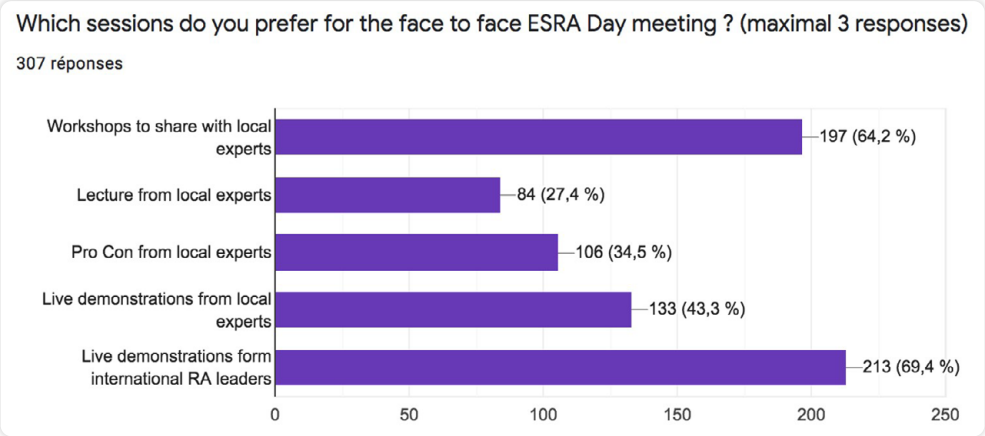
We were hoping that with vaccines the number of cases would be under control and allow all of us to restart some of our basic life activities, like attending education and scientific meetings face to face!

We still believe that ESRA day is a great concept, allowing small gatherings with high scientific quality, clinical debate and hands on practice with local experts.

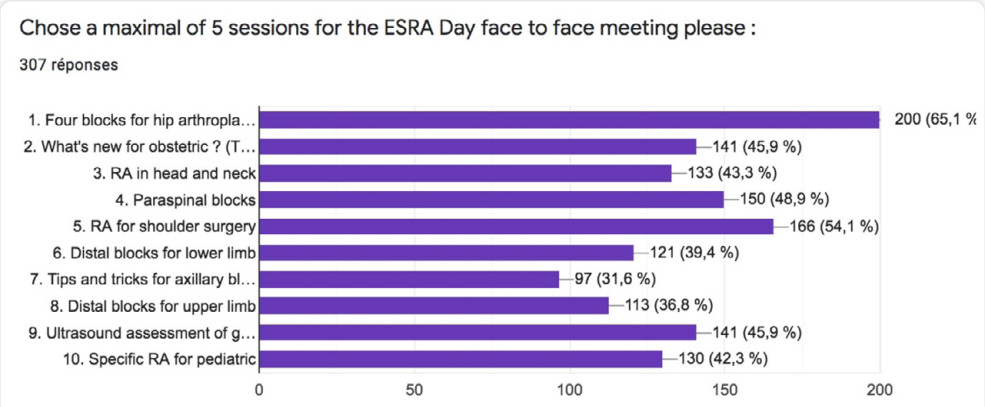
The European Day Committee worked hard to find the perfect programme to suit the needs and expectations of our members, for the upcoming edition of the ESRA day meeting, with a survey sent to ESRA members and friends, during November 2021.

Here are the results from this short survey of 6 questions (307 replies received).

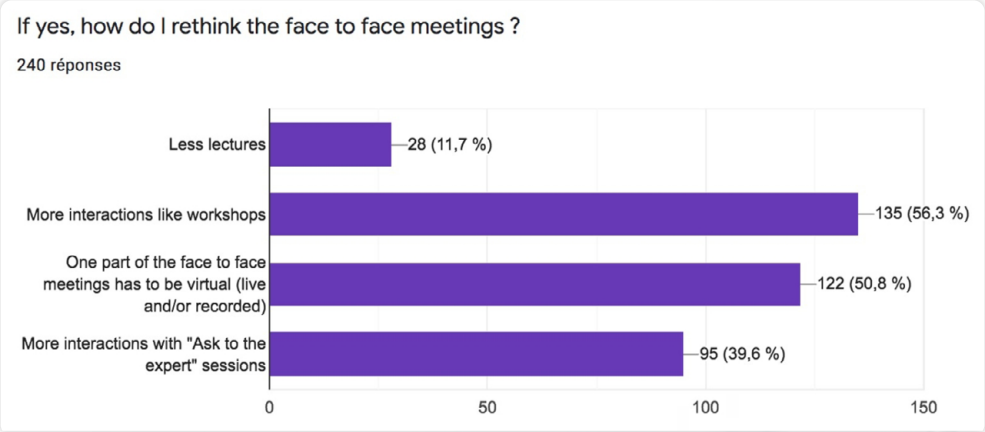
Most responders prefer to have live demonstrations from international speakers (69,4%), workshops with local experts (64,2%) and live demonstrations from local experts (43,3%), graphic 1. When asked about the use of Podcasts and pool interaction, there was a clear "yes" to keep these tools for future editions (> 80% of the replies). Considering the sessions chosen for 2022 ESRA day (graph 2) there was a clear preference for peripheral regional anaesthesia techniques, paraspinal blocks and obstetric anaesthesia updates. It was also clear the need for more hands-on sessions with workshops and hybrid meetings (graph 3).



Graph 1



Graph 2



Graph 3

The program prepared by the ESRA day Committee followed these directives, however, the date advanced (29th January 2022) was not possible to keep.

We hope we can meet and celebrate regional anaesthesia and pain therapy with live hands-on workshops and meeting local experts next Saturday March 19th 2022.

We have great expectations that the pandemic is under control and we can have a great ESRA day.

Sex Differences in Pharmacology

Sari Casaer (GZA Antwerpen, Belgium) @SCasaer

"It emphasizes the importance of tailoring your anaesthesia to the unique patient in front of you, with all its characteristics."

The subject of the last annual meeting of BARA (Belgian Association of Regional Anesthesia) was "Wom-an-esthesia". Anesthesia for breast surgery and obstetrics, chronic pelvic pain and the role of the female anaesthetist were a few obvious topics. But what about the role of sex during the regular daily practice, for surgeries equally performed in men and women? Does it matter if the patient in front of you is male or female?

When deciding on the dosing of our drugs, we consider several factors. Should sex be one of them? In fact, little is known about sex differences in pharmacology as historically females were always excluded from research. Only starting from 2000 Health Research institutes started to change their policy and stated that the biological sex of the subjects studied is an important variable that should be included in research. [1]

Individual variability in drug-effect can be attributed to pharmacokinetic or pharmacodynamic reasons. We know that sex influences body composition. Females have a higher percentage of body fat (5-10%) and a lower percentage of total body water (15-20%). This has its effect on the distribution volume of drugs, with females having a higher volume of distribution for lipid soluble drugs and a lower volume of distribution for water soluble drugs. Furthermore, females also have a lower level of protein binding capacity and the CYP450 system is prone to hormonal influence.

Female sex hormones, like progesterone and estrogen, also have an influence on sleep pattern and pain experience. Progesterone and its derivatives have sedative effects by their interaction with GABAA receptors. When injected in rodents, progesterone induces EEG-changes similar to sleep or to benzodiazepines.[2] This may explain sex-related and cyclic variations in sensitivity to hypnotic drugs.

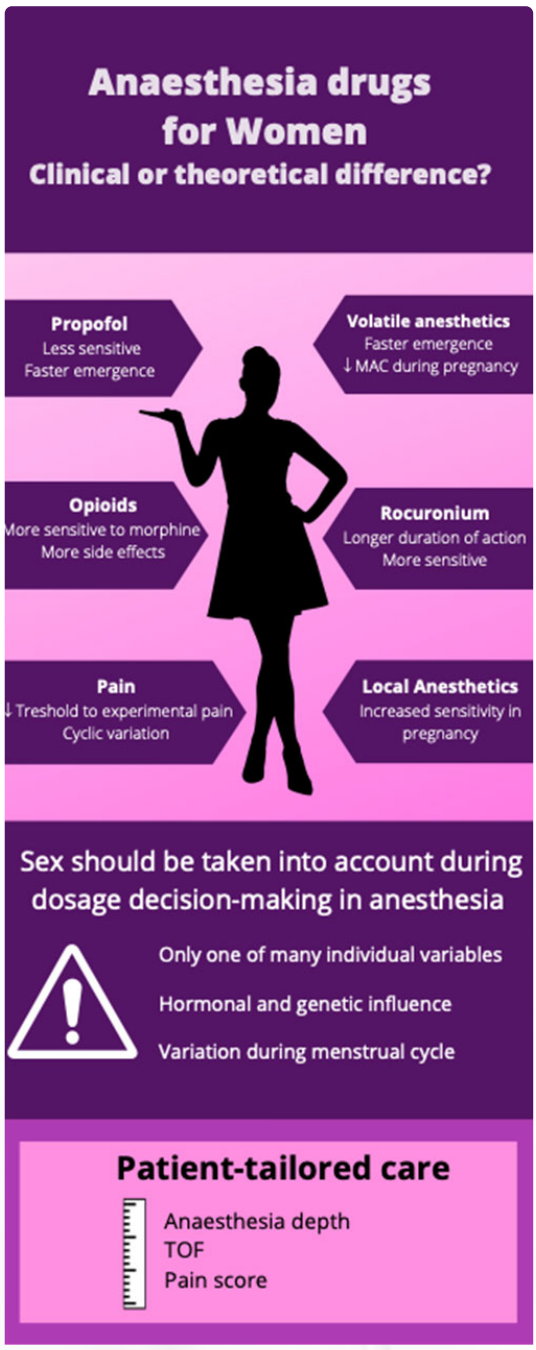
Multiple studies have shown females are less sensitive to *propofol*. During EEG-monitored anesthesia, females use up to 18% more (weight-corrected) propofol than males and have shorter emergence times. [3] Plasma levels of propofol decline faster at the end of infusion. These differences are partially caused by the greater volume of distribution and an increased metabolism, but there is also a real pharmacodynamic difference as BIS scores in women tend to be higher at similar plasma levels of propofol. [4] We know women are at higher risk of awareness and of course this lower sensitivity to propofol could be a contributing factor. And we could question why sex is not included as a parameter in the most frequently used TCI protocols?

For *volatile anesthetics* it is widely recognised that MAC values tend to be lower during pregnancy, when progesterone levels are higher. For non-pregnant women there is no strong evidence to support any clinical important sex difference, although it is sometimes suggested that there is a slight variability in sensitivity during menstrual cycle, with a lower requirement during the luteal phase. [5, 6] One study even investigated the weak correlation between emergence times and the waist:hip ratio of female patients as an argument for the hormonal influence in recovery from general anesthesia. [7] Although females woke up faster, Buchanan found longer recovery stays and lower QoR-40 scores during the first three postoperative days.

Muscle relaxants are water-soluble drugs and after a single weight-based dose the plasma concentrations in females tend to be higher.[8, 9] It is clearly demonstrated that rocuronium and vecuronium have a faster onset and a longer duration in females. Dosing can be reduced 20-30% in females to achieve a same neuromuscular block. [10, 11]

Pregnant patients have a higher neuronal sensitivity to *local anesthetics*. This is thought to be caused by a progesterone-induced facilitation of diffusion through the nerve sheath. Plasma protein binding is less which puts them at a higher risk for systemic toxicity. For non-pregnant patients no strong evidence for sex-related differences in sensitivity to local anesthetics could be found, although smaller reports suggest e.g. a higher sensitivity to spinal bupivacaine or a longer lasting sciatic sensory block in diabetic females. [12-14]

Pain is a complex experience influenced by sociocultural, emotional and cognitive factors. As a consequence, sex-related variability in *opioid effect* is difficult to study. Experimental pain studies try to exclude those more 'subjective' influences and show a lower pain threshold in females. [15] Chronic pain conditions also have a higher prevalence in women.



Sex hormone receptors are distributed in areas of the peripheral and central nervous system involved in nociception and considerable literature indicates an influence of sex hormones on pain experience. [16] As such chronic pain conditions happen to have a cyclic variability and pain perception seems to be more pronounced during intervals of the menstrual cycle associated with rapid hormonal changes (ovulation and early menstruation).[6]

Experimental pain models have shown that morphine has a higher potency in females, with a slower onset and a longer duration. A meta-analysis by Niesters also concluded females have a higher sensitivity to opioids, especially to PCA administered morphine, for the analgesic effect as well the side effects.[17] Data on other -opioids and mixed-receptor opioids are less clear. The mechanism for this sex-related variability in opioid effect appears to be a combination of pharmacokinetic and pharmacodynamic factors.

We can conclude that sex is to be taken into account when deciding on the dose of the drug you use, but it is only one of many variables and the influence of sex may be overshadowed by other factors. It emphasizes the importance of tailoring your anesthesia to the unique patient in front of you, with all its characteristics. Anesthesia depth and neuromuscular block should be measured, and pain therapy should be adapted to your patient's needs. Protocols and standardisation are necessary tools but that doesn't exclude we need to continue finetuning case by case.

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PROSPECT recommendations after video-assisted thoracoscopic surgery (VATS) and guidelines update after prostatectomy for cancer

Roseanne Wilkinson (Medical Writer, Medical Writing Ltd - Cambridge, UK)

Postoperative pain management after video-assisted thoracoscopic surgery (VATS): Recommendations from PROSPECT (PROcedure-SPECific postoperative pain managemenT)

PROSPECT guidelines are developed by an expert working group of anaesthesiologists and surgeons. They provide practical, evidence-based recommendations for postoperative pain management after different surgical procedures.

Thoracic surgery is increasingly performed using minimally-invasive techniques, such as VATS. Although a benefit of VATS is a reduction in pain compared with open thoracotomy, patients still experience significant acute and chronic postoperative pain. Effectively managing that pain helps patients to recover and reduces the risk of postoperative complications.

The latest PROSPECT guideline aims to provide clinicians with an evidence-based approach for pain management after pulmonary resection under VATS:

PROSPECT guidelines for video-assisted thoracoscopic surgery: a systematic review and procedure-specific postoperative pain management recommendations. *Feray S, et al. Anaesthesia 2021*.

Using *PROSPECT's unique methodology*, the working group based their recommendations on a systematic literature review assessing the effects of different analgesic interventions and on the balance of risks and benefits in the context of multimodal, non-opioid analgesic strategies and modern peri-operative care pathways.

The overall recommendations for VATS are shown in Table 1 and on the *PROSPECT website*.

Table 1. Overall recommendations for peri-operative pain management in patients undergoing VATS

Pre-operative and intra-operative interventions	• Paracetamol (Grade D) • Non-steroidal anti-inflammatory drug (Grade D) / cyclooxygenase-2-specific inhibitor (Grade D) • Dexmedetomidine (Grade B) (excluding patients with severe cardiac disease or conduction and/or rhythm disorders) • Paravertebral block: single shot (Grade A) / continuous (Grade A) • Erector spinae plane block: single shot (Grade A) / continuous (Grade B) • Serratus anterior plane block: single shot (Grade A) / continuous (Grade D)
Postoperative interventions	• Paracetamol (Grade D) • Non-steroidal anti-inflammatory drug (Grade D) / cyclooxygenase-2-specific inhibitor (Grade D) • Opioid for rescue (Grade D)

Use of a regional analgesic technique as a component of multimodal analgesia is strongly recommended. Paravertebral block is recommended as a first choice, with ESPB considered an effective alternative, based on non-inferiority in two studies. Serratus anterior plane block may be administered as a second-choice option.

The erector spinae plane block and serratus anterior plane block are relatively new techniques, recommended based on recent studies all published since 2017. An accompanying editorial adds further insights regarding the accumulating evidence for these chest wall fascial blocks, and reinforces the need for larger, well-designed trials with appropriate patient-centred endpoints (*Shelley, Anderson, Macfarlane. Anaesthesia 2021*).

Updates and ongoing PROSPECT work

As well as developing new guidelines, the PROSPECT working group continues to update their recommendations when important new evidence is available. The latest update to be published focuses on pain management after prostatectomy:

PROSPECT guidelines update for evidence-based pain management after prostatectomy for cancer. *Lemoine A, et al. Anaesth Crit Care Pain Med 2021;40:100922.*

The evidence, recommendations and methodology for VATS, prostatectomy and all the PROSPECT reviews (now 20 surgical procedures) can be found on the website, *https://esraeurope.org/prospect*, together with links to all PROSPECT publications (most are open access).

New PROSPECT reviews and updates are underway. Those nearly finalised include total knee arthroplasty (update), open abdominal hysterectomy (update), sternotomy, hip fracture and laparoscopic colectomy.

PROSPECT is supported by an unrestricted grant from the European Society of Regional Anaesthesia and Pain Therapy (ESRA) as an independent Working Group of the society.

Quick Journal Club

Philip Peng (University Health Network - Toronto Western Hospital, Canada) @DrPhilipPeng

"I noticed that there are 4 randomized trials published on the PENG block and there is an emerging interest in this block. I would like to appraise three of them and reflect the motor block potential of this block."

For this edition of the ESRA NL Journal club Prof Philip Peng was asked to select articles which for him were/ are important, interesting or changed his clinical practice. This choice can be a general big randomized study but can also be very personal.
Dr Philip Peng does not need a lot of introduction. He is a leading expert in regional anaesthesia and a fantastic tutor and lecturer. It is an honor to share his contribution for this journal club.

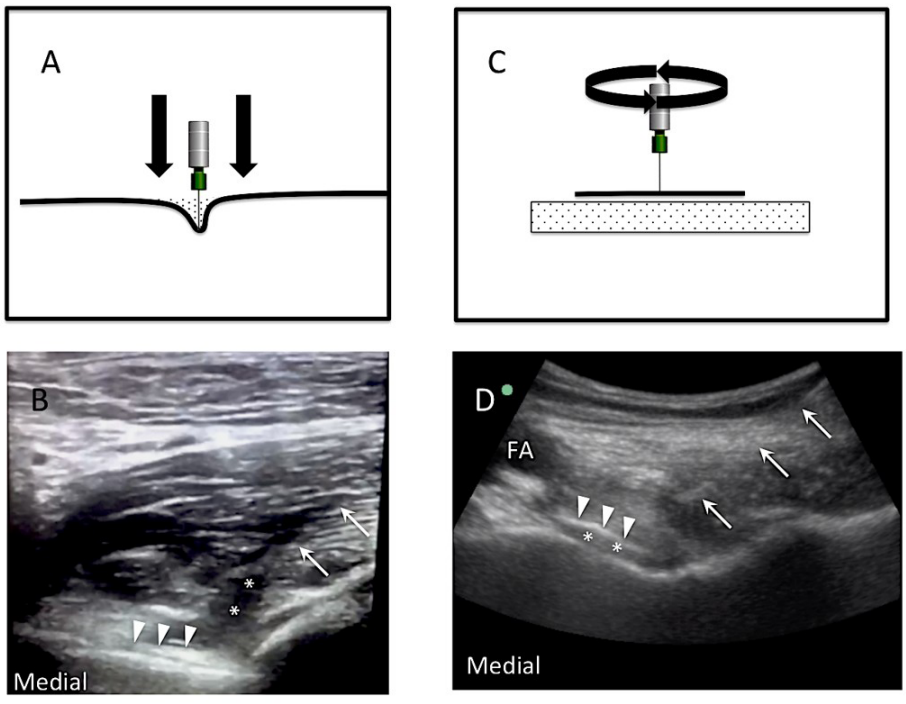
"I was asked by the editor to pick one or a few articles and discuss them in this journal club. As an avid reader of different journals, I have a hard time to pick. Yet, I noticed that there are 4 randomized trials published on the Pericapsular Nerve Group (PENG) block[1-4] and there is an emerging interest in this block. I would like to appraise three of them and reflect the motor block potential of this block.[1-3]

The first one is a pragmatic trial comparing PENG block and femoral nerve block in the peri-operative analgesia.[1] It is a pragmatic trial as the authors allowed the inclusion of all types of fracture, all types of surgical options for hip fractures, both general and spinal anesthesia and even the use of intrathecal morphine in some of the patients. The distribution of the heterogenous types of fracture, surgery and anesthetic techniques was not different between the two groups. Other than the pragmatic nature, the study was well designed. The primary outcome was the maximum numeric pain score (NRS) at 4 hours in the recovery room and was superior in the PENG block group (63% vs 30% pain free in PENG vs femoral nerve block group). No difference in opioids consumption or NRS in other time interval. Regarding the motor block, absence of quadriceps strength was found in 2/30 vs 12/30 in PENG and femoral block group respectively. One of the criticisms was the heterogenicity of surgical types. The authors did a post-hoc analysis and found that the difference in NRS score between PENG and femoral nerve block groups remained for the patients with hemiarthroplasty/total arthroplasty but disappeared when only dynamic hip screw or intramedullary nails surgery were included. The superiority of the PENG over femoral nerve block is not surprising as the articular branches of hip from femoral nerve dive deep to the iliacus muscle at approximately L4-5 level and the femoral nerve block does not really contribute to the blockade of pain signal from hip joint.

Other two randomized trials are on total hip arthroplasty. The first one I would like to talk about is a randomized controlled trial (comparing PENG block with no block).[2] All patients received a rich preoperative analgesic regime, then spinal anesthesia following by PENG block or no block. The surgical approach was posterior and the surgeons performed local infiltration in the wound except the capsule. Patients were managed with a multimodal analgesia approach with PCA sublingual sufentanil in the postoperative period. My criticism for the design is that the control group should be a sham block (just insert the needle) as the block was performed after the spinal anesthesia. Otherwise, the study was well-designed. The maximum NRS was superior in the first 48 hours and the difference was more in the first 12 hours. In addition, the analgesic consumption in first 2 days was much better in the PENG group, and the time for "first walk" was 10 hours earlier in the PENG block group.

The third one is a comparative trial between PENG block and suprainguinal fascia iliaca block (SIFIB) for total hip arthroplasty.[3] Unlike the last two trials, the sample size was estimated not for analgesia but the incidence of quadriceps weakness (n=20 each group vs n=30 each group in the last two trials). Thus, the study was not designed primarily to detect the analgesia difference. The total dose of injectate (levobupivacaine) was kept the same but the volume varied: 20mL 0.5% vs 40mL 0.25% levobupivacaine for PENG block and SIFIB respectively. The incidence of quadriceps weakness was expectedly 90% at 3-hour post-block for SIFIB group but was 45% for PENG block group. Lateral thigh sensation and hip adduction was absent in 2 patients (10%) and 4 patients (20%) in the PENG block group at 3-bour post block. No significant difference in analgesia and opioid consumption in both groups over the 48-hour period. Because of the high incidence of motor block in SIFIB block, it is not ideal for total hip arthroplasty if early ambulation is contemplated.

I would like to make a reflection here.
PENG block was developed to target the articular branches of femoral, obturator and accessory obturator nerves by spreading in the pericapsular space in the anterior and medial capsule.[5-8] The pericapsular spread should not extend to the nerve trunk of femoral and obturator nerve. The thick psoas muscle prevents the spread to the femoral nerve which is superficial to the psoas.[7] On the medial side, the fascia iliaca prevents the spread to the obturator nerve.[9] Then how did the PENG block in those trials result in non-negligible incidence of quadriceps weakness? The mostly likely reason is imperfect subfascial spread and the local anesthetic tracks into the psoas muscle and thus to the femoral nerve superficial to the muscle. The other plausible reason is the medial placement of needle close to the junction of psoas and pectineus muscle allows spread of injectate from deep to superficial part of psoas but it is just a postulation.



A. Insertion of needle involves indenting the fascia before the fascia is pierced. B. Needle insertion (arrows) resulted in tracking of local anesthetic (**) into the muscle without lifting of the psoas fascia (arrowheads). C. Piercing of the psoas fascia can be achieved with rotatory movement of the needles without indenting of the fascia. D. Needle insertion (arrows) with successful depositing of local anesthetic (**) deep to the psoas fascia (arrowheads). FA-femoral artery. Reprinted with permission from Philip Peng Educational Series.

Although anesthesiologists who have performed PENG block are very careful to avoid intramuscular spread, I suspect the incidence is much higher than one expected. Many practitioners try to pierce through a fascia under ultrasound guidance should have noticed that before the needle punctures through the fascia, it "indents" the fascia first (Figure 1). In some patient with strong fascia tissue, the practitioner may have to indent more than 1cm in order to puncture the fascia. What if the fascia cannot be indented? In performing PENG block, the psoas fascia lies on the pubic bone and the 'feel' that the needle is on the bone does not mean the needle is actually on the bone. Pushing the needle too forcefully on the bone may jam the needle tip into the iliofemoral ligament and create a high resistance for the injection. The author for this article also performs this block for alcohol neurolysis and takes great length to make sure a fascia lift is seen by rotating the needle within the fingertips (simulating piercing action). In some young patients, it can take quite a while to see the injectate spread between the psoas fascia and pubic bone. Without seeing this, the injectate can track into the psoas muscle and spread to the femoral nerve with large volume such as 20mL. Another tip for the imperfect lift is likely related to the imperfect visualization of the anterior inferior iliac spine (AIIS) and iliopubic eminence (IPE). Quite often, I see practitioner achieving a perfect scan before insertion of needle but the scanned sonoanatomy deteriorates as soon as the needle inserted. The needle tip is likely proximal or distal to the target. One easy way is to recognise the depth of AIIS and when picture acquired for needle inserted results in significant change of depth of AIIS, it is time to reinsert the needle.

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