

Nerve block or fascial plane block ?

This is the question

ESRA ITALIAN CHAPTER

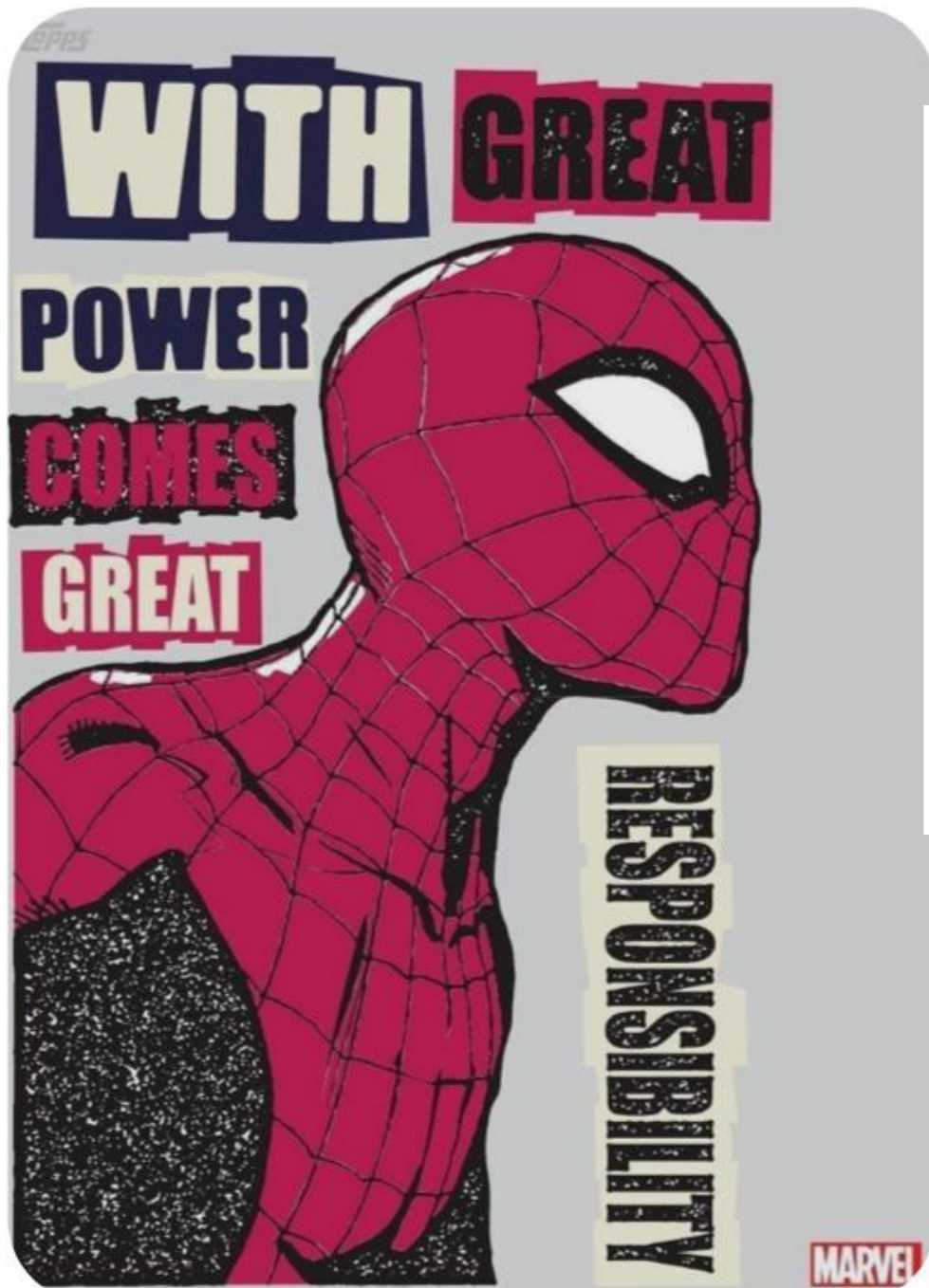
30°
NATIONAL
MEETING



Pierfrancesco Fusco
Direttore UOC Anestesia Rianimazione
Terapia Del Dolore PO Avezzano

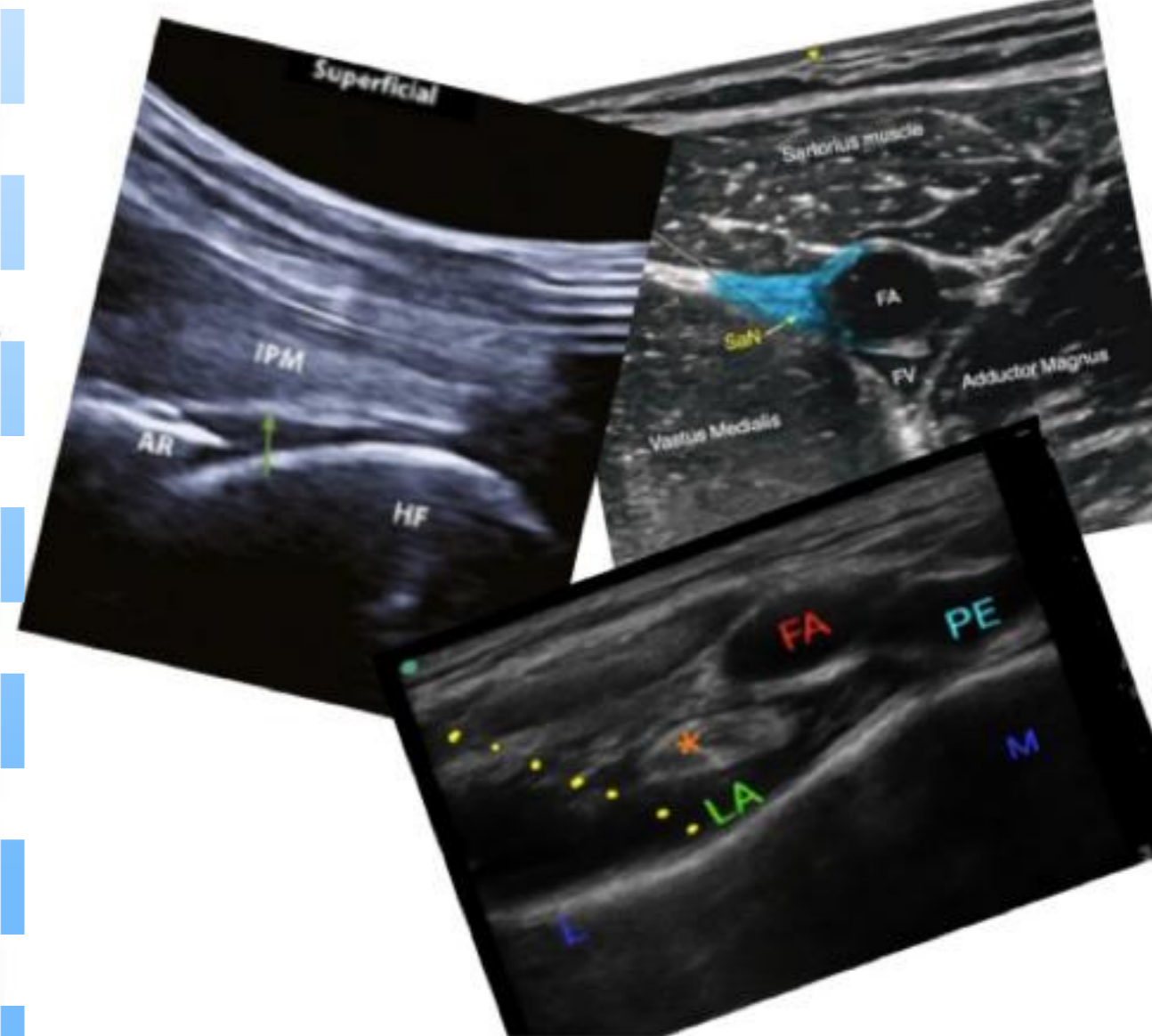
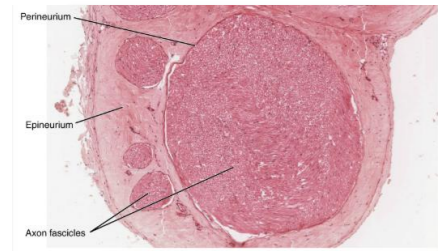
**CONFLICT
OF
INTEREST**





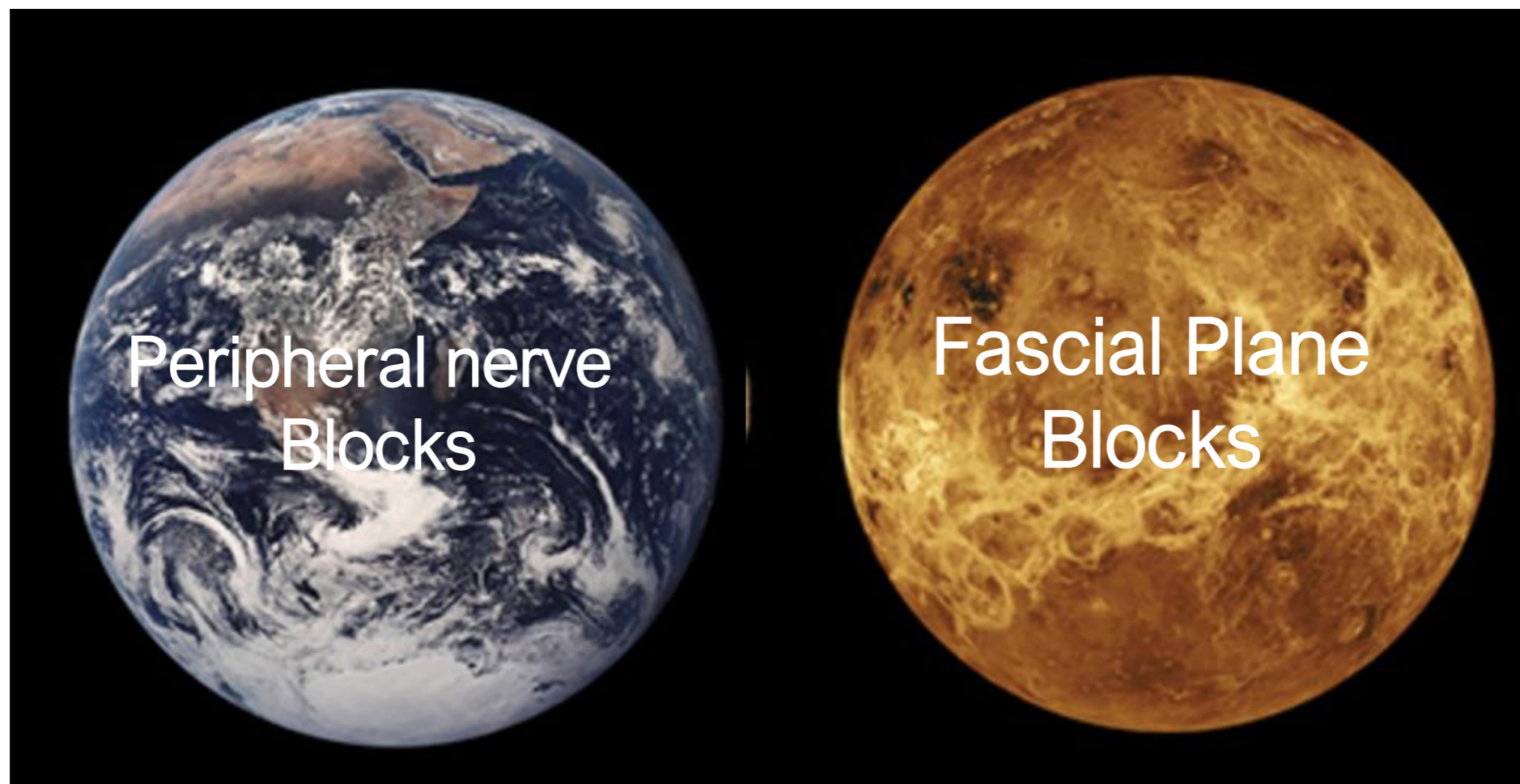
NERVE BLOCKS

PLANE BLOCKS



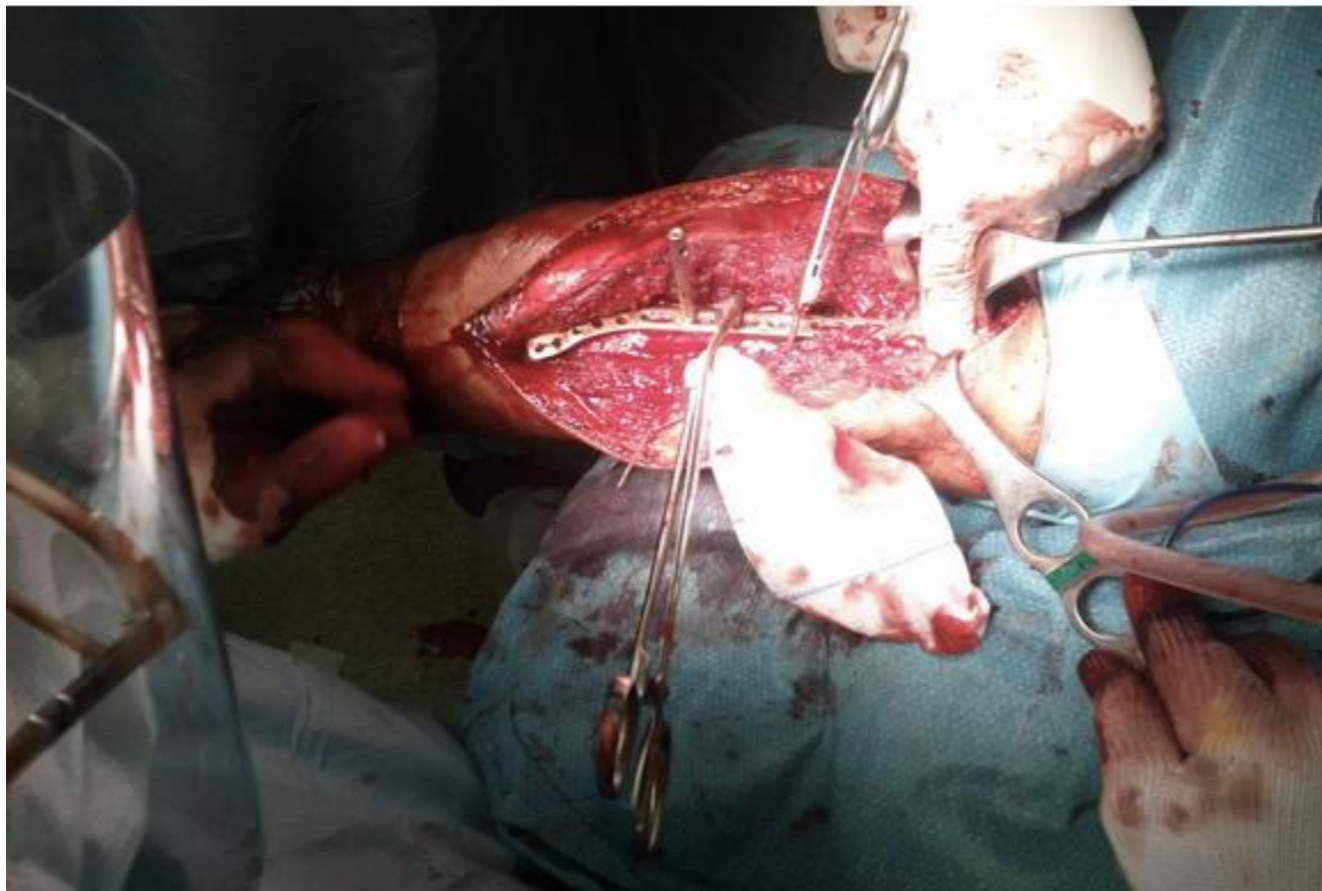
Fascial plane blocks and peripheral nerve blocks:
two planets not so far apart

Pierfrancesco Fusco et al.



L'analgesia perineurale 1° livello di raccomandazione in Ortopedia

Capdevila X et al. Effect of Patient-controlled Perineural Analgesia on Rehabilitation and Pain after Ambulatory Orthopedic Surgery Anesthesiology 2006;105:566-73



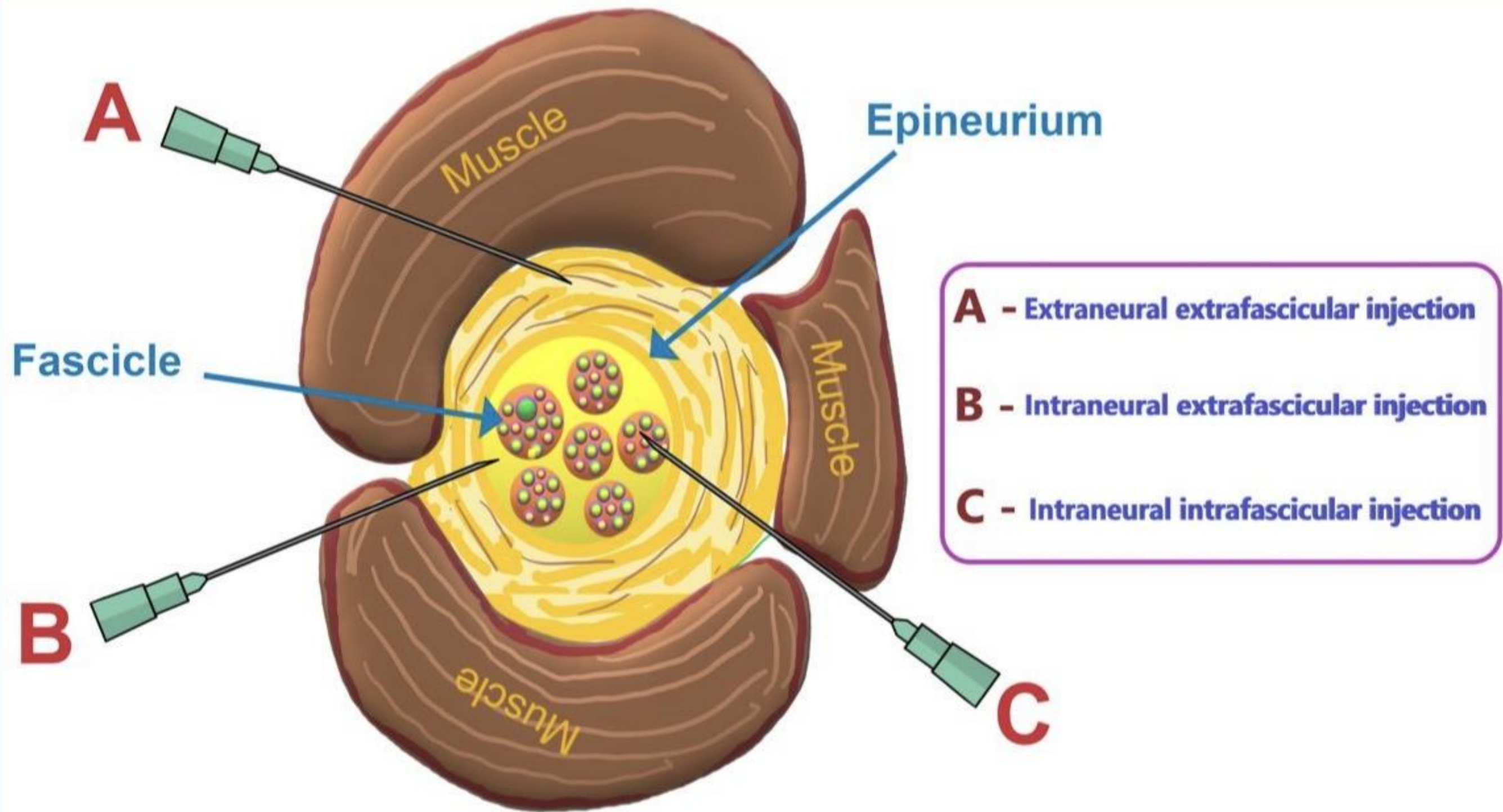
REGIONAL
ANESTHESIA
AND PAIN
MEDICINE

SPECIAL ARTICLE

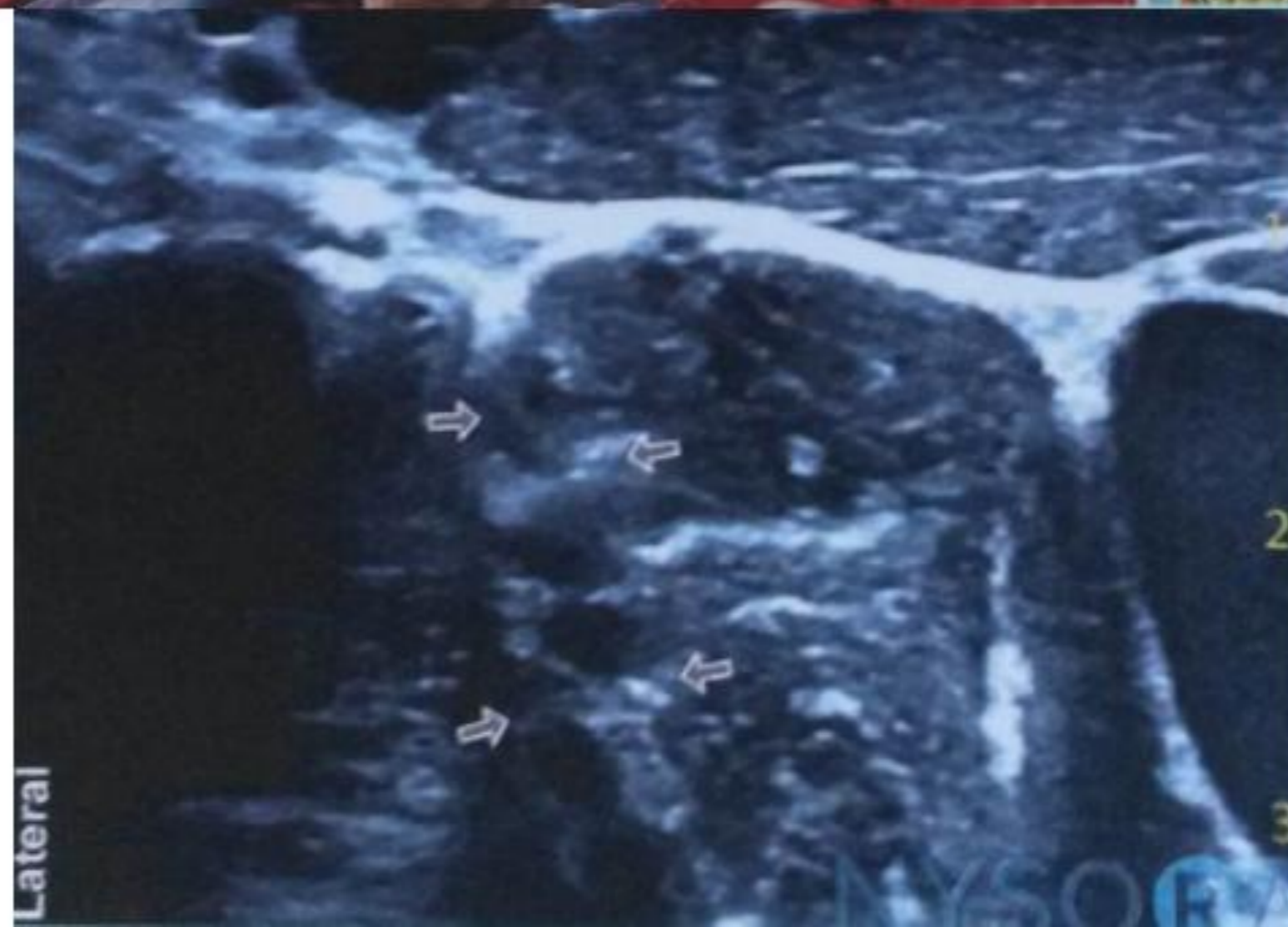
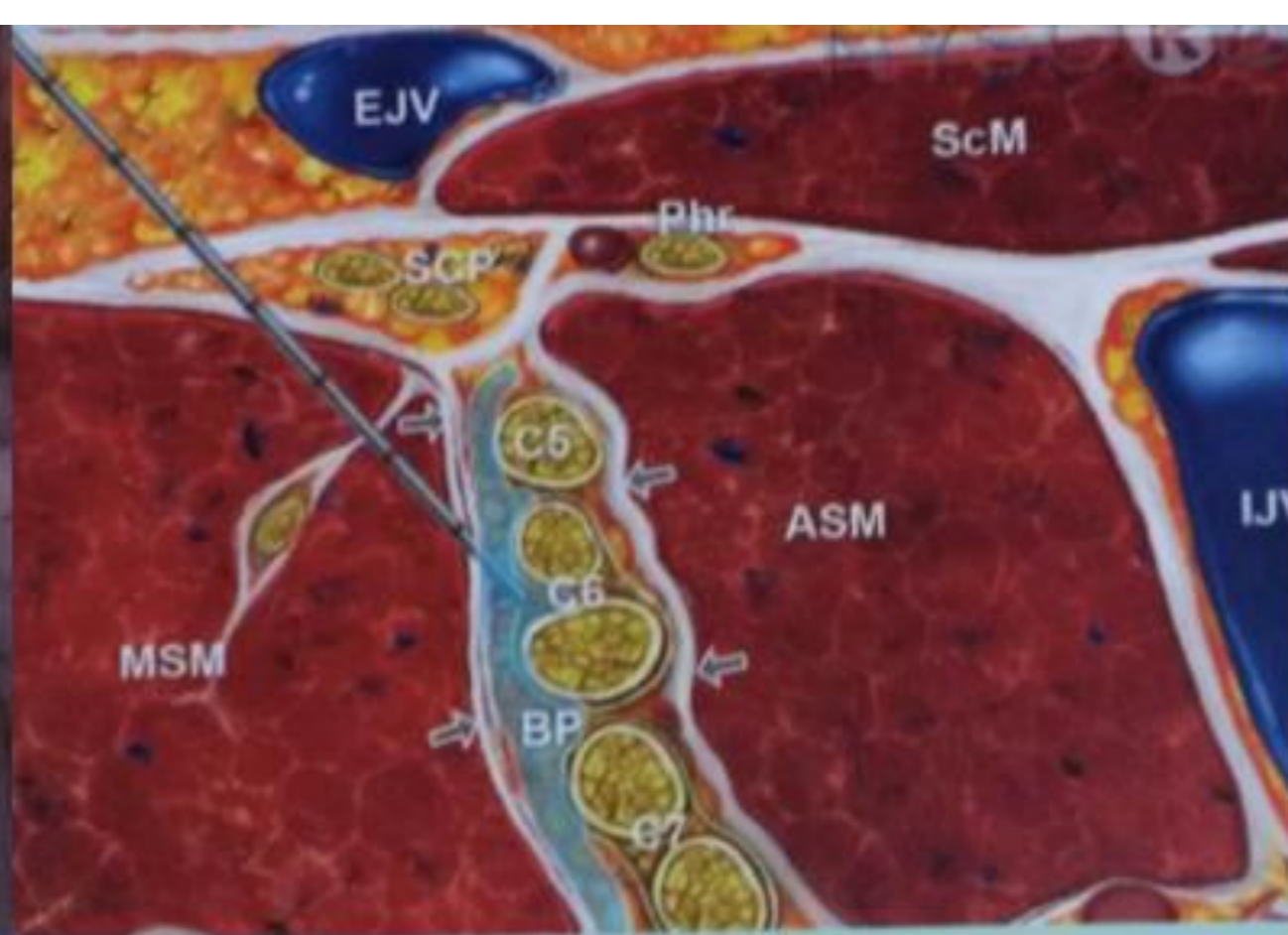
Epidural Technique for Postoperative Pain

Gold Standard No More?

Narinder Rawal, MD, PhD









Ris

MB



Paziente



Autoguard



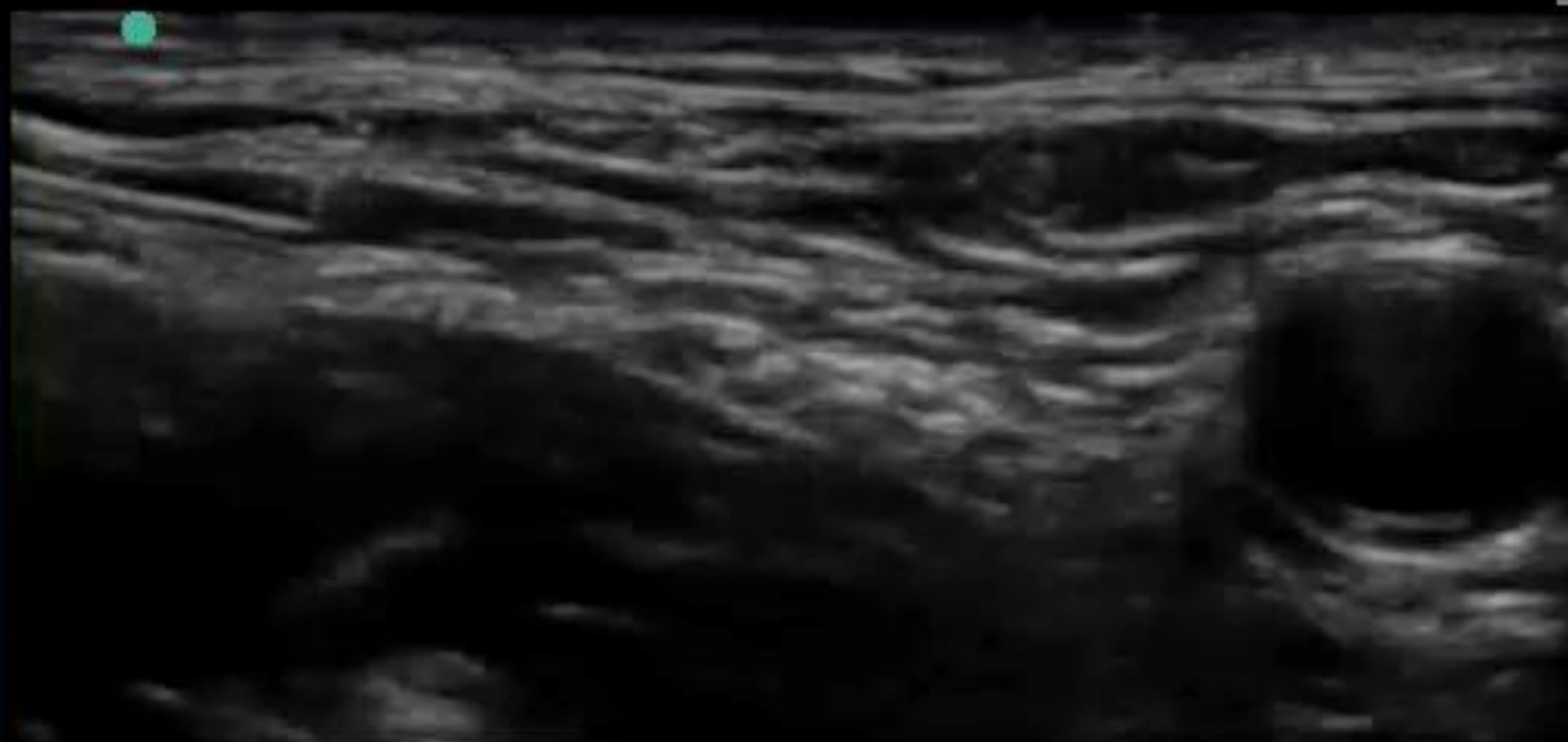
Ris



Filmato



Pag. 1/3



Nrv
HFL



95%

IM
0,7
ITT
0,1

1,8



Guad.



Profond.



Congel.



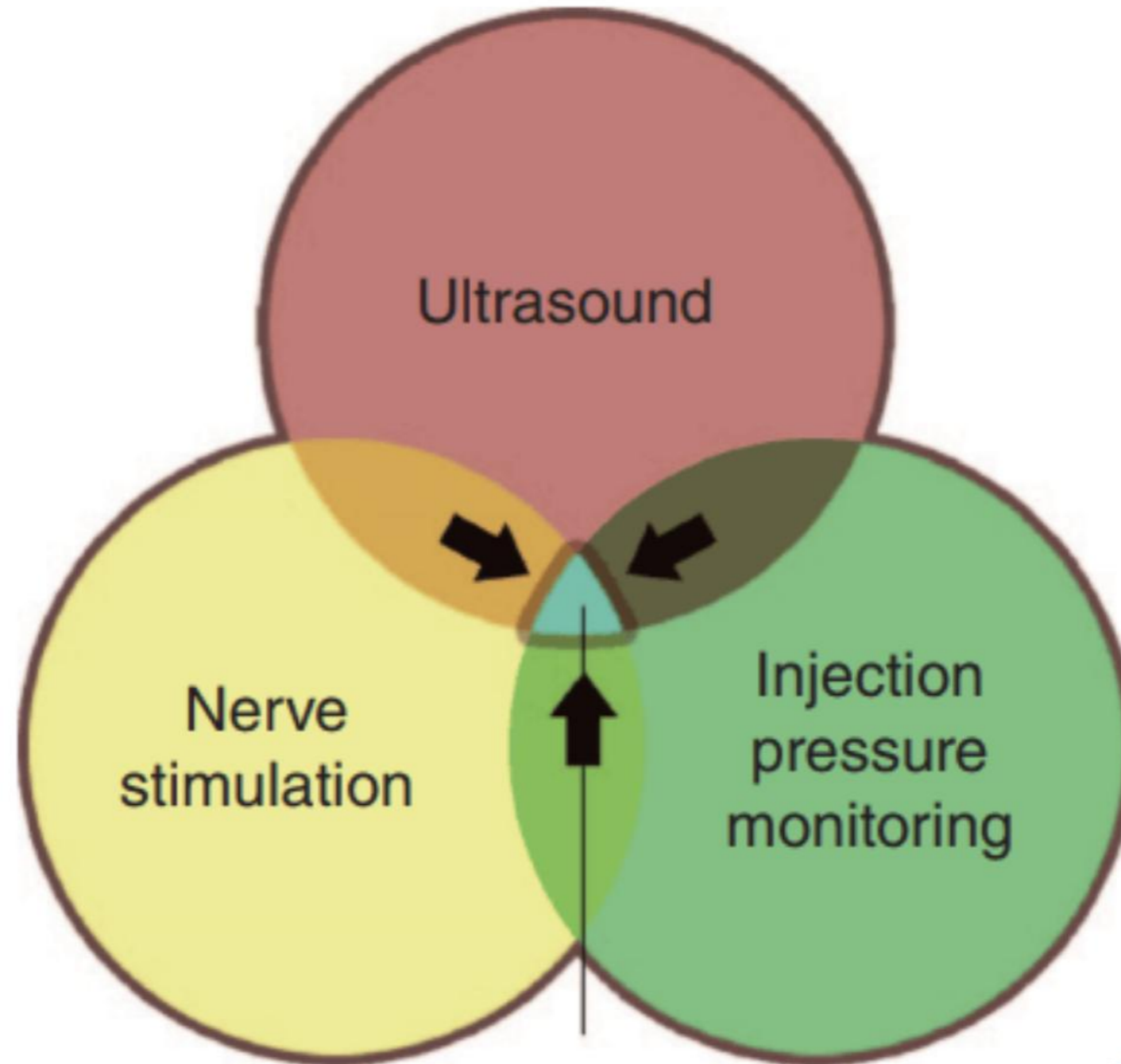
Salva

Opzioni



Modalità





PRO-CON – FASCIAL PLANE BLOCKS: ARE THEY EFFECTIVE?

1,2Steve Coppens*, 1Rebekka Dreelinck, 1Liesbeth Brullot, 1Philippe Van Loon, 1,2Danny Feike Hoogma. 1University Hospitals of Leuven, Department of Anesthesiology, Herestraat 49, B-3000, Leuven, Belgium; 2University of Leuven, Biomedical Sciences Group, Department of Cardiovascular Sciences, KU Leuven, B-3000, Leuven, Belgium

It is frightening that despite a lack of decent research and knowledge these FPBs have become part of daily practice.

- For major surgery, neuraxial techniques are, in our humble opinion still the first choice.
- For lesser invasive surgeries, intrathecal morphine could play a more prominent role in coming years.

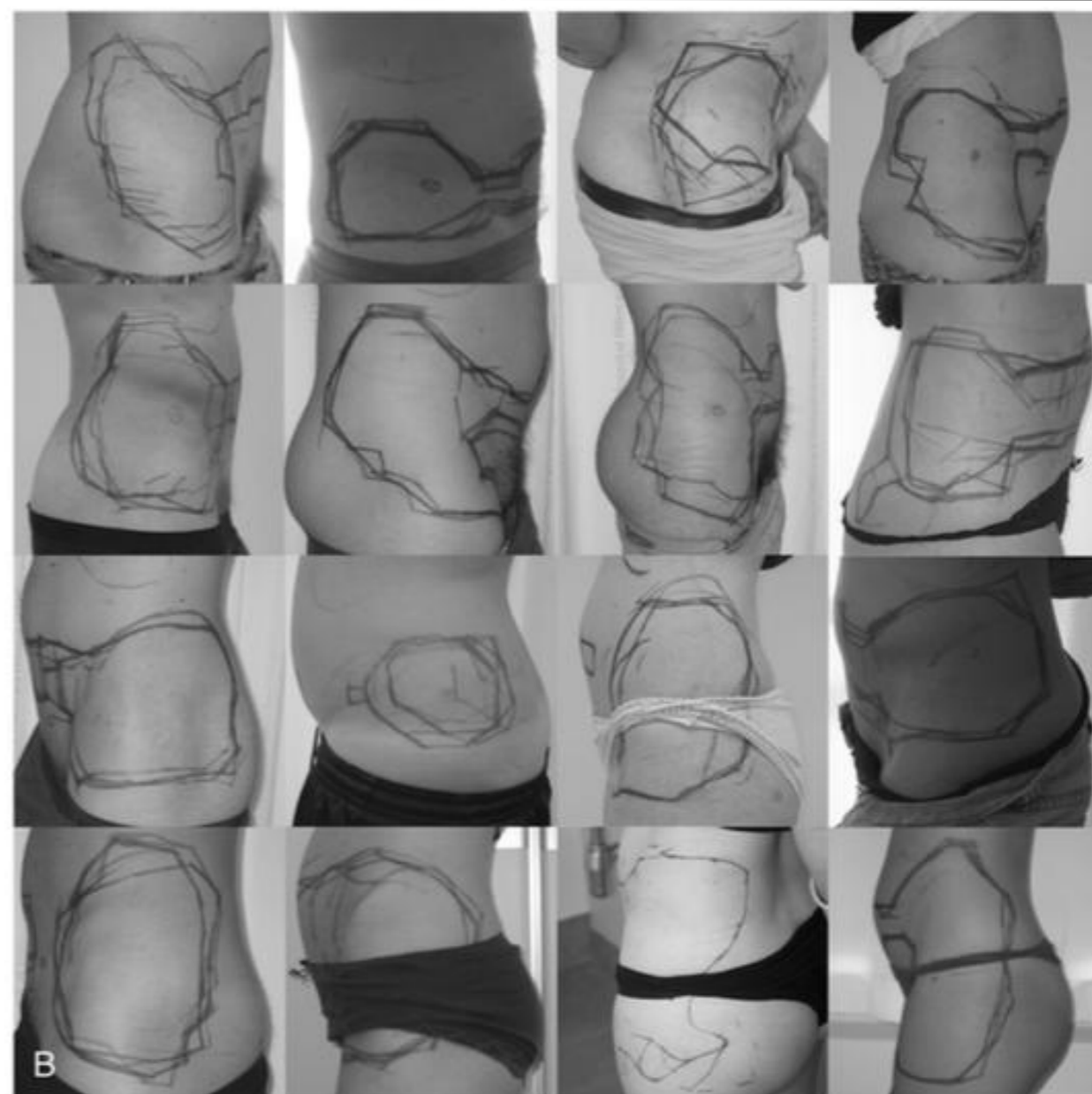
Fascial plane blocks in children—Scientifically supported or not?

Per-Arne Lönnqvist 

- The exact mode of action for most of the FPBs is unclear.
- FPBs appear to be of additional value only when compared to no block or placebo and only for minor to moderate procedures but not major surgical interventions.
- FPBs do not appear to provide surgical anesthesia,
- There are currently no specific situations or indications where FPBs have been found clearly superior to other nerve-blocking

Cutaneous Sensory Block Area, Muscle-Relaxing Effect, and Block Duration of the Transversus Abdominis Plane Block *A Randomized, Blinded, and Placebo-Controlled Study in Healthy Volunteers*

Kion Støving, MD, Christian Rothe, MD, Charlotte V. Rosenstock, MD, PhD, Eske K. Aasvang, MD, DMSc, Lars H. Lundstrøm, MD, PhD, and Kai H. W. Lange, MD, DMSc



Transversus Abdominis
Plane Block in Lower
Segment Cesarean Section:
A Question of Block Failure
or Lack of Efficacy?

Accepted for Publication: 11 January 2010

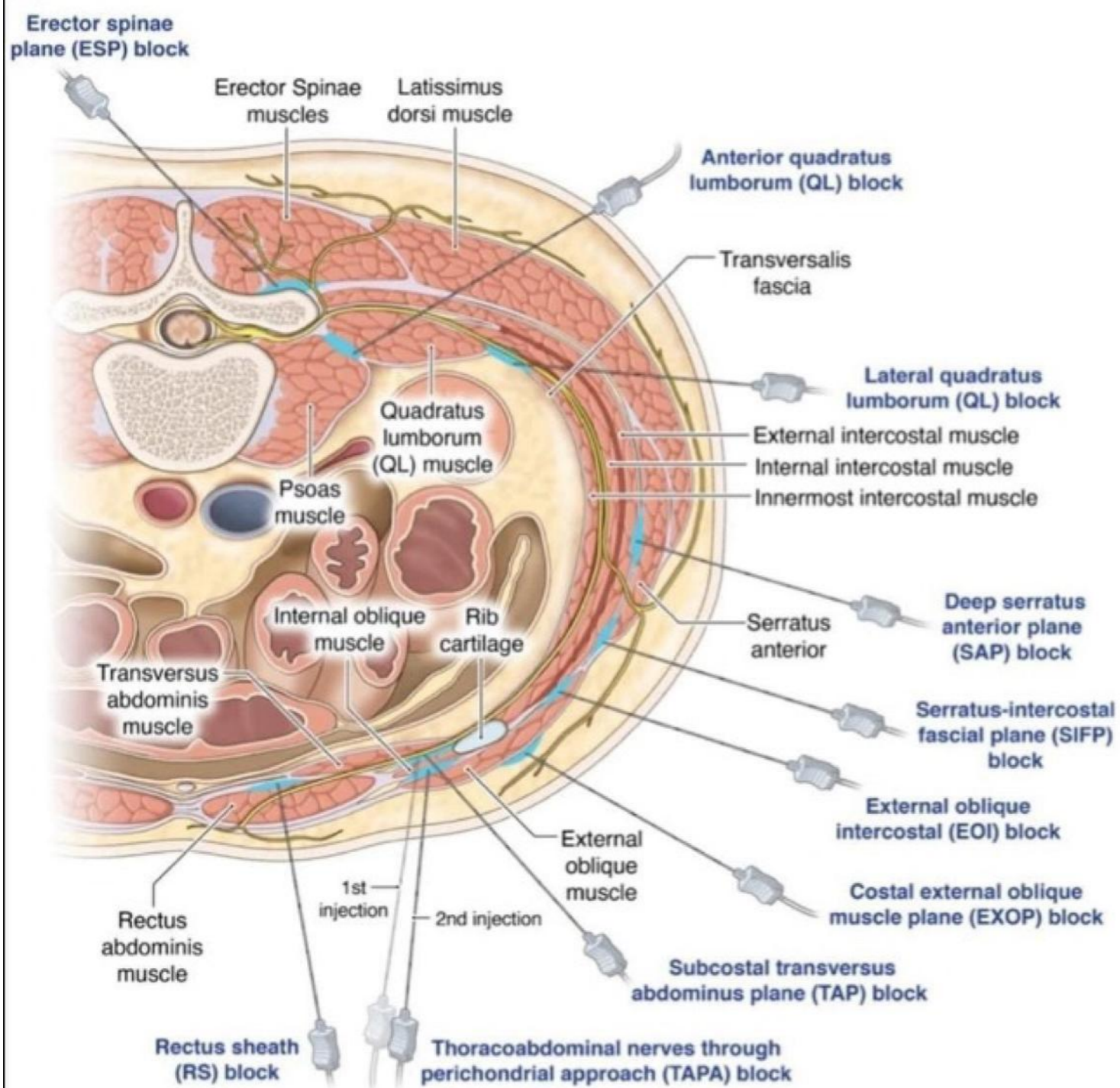
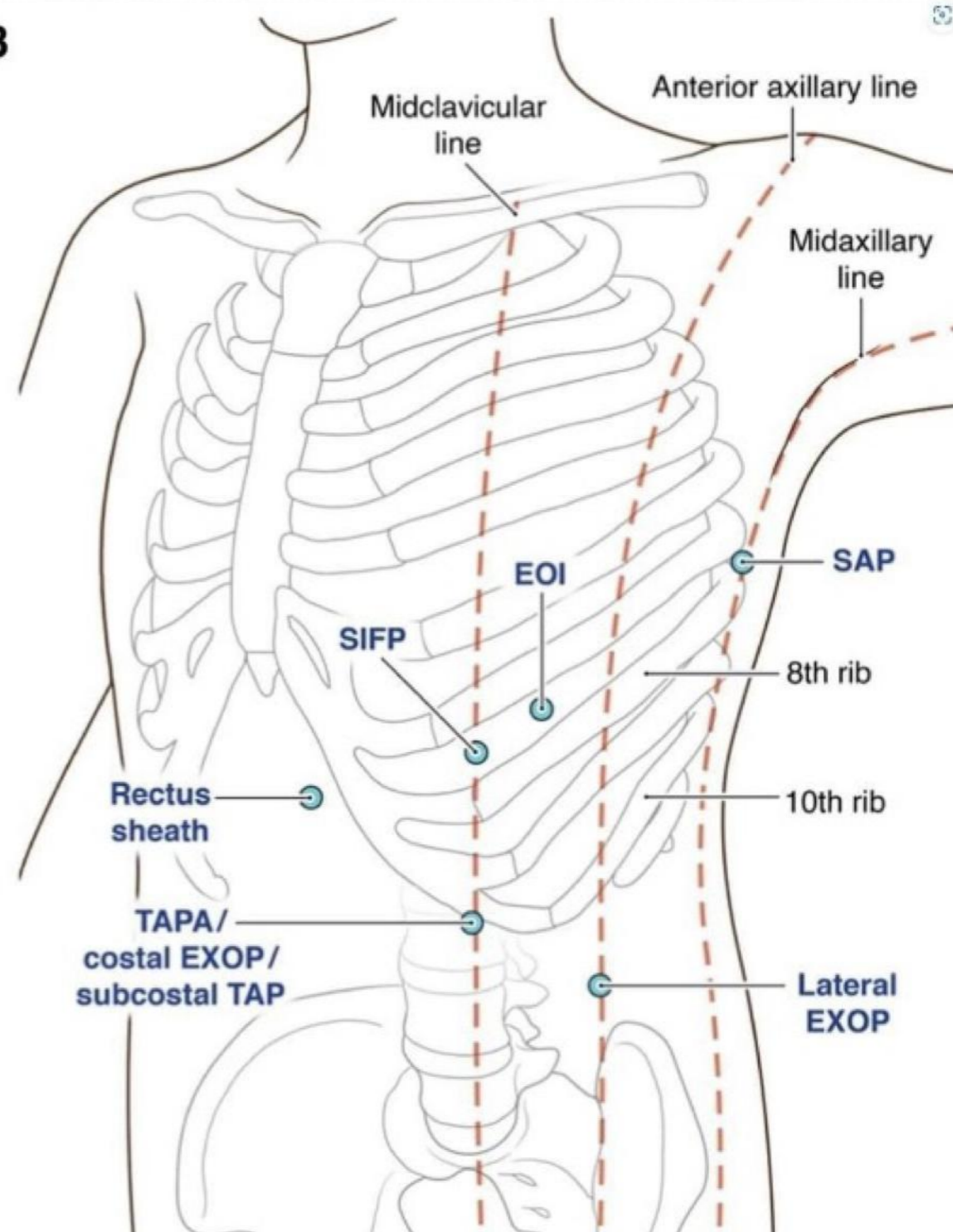
Danielle Factor, FRCA
Ki Jinn Chin, FRCPC
Department of Anesthesiology
Toronto Western Hospital
Toronto, Canada

.....may have deposited the local anesthetic in the **wrong location**, that is, above, and not below this fascial plane

..... **Primary block failure**, rather than lack of clinical efficacy, may therefore account for their results

Future studies evaluating the TAP block should incorporate an **objective assessment** of block success



A**B**



fascial plane block

X

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RESULTS BY YEAR

798 results

<< < Page 1 of 80 > >>





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PUBLICATION DATE

- ☐ 1 year
- ☐ 5 years
- ☐ 10 years
- ☐ Custom Range

TEXT AVAILABILITY

- ☐ **Anatomical basis of fascial plane blocks.**
1 Chin KJ, Versyck B, Elsharkawy H, Rojas Gomez MF, Sala-Blanch X, Reina MA.
Cite Reg Anesth Pain Med. 2021 Jul;46(7):581-599. doi: 10.1136/rapm-2021-102506.
PMID: 34145071 Review.
Fascial plane blocks (FPBs) are regional anesthesia techniques in which the space ("plane") between two discrete **fascial** layers is the target of needle insertion and injection. ...The **plane** between **fascial** layers is filled with a s ...
- ☐ **Mechanisms of action of the erector spinae plane (ESP) block: a narrative review.**
2

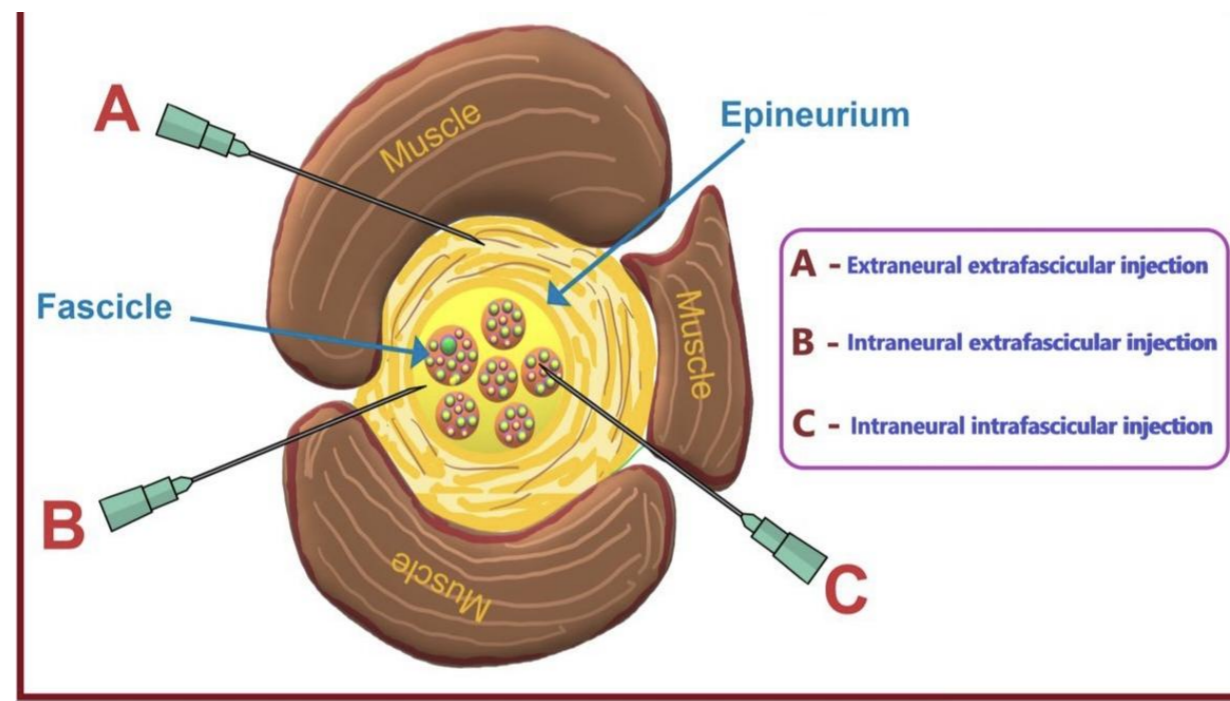
↑
Back to Top

GREATER TECHNICAL COMPLESSITY

REBOUND PAIN

SEDATION OFFEN REQUIRED

NERVE BLOCKS



MOTOR SPERING

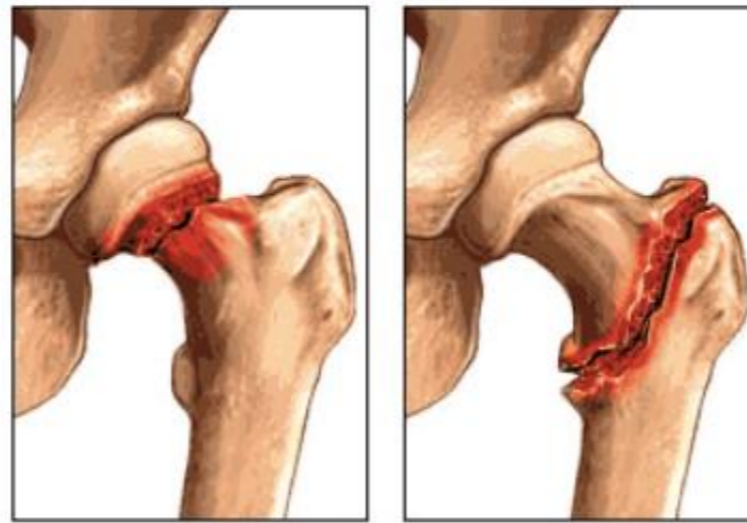
nerve injury

intravascular injection

technical complexity

NEED FOR STANDARDIZATION TEQUINEQUES

NEED FOR DIFFERENT APPROACHES

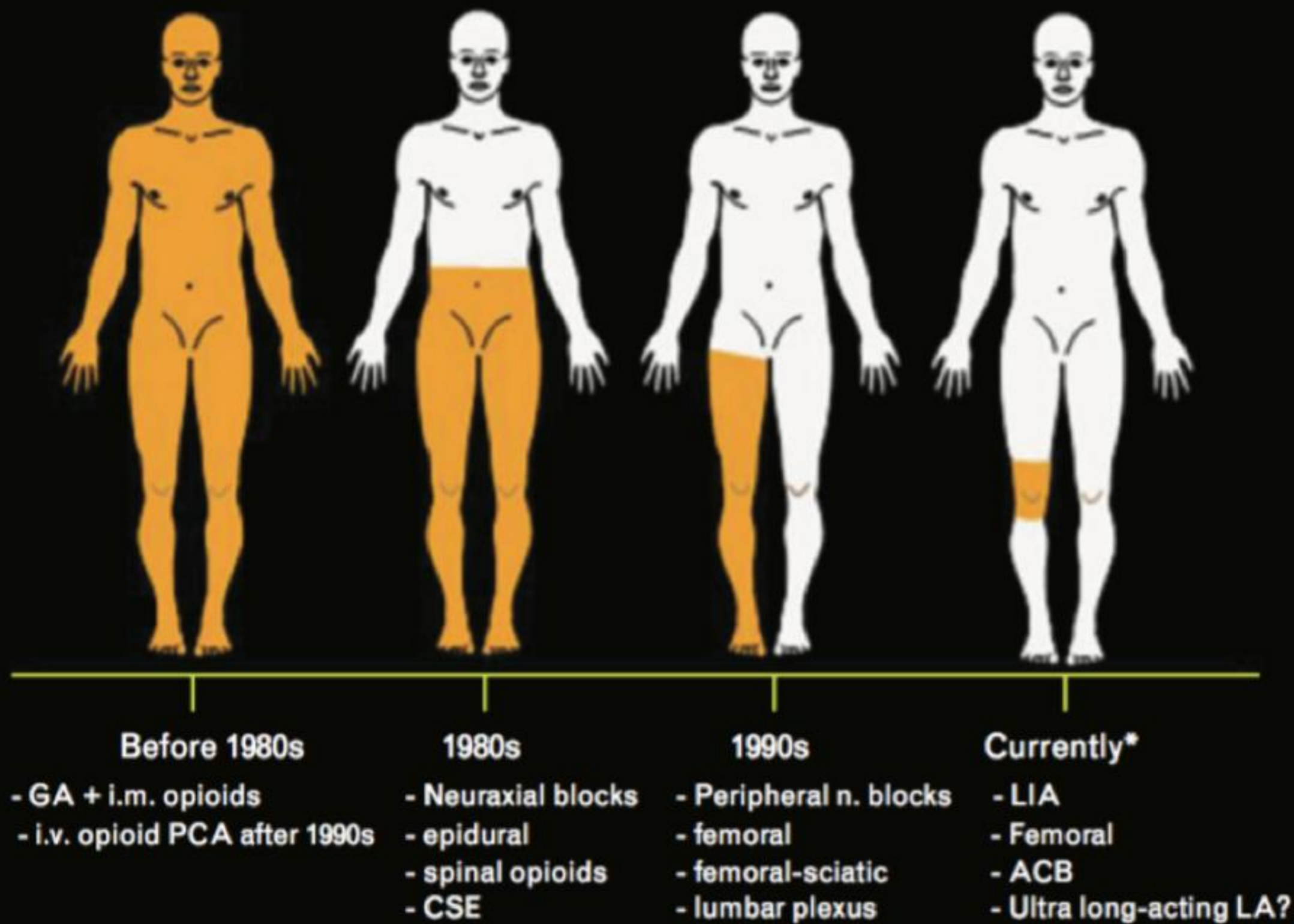


Surgical complications

Imperfect Block

ALR complications

LAST



*Within multimodal analgesia strategies and ERAS pathways



MOTOR SPARING AND FASCIAL PLANE BLOCKS

ANESTHESIA & ANALGESIA®

■ THE OPEN MIND

Fascial Plane Blocks: More Questions Than Answers?

Nick D. Black, MB BCh BAO, FRCA,* Carla Stecco, MD,† and Vincent W. S. Chan, MD, FRCPC‡

....inconsistent effect, efficacy, evidence, indication, and technique. This has not stopped their popularity nor their acceptance into guidelines, protocols, and clinical practice.

While they certainly have a role in modern anesthesia, **a better understanding of fascia** is a prerequisite to greater success

Fascial plane?

Fascial plane block?

Where should we inject?

How to perform a fascial plane block?

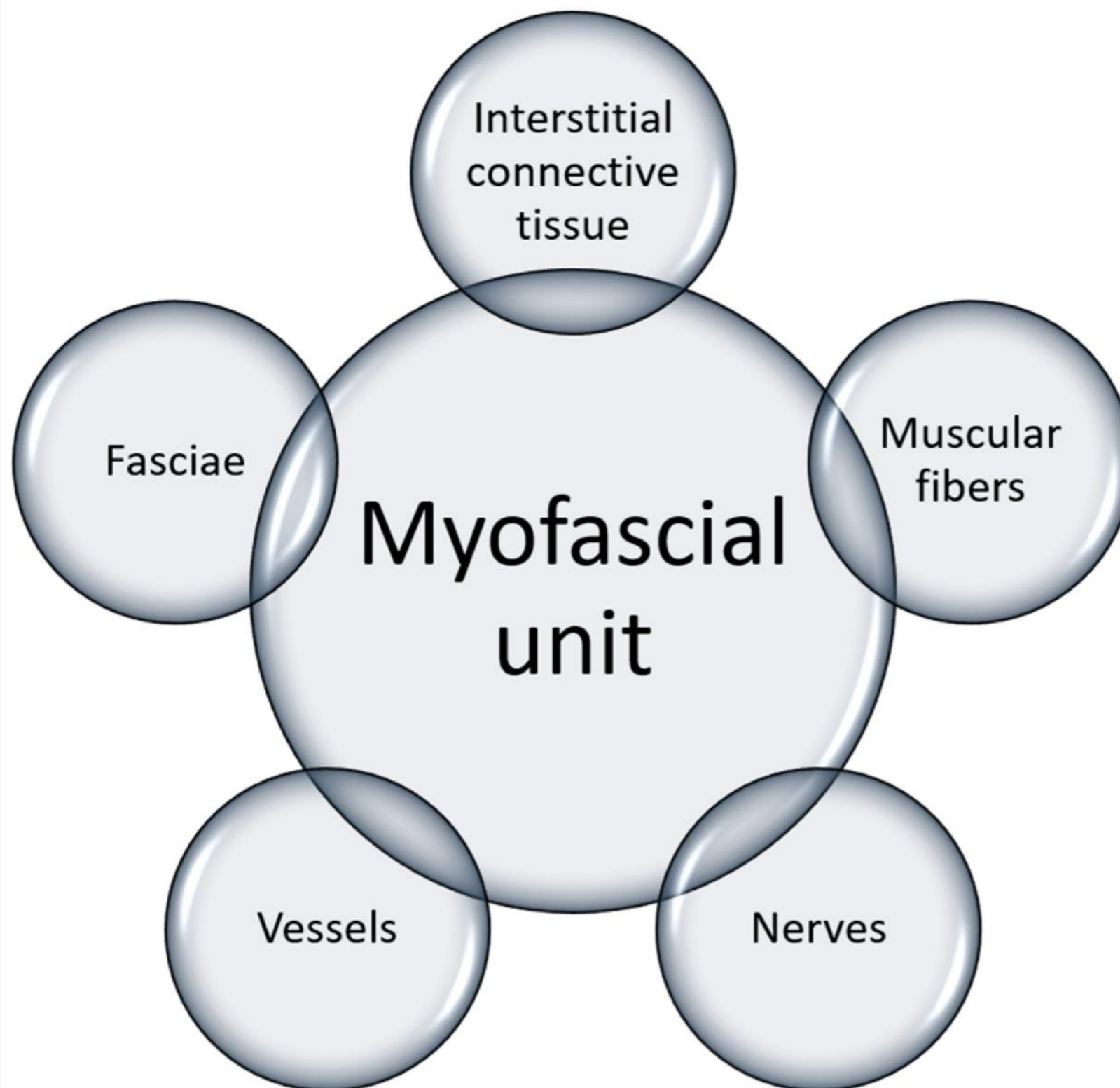
What should we inject?

How much should we inject?

EXPERTS' OPINION

Factors to consider for fascial plane blocks' success in acute and chronic pain management

Pierfrancesco FUSCO ¹, Giuseppe PASCARELLA ², Carla STECCO ³,
Rafael BLANCO ⁴, Mauricio FORERO ⁵, Amit PAWA ⁶, Serkan TULGAR ⁷,
Alessandro STRUMIA ², Luigi M. REMORE ², Alessandro DE CASSAI ⁸, Laura B. COLANTONIO ⁹,
Romualdo DEL BUONO ¹⁰, Fabrizio FATTORINI ¹¹, Giuseppe SEPOLVERE ¹², Mario TEDESCO ¹³,
Gian M. PETRONI ¹⁴ *, Walter CIASCHI ¹⁵, Massimiliano CRASSITI ², Fabio COSTA ²



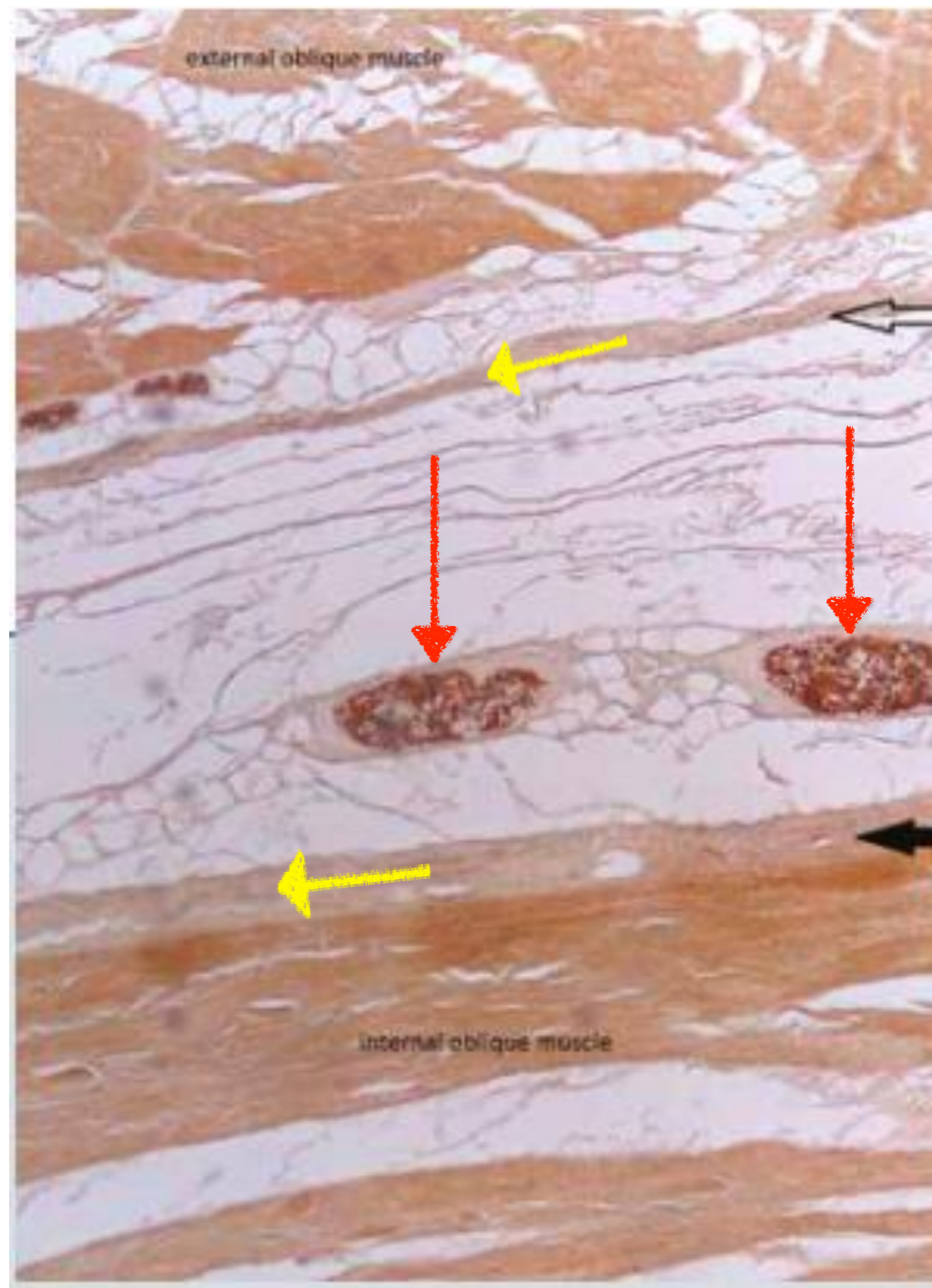
International Journal of
Molecular Sciences



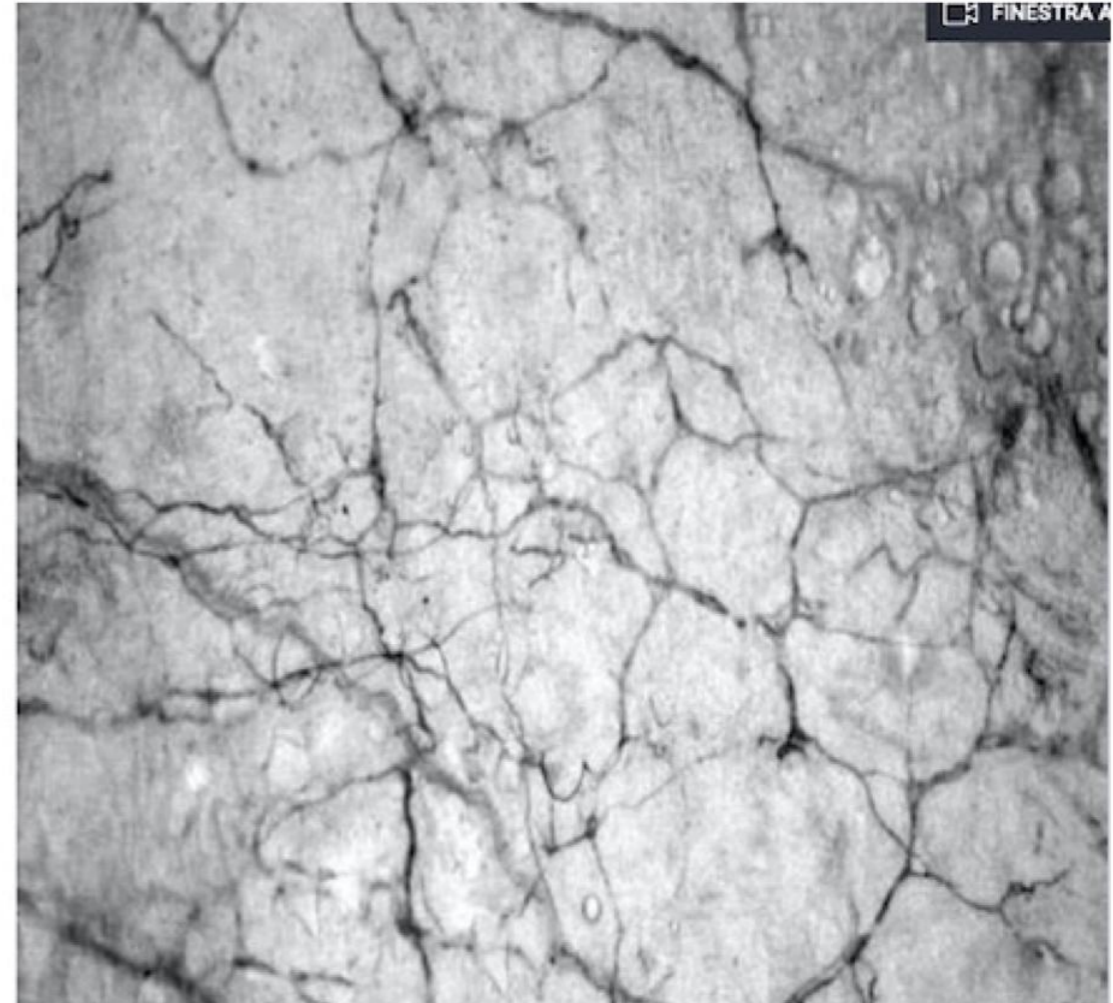
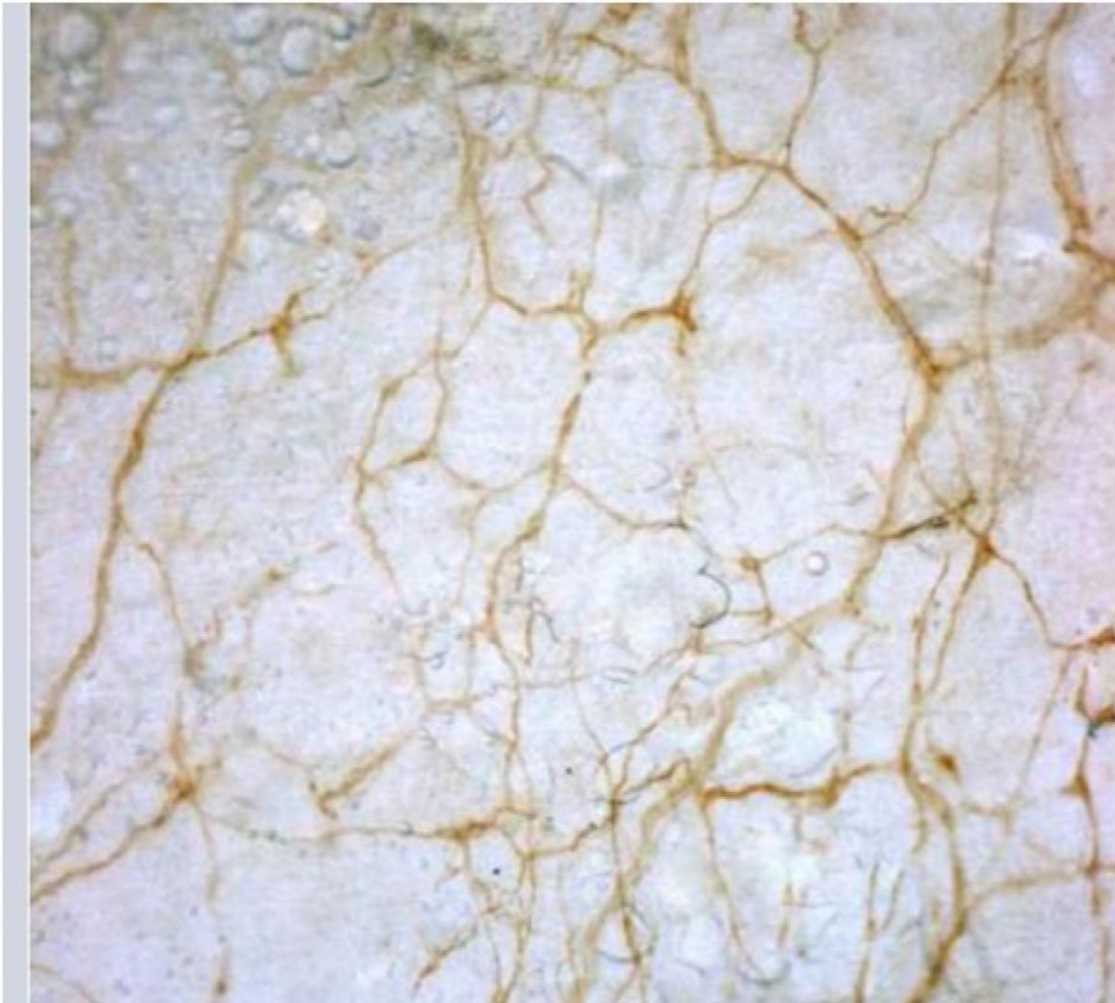
Review

From Muscle to the Myofascial Unit: Current Evidence and Future Perspectives

Antonio Stecco ¹, Federico Giordani ², Caterina Fede ³, Carmelo Pirri ³, Raffaele De Caro ³
and Carla Stecco ^{3,*}



Fascial nerve network



scientific reports

OPEN

Evidence of a new hidden neural network into deep fasciae

Caterina Fede^{1,2}, Lucia Petrelli^{1,2}, Diego Guidolin¹, Andrea Porzionato¹, Carmelo Pirri¹, Chenglei Fan¹, Raffaele De Caro¹ & Carla Stecco¹

 Check for updates

INNERVATION OF THE SUPERFICIAL FASCIA



SPECIAL ISSUE RESEARCH ARTICLE | [Full Access](#)

Fascia and soft tissues innervation in the human hip and their possible role in post-surgical pain

Caterina Fede, Andrea Porzionato, Lucia Petrelli, Chenglei Fan, Carmelo Pirri, Carlo Biz, Raffaele De Caro, Carla Stecco

frontiers | Frontiers in Neuroanatomy

TYPE Original Research
PUBLISHED 29 August 2022
DOI 10.3389/fnana.2022.981426

Check for updates

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Innervation of human superficial fascia

Caterina Fede^{1*}, Lucia Petrelli¹, Carmelo Pirri¹,
Winfried Neuhuber², Cesare Tiengo³, Carlo Biz⁴,
Raffaele De Caro¹, Robert Schleip⁵ and Carla Stecco¹

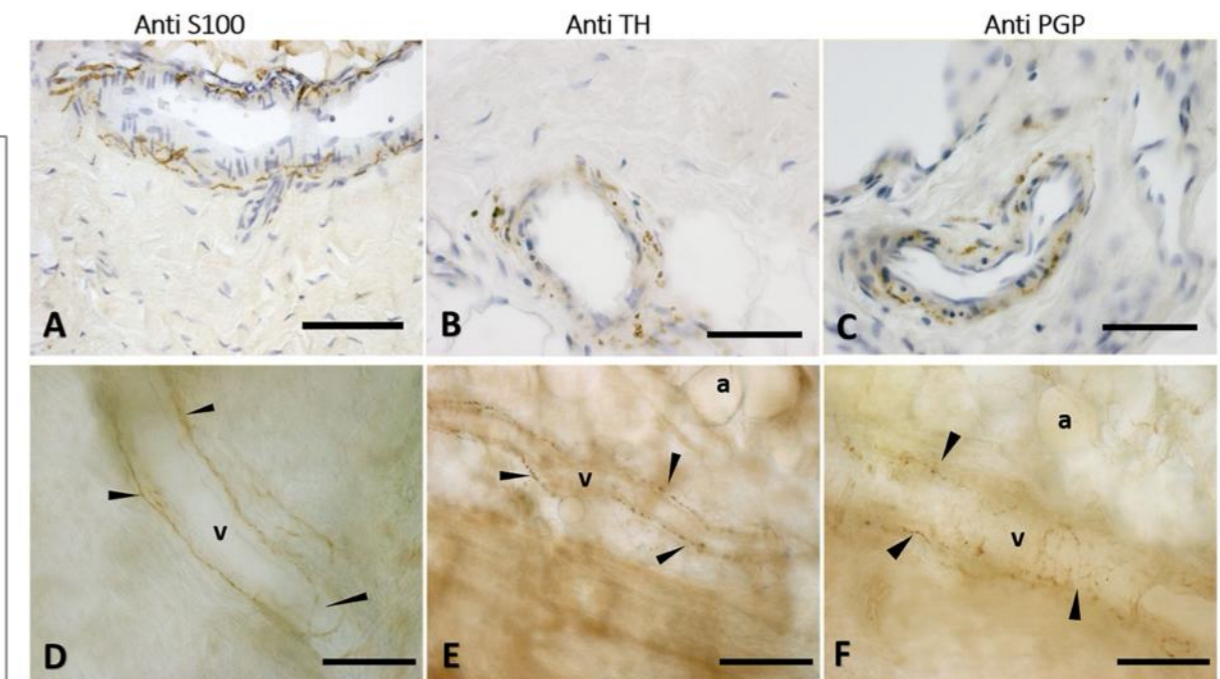
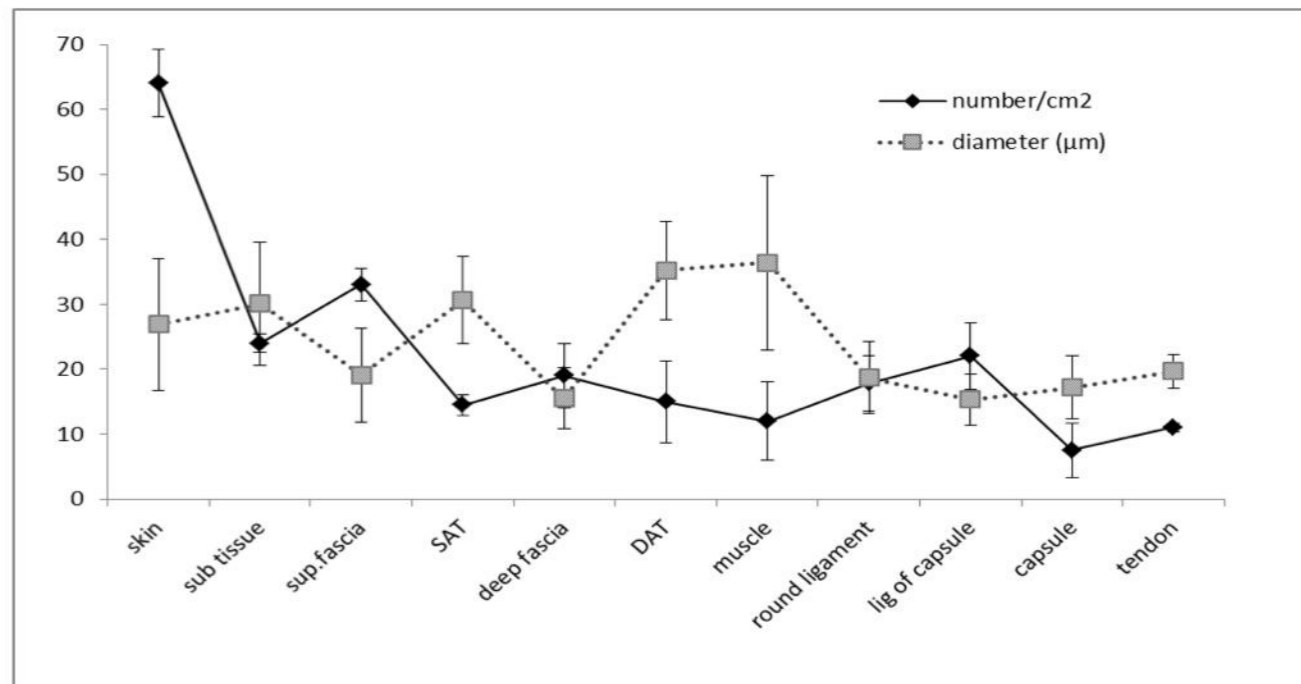
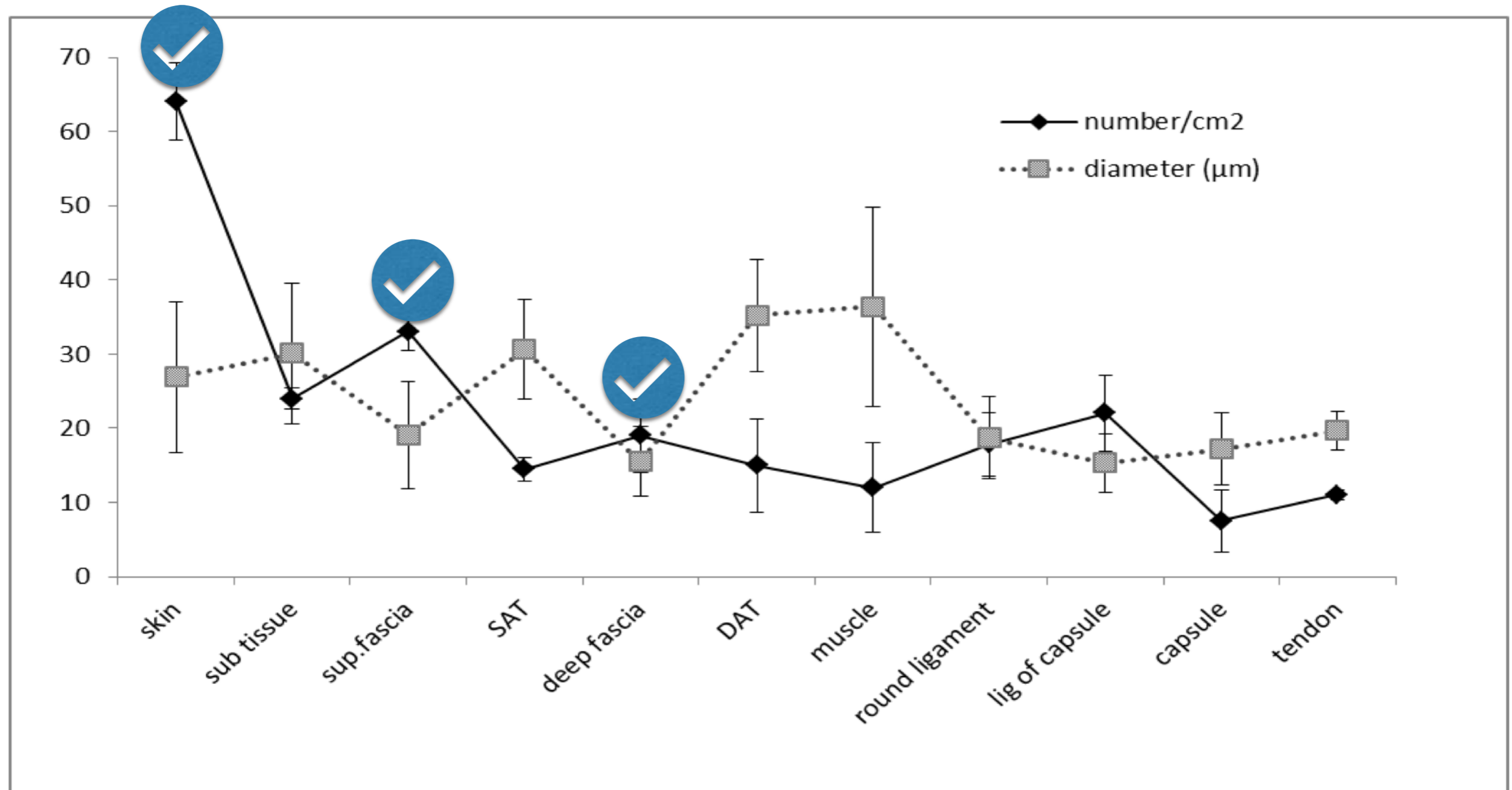


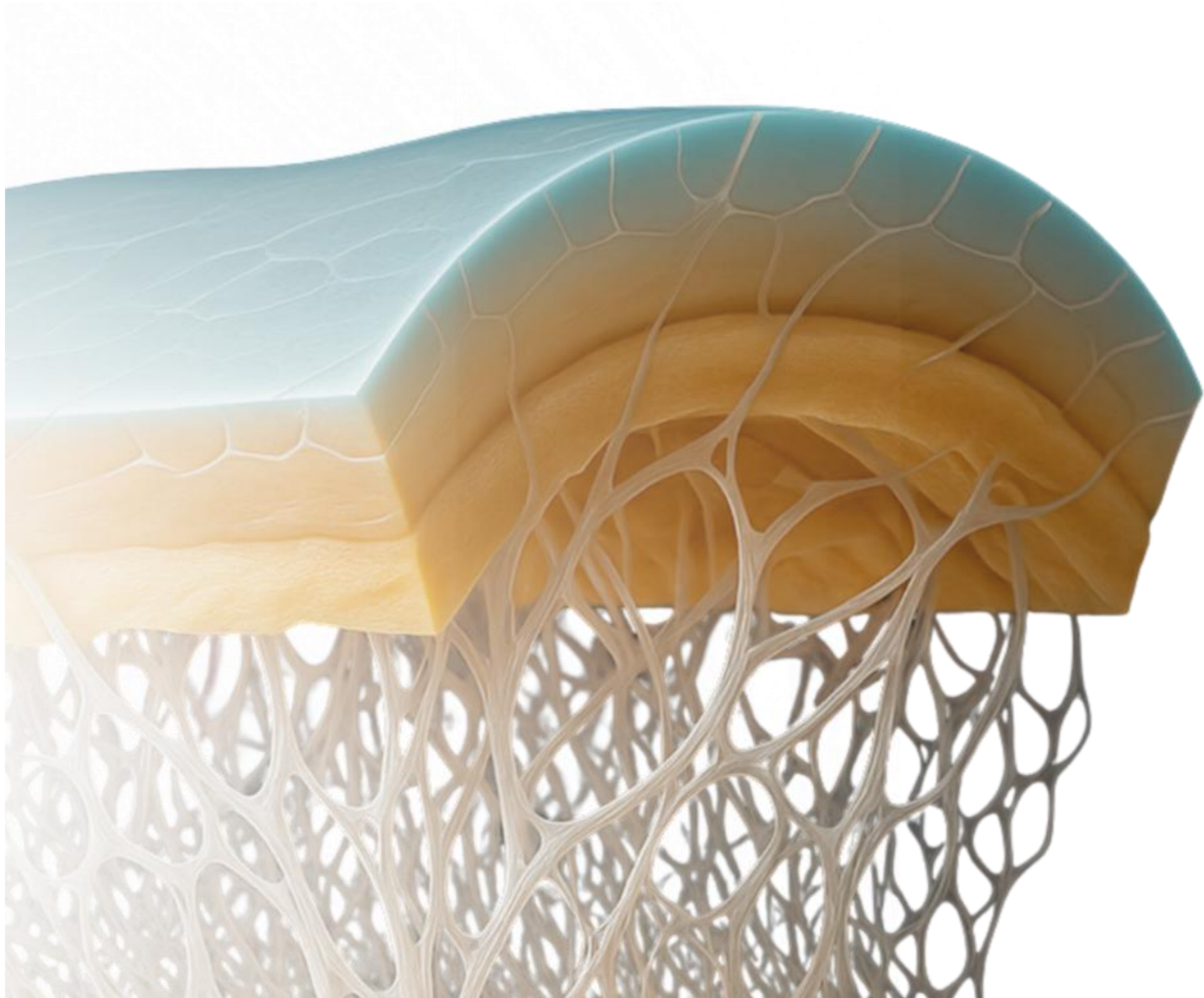
FIGURE 4
Innervation of the blood vessels of superficial fascia. Superficial fascia of the abdomen, stained with S100 (A,D), Tyrosine Hydroxylase (B,E) and PGP9.5 (C,F) antibodies. Panels (A,B,C) are paraffin-embedded-5 μm samples, whereas (D,E,F) are free-floating samples. All the pictures show the innervation of blood vessels. In (E,F) the varicose nature of the axons is evident. v, blood vessel; a, adipocyte; arrows indicate the nerve fibers. Scale bars: (A,F) = 100 μm; (B,C) = 50 μm; (D,E) = 200 μm.



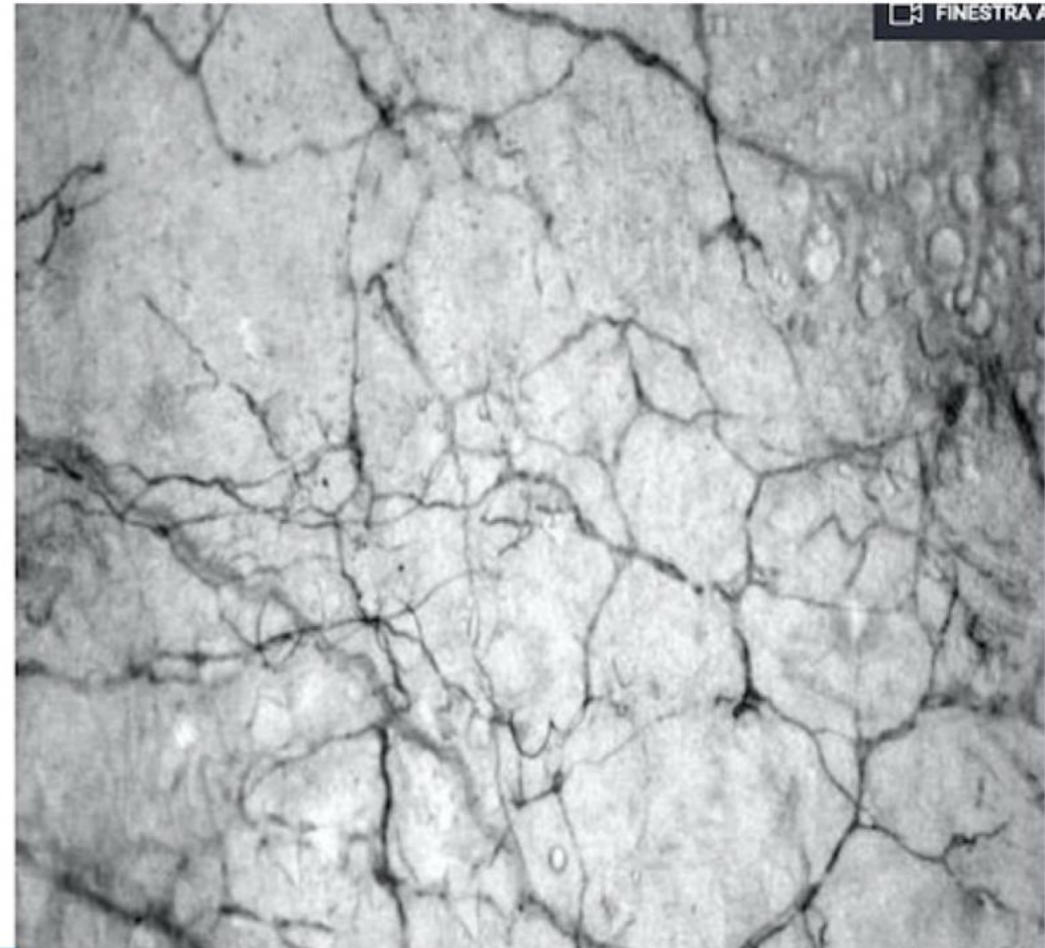
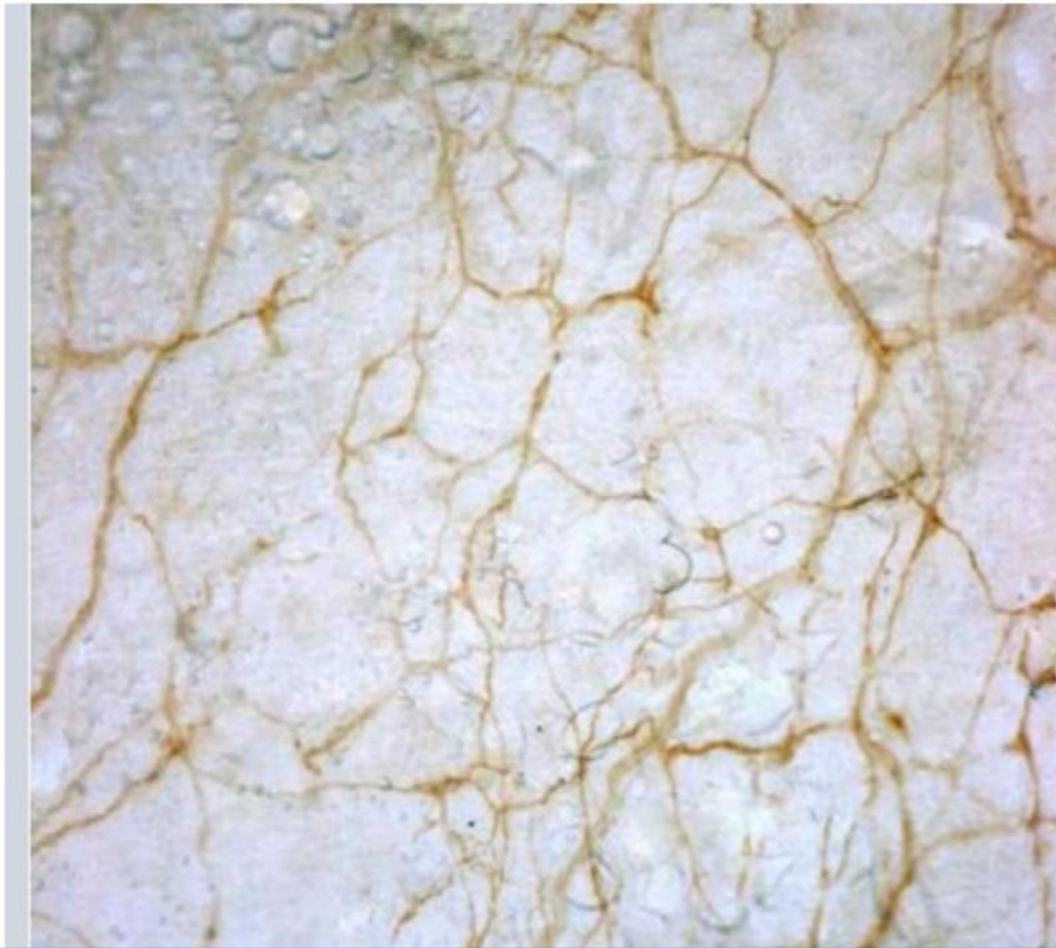
May a fascia have a role in pain?



Fasciae could be a pain generator



THE FASCIA ARE RICHLY INNERVED CAN THEY BE A DIRECT TARGET OF FACIAL BLOCK



> [Minerva Anesthesiol.](#) 2022 Jun;88(6):528-529. doi: 10.23736/S0375-9393.22.16282-6. Epub 2022 Mar 23.

ESP block and chronic pain: the dark side of the moon

[Pierfrancesco Fusco](#)¹, [Carla Stecco](#)², [Gian M Petroni](#)³, [Walter Ciaschi](#)⁴,
[Franco Marinangeli](#)⁴

Case Reports > [J Clin Anesth.](#) 2019 Dec;58:128-129. doi: 10.1016/j.jclinane.2019.07.009. Epub 2019 Aug 1.

Ultrasound-guided lumbar erector spinae plane block: A new alternative for the treatment of post-herniorrhaphy neuralgia

CAN WE CONSIDER THE FASCIA AS THE TARGET OF OUR FASCIAL BLOCK?

Pierfrancesco Fusco, Emanuele Nazzaro, Francesco De Sanctis, Gianmarco Petroni

Considering the fascia as a target would open up new fields of application of fascia blocks in both acute and chronic pain

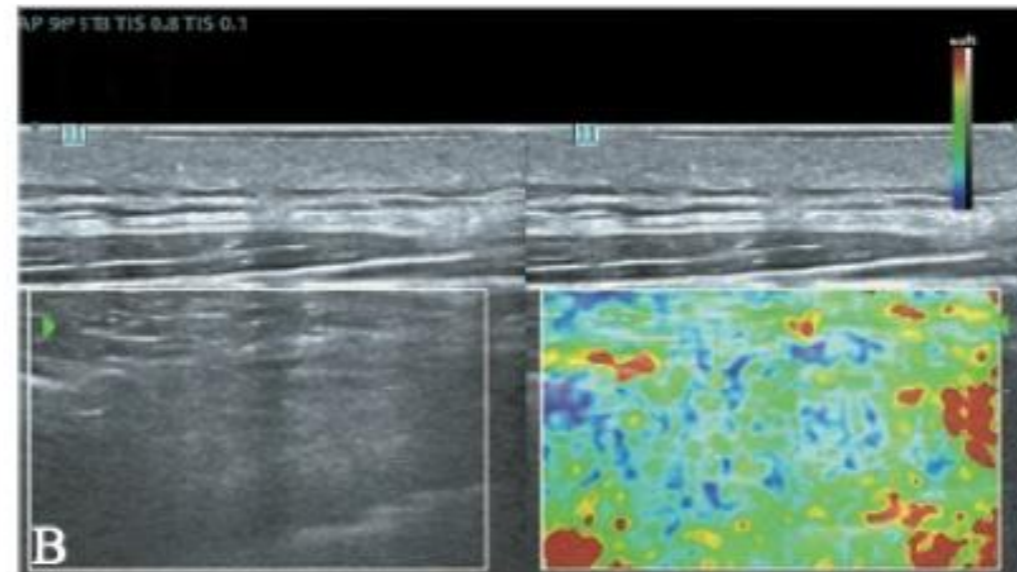
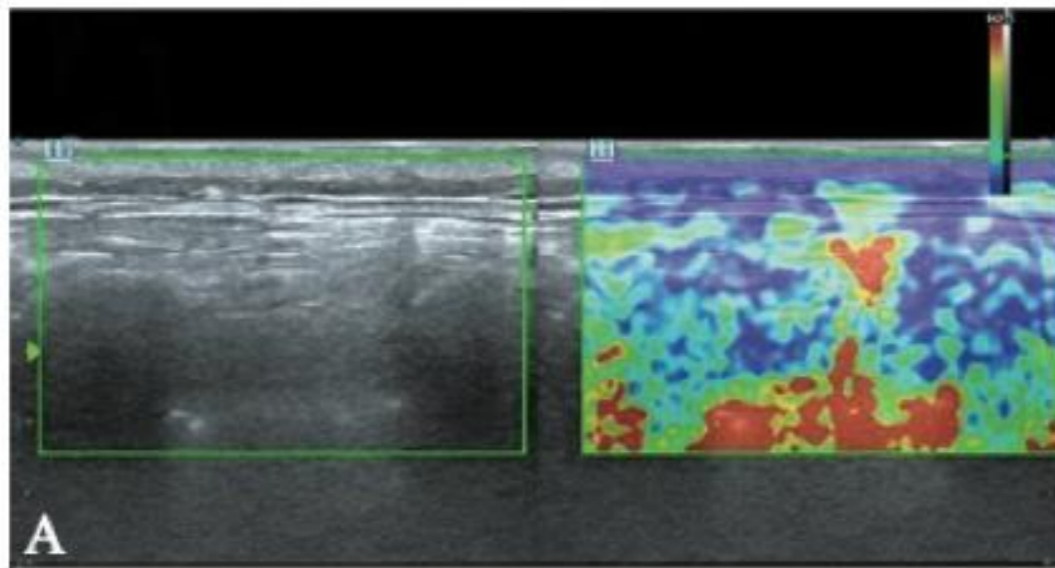


Fascial as a new target

MINERVA ANESTESIOLOGICA

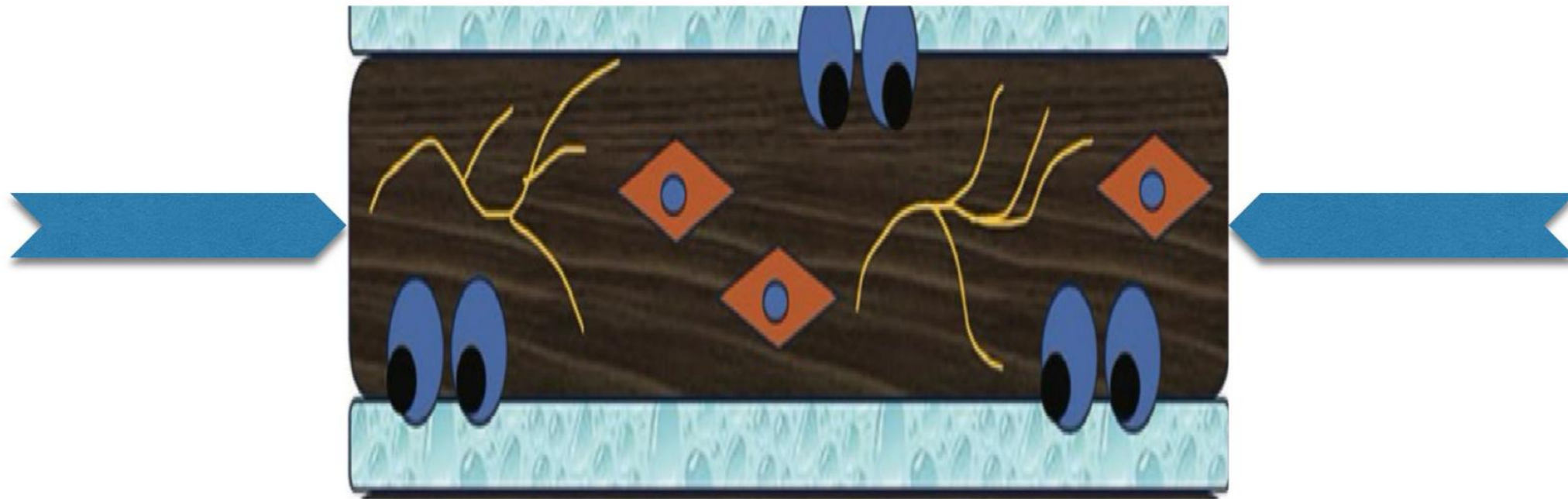
ESP block and chronic pain: the dark side of the moon

Pierfrancesco Fusco 1, MD; Carla Stecco 2, PhD; Gian Marco Petroni 3 *, M.D. ;Walter Ciaschi 3 , M.D. ; Franco Marinangeli 3 , Ph.D

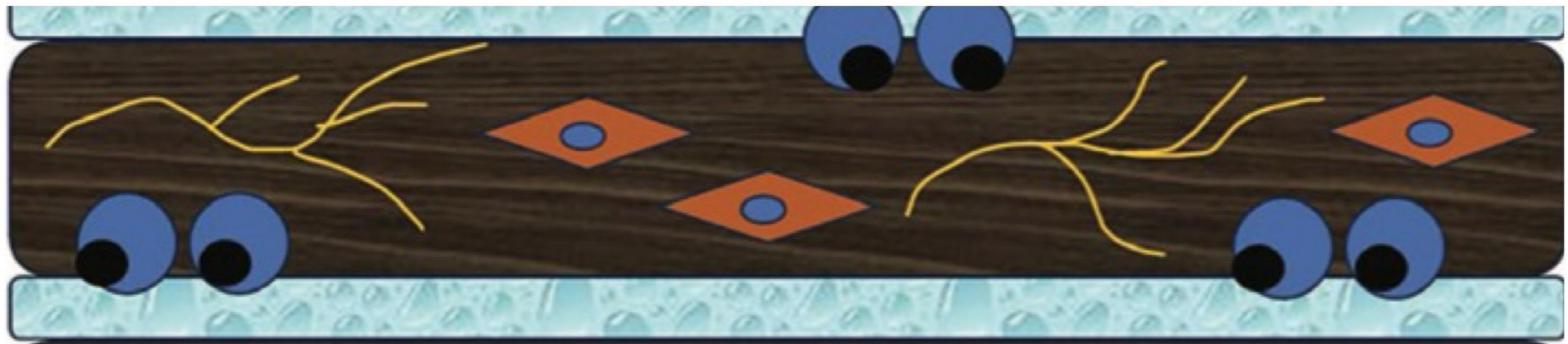


We hypothesize that another possible mechanism by which fascial plane blocks cause lasting pain relief could be the relaxation of the muscles surrounding the fascia

Stiffness myofascial unit

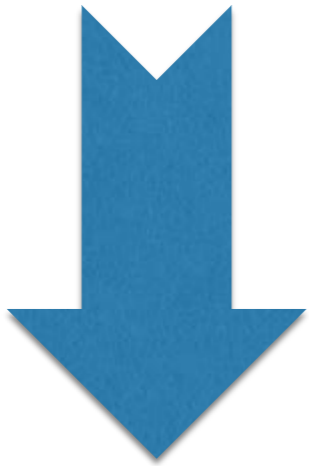


fascial plane block



INCREASING MUSCLE RELAXATION

Fascial plane Blocks



free nerve endings
Fascia as a target



IMPROVEMENT IN
PAIN SYMPTOMS



STIMULATION OF THE
TRIGGER POINTS OF THE
FASCIA MUSCLE



INCREASING MUSCLE
RELAXATION



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Journal of Clinical Anesthesia

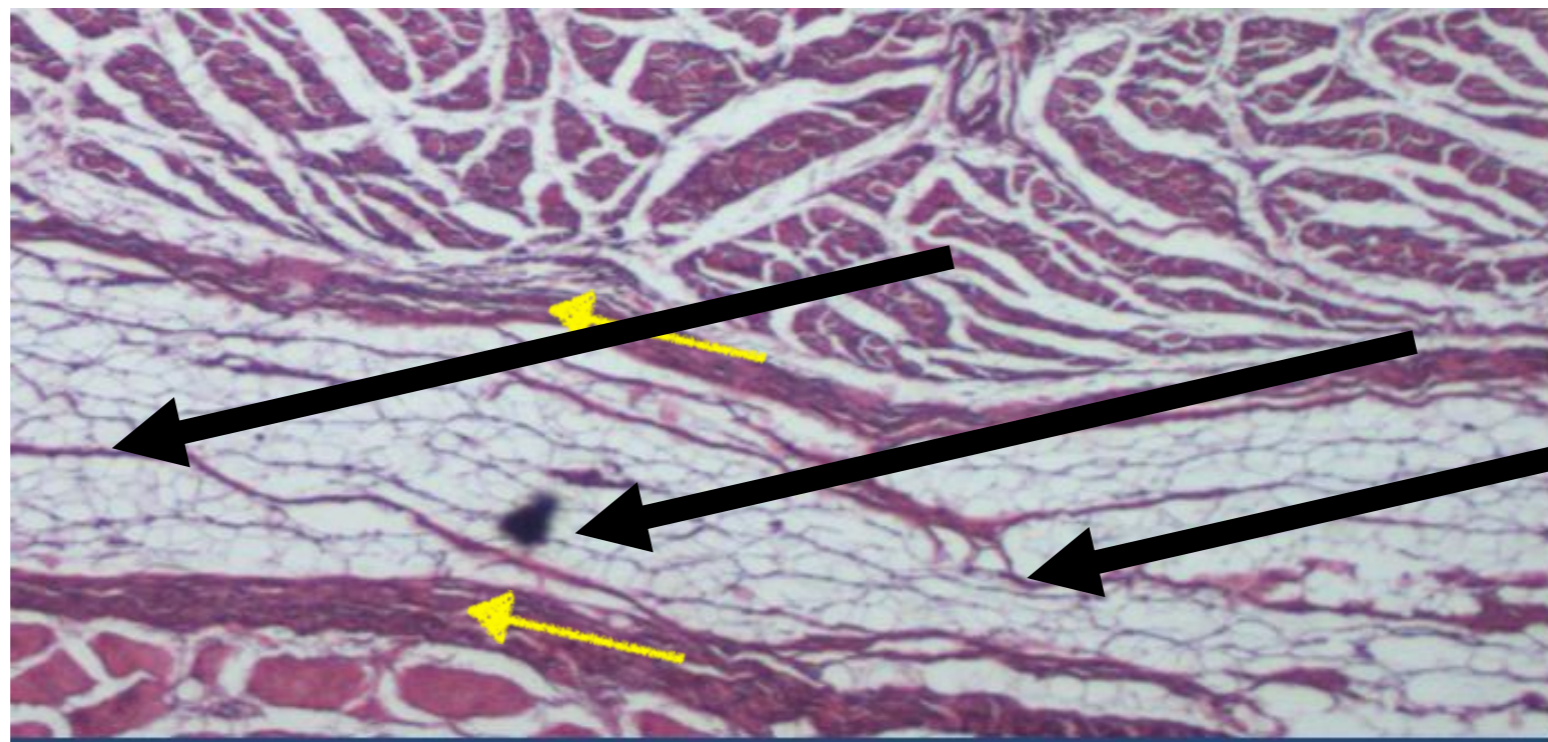
journal homepage: www.elsevier.com/locate/jclinane

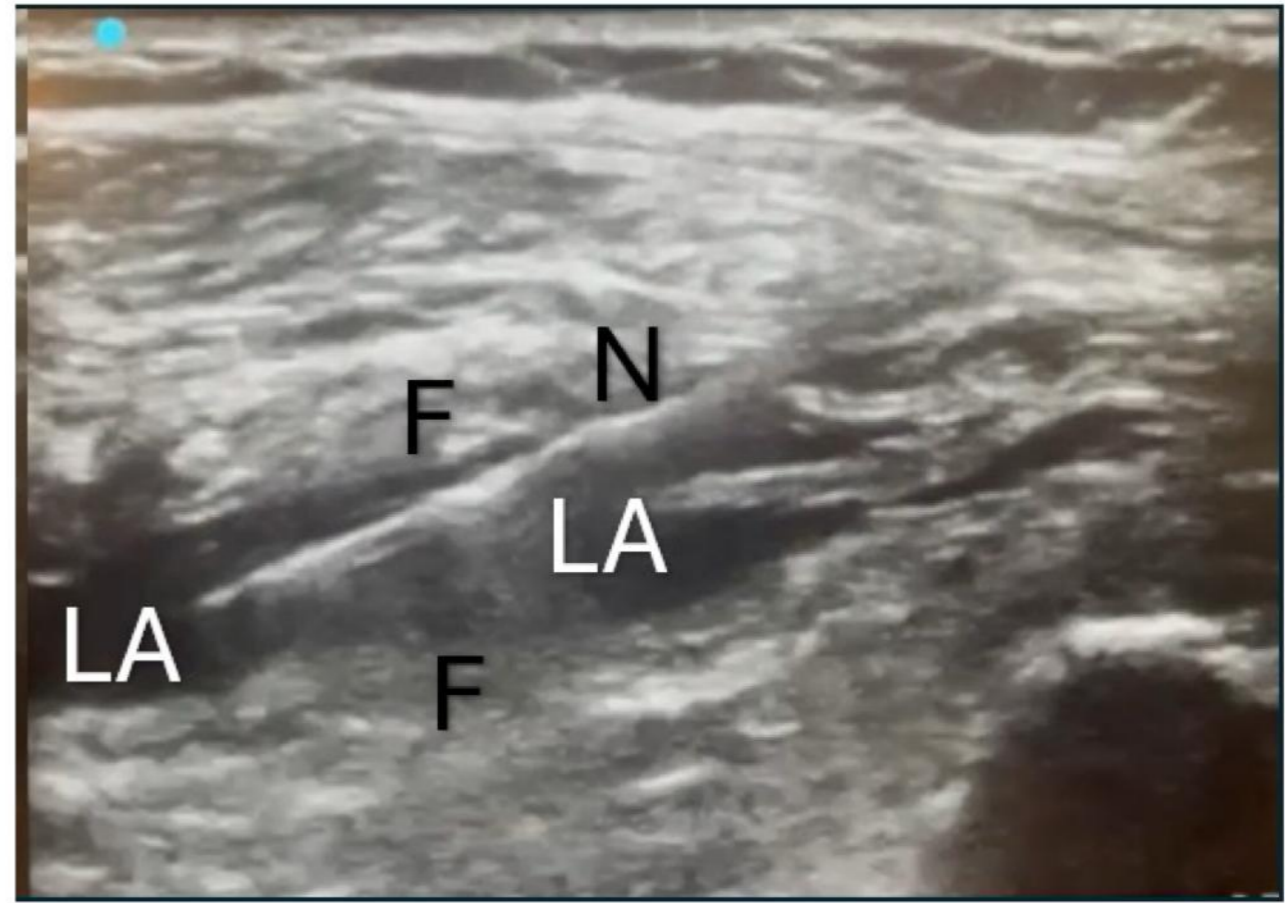
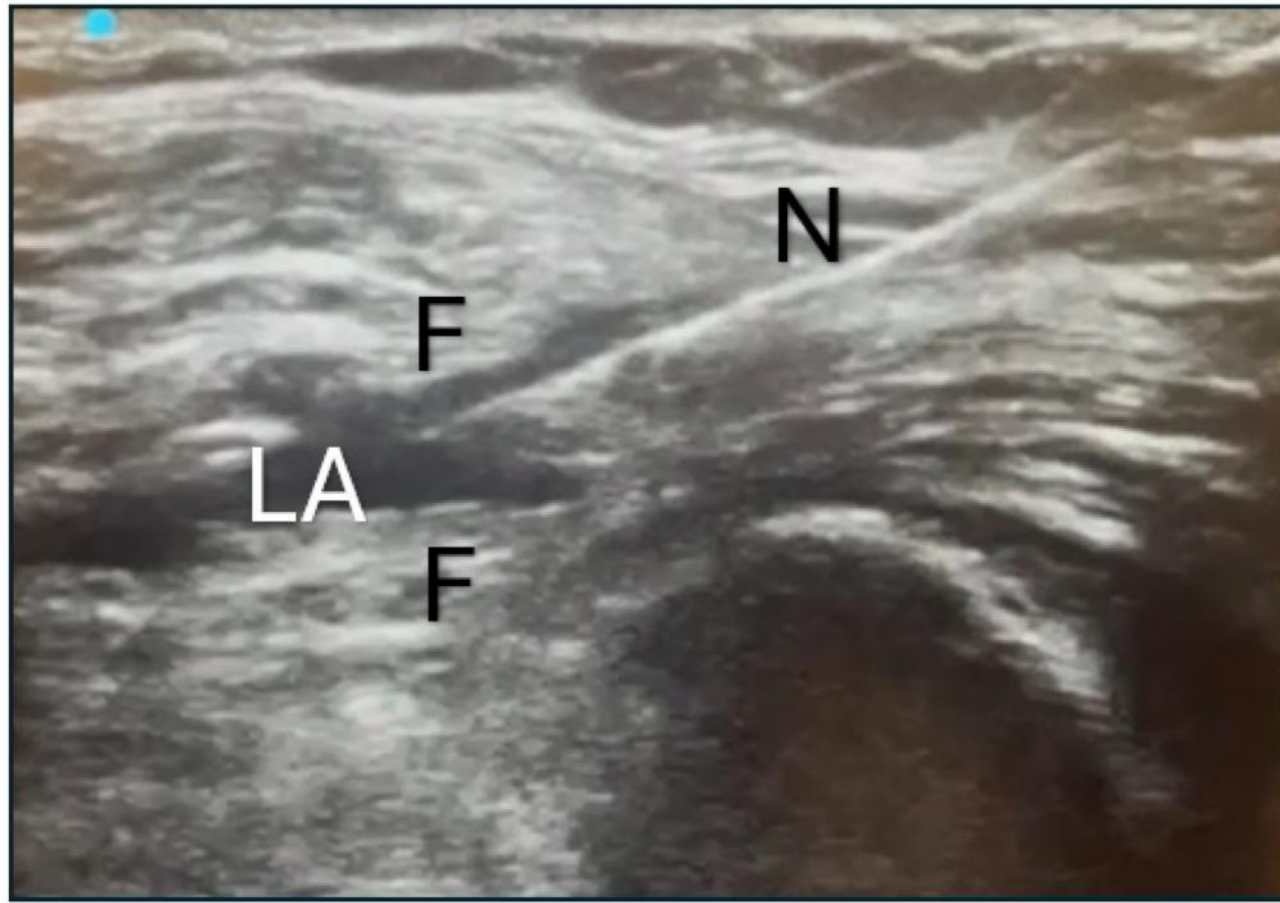


Fascial plane blocks and chronic pain: Another step towards the future

Pierfrancesco Fusco, Emanuele Nazzaro, Gianmarco Petroni, Carla Stecco, Walter Ciaschi, Franco Marinangeli

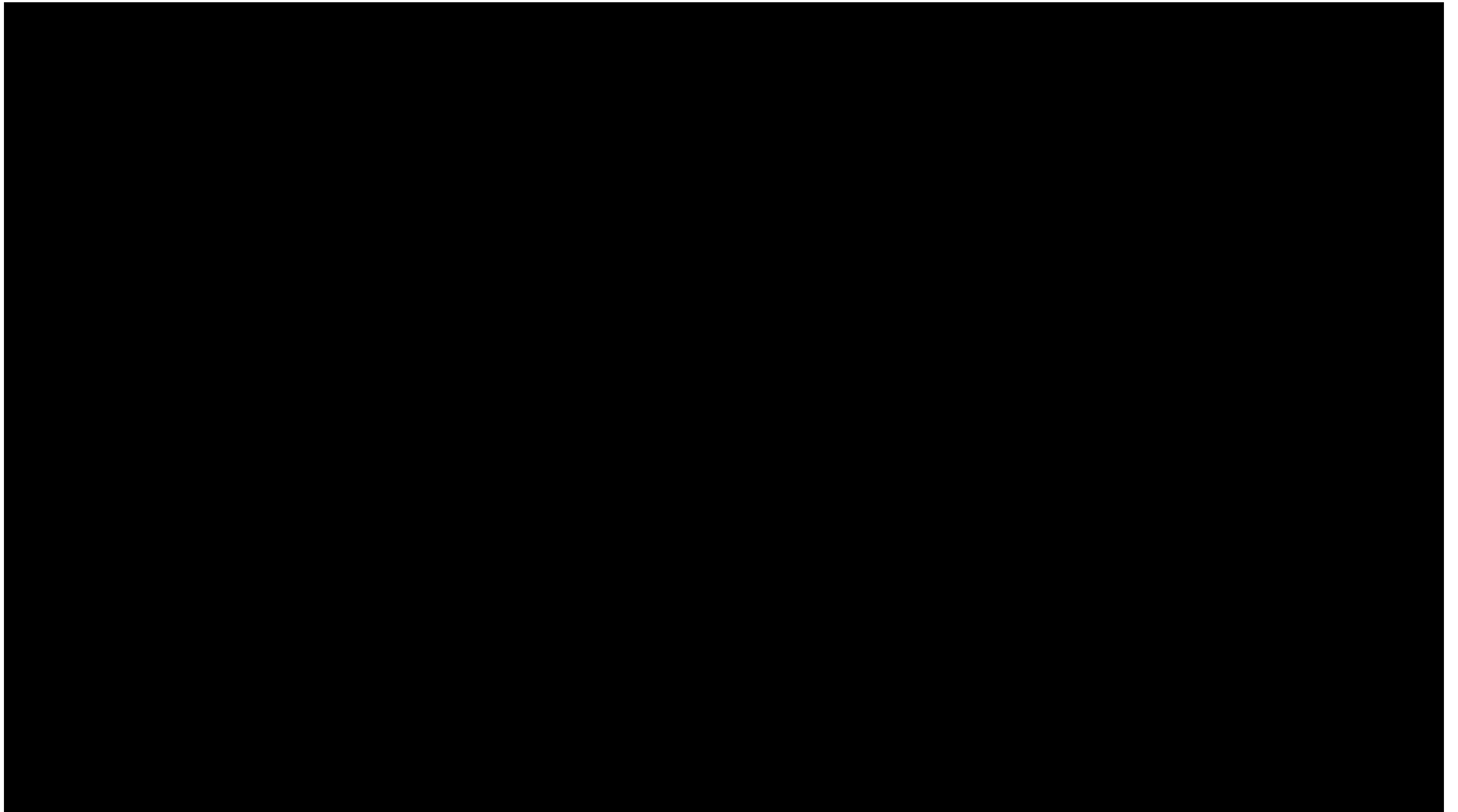
This approach enables the disruption of connective septa, optimizing the required amount of local anesthetic to **achieve the desired level while preventing the risks of overdose or underdose.**





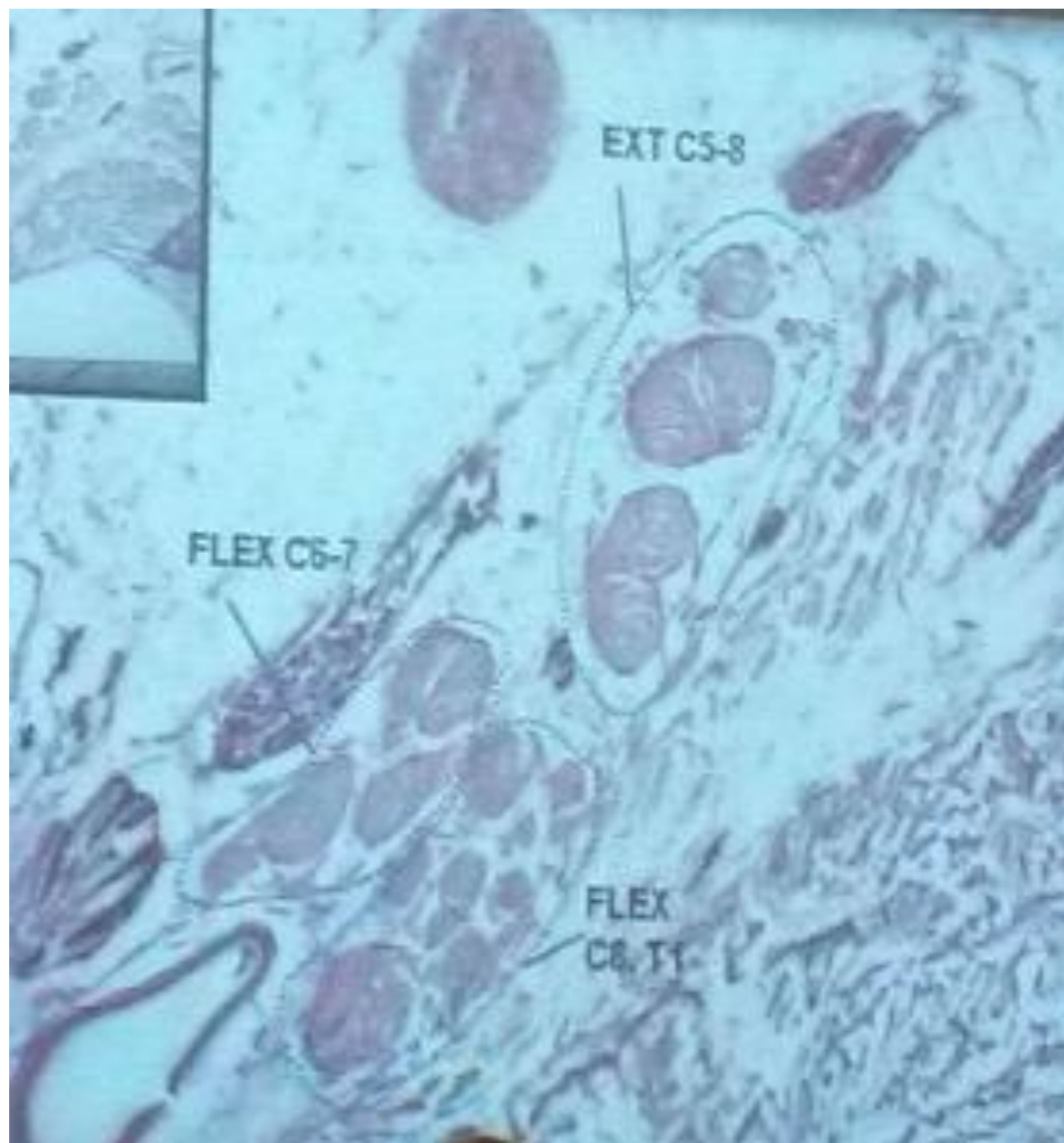
DYNAMIC FASCIAL PLANE BLOCK

DYNAMIC FASCIAL PLANE BLOCK



MORE EFFICACY

MORE SAFE



Ris

S

MB

Nrv

HFL



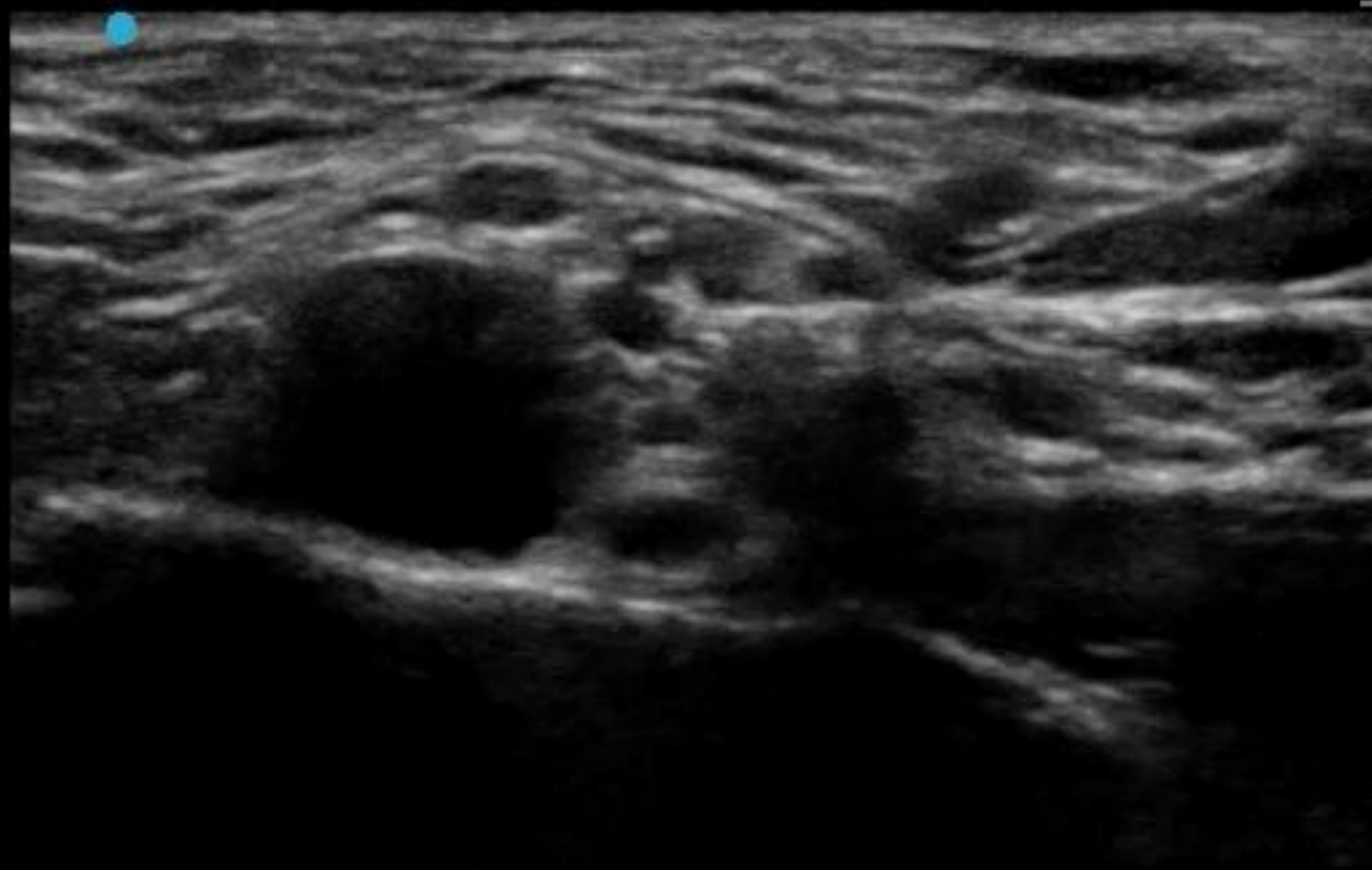
10%

IM

0,9

ITT

0,1



2,2



Ris



0



Guida

Filmati...



Duale

Pag. 1/2

Why the fascial blocks have to become dynamic

Pierfrancesco FUSCO ¹, Emanuele NAZZARRO ² *

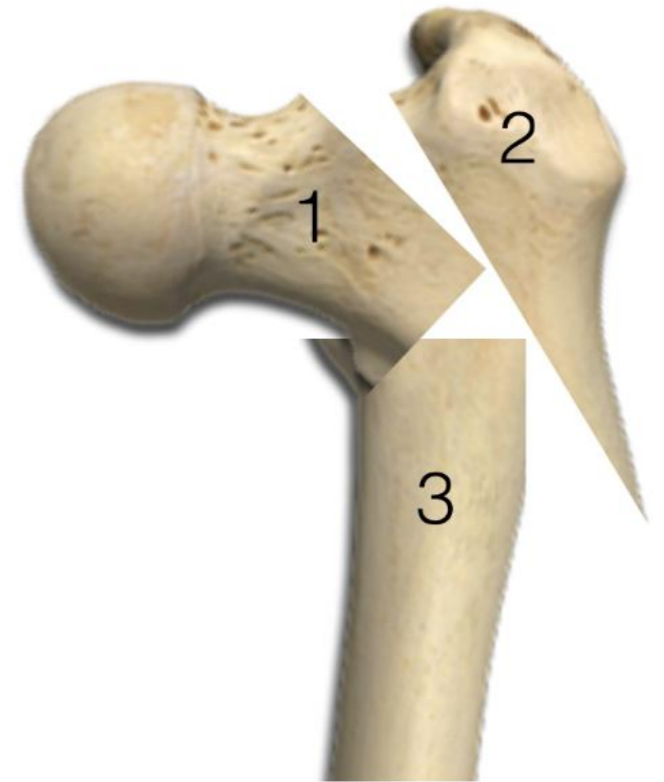
- Rupture **connective septa**
- **Optimize the amount of local anesthetic necessary to reach the predetermined level** “dynamic double V sign”
- Avoid an overdose or underdose of local anesthetic

How mach should we inject?





ERAS AND FAST TRACK STATE OF NECESSITY



It is essential to reduce
invasiveness and promote
early recovery.

Perineural Blocks: Ropivacaine 0.2% Can Provide Surgical Anesthesia: A Case Report

Gian Marco Petroni, MD,¹ and Pierfrancesco Fusco, MD²

Pectoserratus Plane Block in Breast Surgery: Analgesic Doses of Local Anesthetics Can Be Used for Surgical Anesthesia—A Case Report

Pierfrancesco Fusco, MD,¹ Emanuele Nazzarro, MD,¹ Andrea Sanapo, MD,² and Gian Marco Petroni, MD²



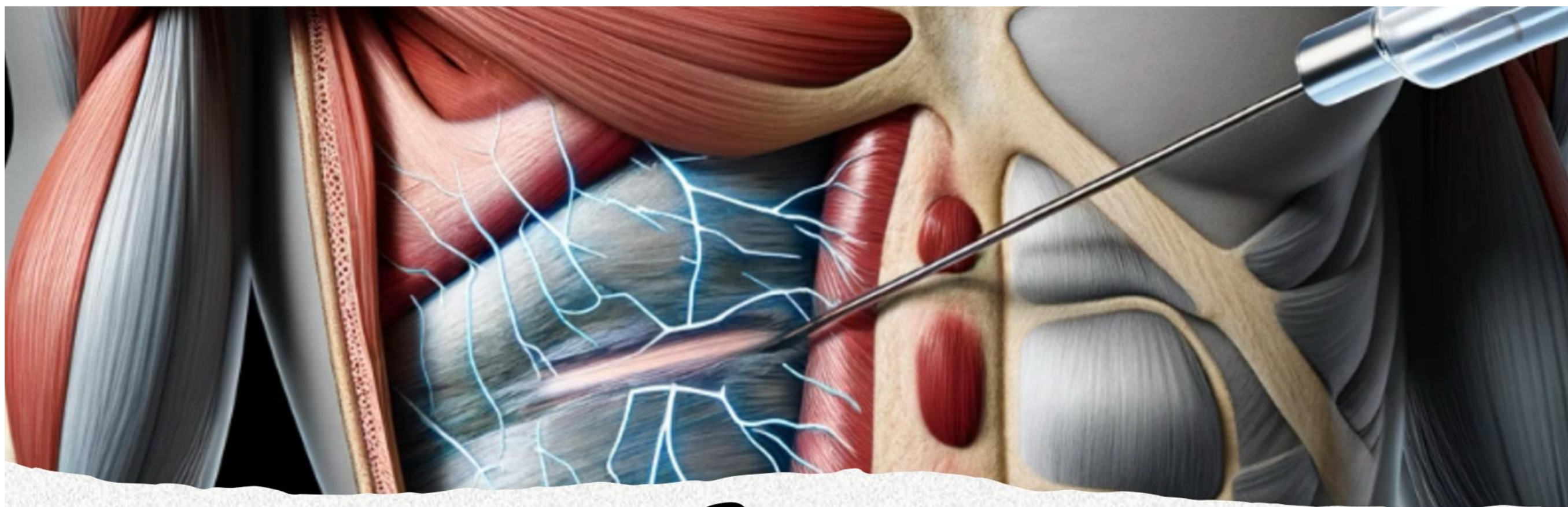
much more than a nerve block

ACUTE PAIN

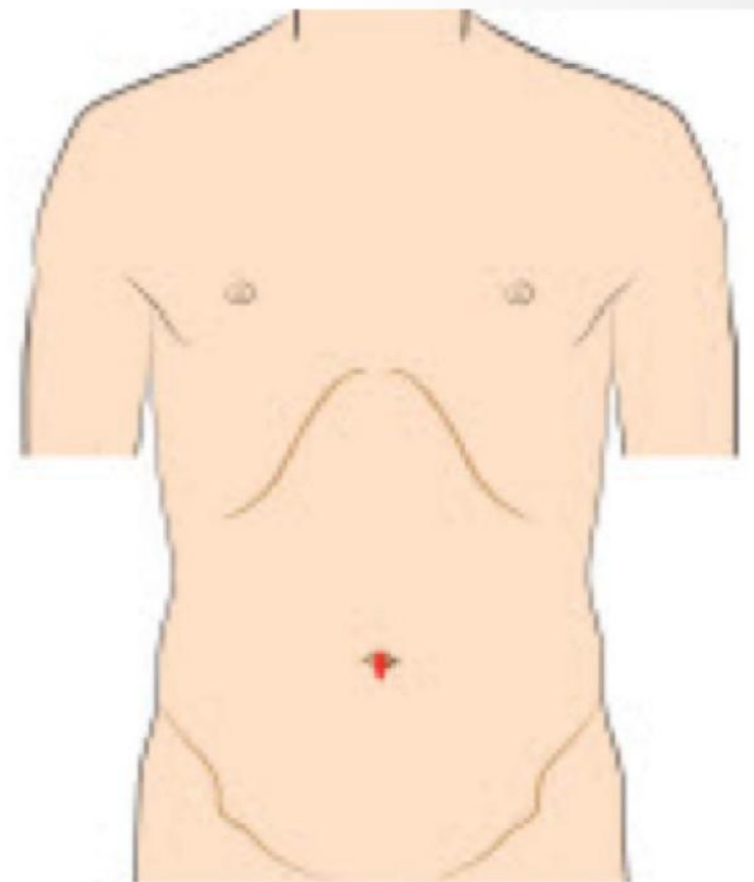
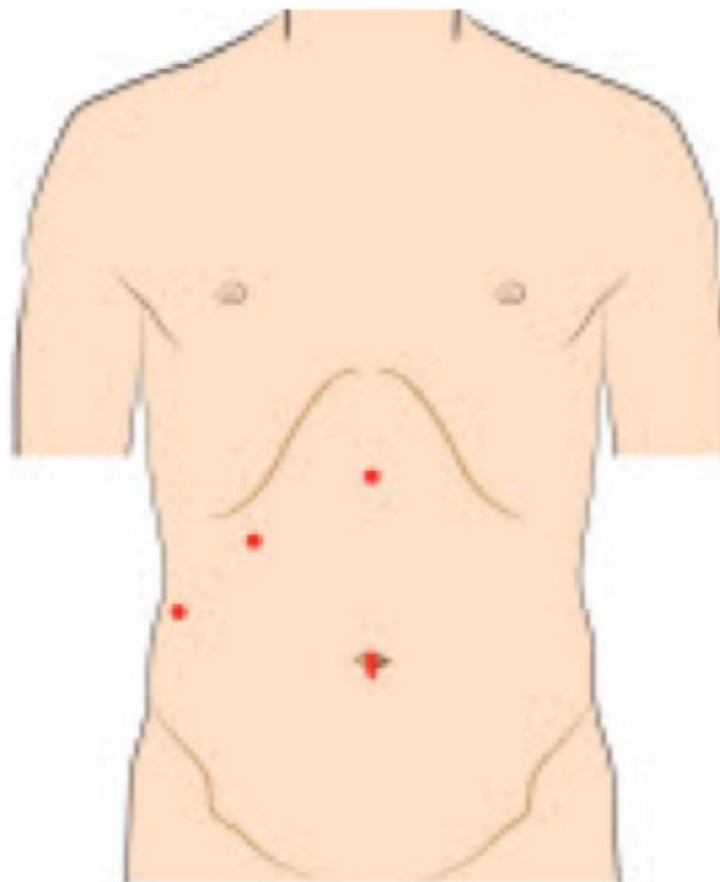
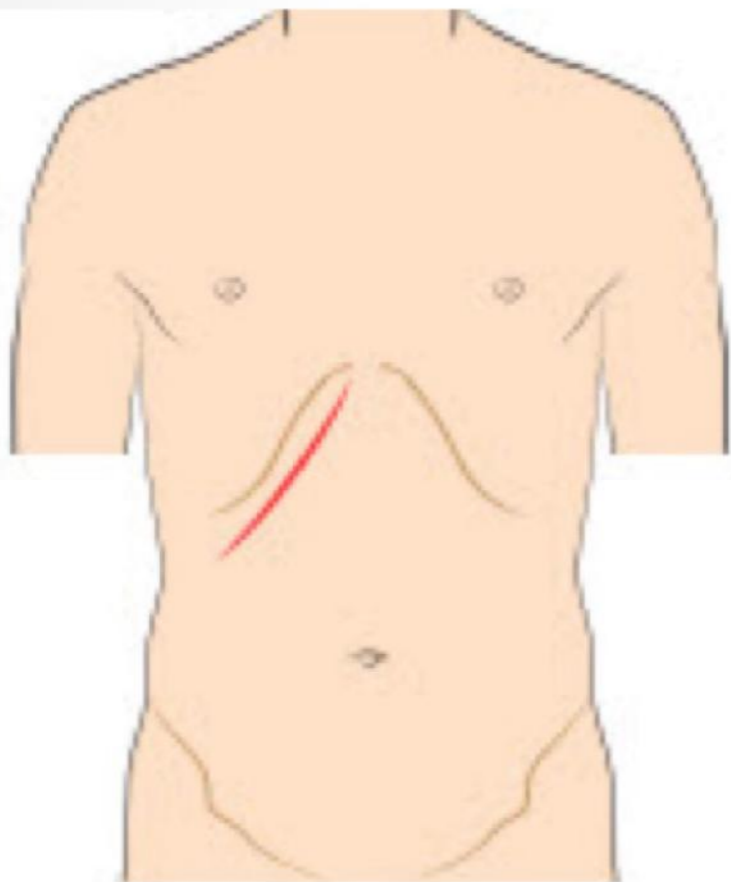
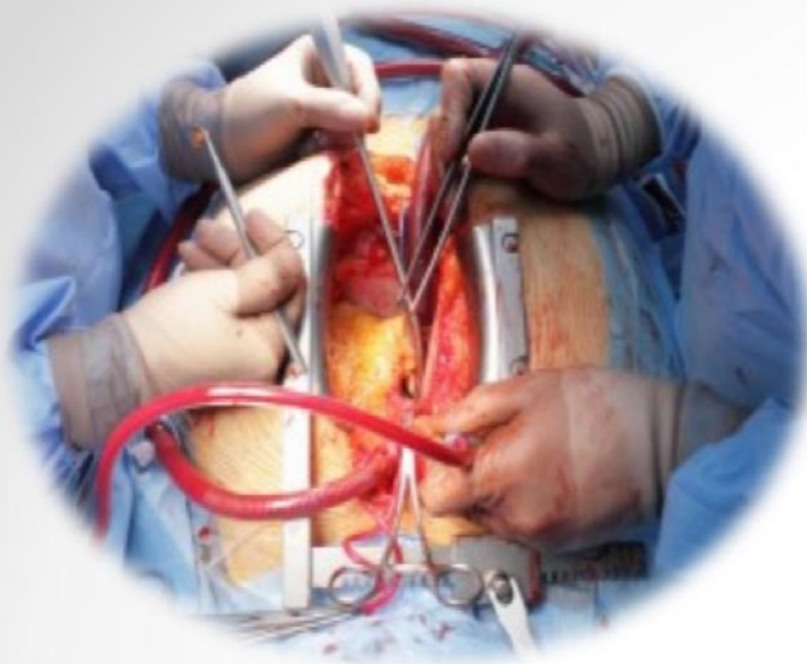


Fasciae suffer significant insult during the surgical act

- Formation of fibrous scars and lacinias
- Reduce their proper sliding
- Slow recovery and rehabilitation
- Onset of chronic postoperative pain



Fascial plane blocks (FPBs) are **motor sparing and long-lasting** analgesic techniques by definition. Their mechanism of action stems from their local anesthetic **effect on nerve fibers traveling within the fascia itself, as well as on the fibers that innervate the fascia**



Open Surgery

Laparoscopy

da Vinci Surgery



The background of the slide is a composite image. It features a surgeon in the upper half, wearing a blue surgical cap and mask, with their hands near their face. In the lower half, the superhero The Flash is depicted in his red suit, running forward. Bright yellow and white lightning bolts are superimposed over the image, connecting the surgeon's hands to The Flash's chest. The overall color palette is dominated by reds, oranges, and yellows, creating a sense of energy and urgency.

MOTOR SPARING OR OPIOID SPARING?

Loco-regional techniques ensuring postoperative analgesia and early recovery from the motor block



OPIOIOD SPARING
OFA

DRUG SAVING

CURARE SAVING

DECREASING PNEUMOPERITONEUM PRESSURE

VASOACTIVE DRUGS SAVING

OPIOID SAVING

MOTOR SPARKING

Editorial Article

Fascial Plane block and ERAS: it's time to drug sparing

P. Fusco¹, E. Nazzarro^{2*}, W. Ciaschi³, GM Petroni⁴, F. De Sanctis⁴ and F. Marinangeli²

This new concept of fascial blocks could lead to an ERAS anesthesia

OPEN

SHORT SCIENTIFIC REPORT

Efficacy of fascial plane blocks in enhanced recovery after surgery protocols for abdominal surgery

A brief meta-analysis

Eros **Pilia**, Francesco **Marrone**  and Pierfrancesco **Fusco**

- We believe that multimodal analgesia strategies including regional anaesthesia are key interventions that contribute to improved postoperative outcomes.
- Our study highlights the potential role of the fascial plane blocks in this clinical scenario, amidst the lack of robust evidence across different guidelines



ERAS AND FAST TRACK

- Shorter times to start physiotherapy and ambulation
- ↓ Recovery time
- ↓ Complications
- ↓ Costs
- ↓ Hospital stay



Fascial plane blocks for postoperative pain management after fast-track total knee arthroplasty: A narrative review

Fabio Costa, Alessandro Ruggiero, Pierfrancesco Fusco, Massimiliano Ricci, Romualdo Del Buono, Alessandro Strumia, Sabrina Migliorelli, Felice E. Agrò, Massimiliano Carassiti, Rita Cataldo, Giuseppe Pascarella¹

Compartment	Techniques
Anterior Compartment	<ul style="list-style-type: none">- Adductor Canal Block (ACB) (including: femoral triangle block, proximal femoral triangle, distal femoral triangle, true adductor canal, proximal adductor canal, distal adductor canal)-Subsartorial Plexus Block- Dual Subsartorial Block- Distal Subsartorial Compartment Block- PASC Block- TIPS Block
Posterior Compartment	<ul style="list-style-type: none">- Popliteal Plexus Block (PPB)- IPACK Block- HI-PAC- SPANK- Gastrosoleus Interfascial Plane Block- Parasacral Ischial Plane (PIP) Block
Other Techniques	<ul style="list-style-type: none">-LUMBAR ESP Lumbar ESP- Sacral ESP- Knee PVI

Fascial could contribute to chronic pain

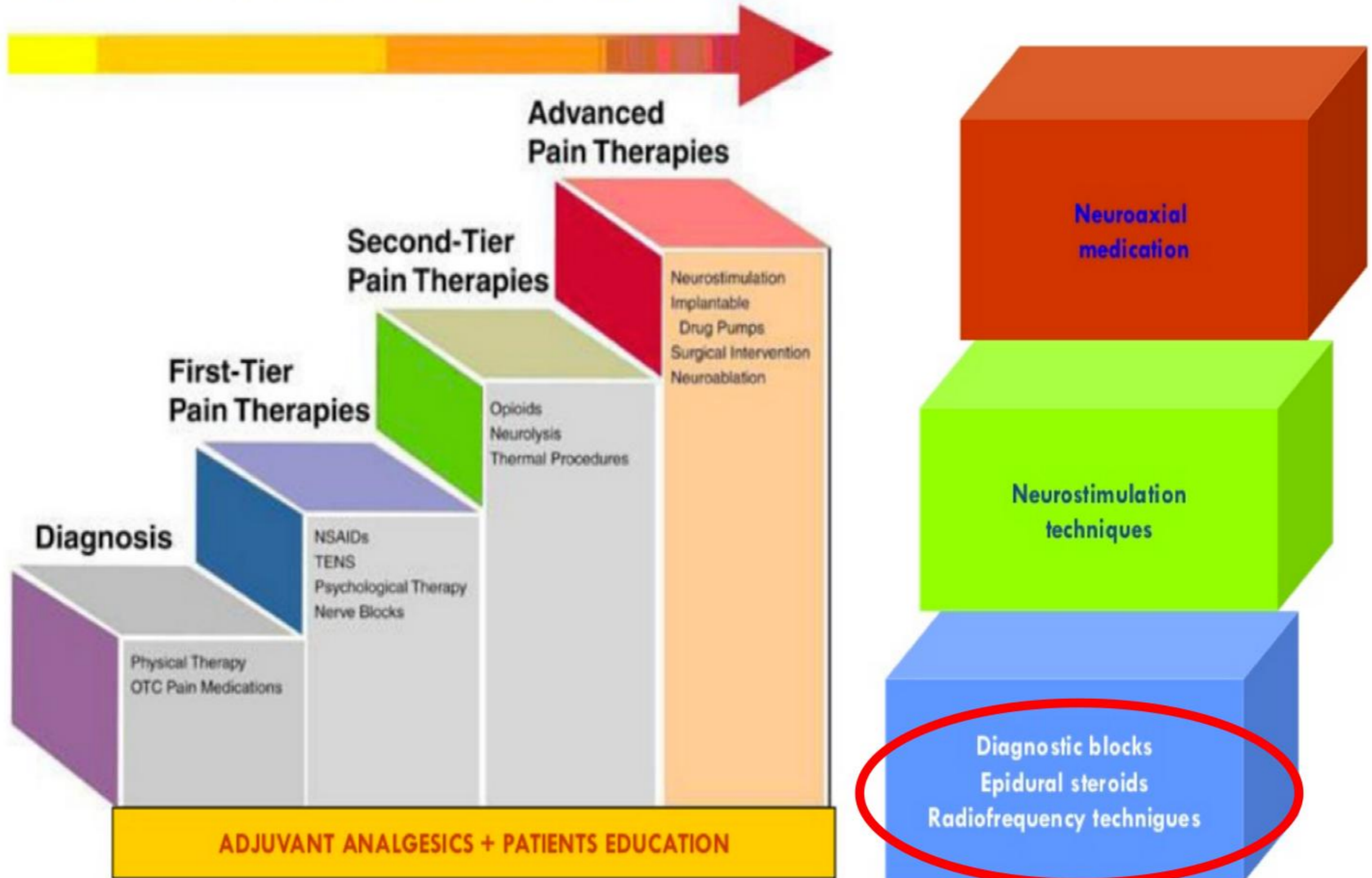
FASCIAE ARE VERY WELL INNERVED

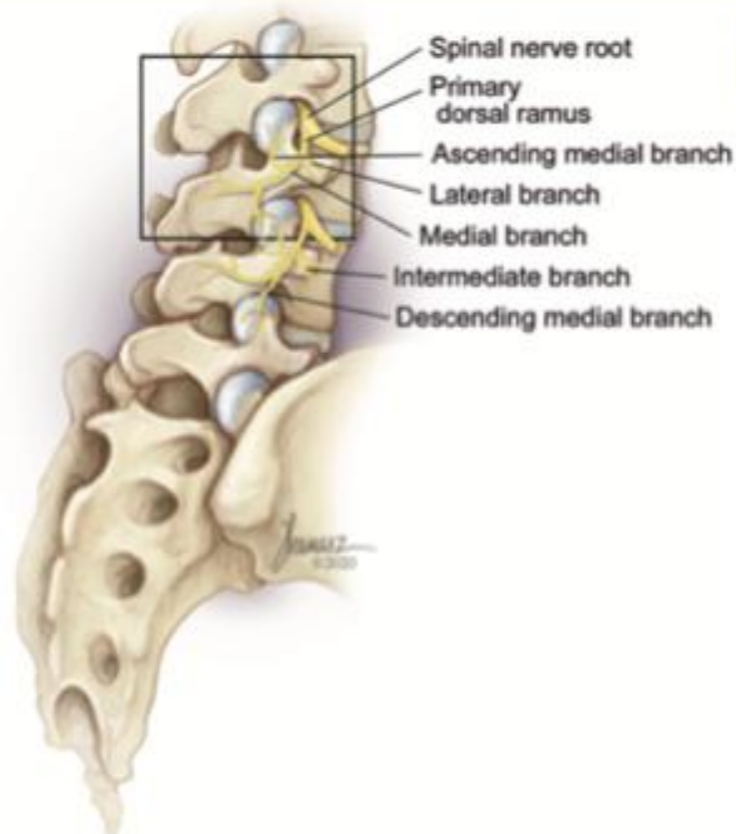
**THEY COULD BE A PAIN GENERATOR, BOTH
IN ACUTE AND CHRONIC CONDITIONS**

**COULD BE THE FASCIAL GENERATED PAIN
A NEW TARGET OF A PLANE BLOCK?**

The Chronic Pain Treatment Continuum

Interventional Therapies





Consensus practice guidelines on interventions for lumbar facet joint pain from a multispecialty, international working group

Steven P Cohen¹, Arun Bhaskar,² Anuj Bhatia,³ Asokumar Buvanendran,⁴ Tim Deer,⁵ Shuchita Garg,⁶ W Michael Hooten,⁷ Robert W Hurley,⁸ David J Kennedy,⁹ Brian C McLean,¹⁰ Jee Youn Moon,¹¹ Samer Narouze,¹² Sanjog Pangarkar,¹³ David Anthony Provenzano,¹⁴ Richard Rauck,¹⁵ B Todd Sitzman,¹⁶ Matthew Smuck,¹⁷ Jan van Zundert,^{18,19} Kevin Vorenkamp,²⁰ Mark S Wallace,²¹ Zirong Zhao²²

The committee recommends a single block.

We found moderate evidence that dual blocks result in a higher subsequent success rate for medial branch RF, but that the use of a zero-block paradigm results in the highest overall number of patients with a positive response to the RFA



Consensus practice guidelines on interventions for cervical spine (facet) joint pain from a multispecialty international working group

Robert W Hurley,¹ Meredith C B Adams ,² Meredith Barad,³ Arun Bhaskar,⁴ Anuj Bhatia ,⁵ Andrea Chadwick ,⁶ Timothy R Deer ,⁷ Jennifer Hah,⁸ W Michael Hooten ,⁹ Narayan R Kissoon,¹⁰ David Wonhee Lee,¹¹ Zachary McCormick,¹² Jee Youn Moon ,^{13,14} Samer Narouze ,¹⁵ David A Provenzano,^{16,17} Byron J Schneider,¹⁸ Maarten van Eerd,¹⁹ Jan Van Zundert,¹⁹ Mark S Wallace,²⁰ Sara M Wilson,²¹ Zirong Zhao,²² Steven P Cohen ,²³

Conclusions Cervical medial branch radiofrequency ablation may provide benefit to well-selected individuals, with medial branch blocks being more predictive than intra-articular injections.

FASCIA CAN PLAY A ROLE AS PAIN GENERATION

DEEP FASCIA
COULD CAUSE OF
PAIN DUE TO:

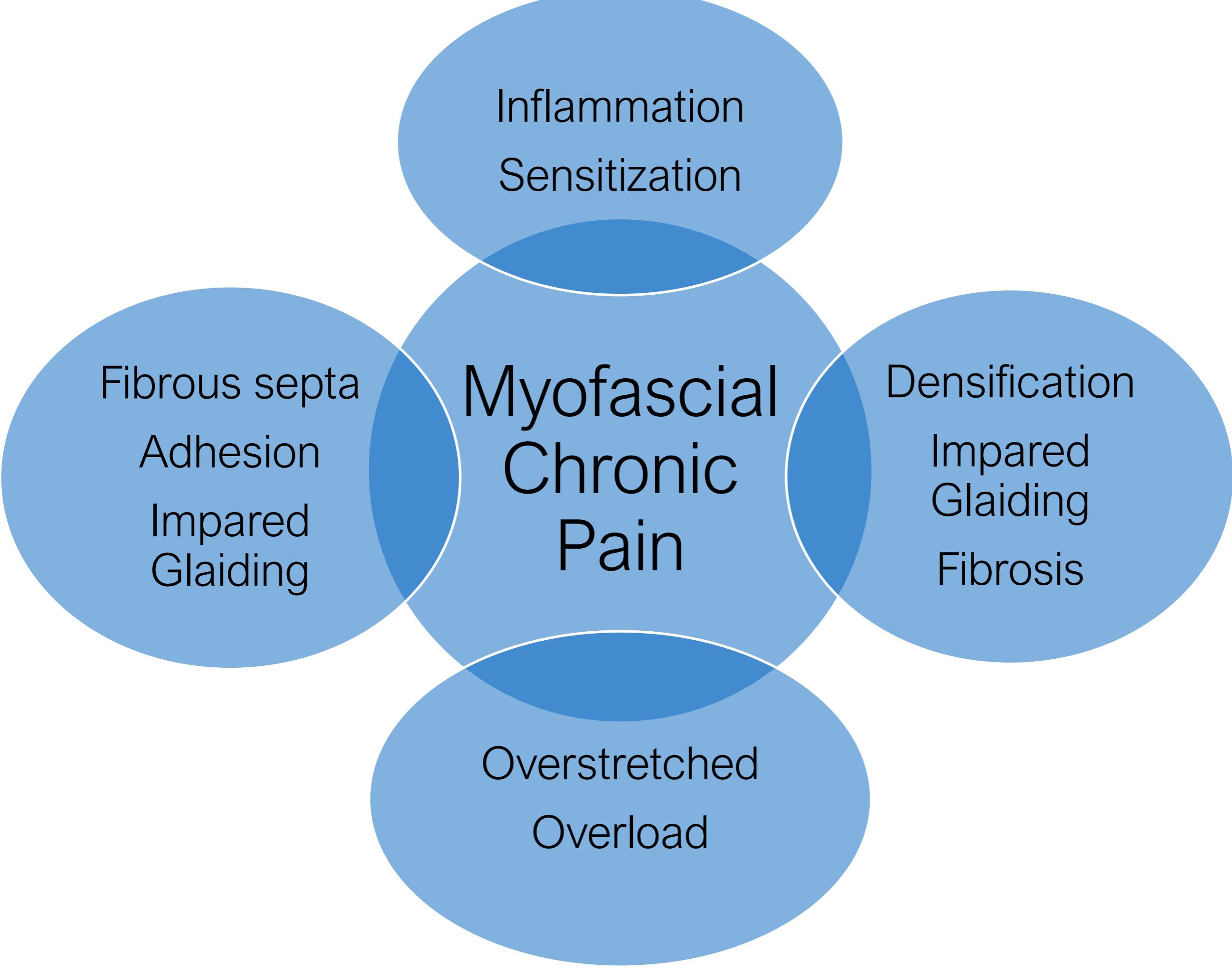
An alteration of
its tension

An alteration of
its macroscopic
structure

**An alteration of
its microscopic
structure**

**Alteration
of Gliding
(HA)**

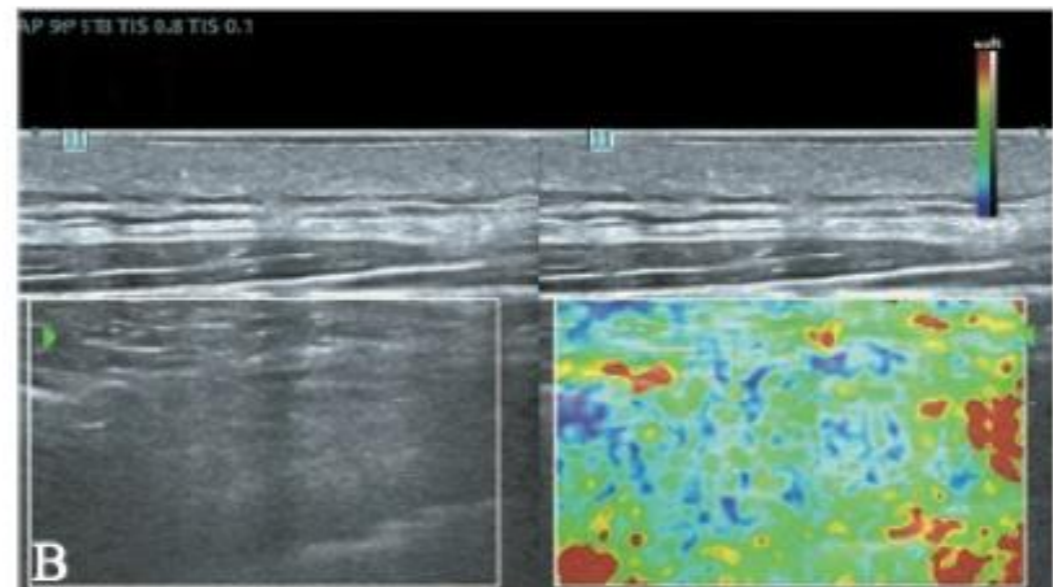
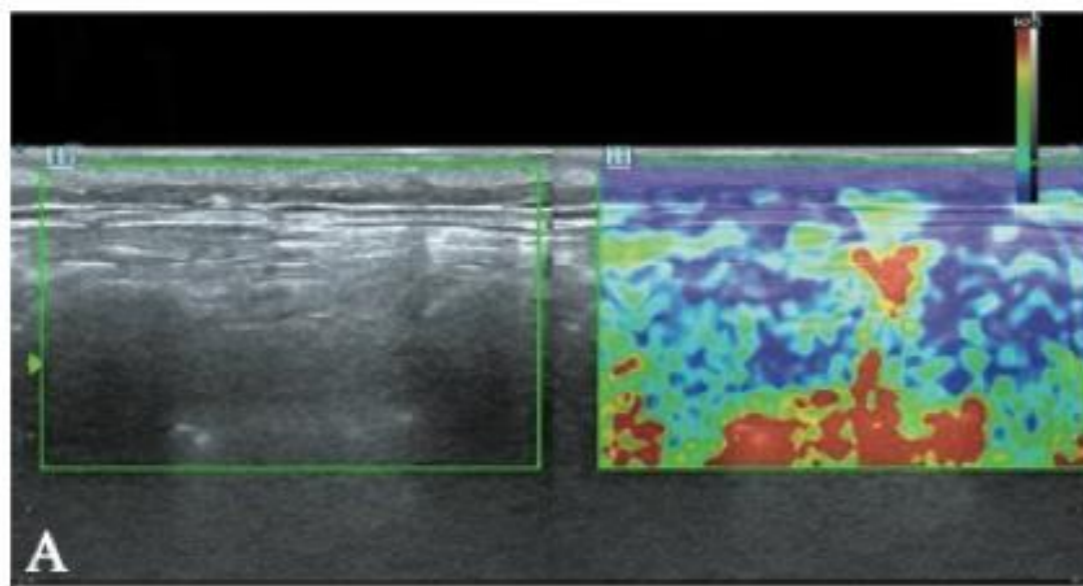
**Density
and type of
innervation**



MINERVA ANESTESIOLOGICA

ESP block and chronic pain: the dark side of the moon

Pierfrancesco Fusco 1, MD; Carla Stecco 2, PhD; Gian Marco Petroni 3 *, M.D. ;Walter Ciaschi 3 , M.D. ; Franco Marinangeli 3 , Ph.D



We hypothesize that another possible mechanism by which fascial plane blocks cause lasting pain relief could be the relaxation of the muscles surrounding the fascia

CAN WE CONSIDER THE FASCIA AS THE TARGET OF OUR FASCIAL BLOCK?

Pierfrancesco Fusco, Emanuele Nazzaro, Francesco De Sanctis, Gianmarco Petroni

Considering the fascia as a target would open up new fields of application of fascia blocks in both acute and chronic pain

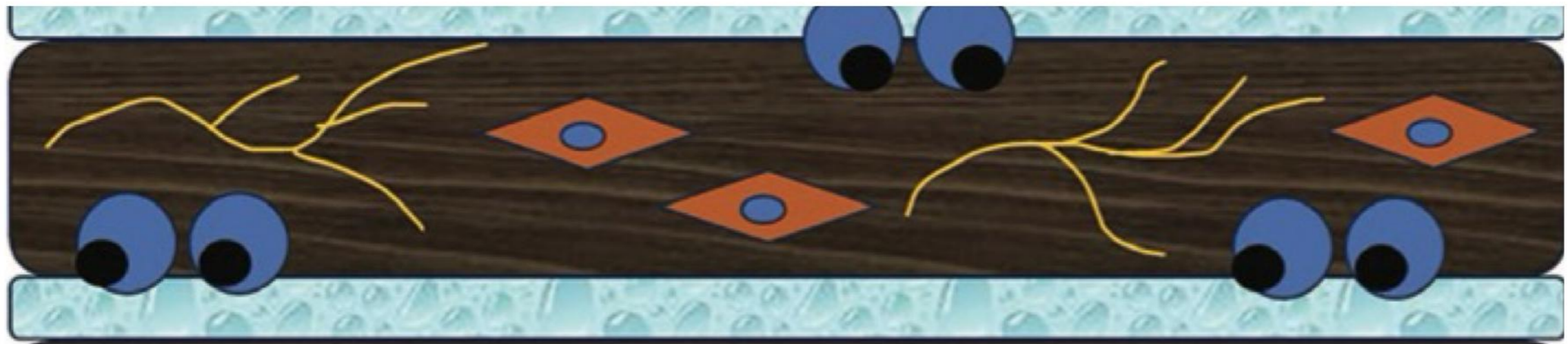


Fascial as a new target

Stiffness myofascial unit



fascial plane block



INCREASING MUSCLE RELAXATION

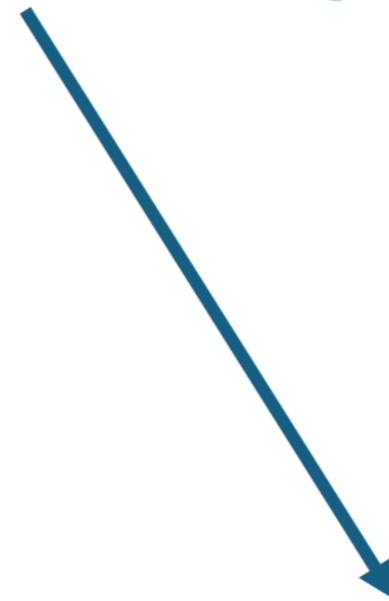
NEW PARADIGM FOR FASCIA



Fascia as a new target



NOCICEPTIVE PAIN



NEUROPATHIC PAIN

- **fascial plane blocks continue to broaden their application also in chronic pain management, as a part of a multimodal strategy or as alternative to conventional drugs or opioids.**

Marrone et al. *J Anesth Analg Crit Care* (2024) 4:71
<https://doi.org/10.1186/s44158-024-00205-y>



Journal of Anesthesia,
Analgesia and Critical Care

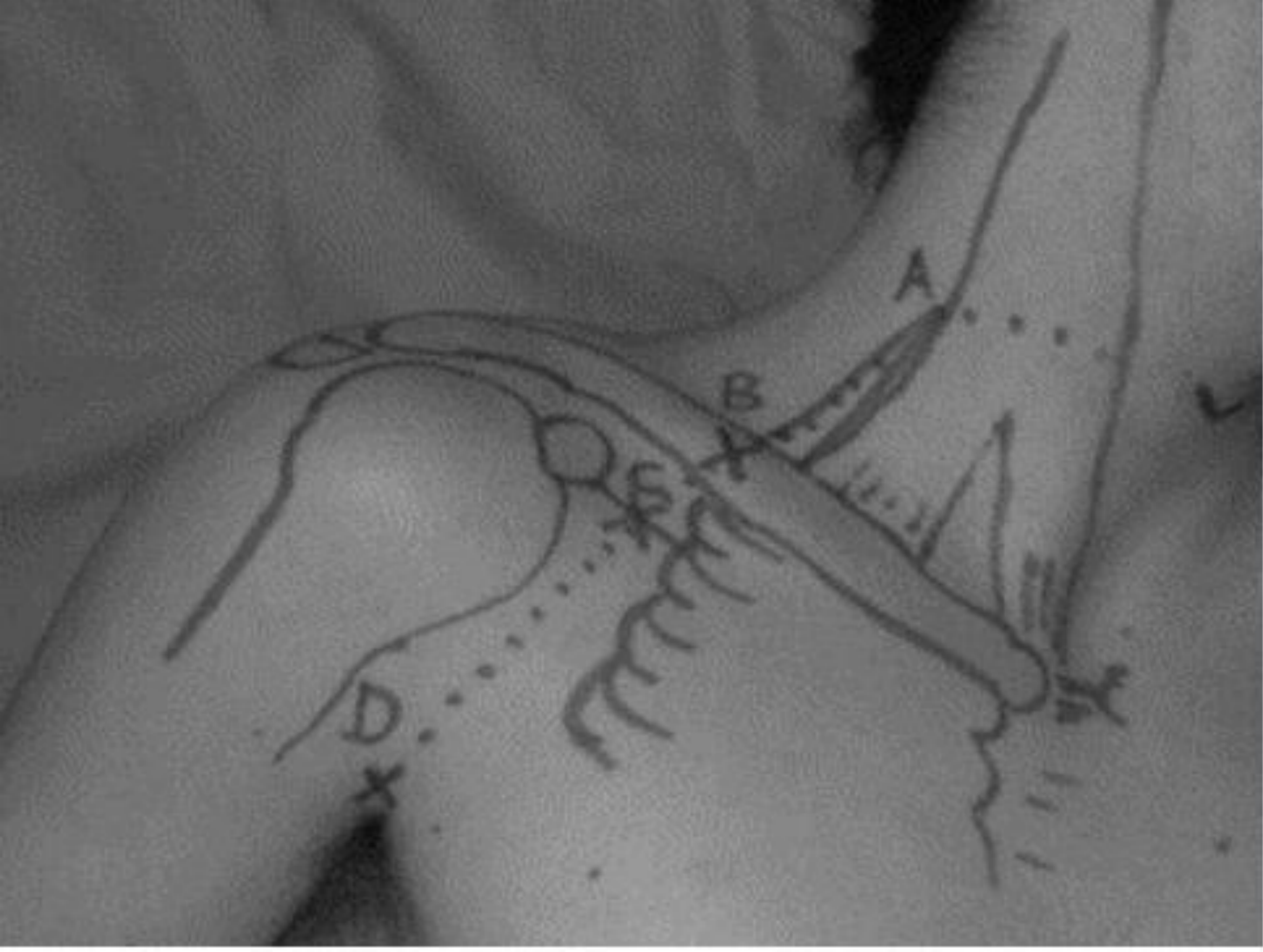
REVIEW

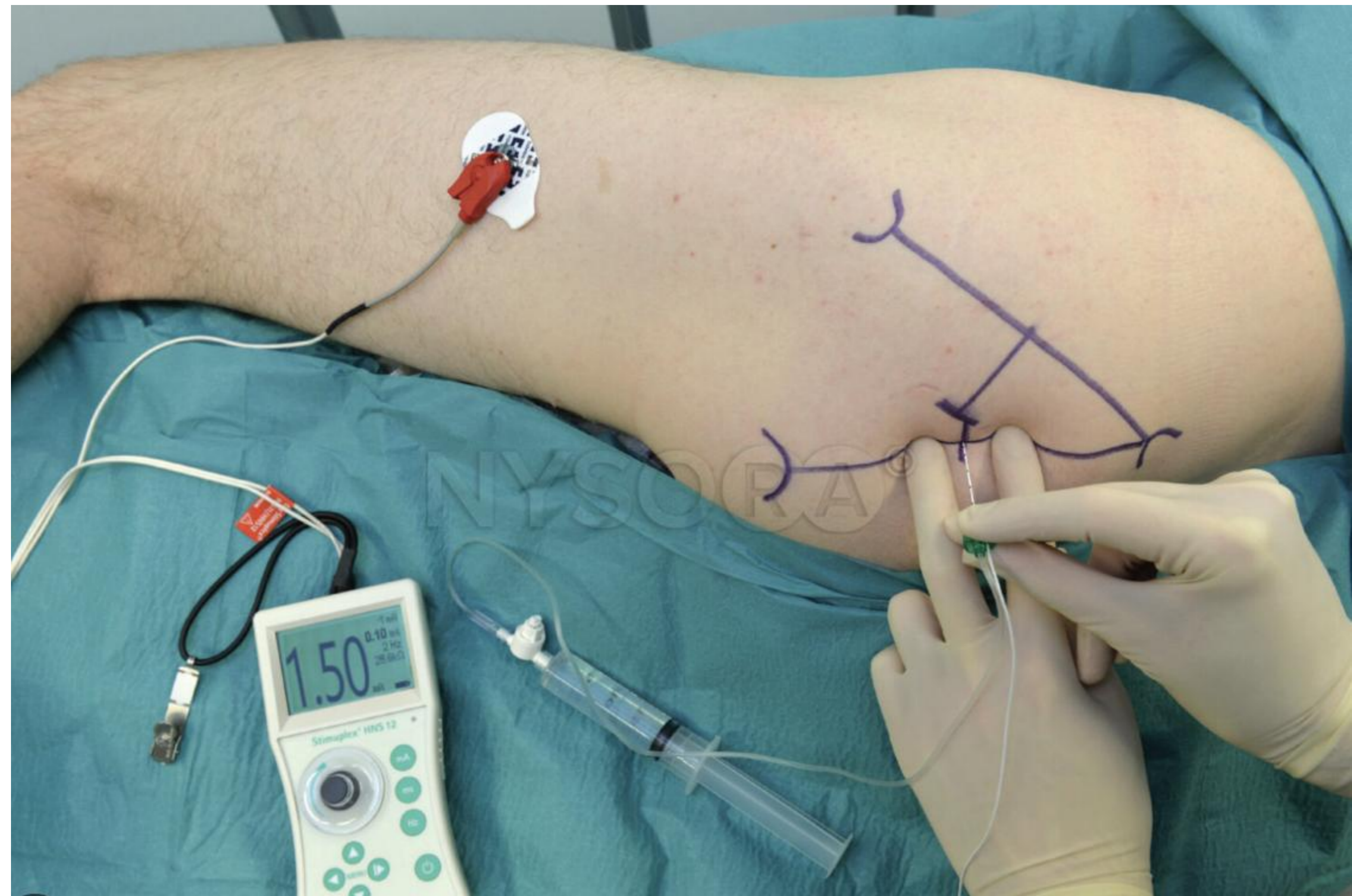
Open Access

Ultrasound-guided fascial plane blocks in chronic pain: a narrative review



Francesco Marrone^{1*}, Carmine Pullano², Alessandro De Cassai³ and Pierfrancesco Fusco⁴





**Image Guidance
Should Be The Standard**

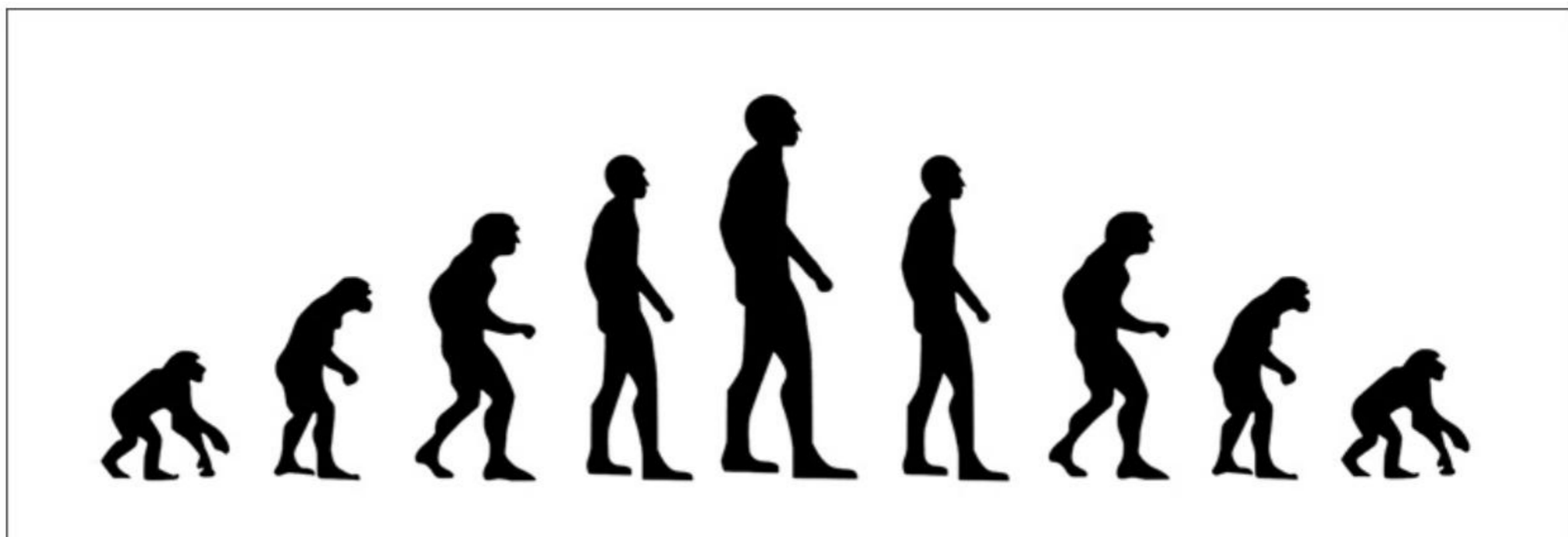
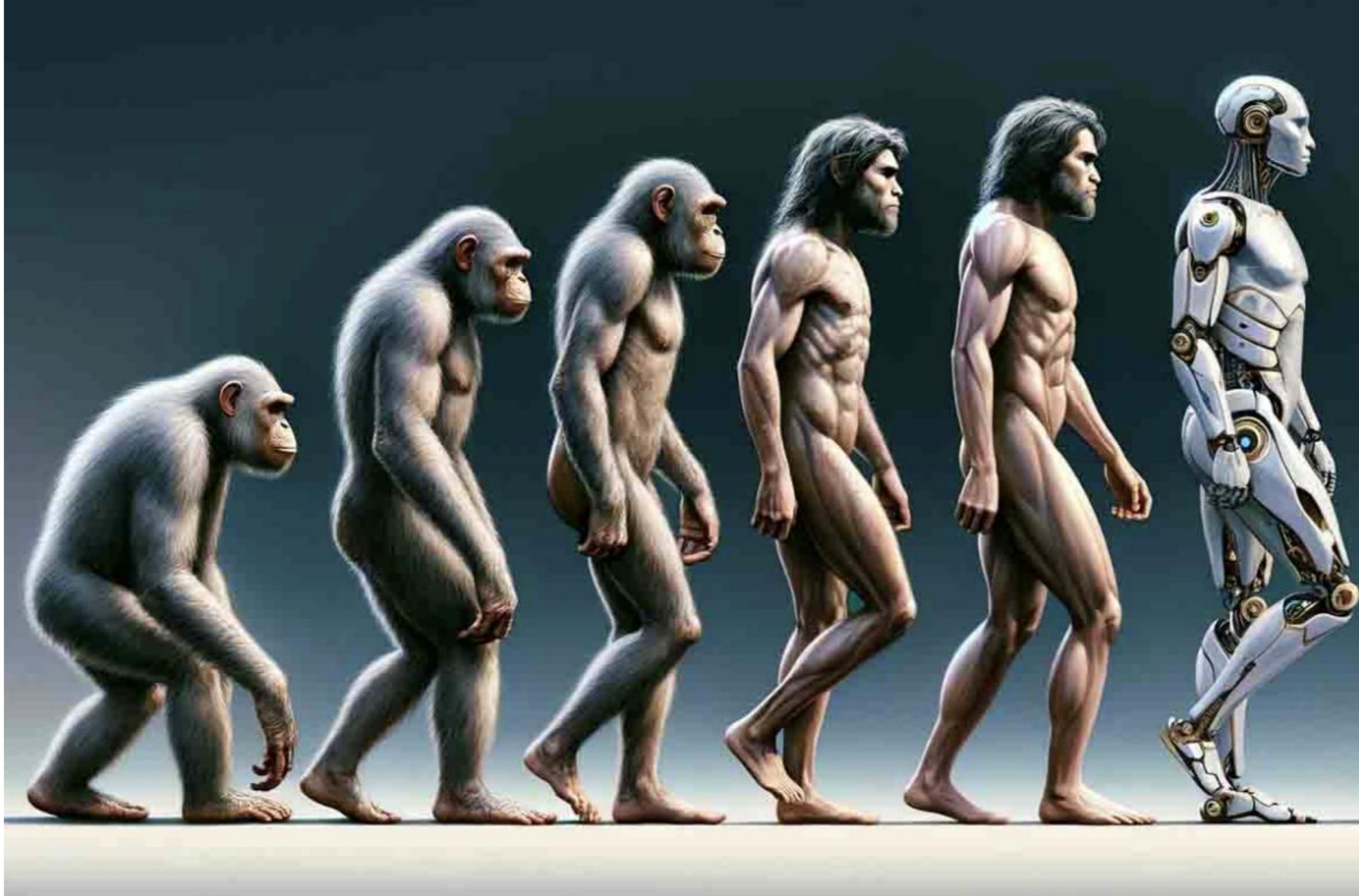


McDonnell
Laffey
block

er C,
plane
con-



Ultrasound Technique





BASILEAE, PER IOANNEM OPORINUM

TABULAE ANATOMICAE

EX ARCHETYPIS EGREGII PICTORIS

PETRI BERRETTINI CORTONENSIS

EXPRESSAE ET IN AES INCISAE

O P U S

CHIRURGIS ET PICTORIBUS APPRIME NECESSARIUM
ALTERAM HANC EDITIONEM RECENSUIT
NOTHAS ICONAS EXPUNXIT PERPETUAS EXPLICATIONES ADJECIT

FRANCISCUS PETRAGLIA

PHILOSOPHIAE ET MEDICINAE PROFESSOR.



R O M A E 1798

IMPENSIS VENANTII MONALDINI BIBLIOTOLAE
PRAESIDUM FACULTATE.

Antes



Epidural



Hoy



ESP

PECS

Epidural

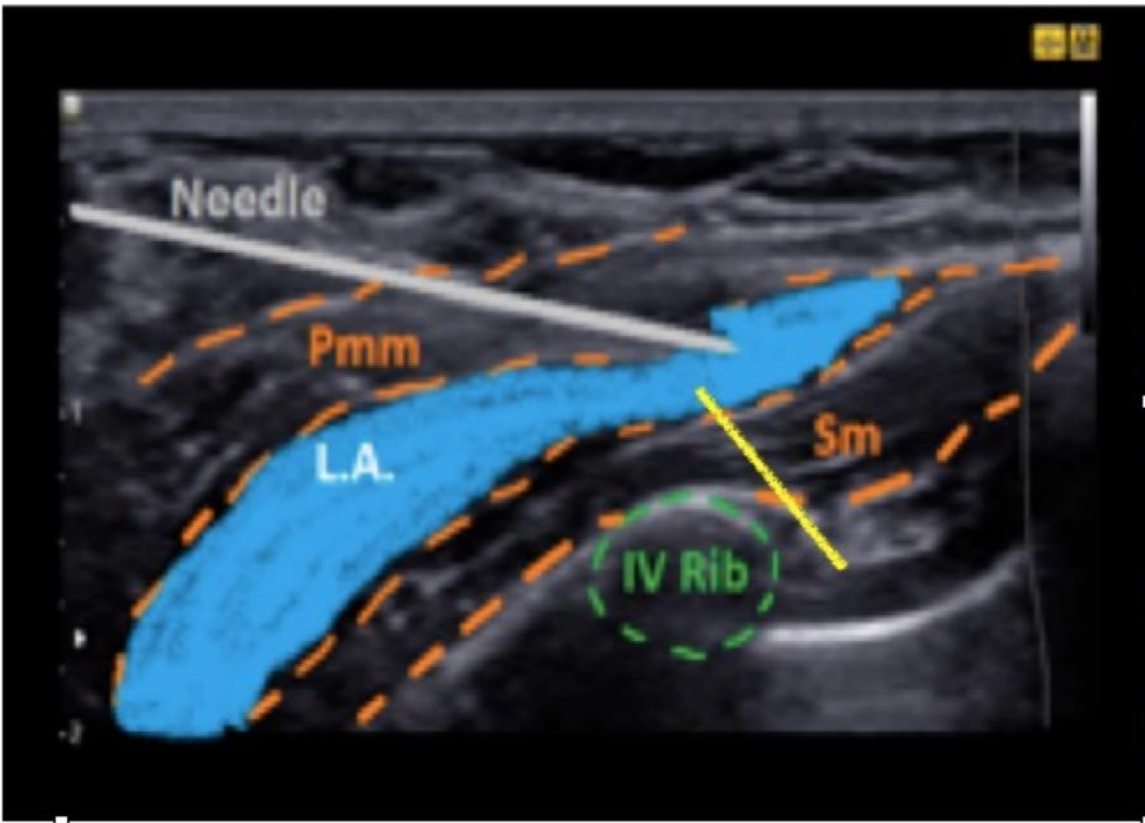
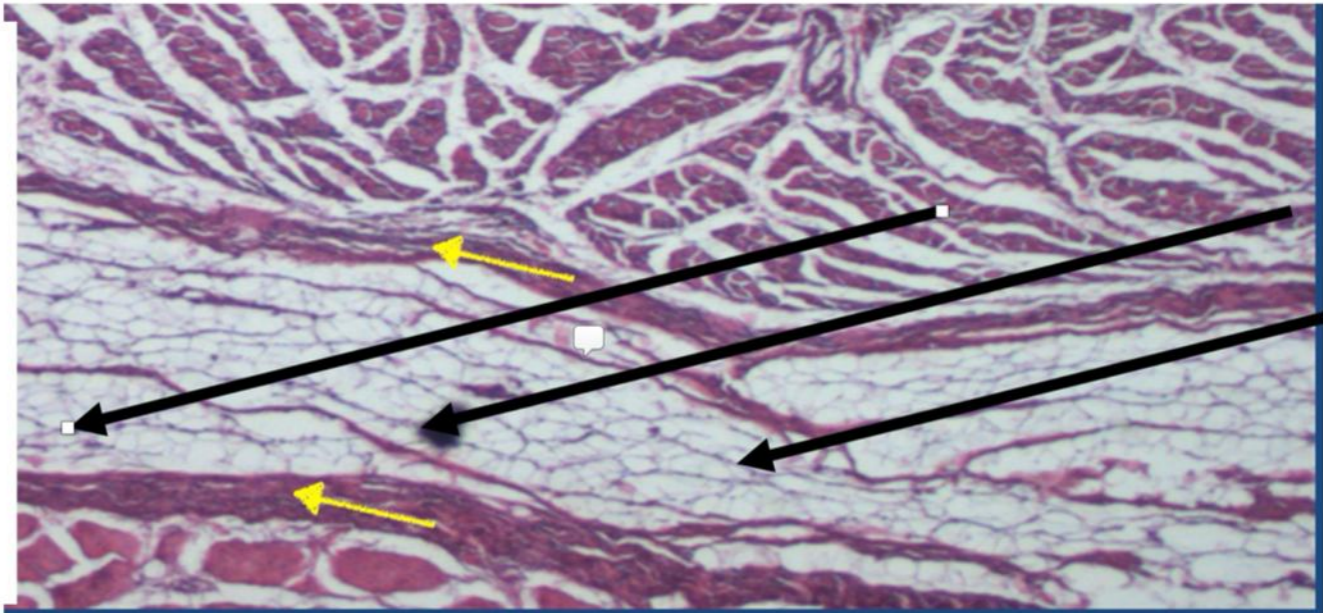
TAP

QLB

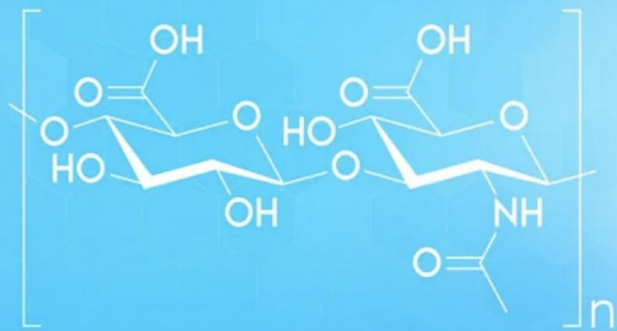
EXPERTS' OPINION

Factors to consider for fascial plane blocks' success in acute and chronic pain management

Pierfrancesco FUSCO¹, Giuseppe PASCARELLA², Carla STECCO³,
Rafael BLANCO⁴, Mauricio FORERO⁵, Amit PAWA⁶, Serkan TULGAR⁷,
Alessandro STRUMIA², Luigi M. REMORE², Alessandro DE CASSAI⁸, Laura B. COLANTONIO⁹,
Romualdo DEL BUONO¹⁰, Fabrizio FATTORINI¹¹, Giuseppe SEPOLVERE¹², Mario TEDESCO¹³,
Gian M. PETRONI¹⁴*, Walter CIASCHI¹⁵, Massimiliano CRASSITI², Fabio COSTA²

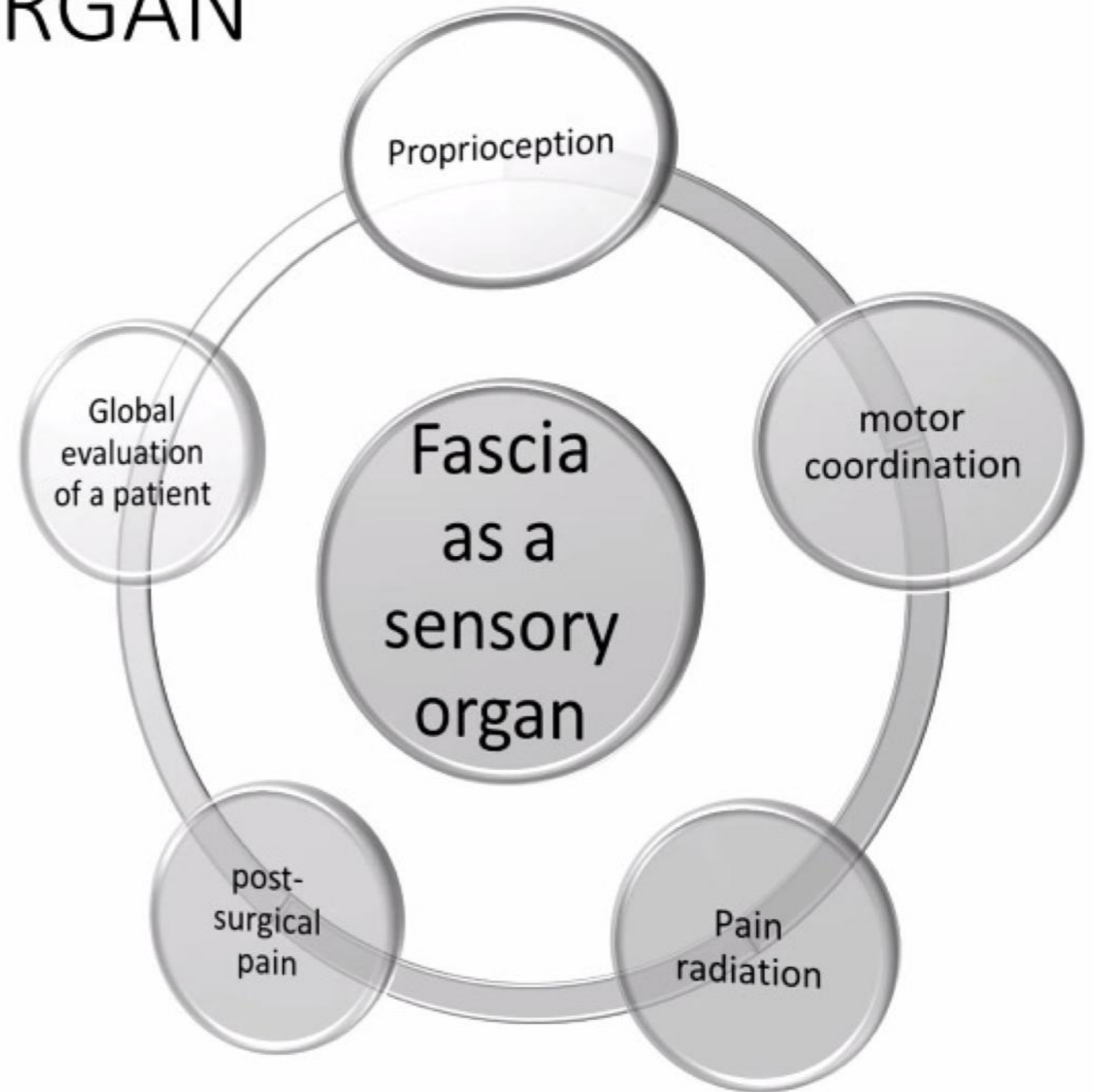
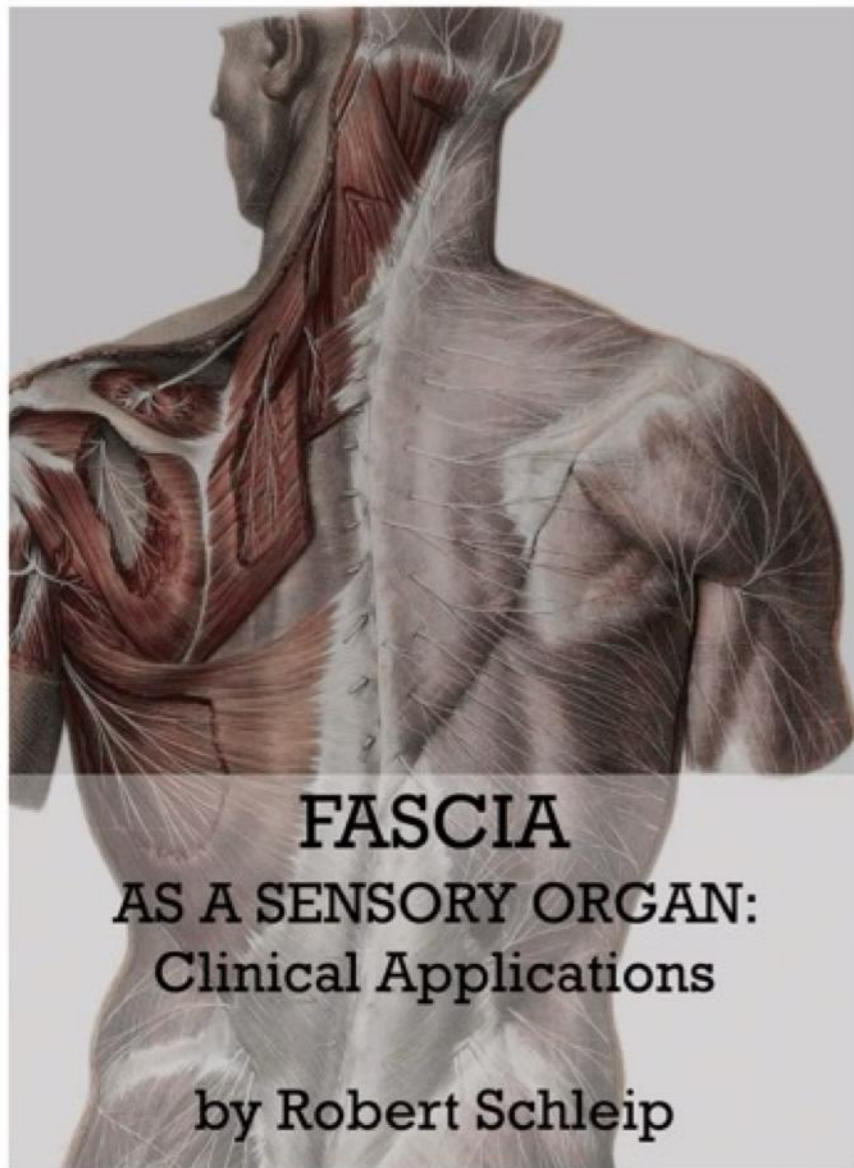


HYALURONIC (ACID)



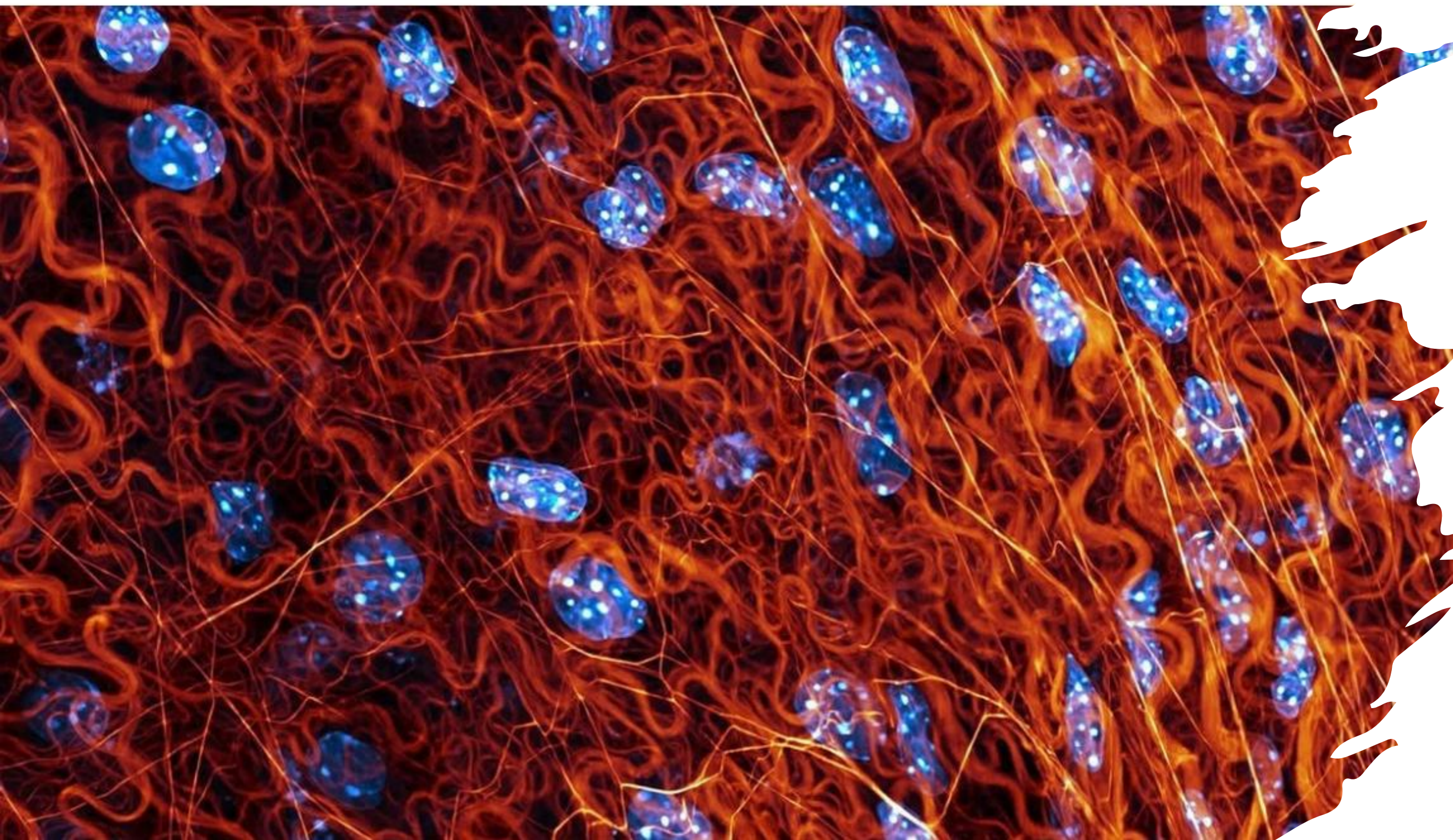
individualized pain management

FASCIA AS A SENSORY ORGAN





much more than a nerve block



Fascia

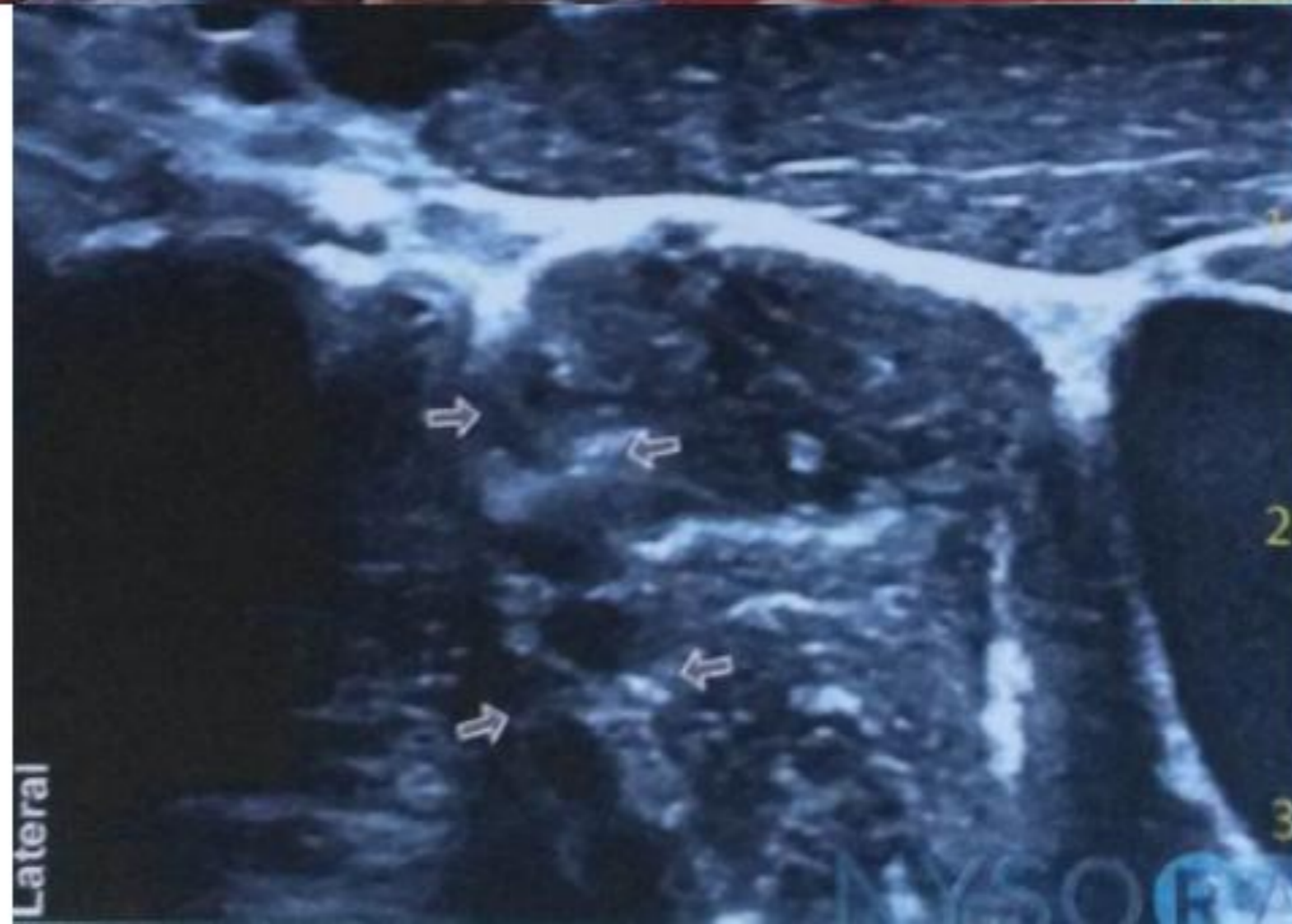
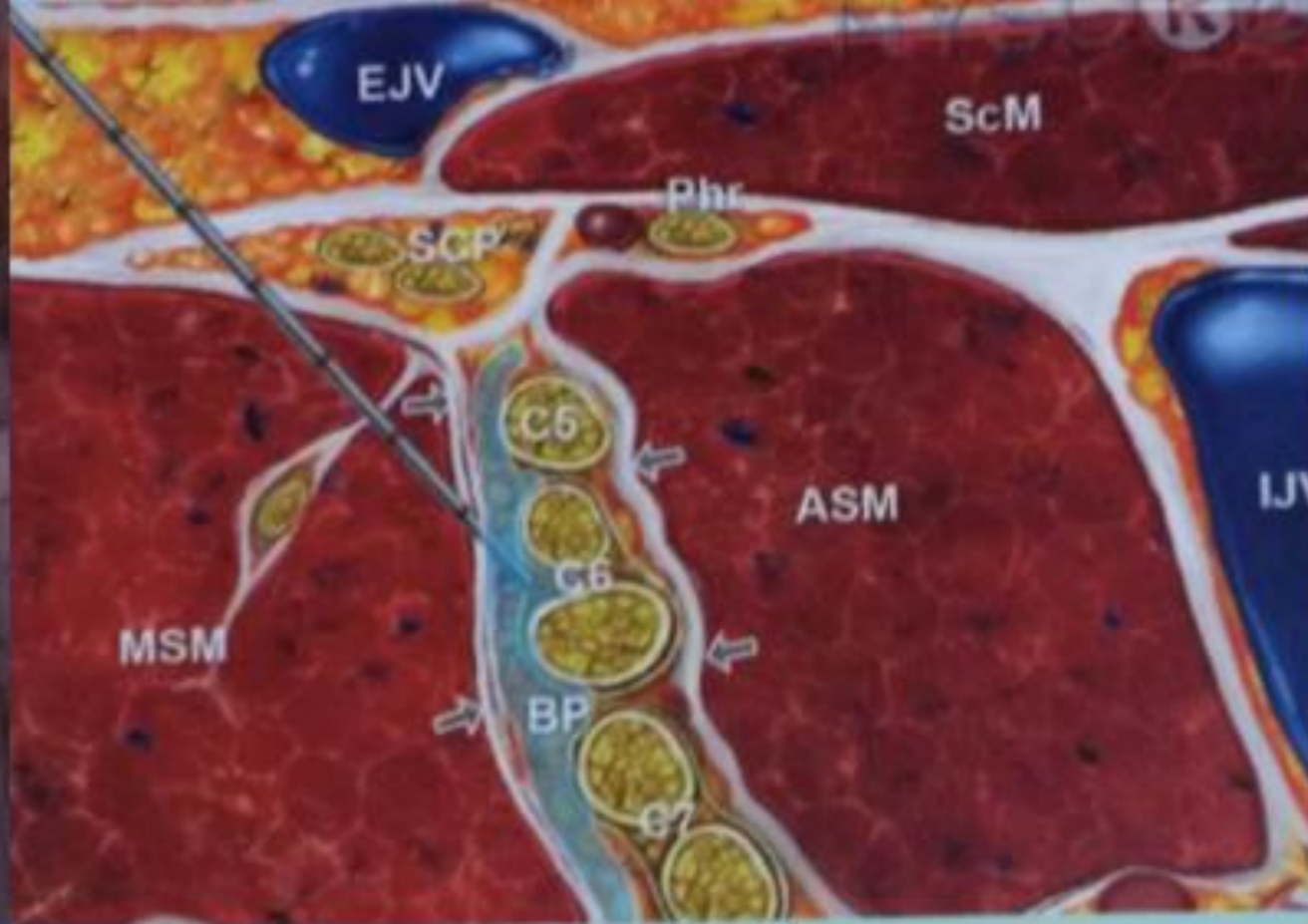
The connective tissue
that surrounds your
muscles and organs

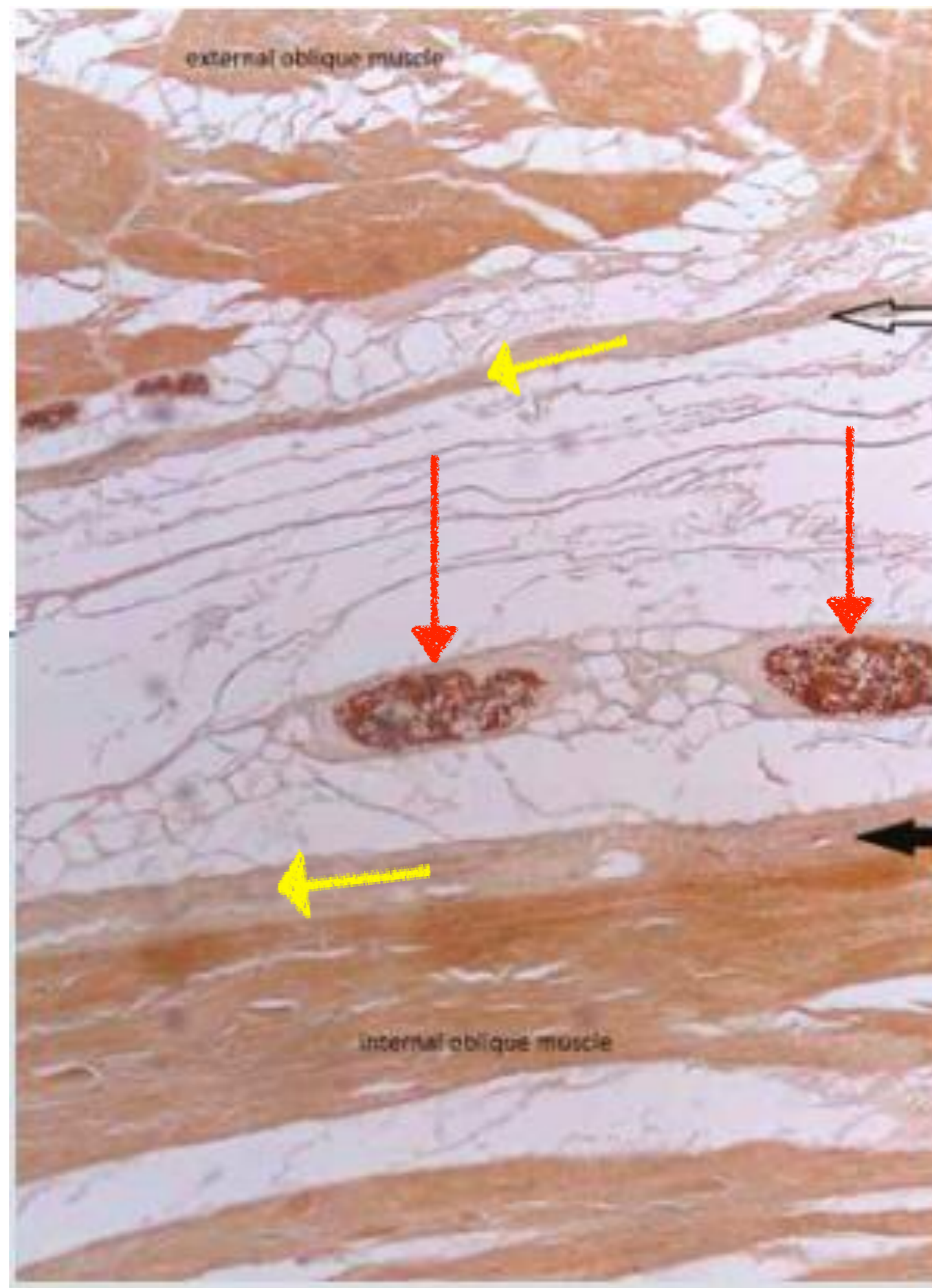
It holds the key to
tackling chronic pain
and immune dysfunction

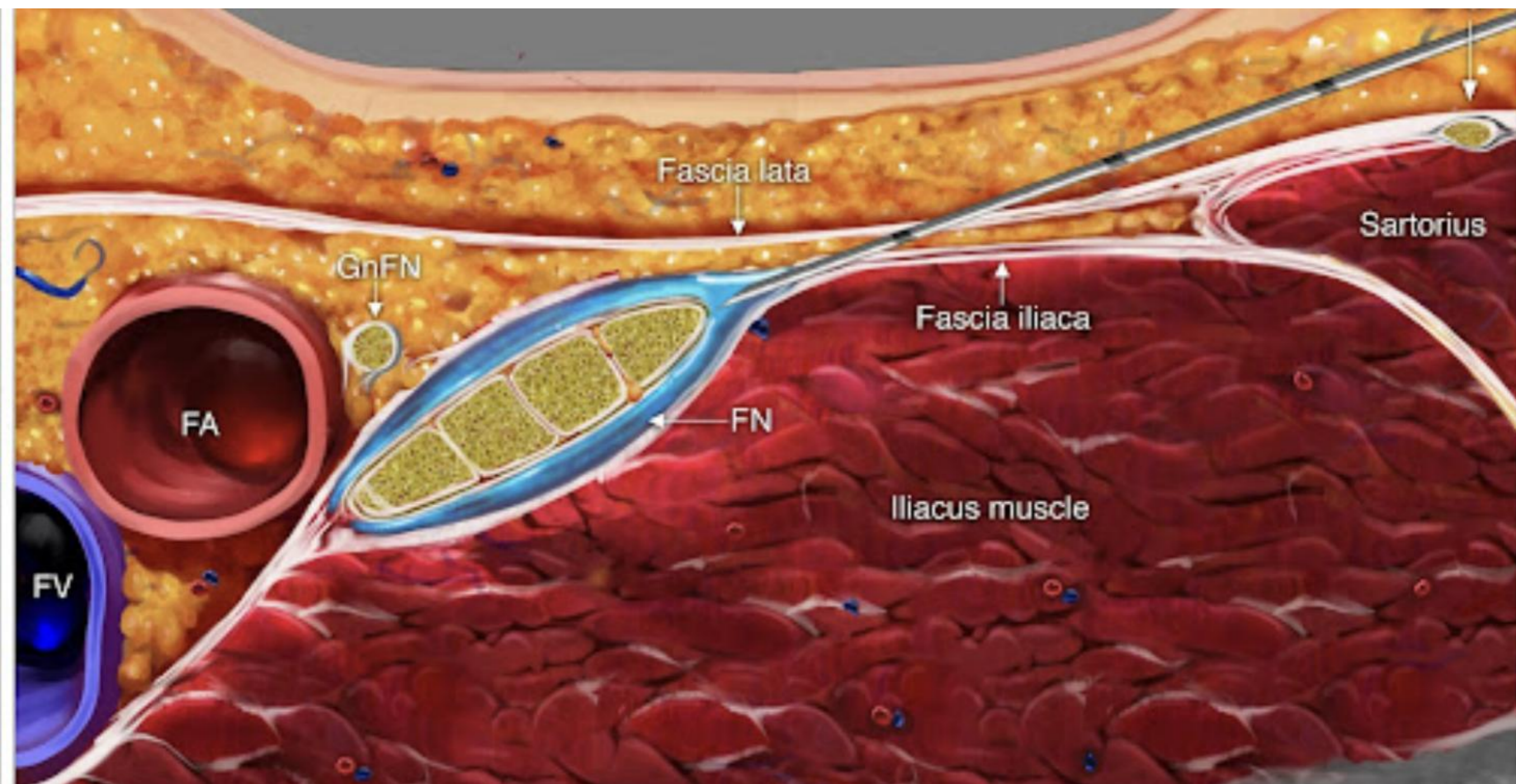
The long-overlooked
tissue that shapes your
health

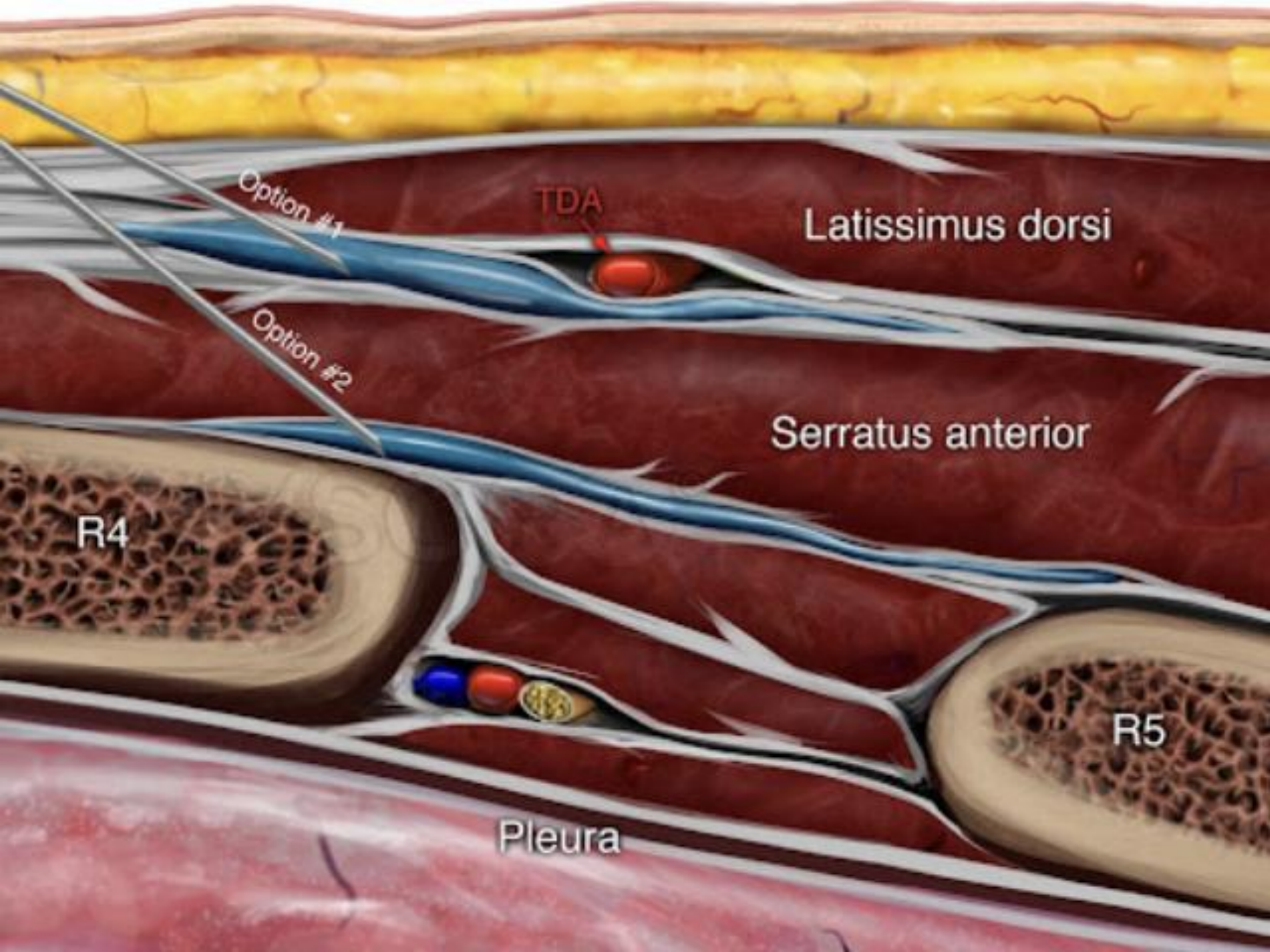




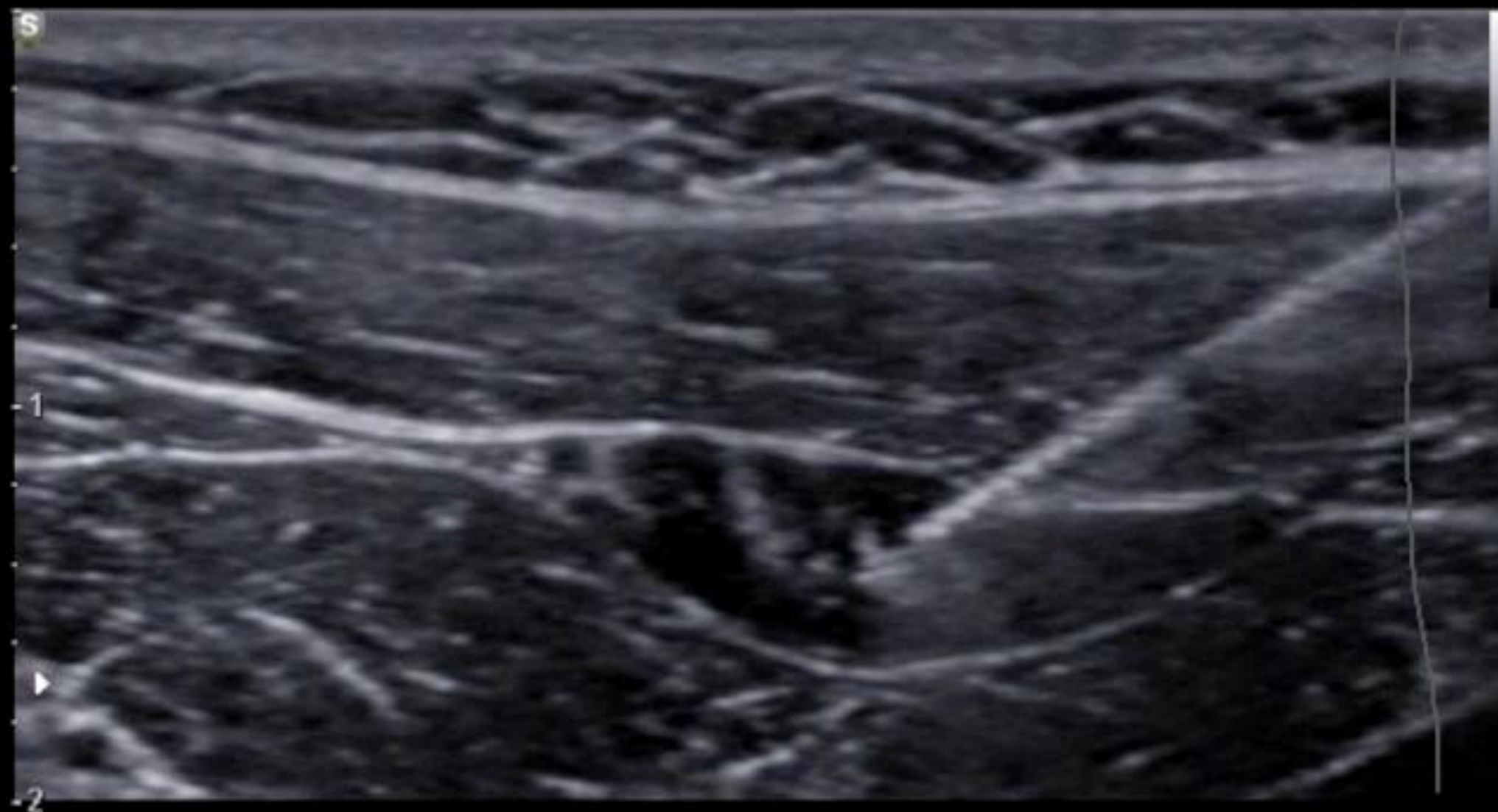








[2D] G50/DR116dB/FA6/P90/Frq Gen./3.0cm



 **sciatico post**

Gen MB

Nrv
C60



27%

IM
0,6

ITT
0,1



Paziente



Autoguard



Gen



Filmato



Pag. 1/4

5,6



Guad.



Profond.



Congel.



Salva

Opzioni



Colore

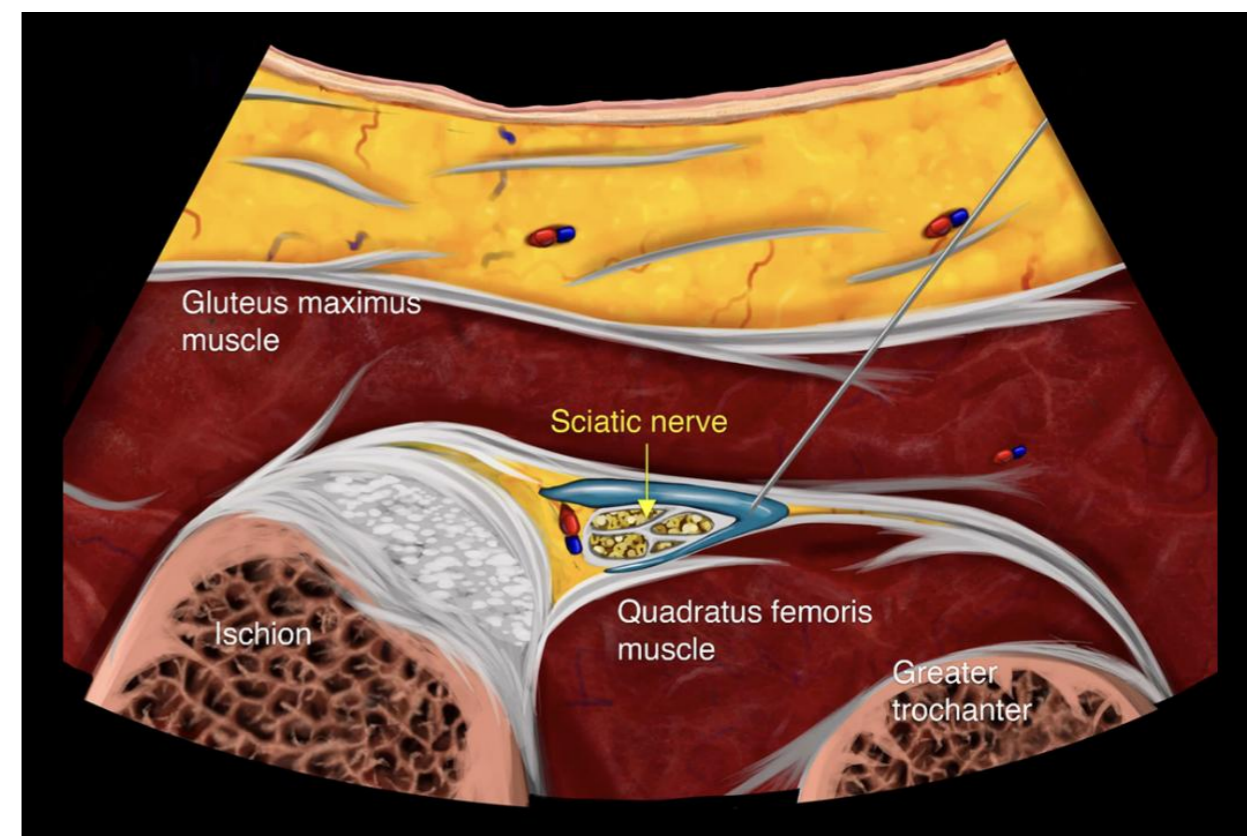
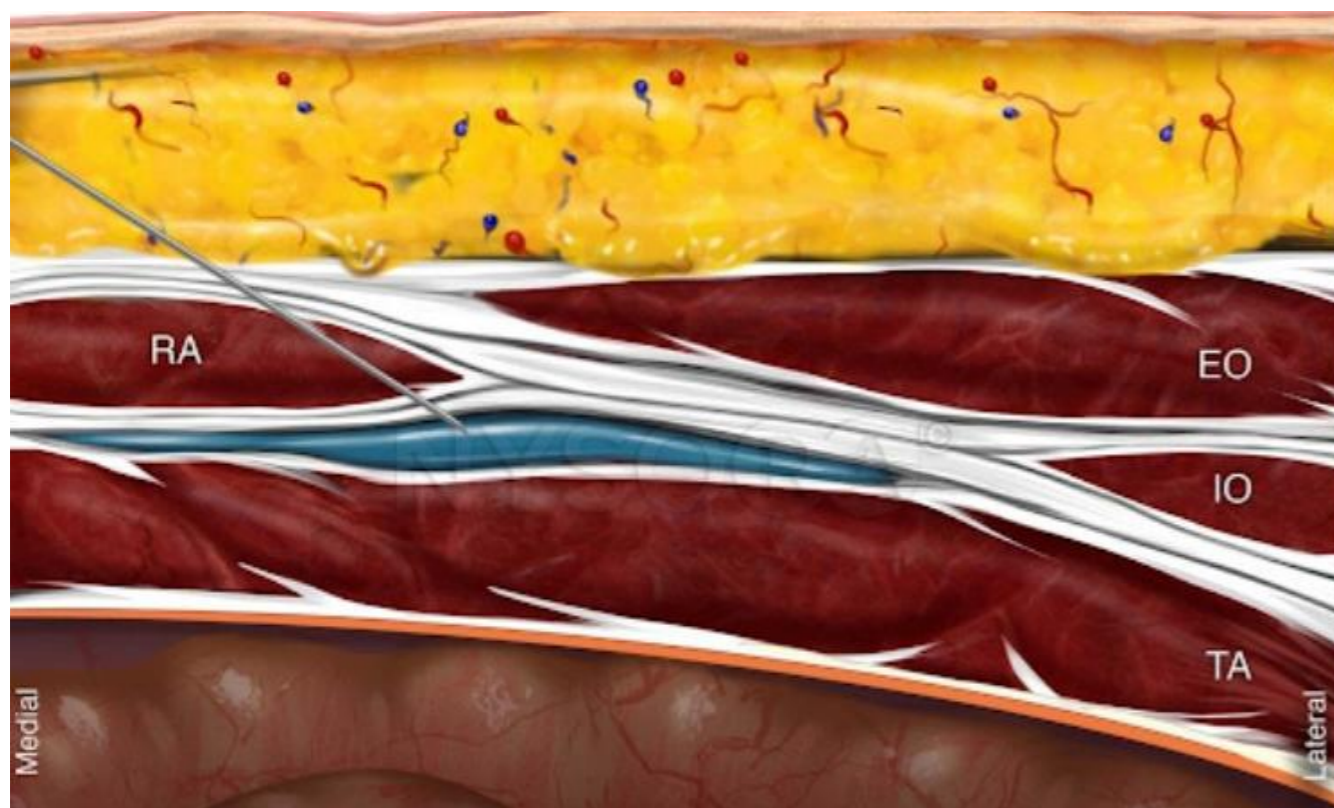
GE



5cm

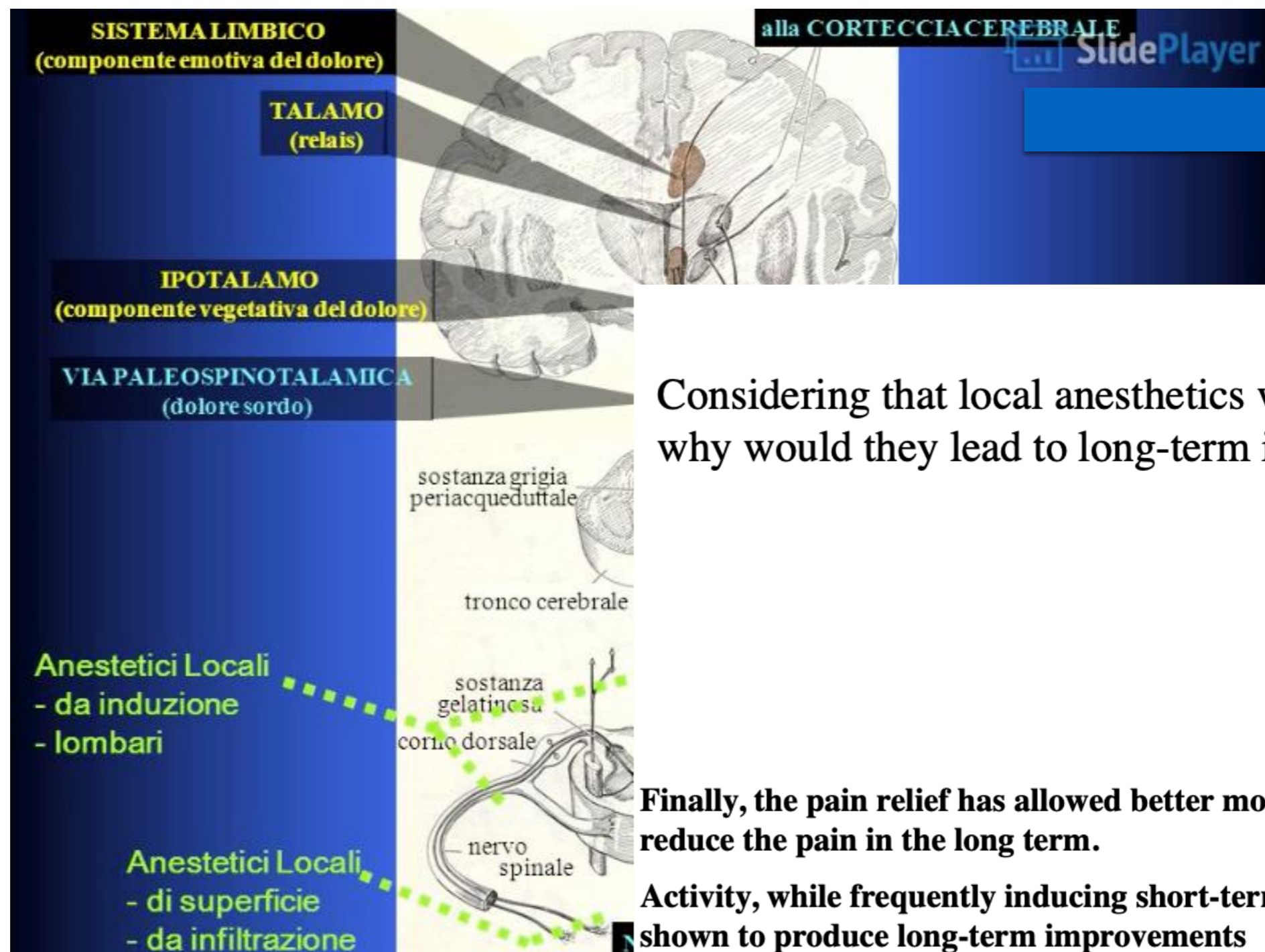
Nerve block or fascial block: This is the question

**Pierfrancesco Fusco, Gian Marco Petroni, Francesca De Sanctis,
Chiara Maggiani, Emanuele Nazzarro**





grazie



Considering that local anesthetics work for only few why would they lead to long-term improvements?

Finally, the pain relief has allowed better mobility, which may have reduce the pain in the long term.

Activity, while frequently inducing short-term increases in pain, has shown to produce long-term improvements

injecting a local anesthetic will interrupt the pain pathway in the injured area of the body and **reduced excitability of pain pathways**

In other words, the injured area will send the same amount of pain signals, but



Short-lasting effect for long-lasting benefit?

Very limited data exist on their efficacy in the middle- or long-term, and on the comparative effectiveness with alternative treatments.

NERVE BLOCKS

- **pain relief**
- **allowed better mobility**
- **reduce the pain in the long term**

**Activity has been shown to produce
long-term improvements**

This is the right time

The opioid crisis has prompted massive investments in pain research, aiming to

Nerve blocks have become very accurate and safe, also thanks the development

This is a great time for funding agencies to support and for clinical researchers

These studies would be great service to patients and to the health care profession

◦ Negli ultimi anni diverse tecniche sono state messe a punto per il trattamento del dolore cronico di origine gangliare / post-gangliare (infiltrazione single shot, infusione continua con catetere perinervoso, neuromodulazione o termocoagulazione con RF, PENS)



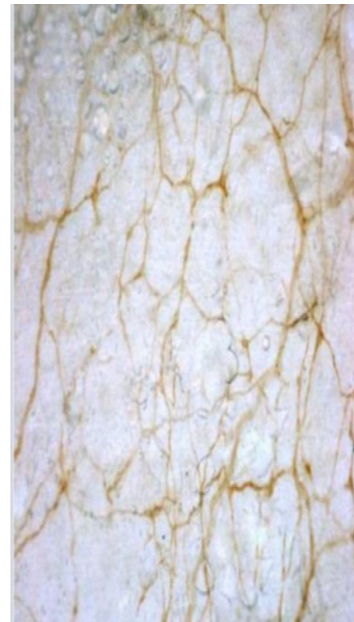
Pain is not merely the result of the transmission of an input from an injured tissue to the brain.

Very few treatments on nerves can lead to substantial reduction of pain and improvement of function.

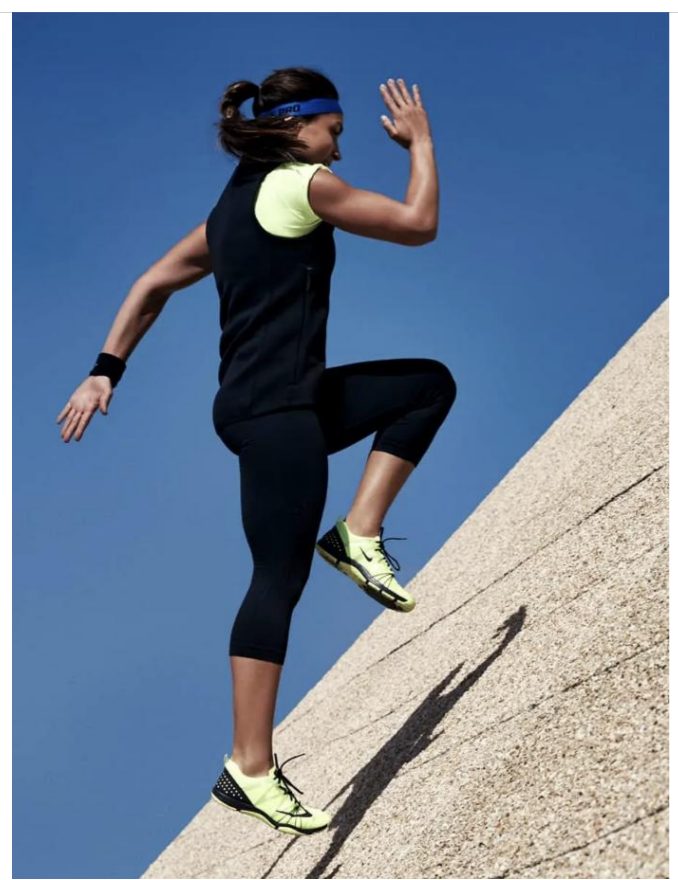
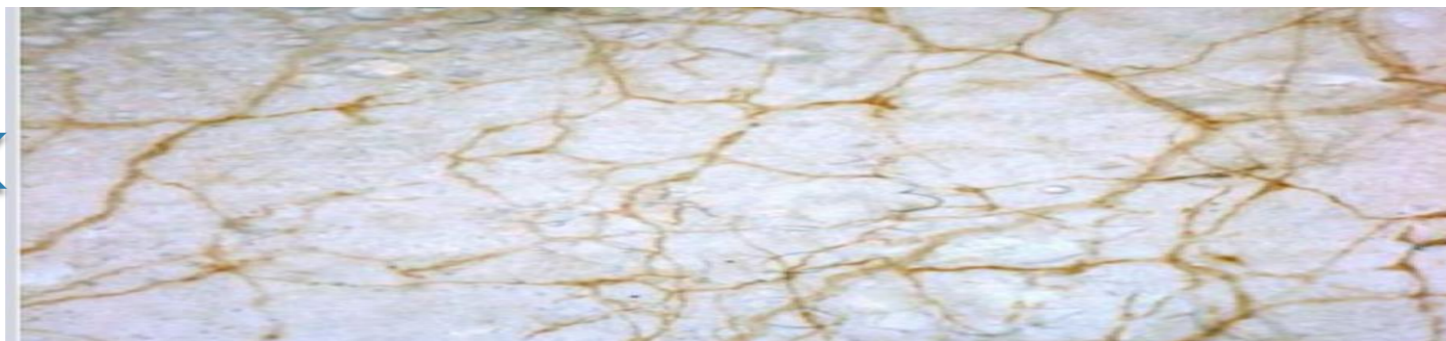
Make sure you address **cognitive and emotional components**, and implement strategies to **improve**

Explain patient that this will require their collaboration, and a **multi-dimensional approach**

OVERLOADED



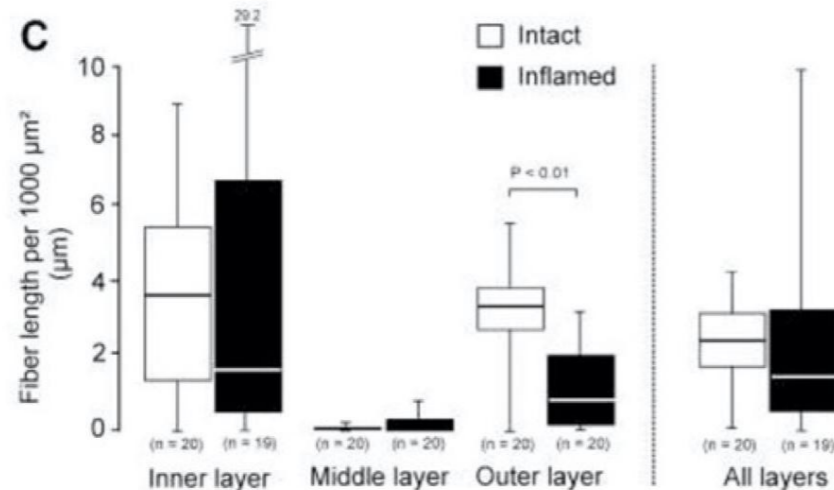
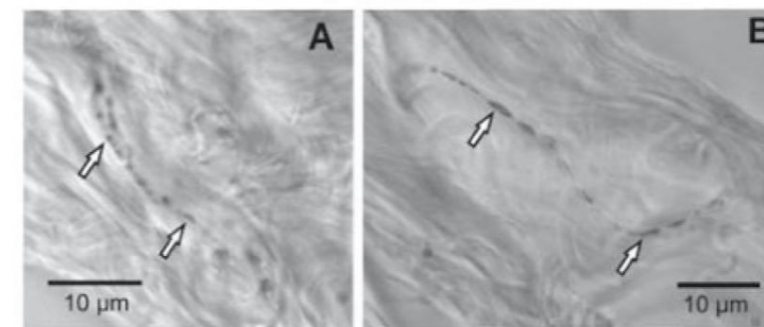
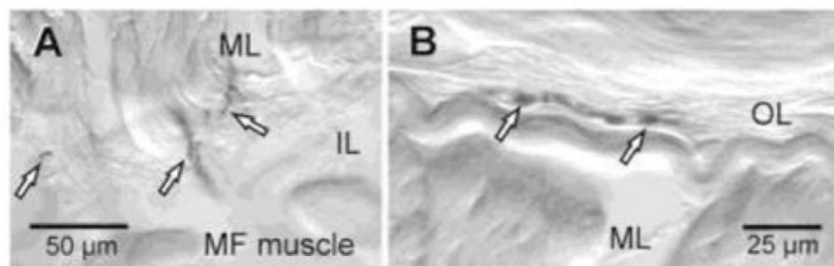
OVERSTRETCHED



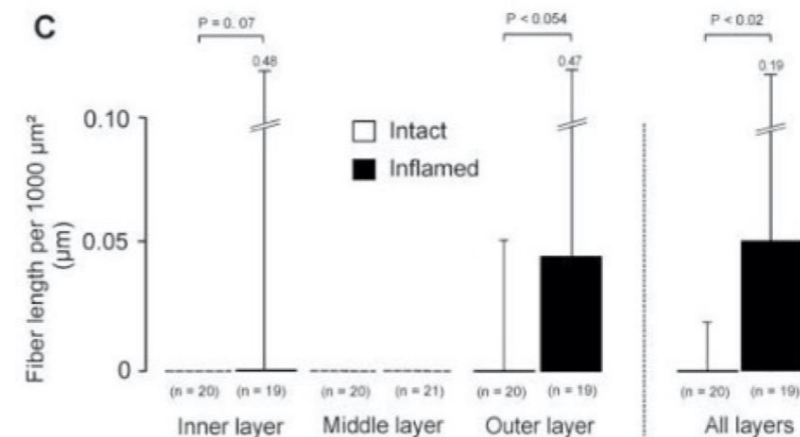
INNERVATION OF DEEP FASCIA

The inflamed TLF shows an increase of nociceptive fibers, which may explain the pain from a pathologically altered fascia

(Hoheisel et al, 2015, Neuroscience)

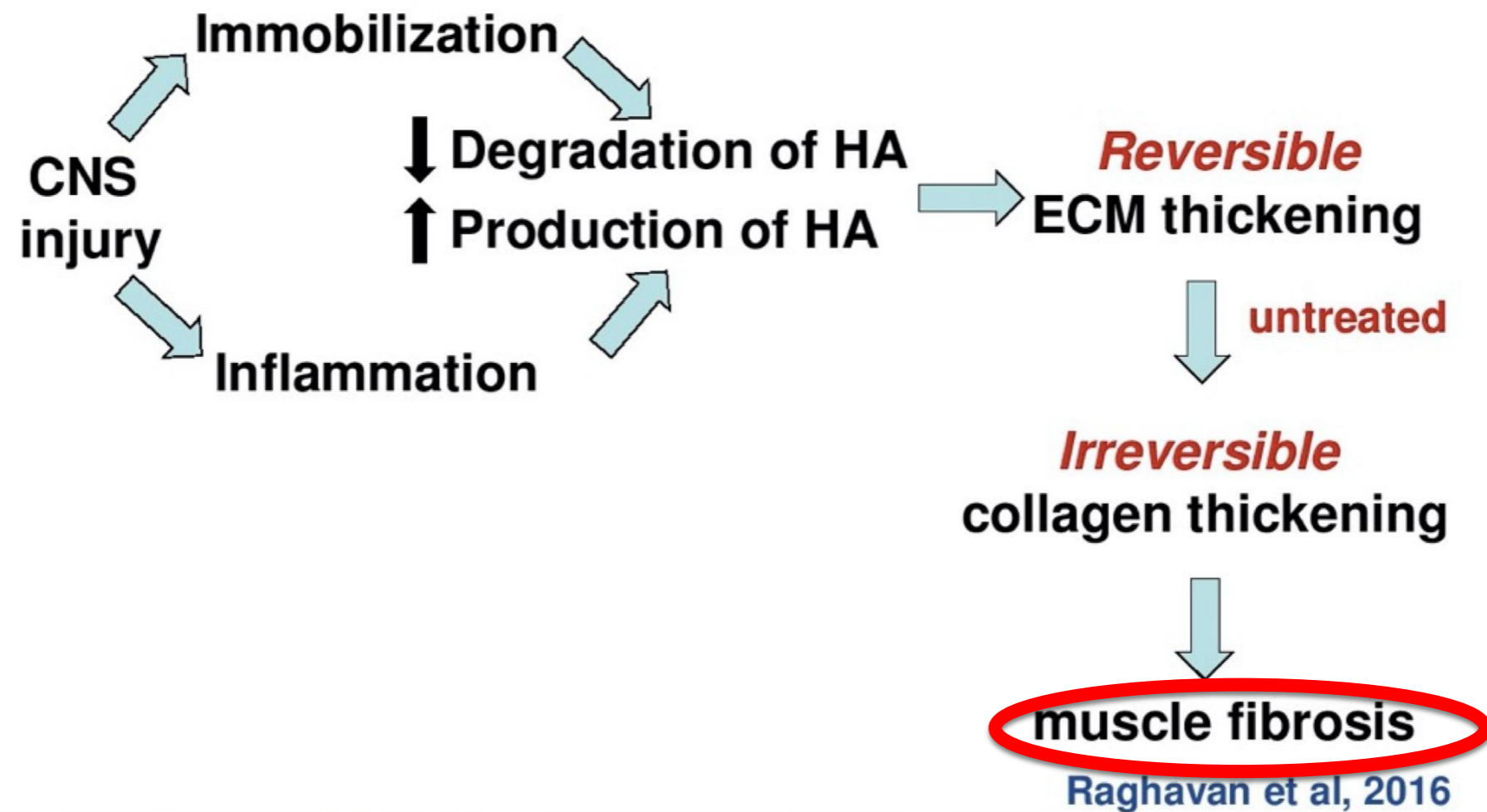


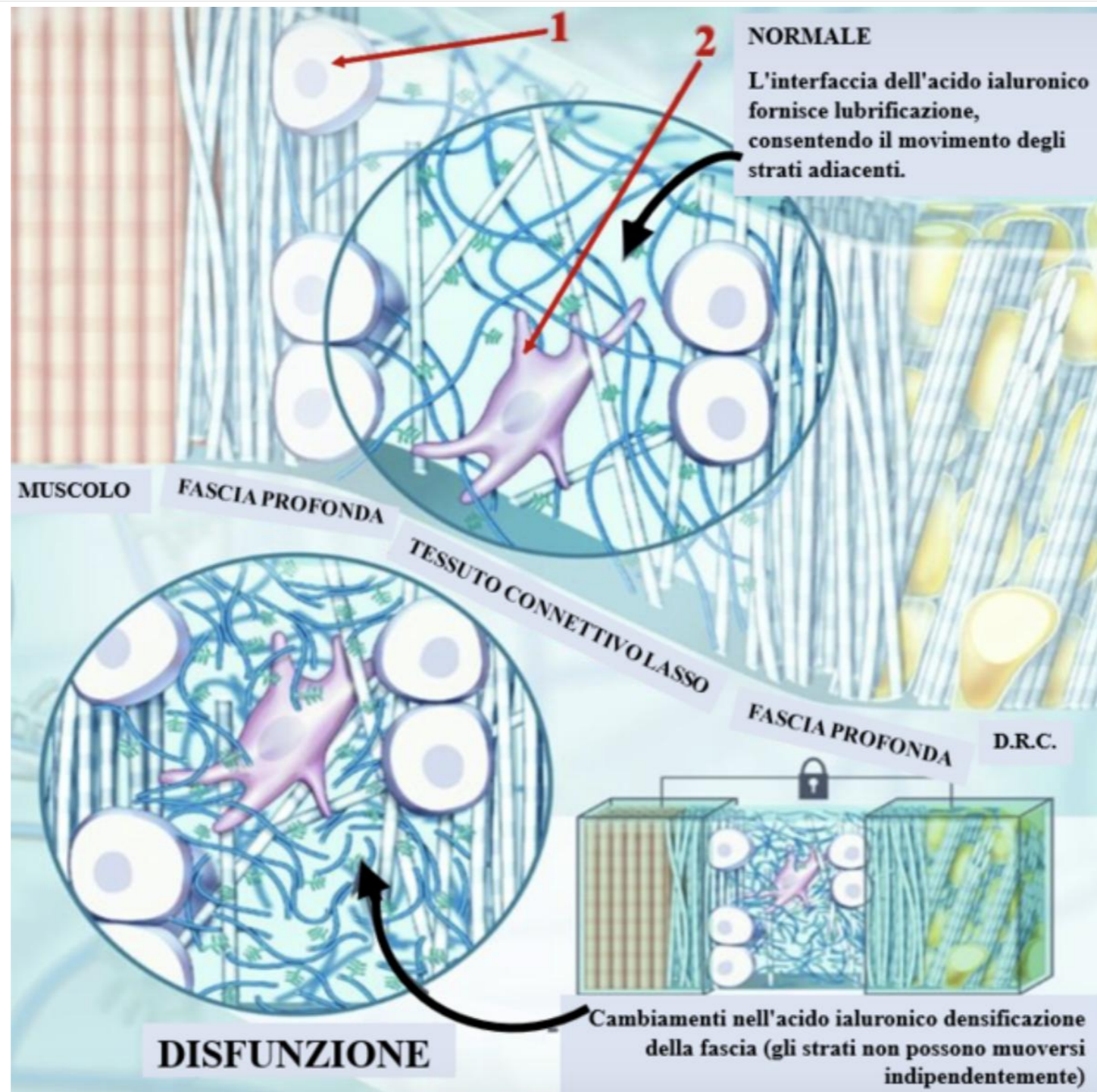
PGP 9.5 antibody: all nerve fibers



Substance P-immunoreactive fibers:
only nociceptive fibers

The Hyaluronan Hypothesis of Muscle Stiffness after CNS Injury

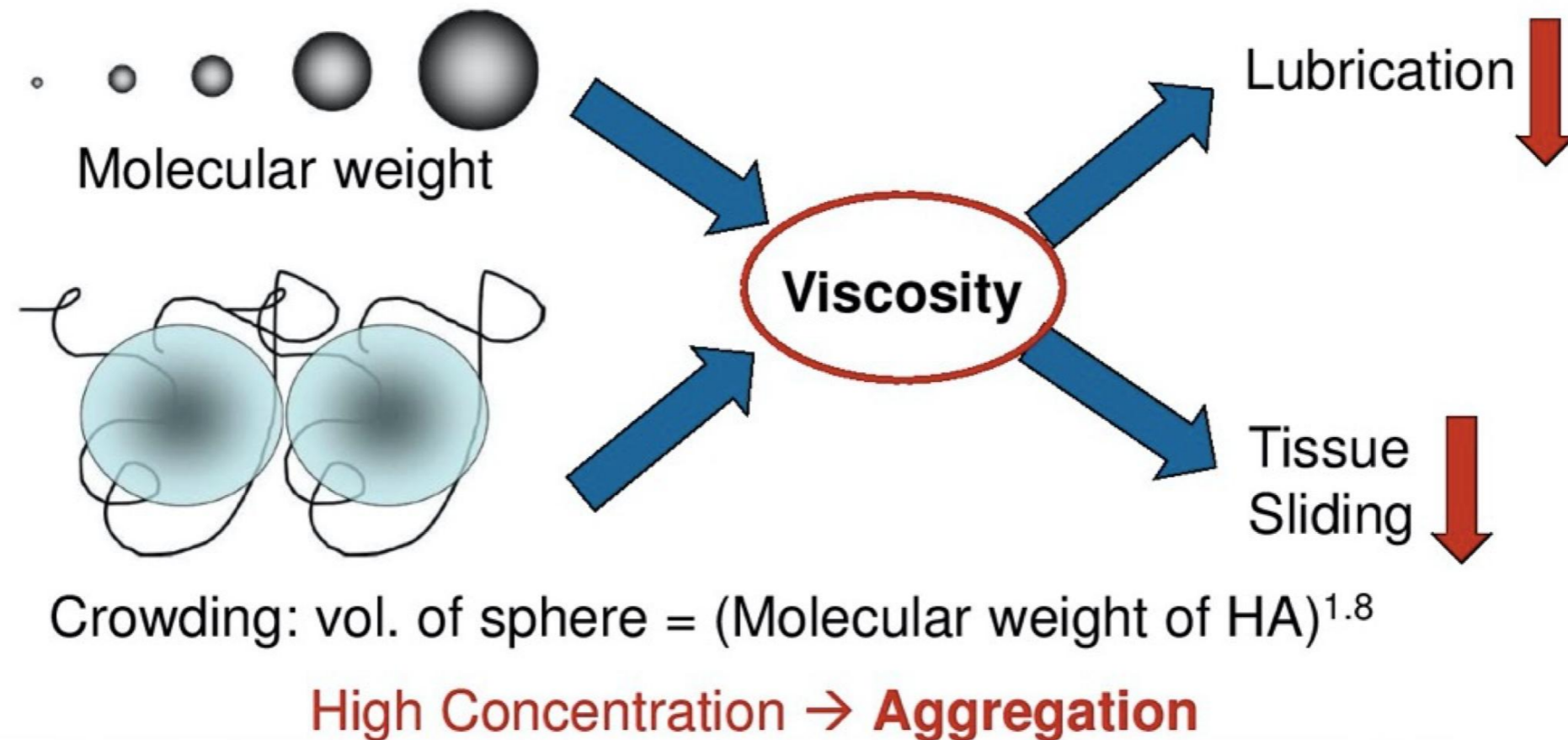




REVIEW


Viscoelastic Properties of Hyaluronan in Physiological Conditions [version 1; referees: 1 approved]

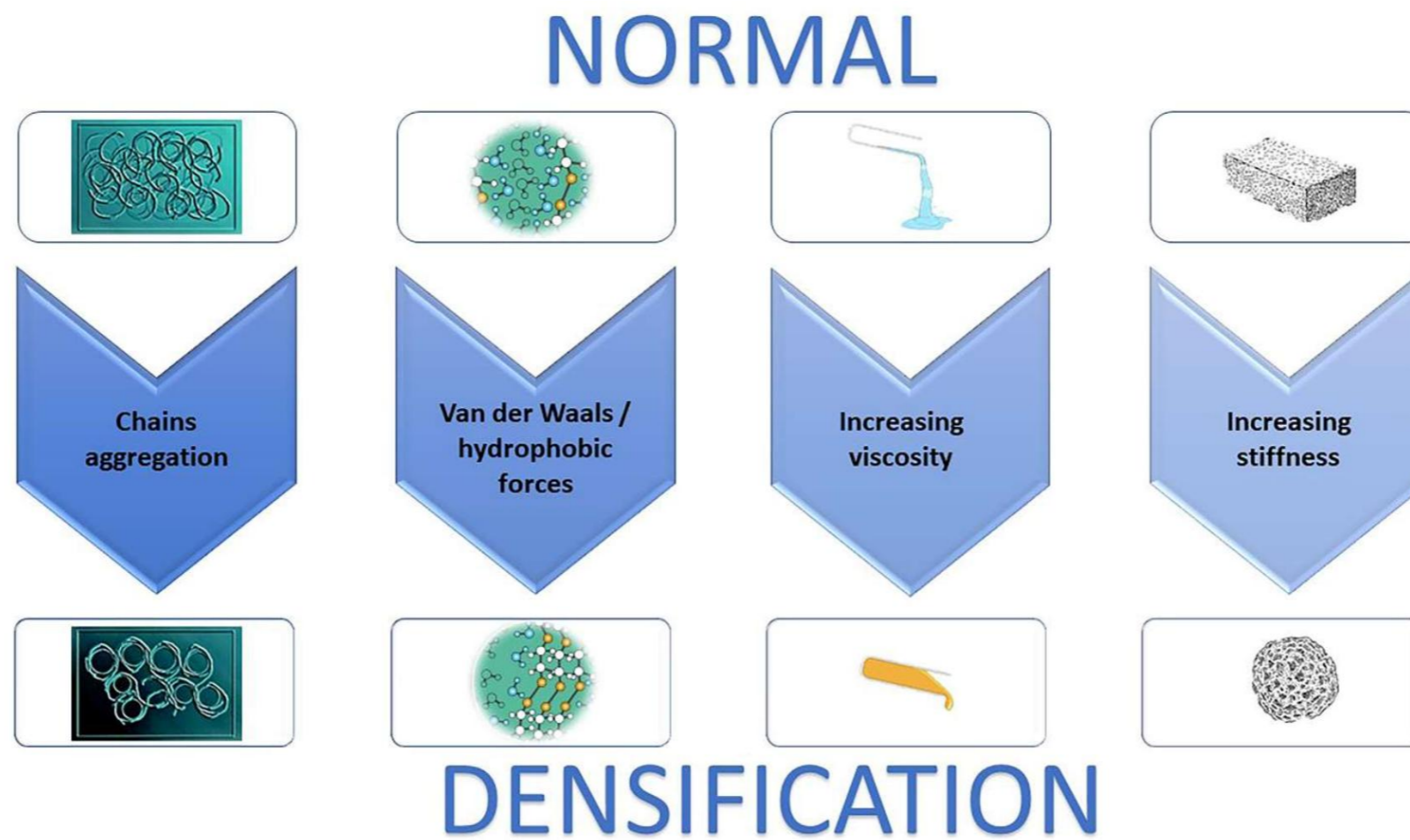
Mary K. Cowman¹, Tannin A. Schmidt², Preeti Raghavan³, Antonio Stecco⁴

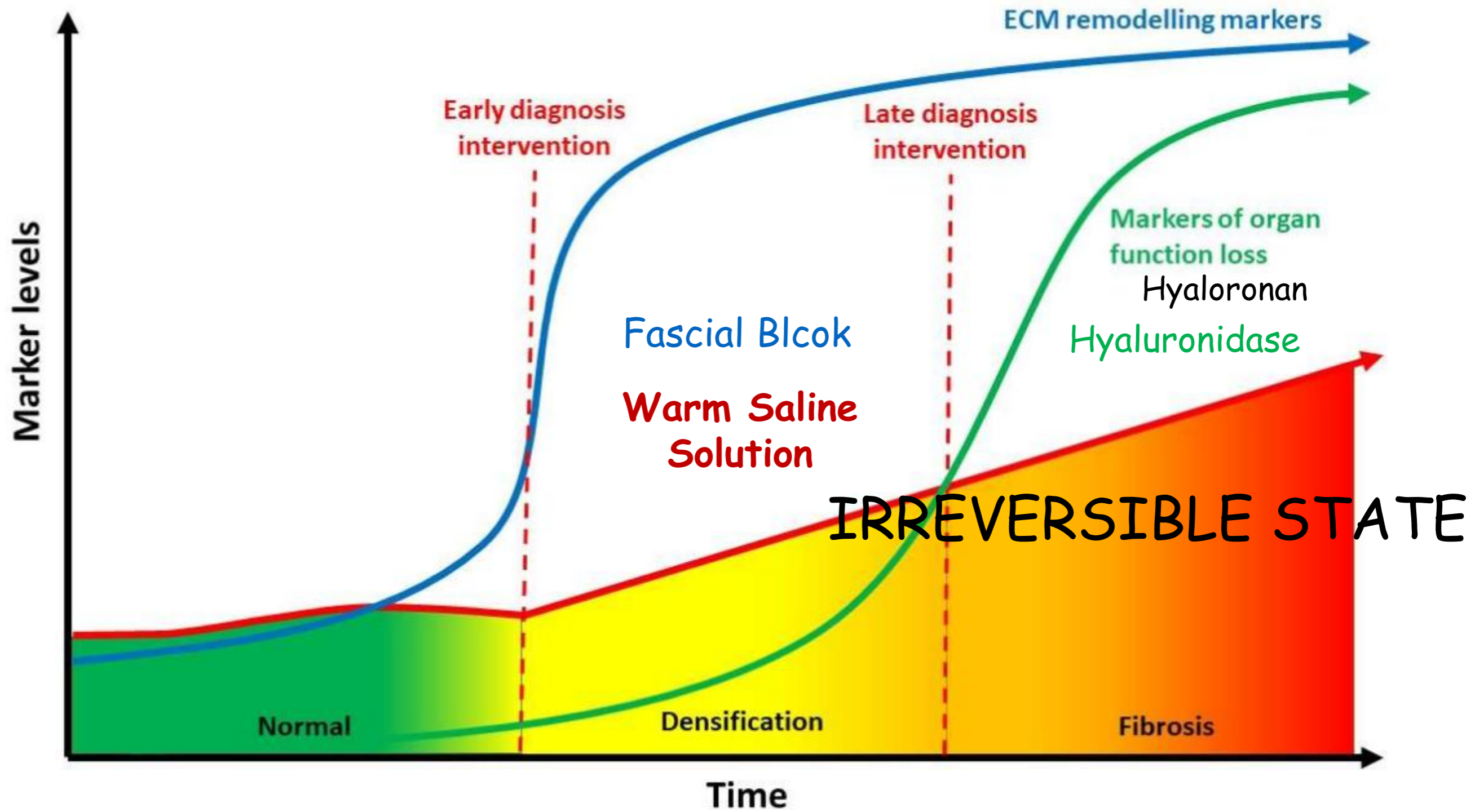


Review

Densification: Hyaluronan Aggregation in Different Human Organs

Antonio Stecco ¹, Mary Cowman ², Nina Pirri ³, Preeti Raghavan ⁴ and Carmelo Pirri ^{5,*} 







Systematic Review and Meta-Analysis

Access this article online

Website: <https://journals.lww.com/ijaweb>

DOI: 10.4103/ija.ija_560_25

Quick response code



Efficacy of ultrasound-guided sacral erector spinae block in elective surgery. An up-to-date systematic review and meta-analysis of randomised controlled trials

*Eros Pilia^{1,2}, Francesco Marrone³, Elisabetta Pusceddu¹, Salvatore Sardo²,
Gabriele Finco², Pierfrancesco Fusco⁴*

Conclusions: This meta-analysis of RCTs indicated that the use of SESPB in conjunction with spinal anaesthesia results in a reduced need for rescue opioid analgesics and improved postoperative pain management at 24 h for patients undergoing elective surgery.

DA QUI PROSSIME DIA BLOCCHI NERVOSI VS BLOCCHI
DI FASCIA

Pain Physician

Systematic Review


Nerve Block Efficacy and Safety for Acute Thoracic Herpes Zoster: A Systematic Review and Meta-analysis

Chiao-Ming Chuang, MD, Chung-Ren Lin, MD, PhD, and Yu-Lien Hsieh, MD

Conclusion: In conclusion, nerve blocks with local anesthetics and steroids provide effective analgesia, reduce analgesic consumption, and lower PHN incidences in patients with acute thoracic herpes zoster. We recommend an ESP block due to its safety profile, while a PVB may offer similar analgesic benefits but with a higher risk. Further high-quality studies are necessary to confirm these findings.

Fascial plane blocks for cardiothoracic surgery: a narrative review



Paolo Capuano^{1*} , Giuseppe Sepolvere², Antonio Toscano³, Paolo Scimia⁴, Simona Silvetti⁵, Mario Tedesco⁶, Luca Gentili⁷, Gennaro Martucci¹ and Gaetano Burgio¹

In this context, fascial plane blocks are emerging as part of a multimodal analgesic in cardiac surgery and as alternatives to conventional neuraxial blocks for thoracic surgery, and there is a growing body of evidence suggesting their effectiveness and safety in providing pain relief for these procedures.

REVIEW

2015 EDIZIONI MINERVA MEDICA

Transversus abdominis plane block for analgesia after Cesarean delivery. A systematic review

P. FUSCO ¹, P. SCIMIA ², G. PALADINI ³, M. FIORENZI ², E. PETRUCCI ², T. POZONE ¹,
F. VACCA ¹, A. BEHR ⁴, M. MICAGLIO ⁵, G. DANELLI ⁶, V. COFINI ⁷, S. NECOZIONE ⁷,
G. CARTA ⁸, F. PETRINI ³, F. MARINANGELI ²

When correctly executed

Primary US-guided TAP block failure, rather than lack of its clinical efficacy, may explain why this technique, doesn't improve the quality of post-cesarean analgesia.

Mettere da mia vecchie tutti approcci arto superiore

ABDOMINAL WALL

Rectus sheath block
Ilioinguinal iliohypogastric nerve block
Subcostal TAP block
Transversus abdominis plane block
Lateral TAP block
Midaxillary transversus abdominis plane block
Anterior quadratus lumborum block
Posterior quadratus lumborum block
Lateral quadratus lumborum block
Posterior TAP block
Transversalis fascia plane block
Rhomboid intercostal subserratus plane block
Rhomboid intercostal plane block

PARASPINAL

Paravertebral block
Erector spinae plane block
Retrolaminar block
Multiple injection costotransverse block
Subtransverse process interligamentary plane block
Costotransverse foramen plane block
Midpoint transverse process to pleura block
Intertransverse process block
Thoracolumbar interfascial Plane Block (TLIP)
Lumbar multifidus plane block
Lateral TLIP or modified TLIP
Lumbar longissimus plane block
Cervical interfascial plane block
Multifidus cervicis plane block
Cervical intersemispinalis plane block
Paraspinal interfascial plane blocks
Cervical paraspinal interfascial plane blocks

CHEST WALL

Serratus anterior plane block
Deep serratus anterior plane block
Superficial serratus anterior plane block
Transversus thoracis plane block
Parasternal intercostal plane block (superficial)
Superficial parasternal intercostal plane block
Pecto-intercostal fascial plane block
Subpectoral interfascial plane block
Parasternal Pecs block
Parasternal intercostal plane block (deep)
Deep parasternal intercostal plane block
PECS I
Interpectoral plane block
Superficial pectoralis plane block
PECS II
Pectoserratus plane block
Pectoral nerves block II
Deep pectoralis plane block

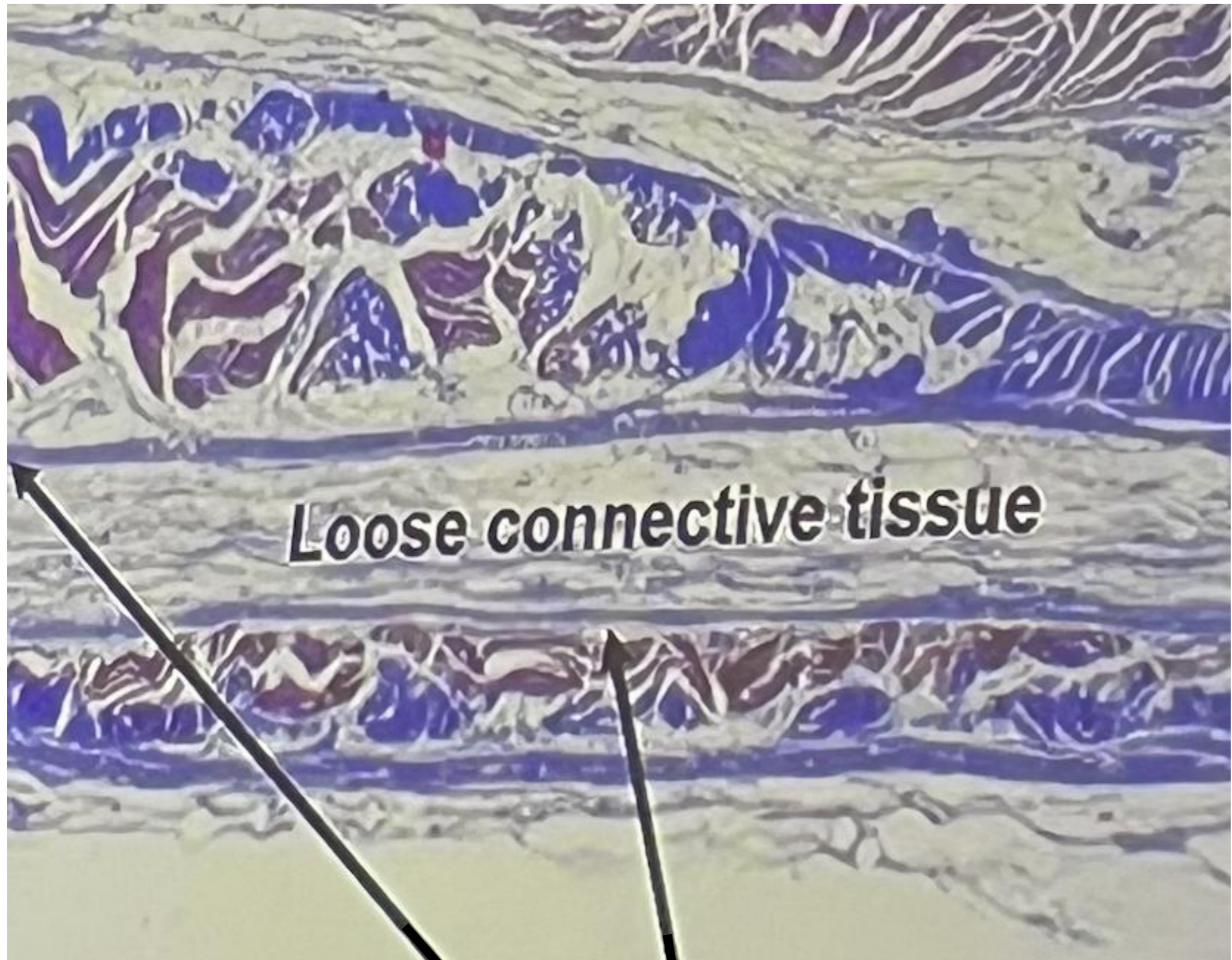
E' essenziale conoscere tutti i blocchi di fascia?

Abdominal wall	1	Rectus sheath block (98%)	Injection in the plane between the rectus abdominis muscle and posterior rectus sheath (98%)
	2	Ilioinguinal iliohypogastric nerves block (91%)	Injection in proximity to the ilioinguinal and iliohypogastric nerves, located within the plane between the internal oblique and transversus abdominis muscles in the lower quadrants of the anterior abdominal wall (93%)
	3	Transversus abdominis plane (TAP) block (95%)	Injection in the plane between the internal oblique and transversus abdominis muscles (95%)
	4	Midaxillary transversus abdominis plane block (89%)	Injection in the plane between the internal oblique and transversus abdominis muscles at the midaxillary line (81%)
	5	Subcostal transversus abdominis plane block (91%)	Injection in the plane between the internal oblique and transversus abdominis muscles along the medial costal margin in the upper quadrants of the anterior abdominal wall (80%)
	6	Anterior quadratus lumborum block (QLB) (93%)	Injection in the plane between quadratus lumborum and psoas major muscles (87%)
	7	Lateral quadratus lumborum block (QLB) (89%)	Injection in the plane between the aponeuroses of internal oblique and transversus abdominis muscles at the lateral border of the quadratus lumborum muscle (87%)
	8	Posterior quadratus lumborum block (QLB) (96%)	Injection in the plane between the quadratus lumborum and erector spinae muscles, on the posterior surface of quadratus lumborum muscle (87%)
	9	Transversalis fascia plane (TFP) block (81%)	Injection in the plane between the transversus abdominis and the transversalis fascia (75%)
	10	Rhomboid intercostal plane block (69%)	Injection in the plane between the rhomboid major and intercostal muscles (81%)
Paraspinal	11	Paravertebral block (PVB) (96%)	Injection in the paravertebral space (between the superior costotransverse ligament and parietal pleura) in the thoracic region (98%)
	12	Intertransverse process (ITP) block (58%)	Injection in the tissue between two transverse processes, posterior to the superior costotransverse ligament or halfway between the posterior aspect of the transverse process and the pleura. (86%)
	13	Erector spinae plane (ESP) block (100%)	Injection in the plane between the erector spinae muscles and the transverse process (98%)
	14	Retrolaminar block (RLB) (89%)	Injection in the plane between the erector spinae muscles and the lamina (91%)
Chest wall	15	Superficial serratus anterior plane (SAP) block (80%)	Injection in the plane superficial to the serratus anterior muscles (52%)
	16	Deep serratus anterior plane block (SAP) (91%)	Injection in the plane between the posterior surface of the serratus anterior muscle and the periosteum of the rib (76%)
	17	Superficial parasternal intercostal plane (PIP) block (90%)	Injection in the plane superficial to the internal intercostal muscles and ribs and deep to the pectoralis major muscle (83%)
	18	Deep parasternal intercostal plane (PIP) block (85%)	Injection in the plane between the internal intercostal and the transversus thoracis muscles (83%)
	19	Interpectoral plane (IPP) block (73%)	Injection in the plane between the pectoralis major and pectoralis minor muscles (94%)
	20	Pectoserratus plane (PSP) block (53%)	Injection in the plane between the pectoralis minor and serratus anterior muscles (76%)

- Thoracoabdominal nerves through perichondral approach
- External oblique fascial plane block
- Thoracolumbar interfascial plane block
- Lateral / modified thoracolumbar interfascial plane block
- Cervical interfascial plane block
- Multifidus cervicis plane block
- Cervical intersemispinalis plane block
- Paraspinal interfascial plane blocks



WHAT IS FASCIAL COMPARTMENT



Fibrotic layer that creates borders

Fibrotic
layers

FASIAE



Fluid filled
interstitial
space



Gen

MB

2011Set14

14:14

Nrv

C60



53%

IM

0,6

ITT

0,1



Paziente



Autoguard



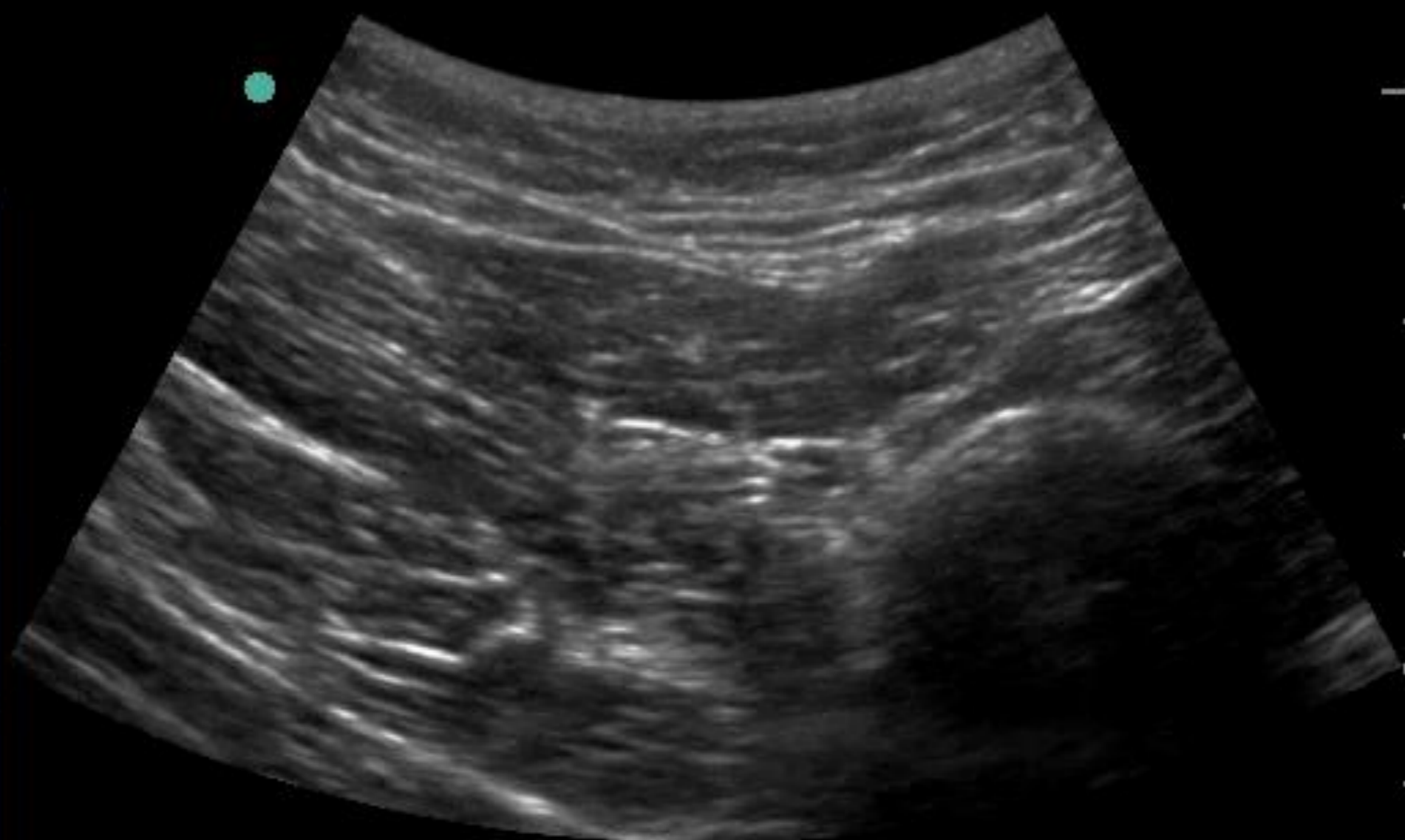
Gen



Filmato



Pag. 1/4



6,6



Guad.



Profond.



Congel.



Salva

Opzioni



Colore



Ris

MB

2014Set16 10:00

Nrv

HFL



95%

IM

0,7

ITT

0,1



Paziente



Autoguard



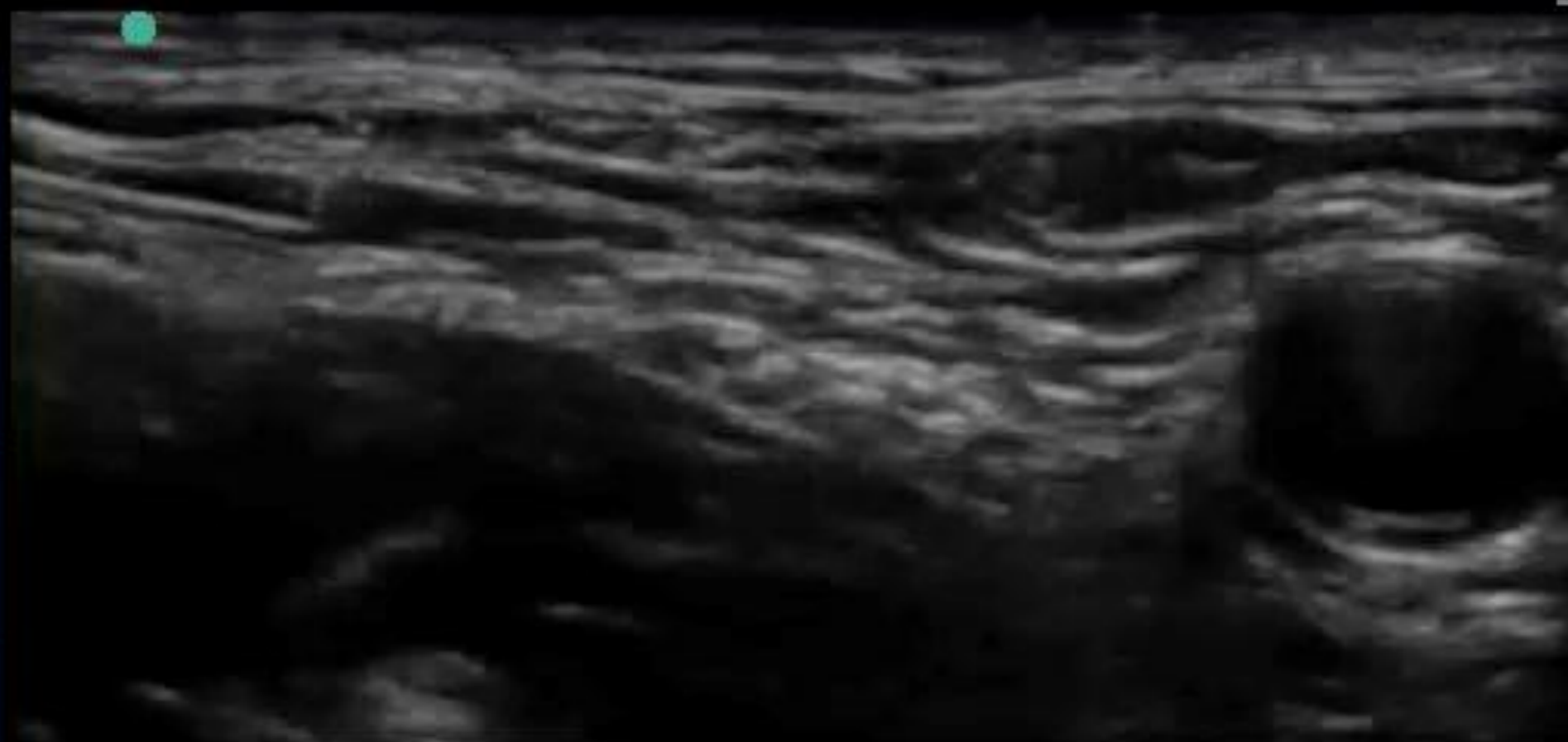
Ris



Filmato



Pag. 1/3



1,8



Guad.



Profond.



Congel.



Salva

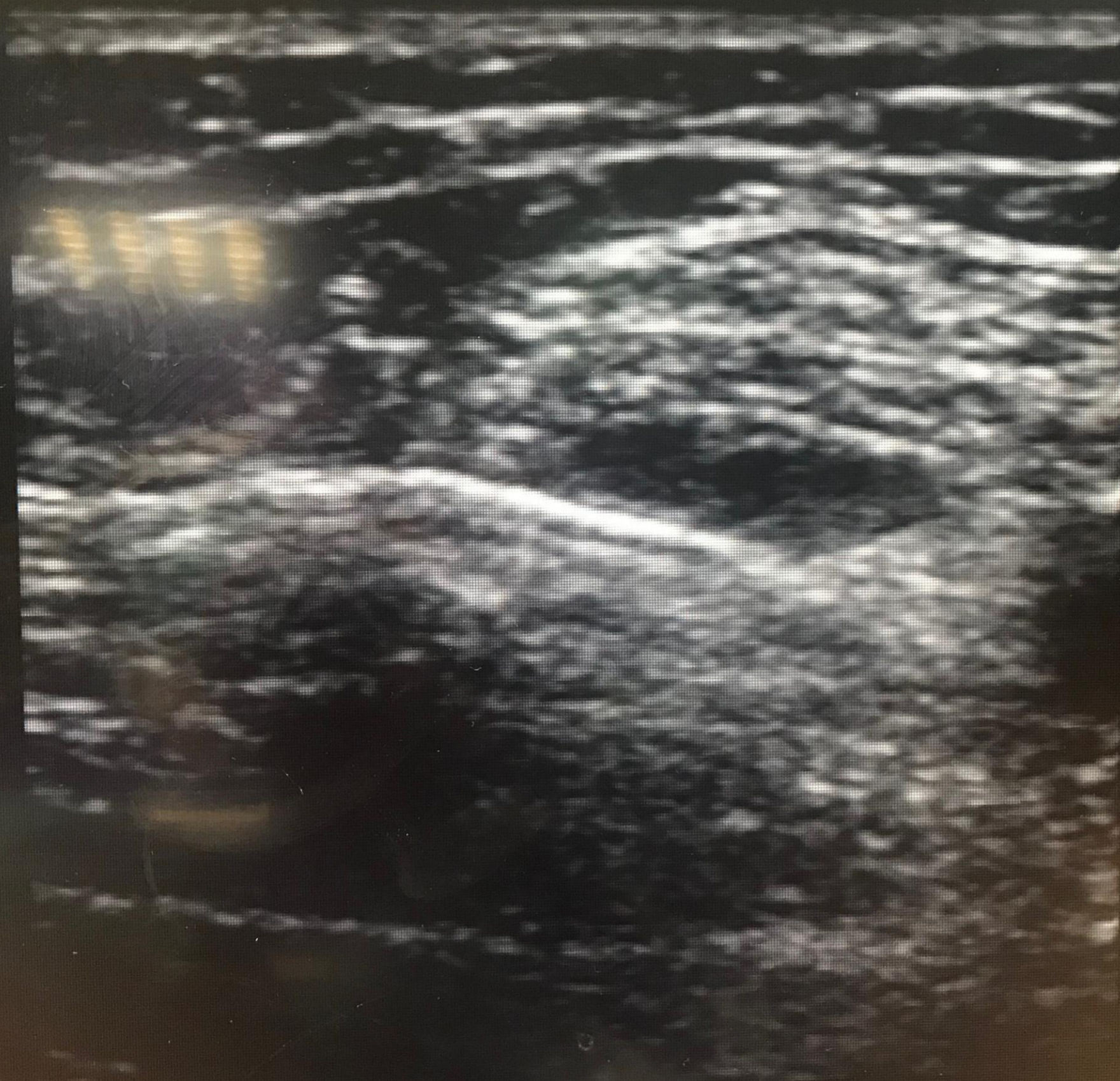
Opzioni



Modalità



2018Giu12 14:39



Nrv
L38



99%
81
0

IM
0,8

3,8



Gen

MB

2011Set14 14:14

Nrv

C60



53%

IM

0,6

ITT

0,1



Paziente



Autoguard



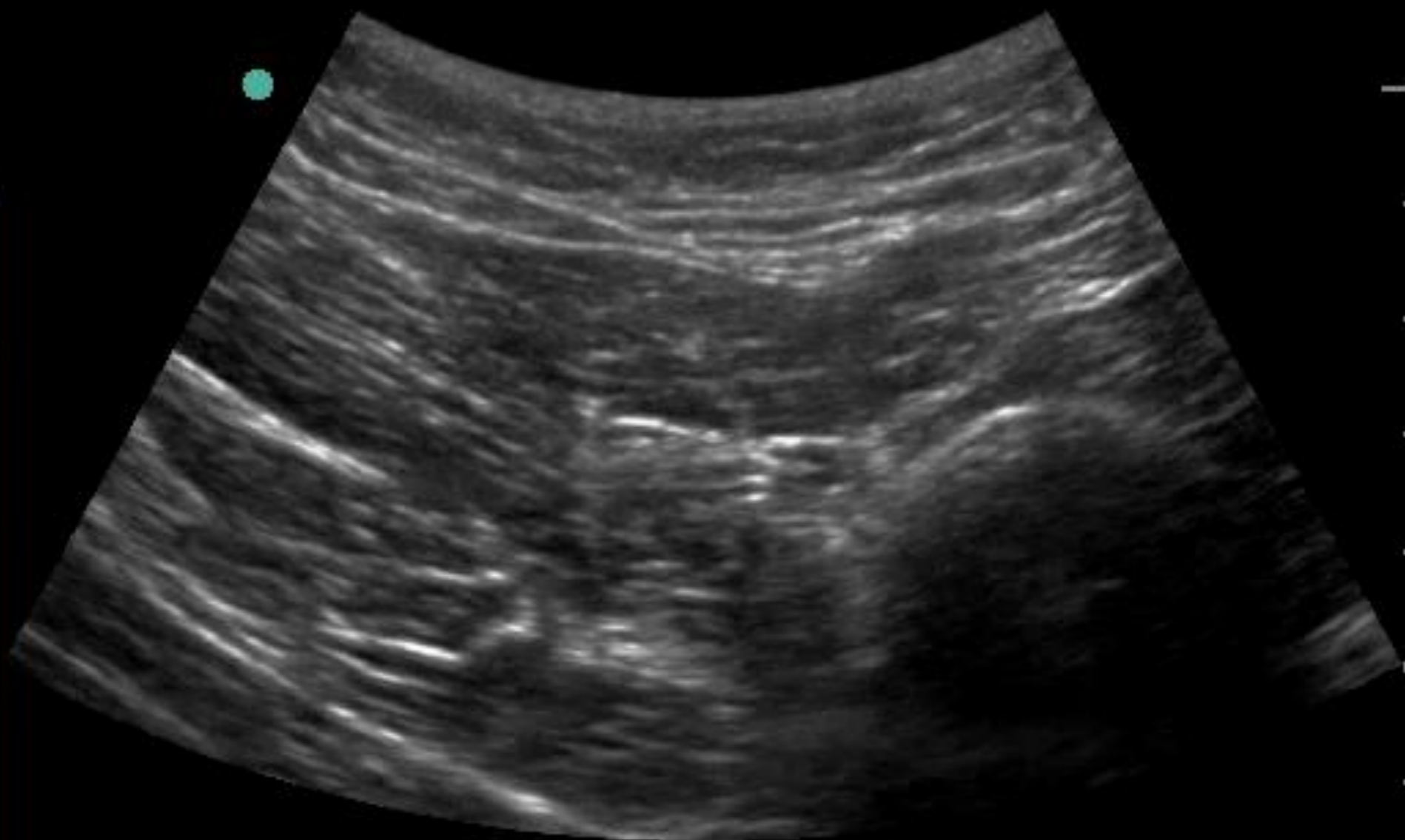
Gen



Filmato



Pag. 1/4



6,6



Guad.



Profond.



Congel.



Salva

Opzioni



Colore

pt spalla

2018Apr26 07:18

Ris
S MB

Nrv
HFL



85%

IM

0,9

ITT

0,1

A

B

2,2



Ris



0



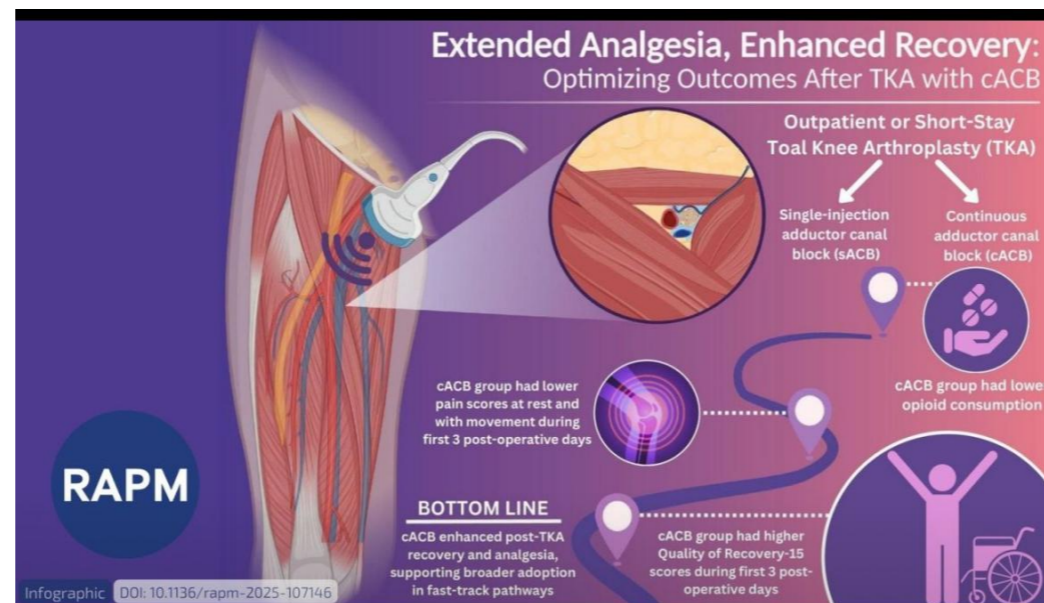
Guida

Filmati...



Duale

Pag. 1/2



How mach should we inject?

Ultrasound Evaluation of the Combined Effects of Thoracolumbar Fascia Injury and Movement Restriction in a Porcine Model

James H. Bishop¹, James R. Fox¹, Rhonda Maple¹, Caitlin Loretan¹, Gary J. Badger², Sharon M. Henry³, Margaret A. Vizzard¹, Helene M. Langevin^{1,4*}

ROLE OF THE IMMOBILIZATION

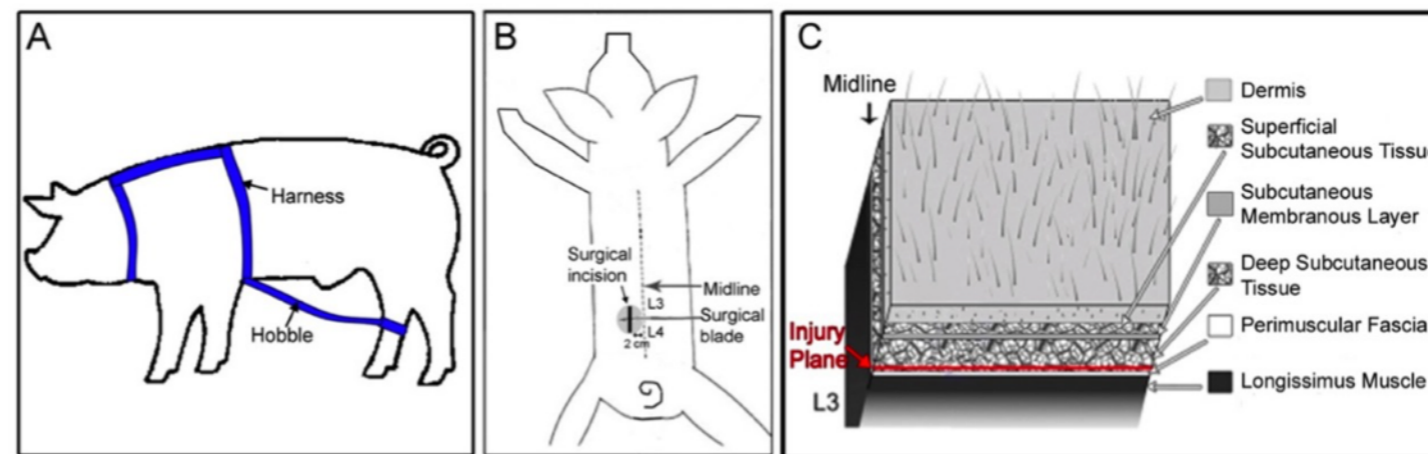


Fig 1. Movement restriction and fascia injury methods. (A) Hobble device used to induce movement restriction. (B) Location of fascia injury. (C) Location of fascia injury plane.

In pigs, a combination of fascia injury and movement restriction produced increased fascia thickness and decreased mobility in connective tissue layers similar to those observed in a study of humans with chronic LBP



Why fascial plane block in children

more favorable spread in
neonates and infants

Mechanical
Inputs

DEEP
FASCIA
COULD BE
ALTERED BY

Lack of
movement

Diabetes

Aging

Hormones



HIALURONAN



COLLAGEN I



Sonde dedicate aghi dedicati

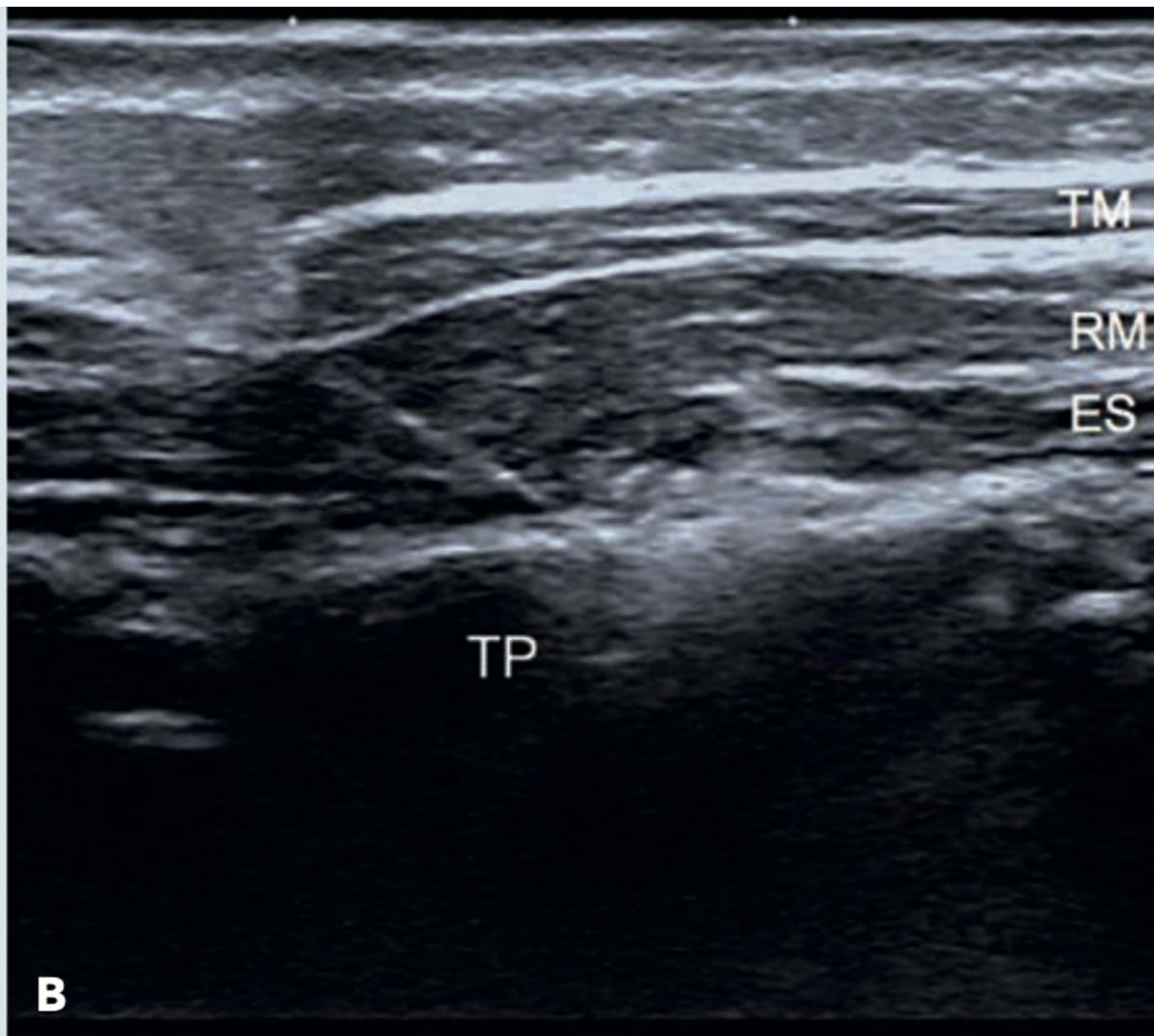


Tabella 13.1 Volumi e concentrazioni di anestetico locale (levobupivacaina o ropivacaina) nei blocchi del tronco e della parete addominale nel bambino

Blocco	Dose di anestetico locale	Concentrazione di anestetico locale	Infusione continua
TAP block	0,25-0,75 mg/kg	0,2-0,25%	0,1-0,3 mg/kg/h
II-IH block	0,25-0,75 mg/kg	0,2-0,25%	
Fascia dei retti	0,25-0,75 mg/kg	0,2-0,25%	
QL block	0,25-0,75 mg/kg	0,2-0,25%	
ESP block	0,5-1 mg/kg per lato	0,2-0,25% (0,1-0,125% per infusione continua)	0,1-0,3 mg/kg/h
SAP block	0,25-0,75 mg/kg	0,2-0,25%	
MSP block	0,5-1 mg/kg	0,2-0,25%	

Adiuvanti: clonidina/dexmedetomidina 0,5-1 µg/kg



ERAS AND FAST TRACK

- Shorter times to start physiotherapy and ambulation
- ↓ Recovery time
- ↓ Complications
- ↓ Costs
- ↓ Hospital stay

ADVERSE CEREBRAL EFFECTS OF ANAESTHESIA ON OLD PEOPLE

P.D . Bedford

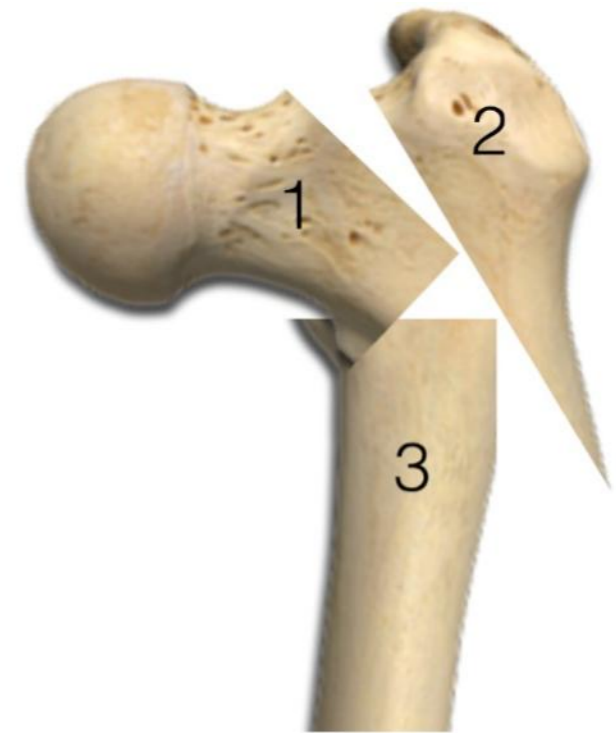
M.D Leeds M.R.C.P.

Consultant Physician to the Cowley Road Hospital, Oxford

1. Operations on elderly people should be confined to unequivocally necessary cases
2. During and after operation under anaesthesia, it is important that the blood-pressure, haemoglobin concentration, and oxygenation of the blood should be kept at optimal levels.
3. “Hypotensive surgery” is absolutely contraindicated for the elderly. The effect of posture on the blood-pressure of patients given muscle-relaxant drugs must be appreciated and carefully observed

The Lancet 1955 250-263

ERAS AND FAST TRACK STATE OF NECESSITY



It is essential to reduce
invasiveness and promote
early recovery.



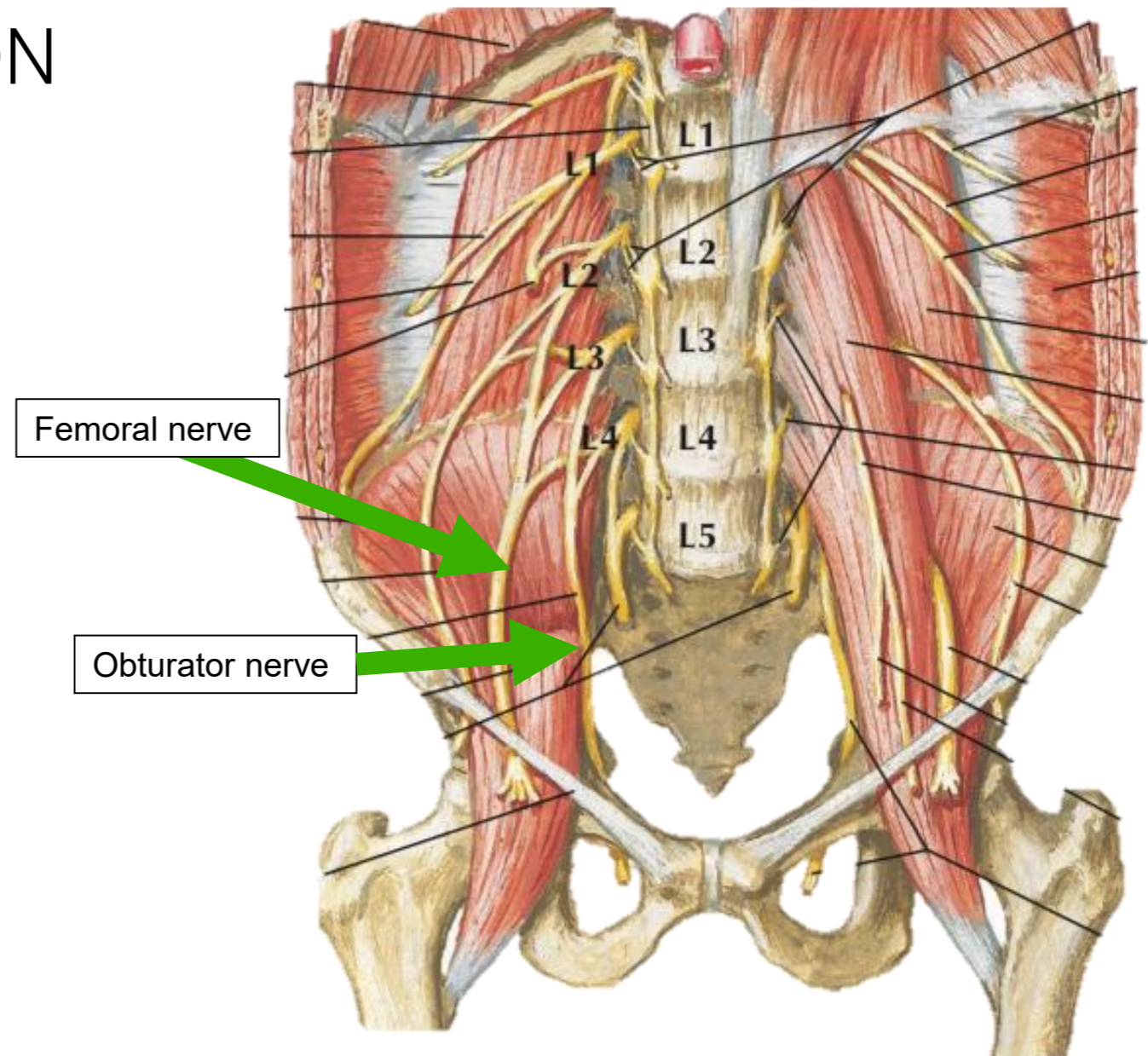
HIP INNERVATION

ANTERIOR HIP
CAPSULE

LUMBAR PLEXUS

Femoral+
Obturator

Short, Anthony J., et al. "Anatomic Study of Innervation of the Anterior Hip Capsule: Implication for Image-Guided Intervention." *Regional anesthesia and pain medicine* 43.2 (2018): 186-192.



HIP INNERVATION

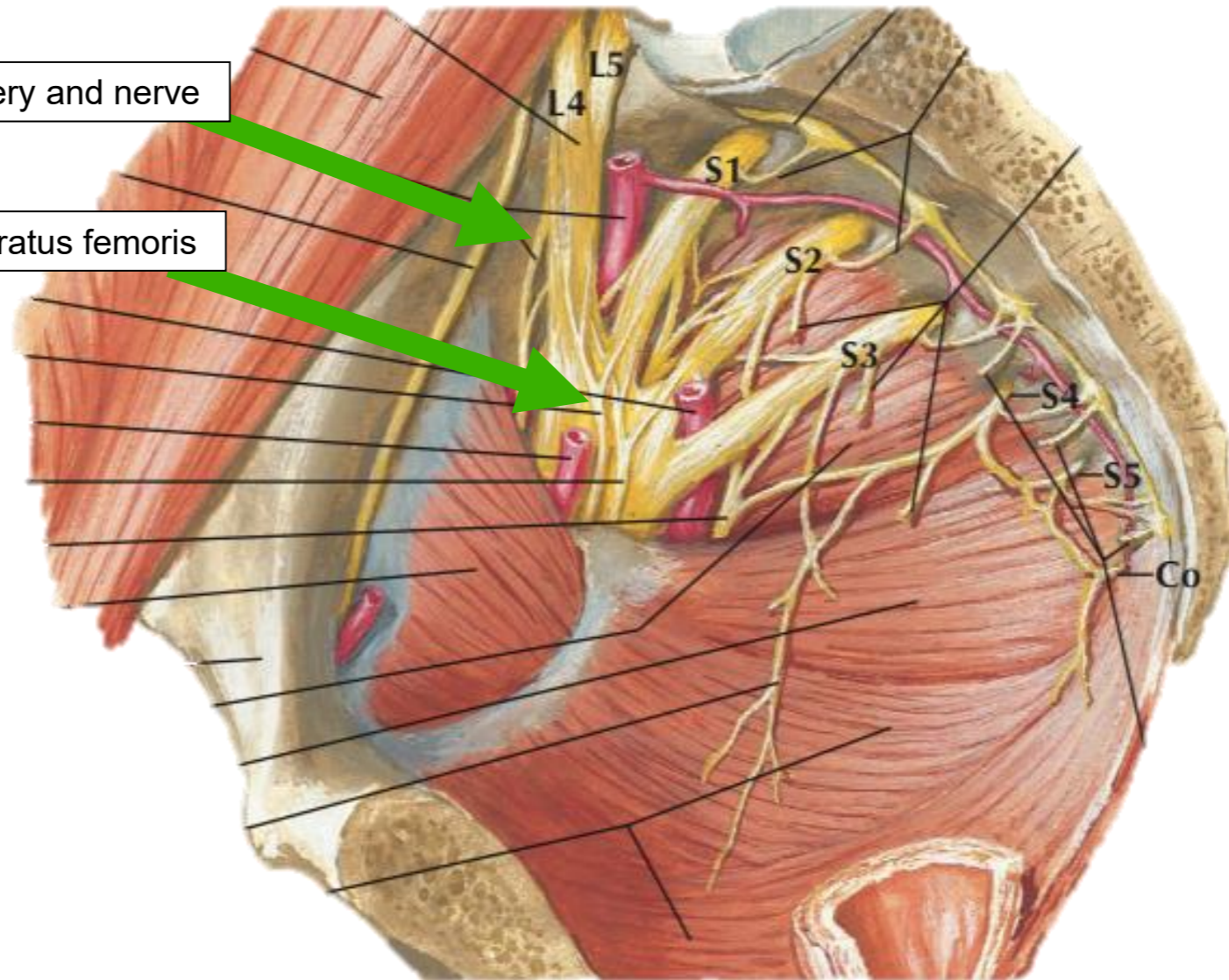
POSTERIOR HIP
CAPSULE

SCIATIC PLEXUS

Sciatic+
Sup. Gluteal n.+ QuadRaTus
Femoris n.

Superior gluteal artery and nerve

Nerve to quadratus femoris



Birnbaum, K., et al. "The sensory innervation of the hip joint-an anatomical study." Surgical and Radiologic Anatomy 19.6 (1997): 371-375.

The OLD NEWS

Epidural

Paravertebral

Lumbar plexus

LIA

Femoral

Fascia iliaca

Sciatic

Obturator

The news

LIA

QUADRATUS LUMBORUM (1-2-3/Transmuscular -Intramuscular - Paramedian sagittal oblique)

ERECTOR SPINAE (1-2)

ADDUCTOR CANAL BLOCK

PENG

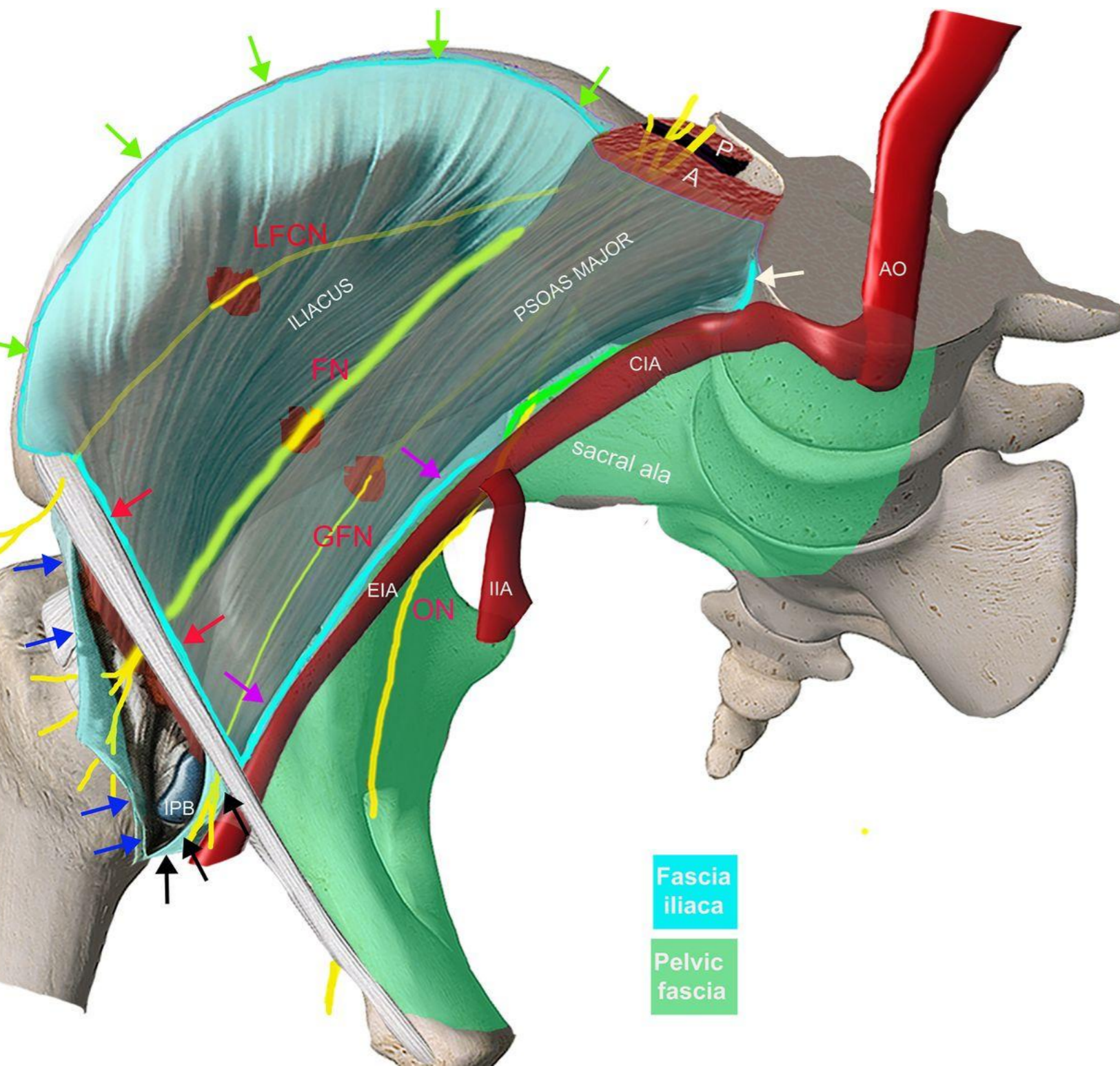
Importance of the correct volume

Importance of the correct volume

The effect of the volume of supra-inguinal injected solution on the spread of the injectate under the fascia iliaca: a preliminary study

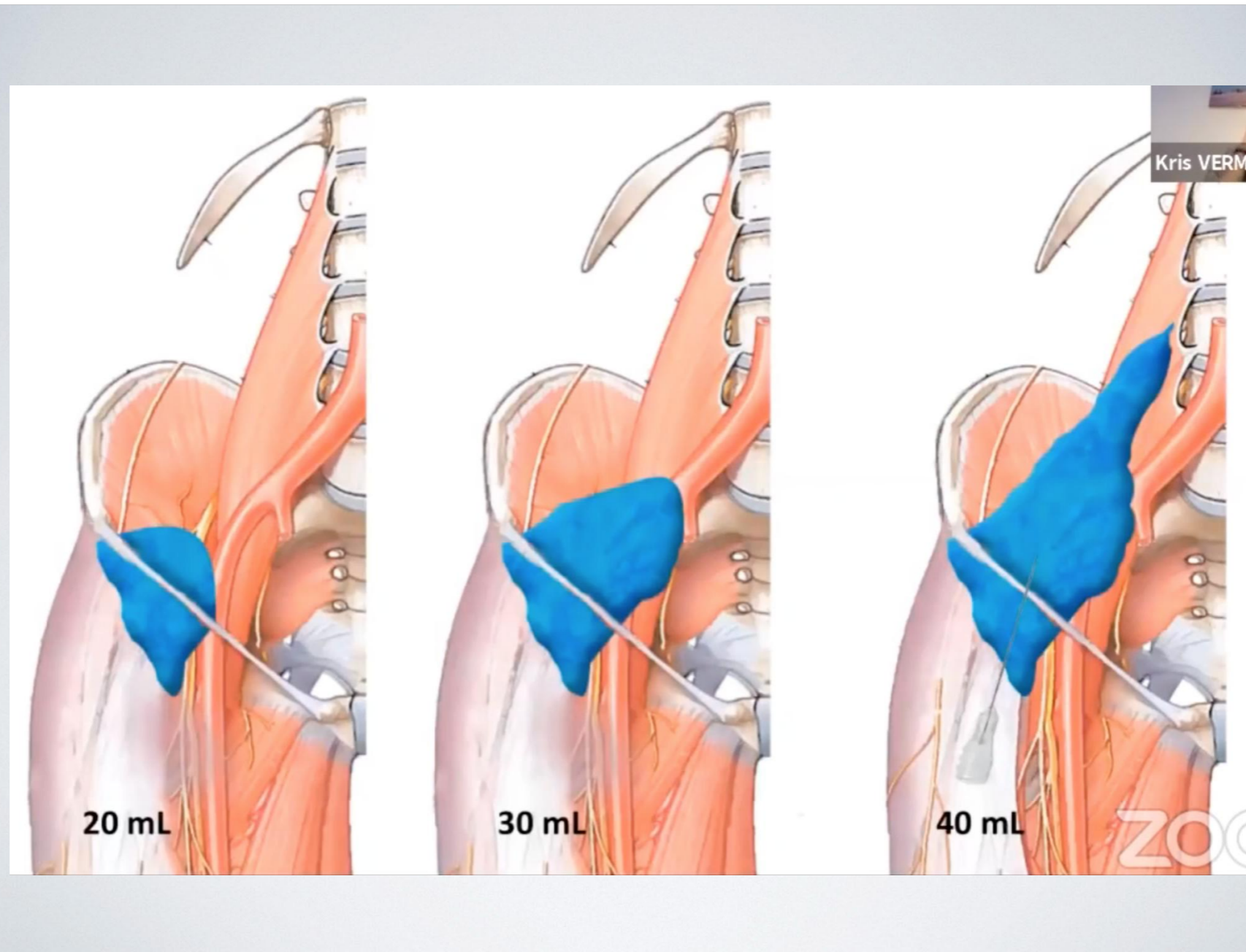
Kris Vermeylen¹ · F. Soetens¹ · I. Leunen¹ · A. Hadzic^{2,3} · S. Van Boxtael⁴ · J. Pomés⁵ · A. Prats-Galino⁶ · M. Van de Velde⁷ · A. Neyrinck^{7,8} · X. Sala-Blanch^{9,10}

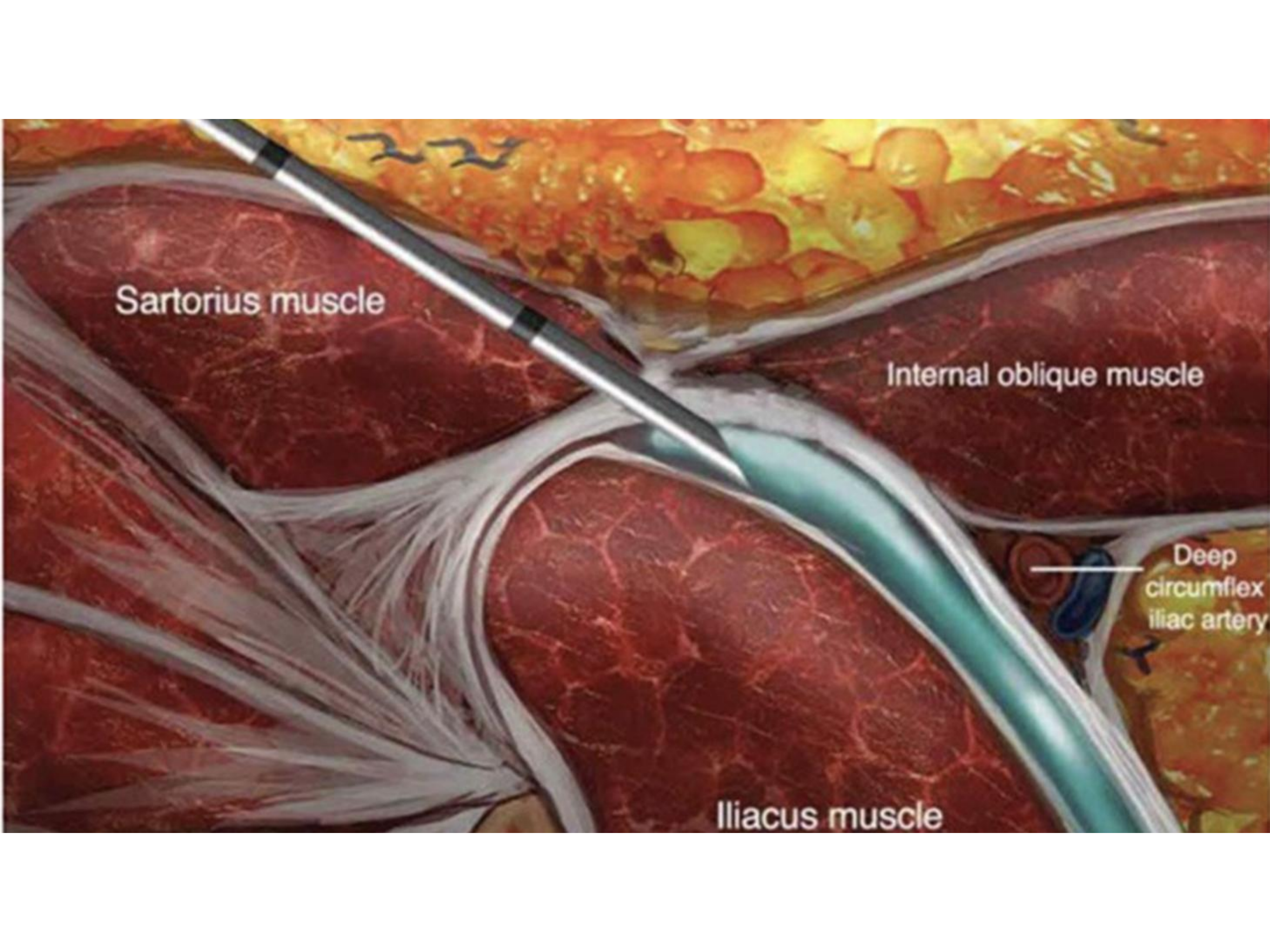
J Clin Anesth. 2021 Feb;68:110100. doi: 10.1016



FASCIA ILIACA COMPARTMENT

Supra-inguinal fascia iliaca block





Sartorius muscle

This anatomical illustration shows a cross-section of the right half of a human pelvis and upper thigh. The Sartorius muscle is depicted as a broad, fan-shaped muscle on the left side, with its fibers converging towards the knee. The Internal oblique muscle is shown as a large, reddish-brown muscle mass on the right side. The Iliacus muscle is a thick, cylindrical muscle bundle running diagonally from the upper right towards the center. The Deep circumflex iliac artery is shown as a blue, tubular structure passing behind the Iliacus muscle. A surgical instrument, possibly a retractor or dissector, is shown entering from the top left, holding back the Sartorius muscle to provide a clear view of the internal structures. The overall color palette is dominated by the reds of the muscle and the yellows of the subcutaneous fat.

Internal oblique muscle

Deep
circumflex
iliac artery

Iliacus muscle

REGIONAL ANESTHESIA AND ACUTE PAIN

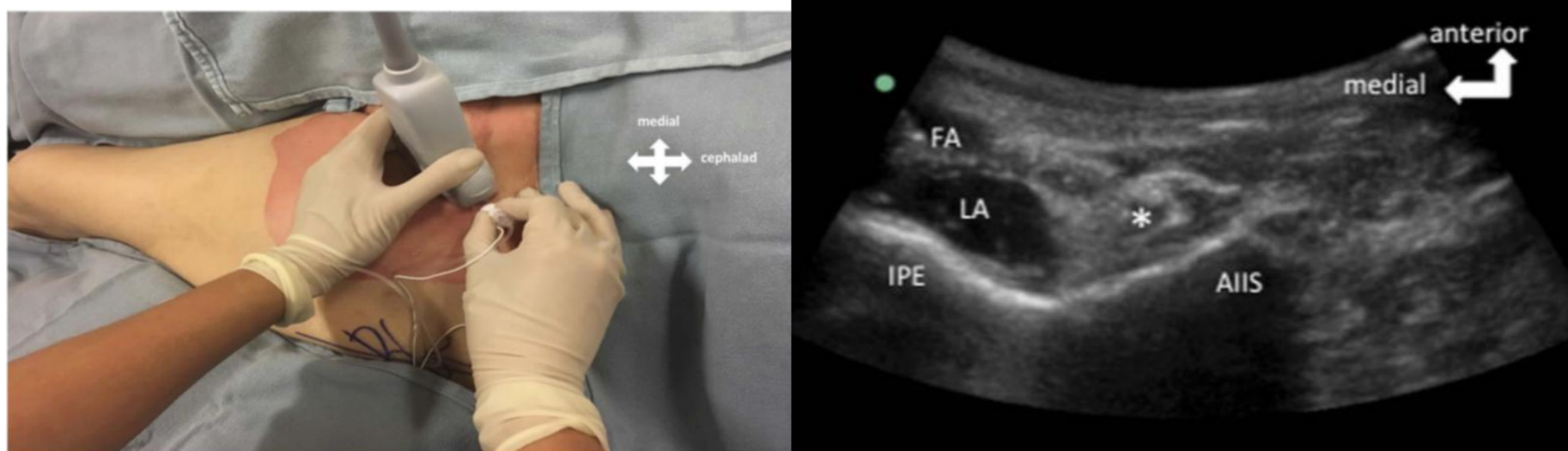
BRIEF TECHNICAL REPORT

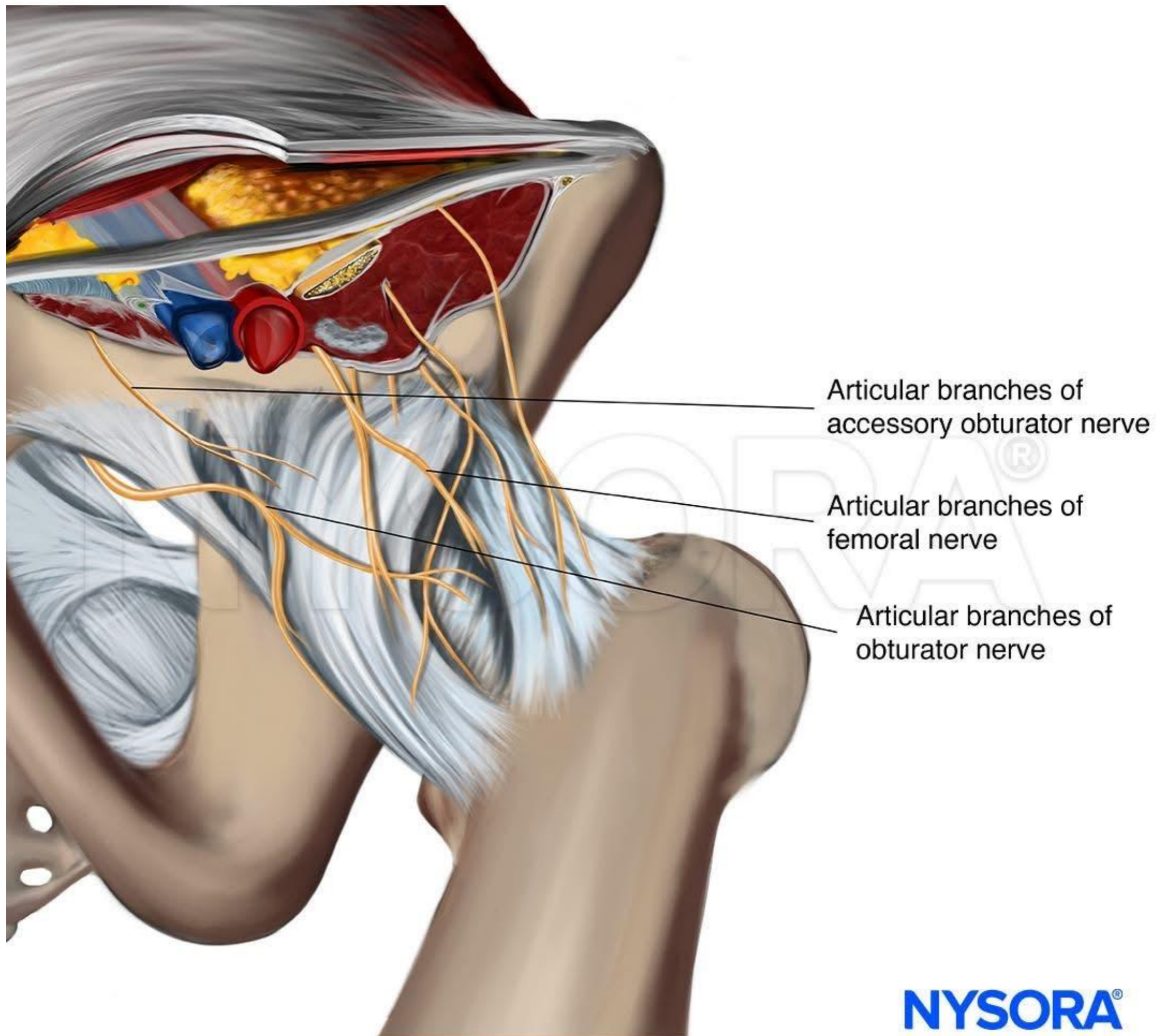
Pericapsular Nerve Group (PENG) Block for Hip Fracture

Laura Girón-Arango, MD,† Philip W.H. Peng, MBBS, FRCPC, Founder (Pain Med),*†*

Ki Jinn Chin, MBBS, MMed, FANZCA, FAMS, FRCPC,†*

Richard Brull, MD, FRCPC, and Anahi Perlas, MD, FRCPC*†*

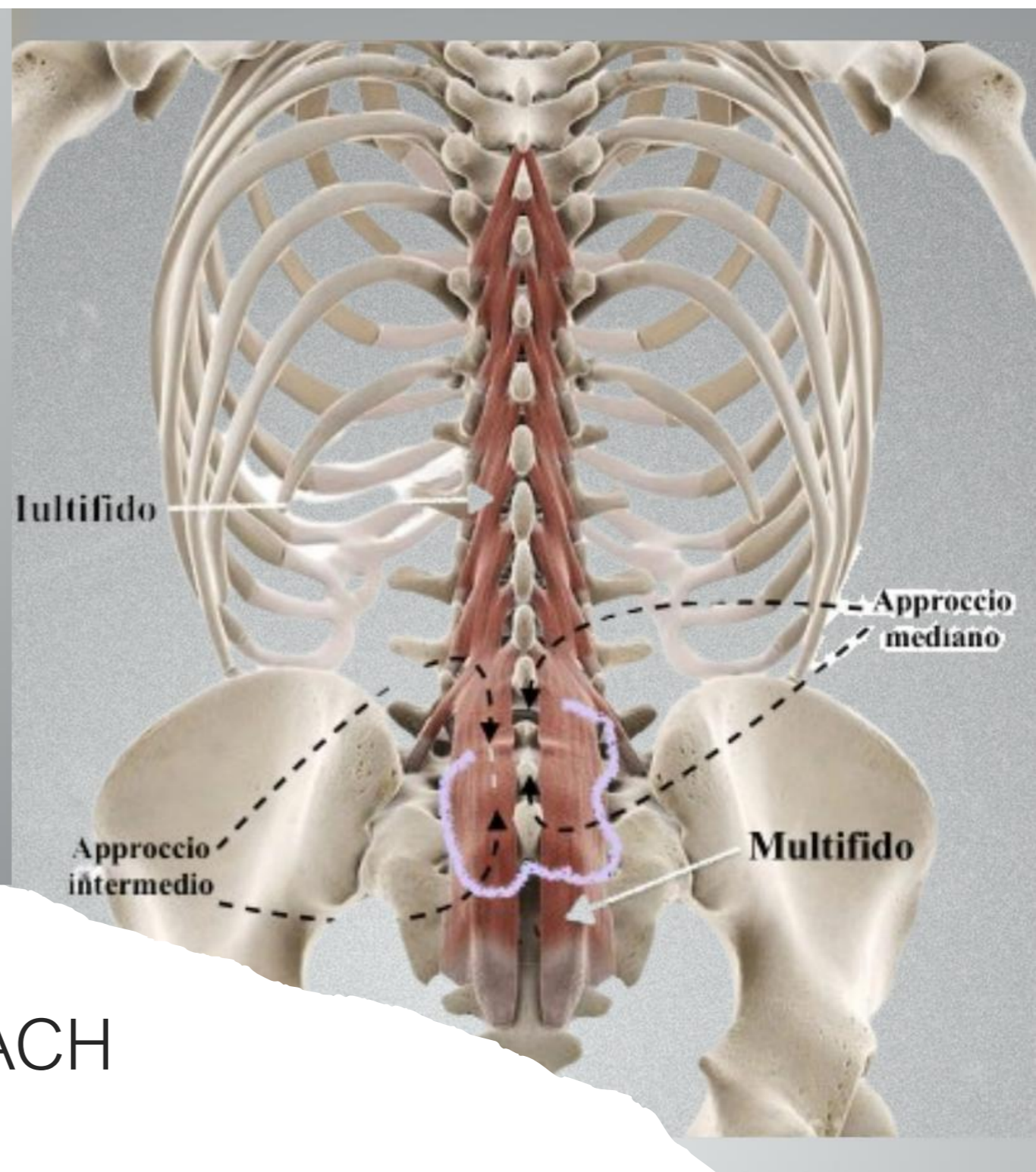
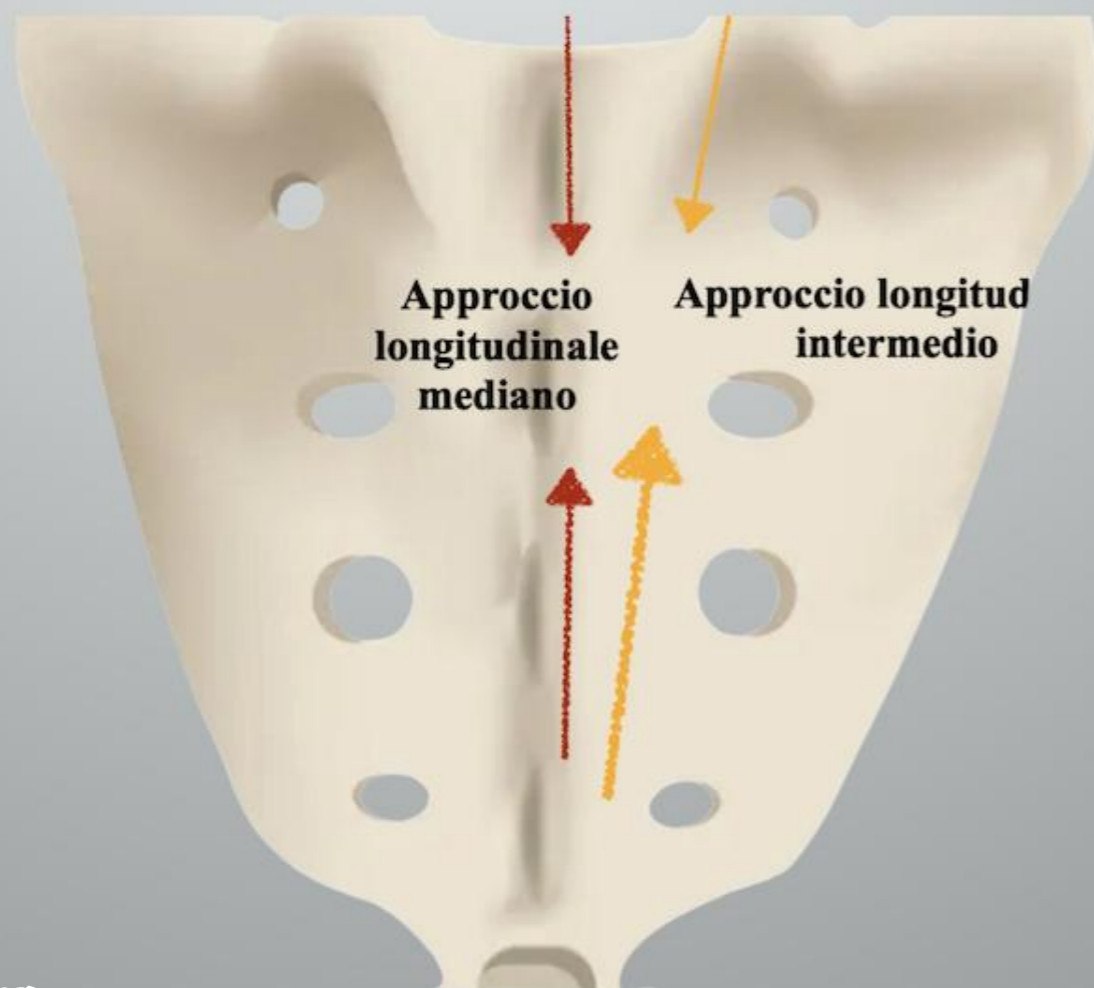




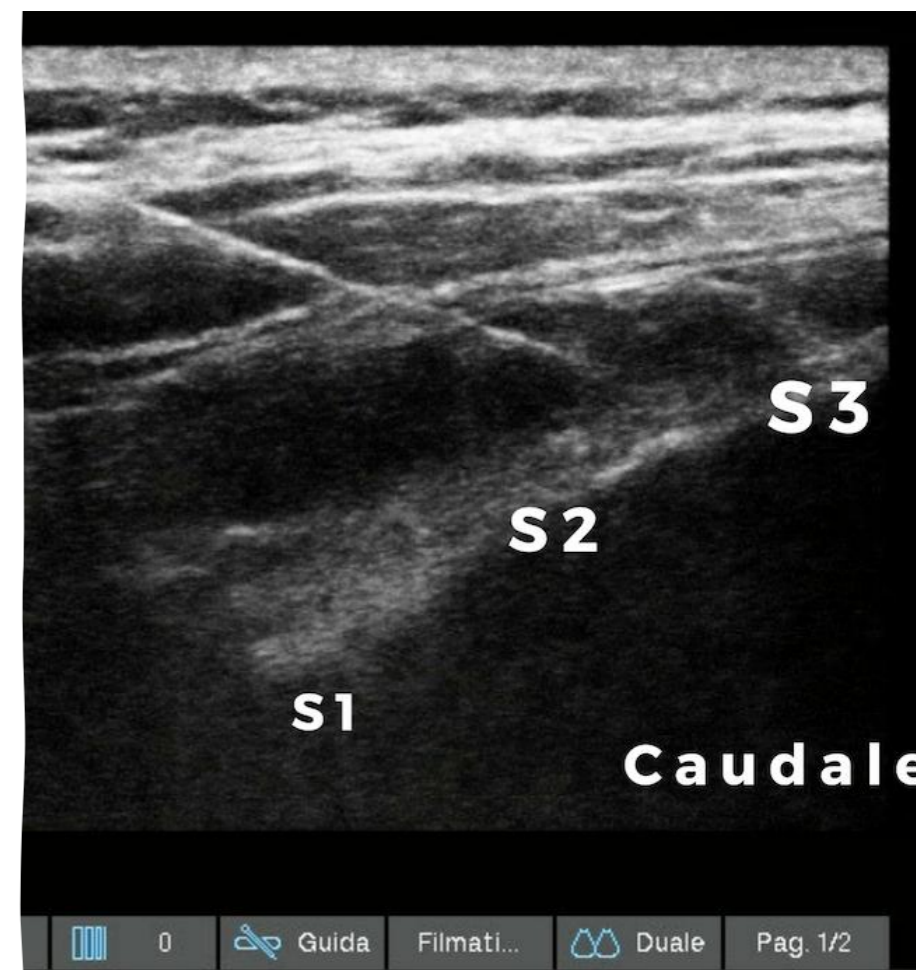
The LATEST news

**LUMBAR
ESP BLOCK**

**SACRAL
ESP BLOCK**



SACRAL ESP BLOCK APPROACH



MEDIAN APPROACH



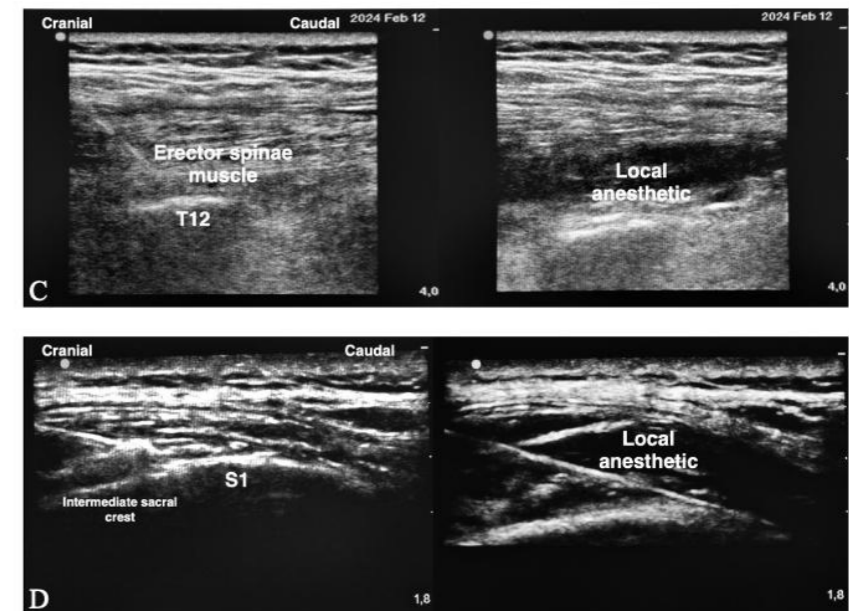


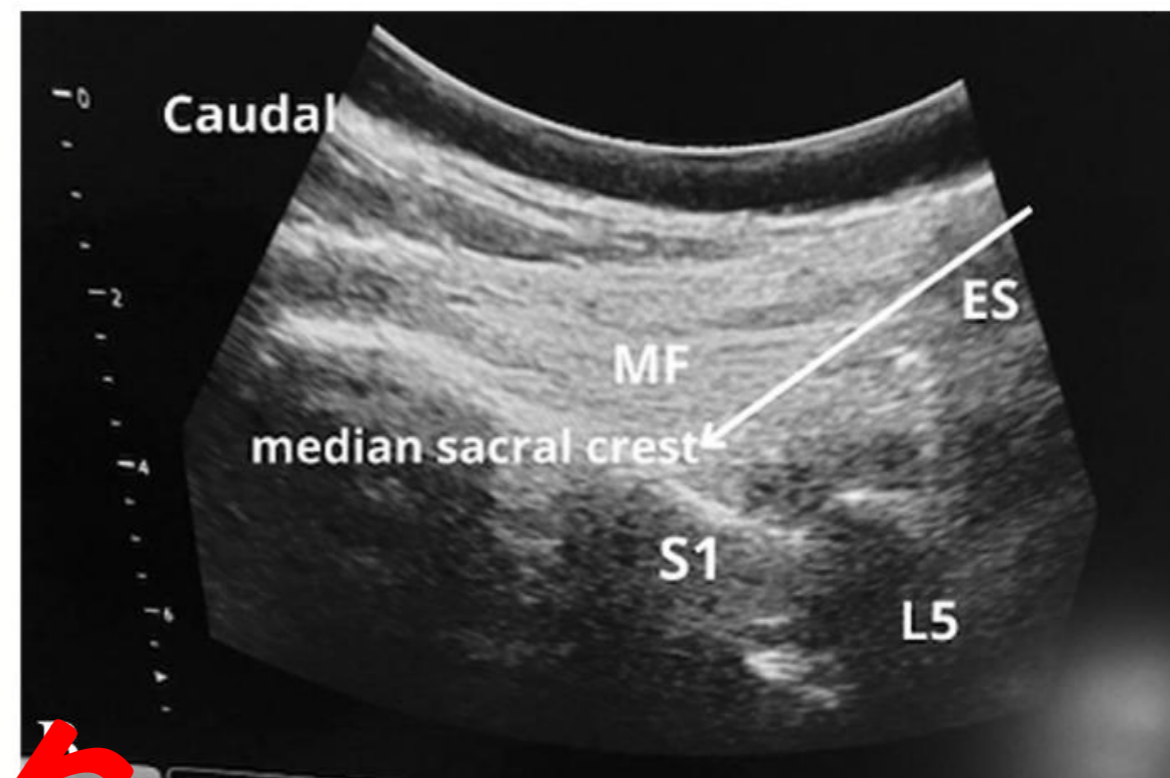
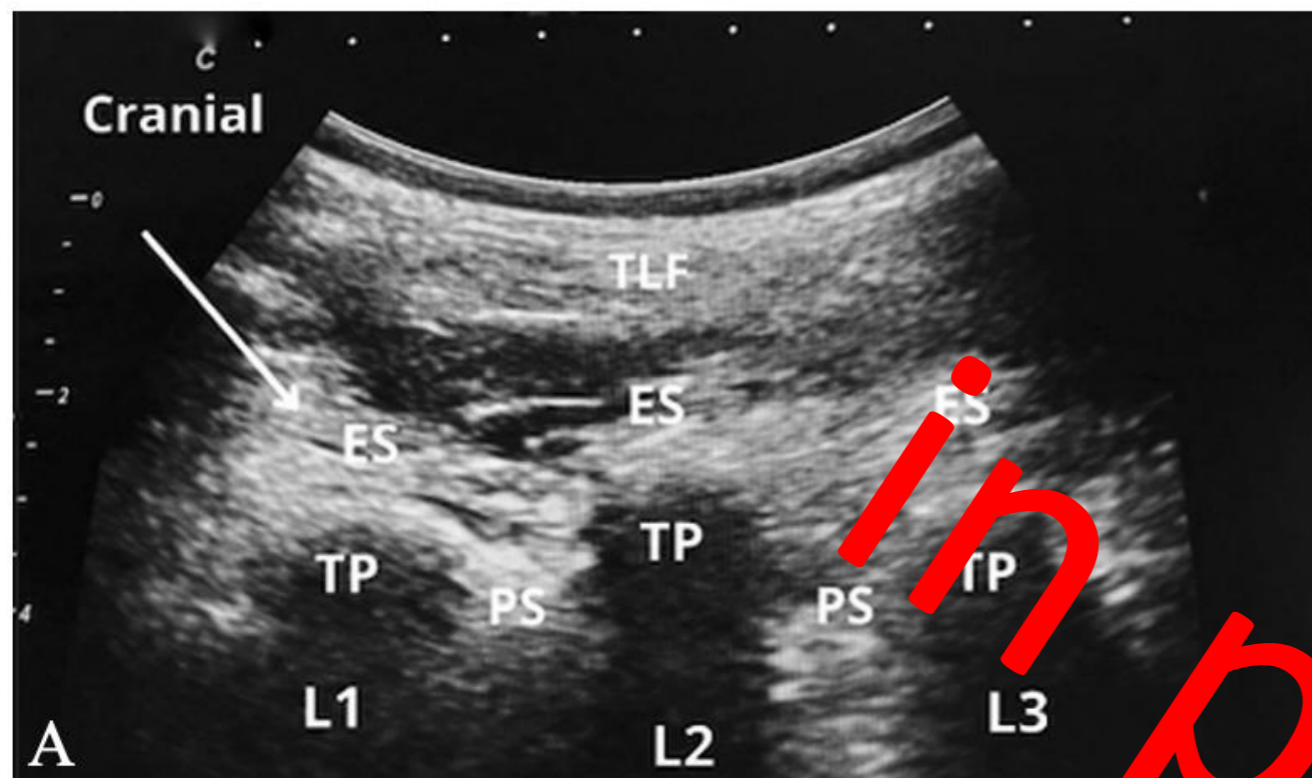
Combined lumbar and sacral erector spinae Block for hip fracture pain and surgery

MINERVA ANESTESIOLOGICA

Francesco MARRONE , Pierfrancesco FUSCO, Saverio PAVENTI 1, Marco TOMEI, Simona LOLLI , Elisa CHIRONNA , Carmine PULLANO

Lumbar and sacral ESP Blocks offer an alternative without the use of neuraxial techniques or opioid administration





Femoral nerve and lumbo-sacral erector spinae plane blocks in hip fracture: an alternative to neuraxial anesthesia?

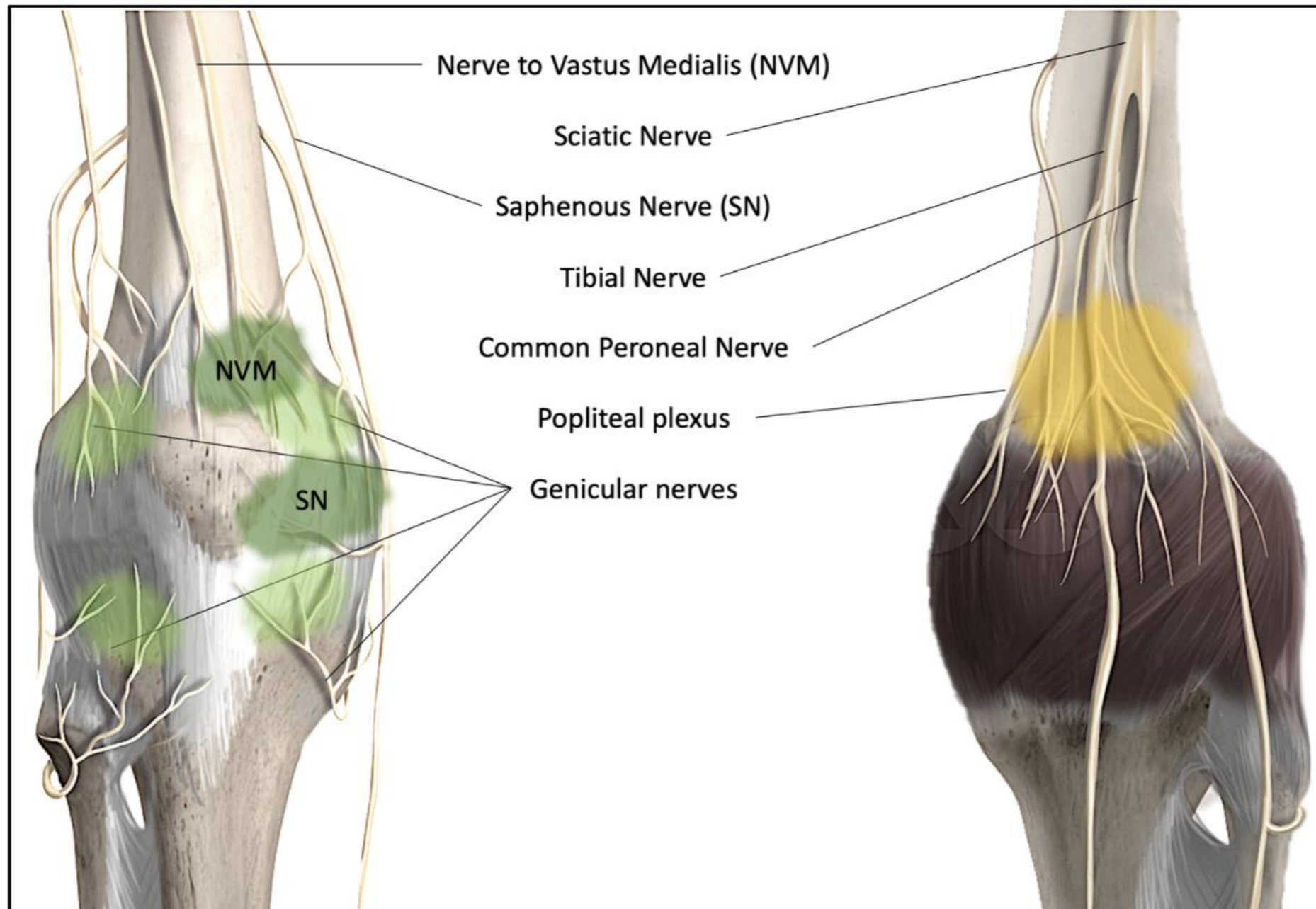
Fattorini F, Alfonsi B, Fusco P, Pullano C, Perna R, Marone F.

MINERVA ANESTESIOLOGICA

LETTERS TO THE EDITOR

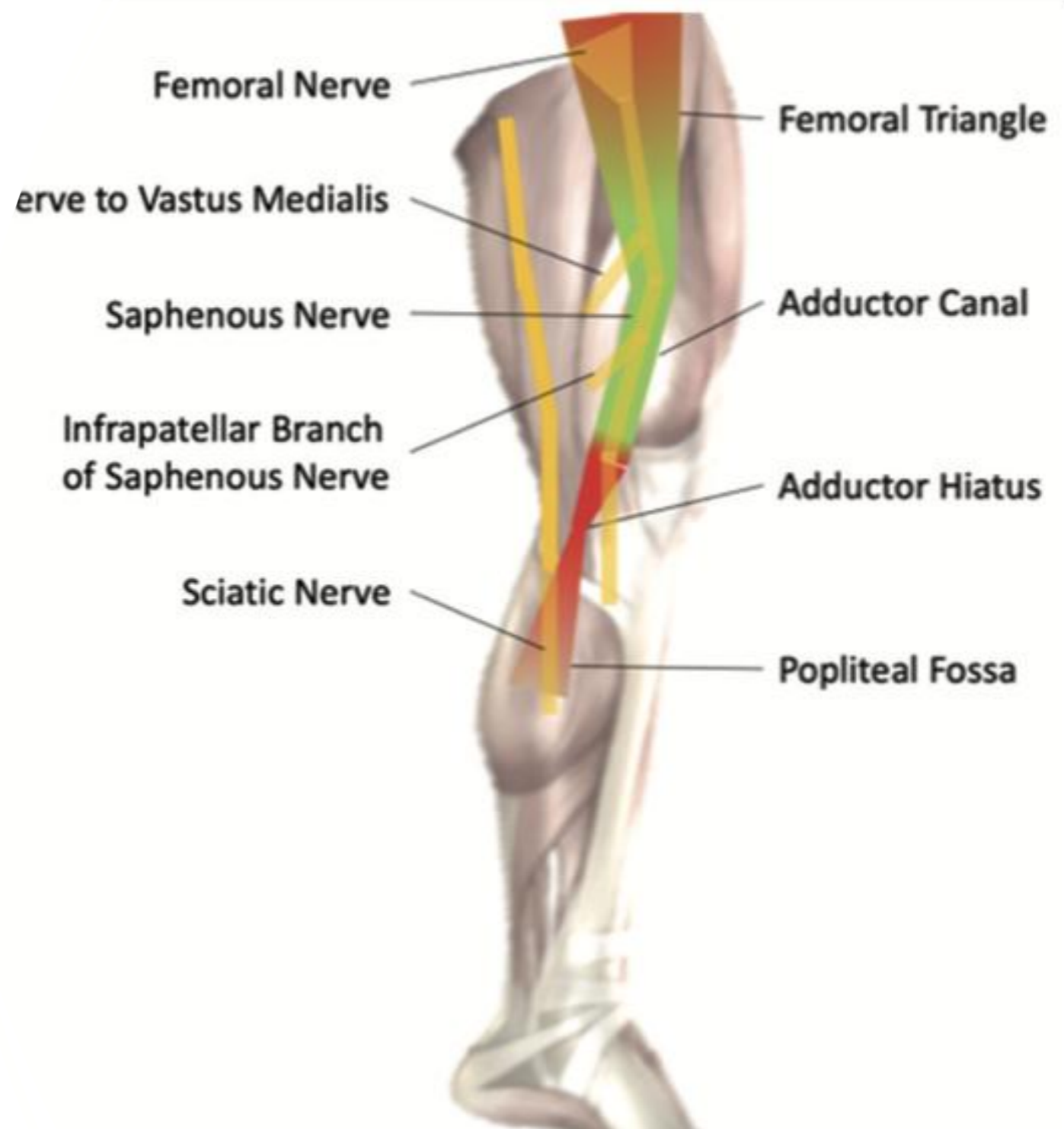
SACRAL ESP BLOCK

- Pooled data from high-quality RCTs show that combining SESPb with spinal anesthesia in patients undergoing elective surgery significantly reduces the episodes of rescue **opioid analgesics administration** in the postoperative period.
 - Additionally, patients receiving SESPb reported significantly **improved postoperative pain control 24 hours after surgery.**
- Based on the observed benefits, including SESPb alongside spinal anesthesia can be **considered for patients undergoing elective surgeries.**





Continuity of the adductor canal with the femoral triangle superiorly and the adductor hiatus and popliteal fossa inferiorly

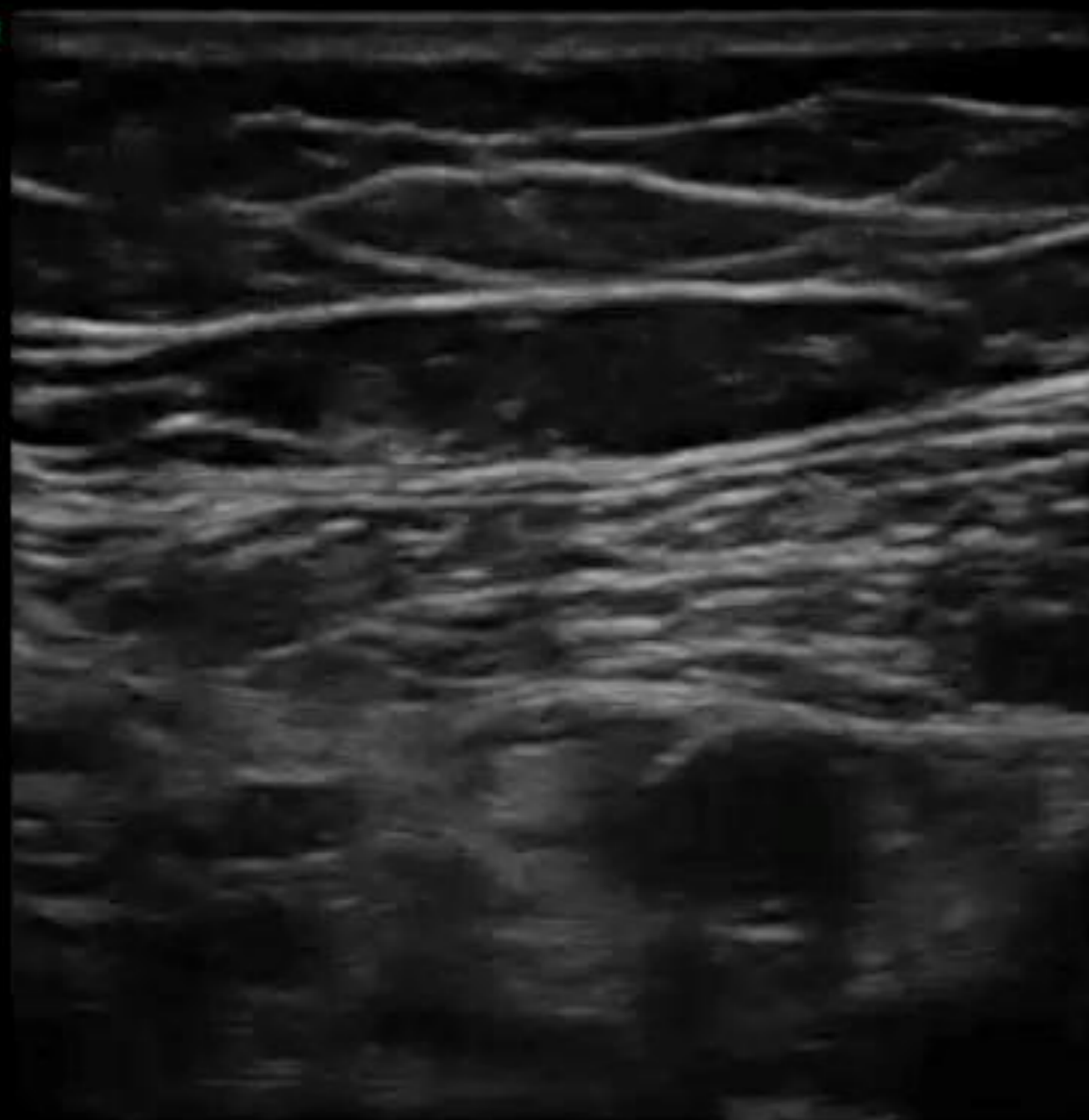




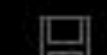
2018Apr18 13:09

Ris
S

MB



Nrv
HFL



79%

IM

0,7

ITT

0,1

A

B

4,0



Ris



0



Guida



MB On



Duale

Pag. 1/2

regional anesthesia & pain medicine

The “inverse double bubble” sign for an effective adductor canal block: a novel approach for the ultrasound confirmation of being on the right site

P. Fusco, S. Di Carlo, P. Sciminà, E. Petrucci, G. Deqan, F. Marinangeli

Reg Anesth Pain Med April 2019 Vol 44 No 4

FPBs for TKA

Compartment	Techniques
Anterior Compartment	<ul style="list-style-type: none"> - Adductor Canal Block (ACB) (including: femoral triangle block, proximal femoral triangle, distal femoral triangle, true adductor canal, proximal adductor canal, distal adductor canal) -Subsartorial Plexus Block - Dual Subsartorial Block - Distal Subsartorial Compartment Block - PASC Block - TIPS Block
Posterior Compartment	<ul style="list-style-type: none"> - Popliteal Plexus Block (PPB) - IPACK Block - HI-PAC - SPANK - Gastrosoleus Interfascial Plane Block - Parasacral Ischial Plane (PIP) Block
Other Techniques	<ul style="list-style-type: none"> -LUMBAR ESP Lumbar ESP - Sacral ESP - Knee PVI

the multiple subsartorial techniques, (ACB), are currently the most effective for the anterior compartment

From the evidence examined so far, it is clear that achieving comprehensive postoperative analgesia after TKA requires an approach that integrates three injections: one for the anterior compartment, one for the posterior compartment, and a third for the cutaneous branches

The popliteal plexus block seems promising.

BJA

British Journal of Anaesthesia, 134 (2): 510–522 (2025)

doi: 10.1016/j.bja.2024.10.041

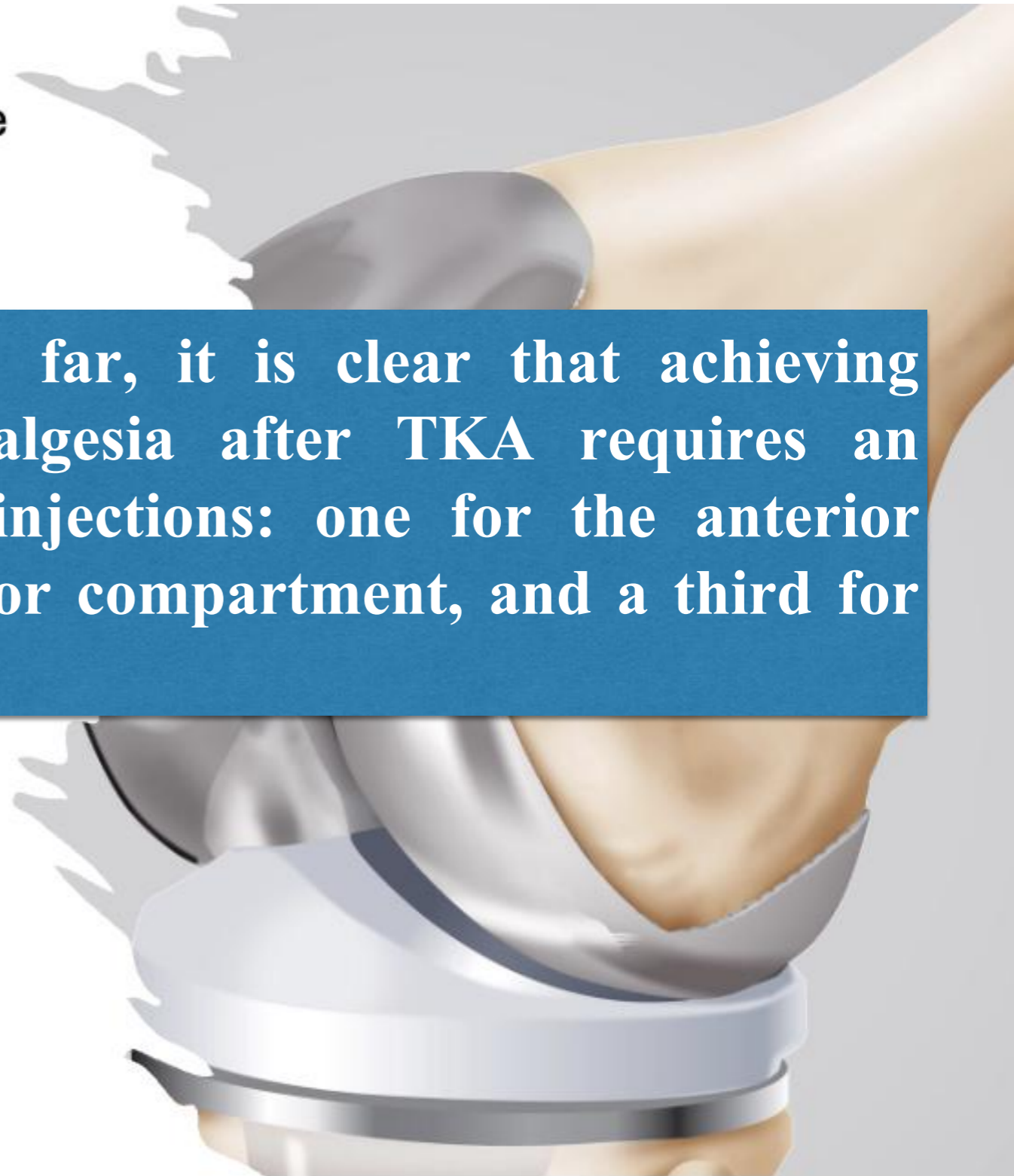
Advance Access Publication Date: 2 January 2025

Review Article

REGIONAL ANAESTHESIA

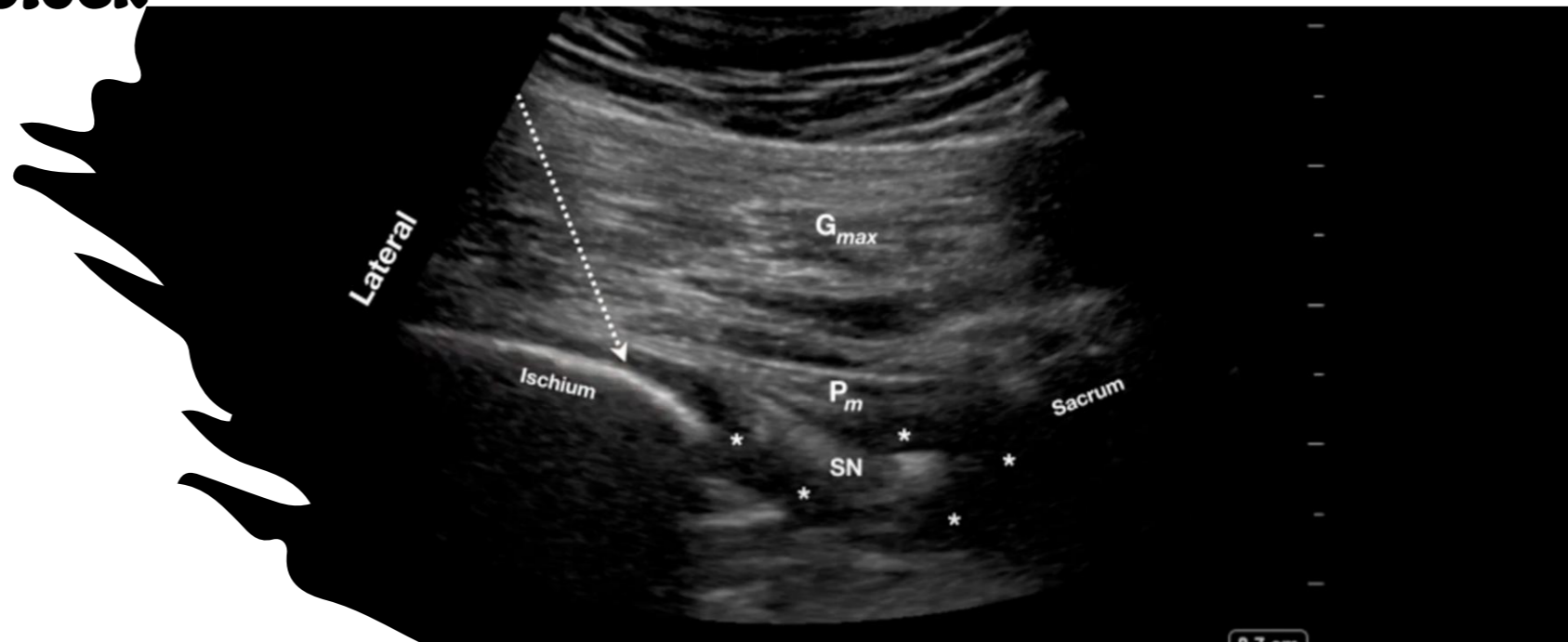
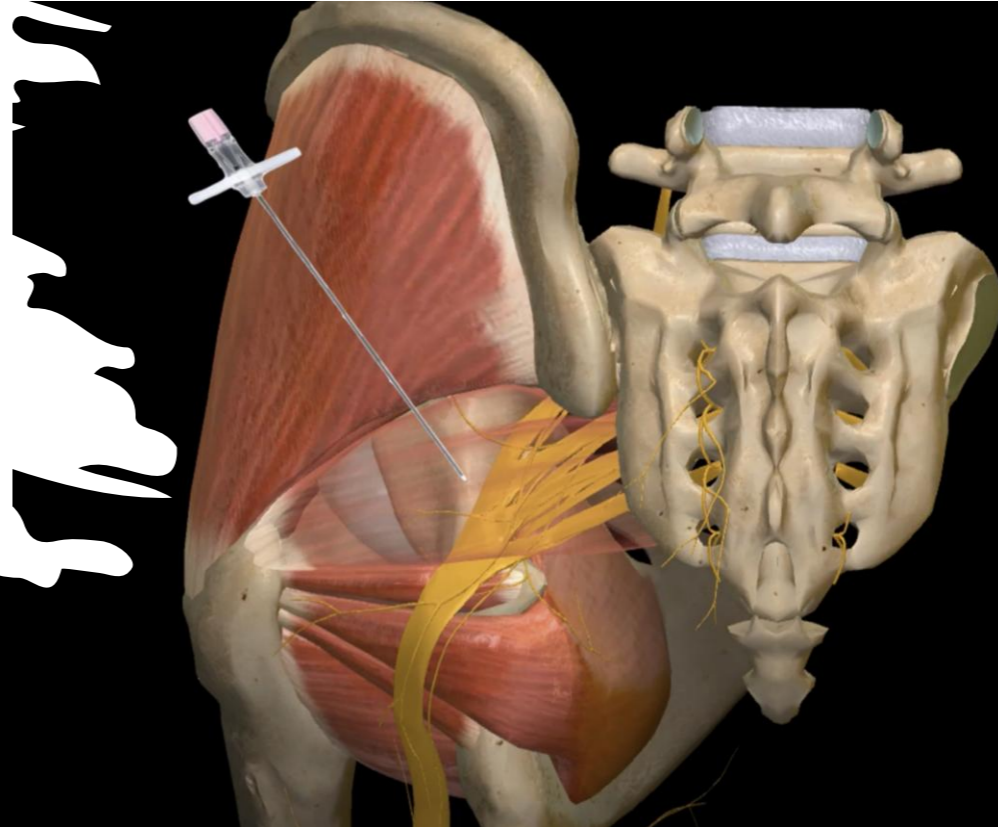
Motor-sparing regional anaesthesia for total knee arthroplasty: a narrative and systematic literature review

Leigh White^{1,2,*}, Michael Kerr^{3,4,5}, Christopher Thang^{1,2,5} and Amit Pawa^{6,7}



n e w s

Parasacral Ischial Plane (PIP) Parasacral Interfascial Plane block



Sacral plexus block. what if I cannot see the sciatic nerve?

MINERVA ANESTESIOLOGICA

Fusco P, Nazzarro E, Petroni GM, DE Sanctis F, Maggiani C.

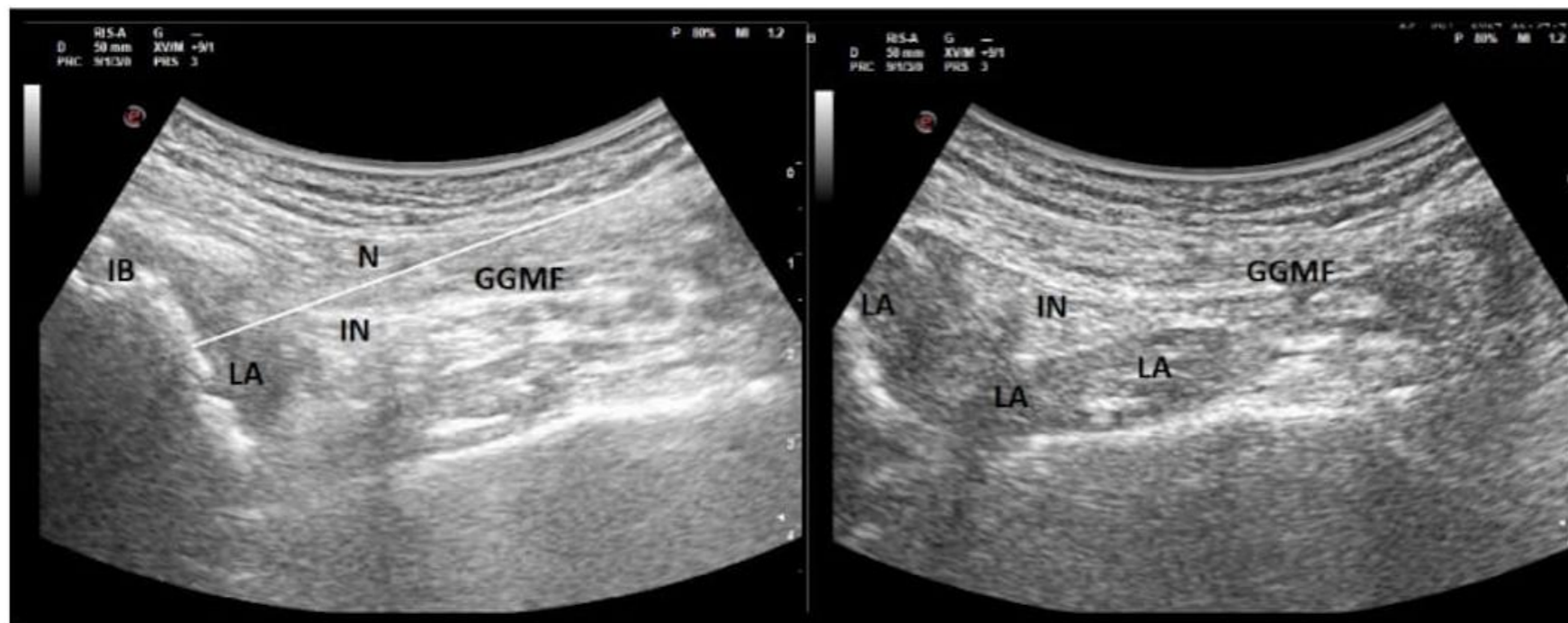


Fig 1.A

Fig 1.B

The role of fascia in locoregional anesthesia is still being researched, but their role seems to be increasingly relevant, not only as containers of anesthetic but as targets of anesthesia itself.

BLOCCHI DI FASCIA ARTO SUPERIORE?

Ringrazio tutti gli amici dell'esra che sono tanti con i quali ho
condiviso

In tutti questi anni tanti momenti e gioie esoprattutto se sono
quello che sono oggi lo dico senza retorica a tutti voi che mi
avete dato qualcosa per permettermi di onorare questa
lettura magistrale e un ringraziamento particolare al
presidente fattorini a cui mi lega profonda stima e altrettanta
profonda amicizia