

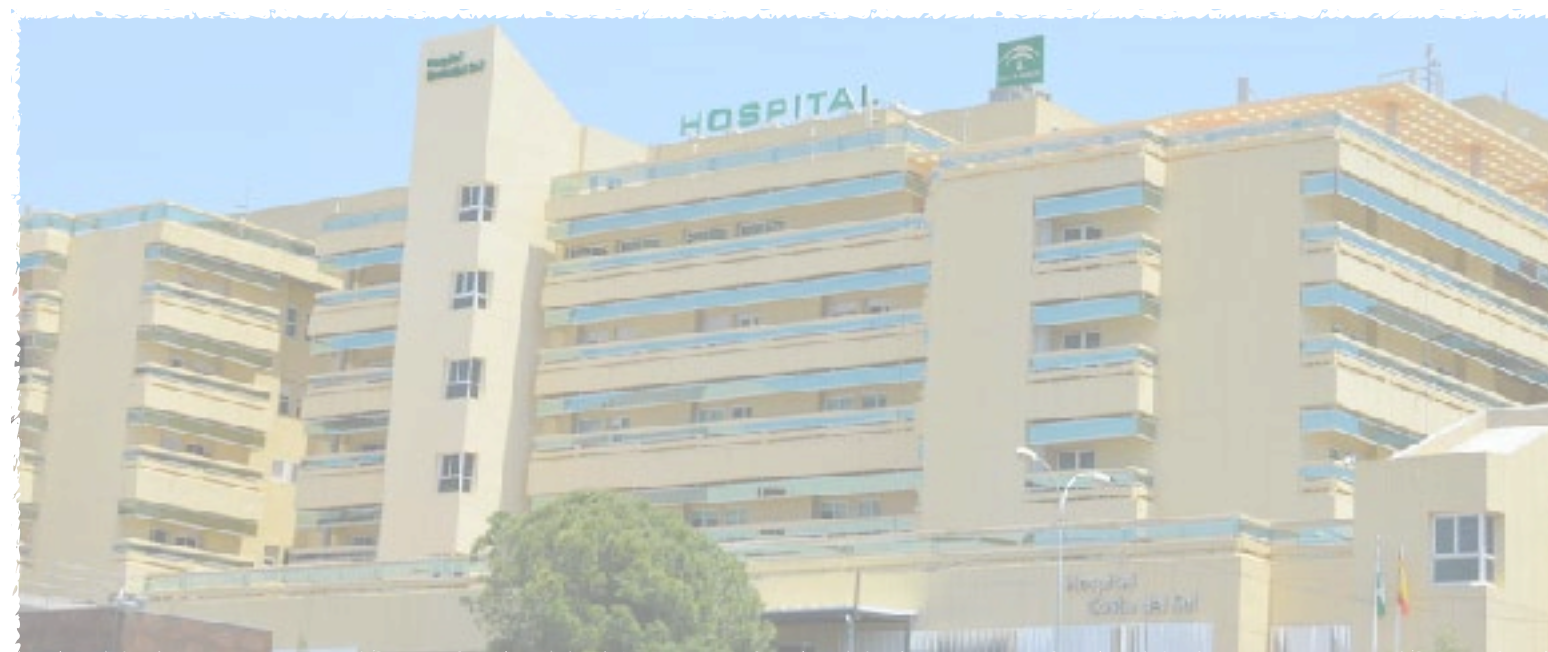
# ECOGRAFÍA EN ANESTESIA REGIONAL

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*La región cervical y sus posibilidades de bloqueos específicos.*

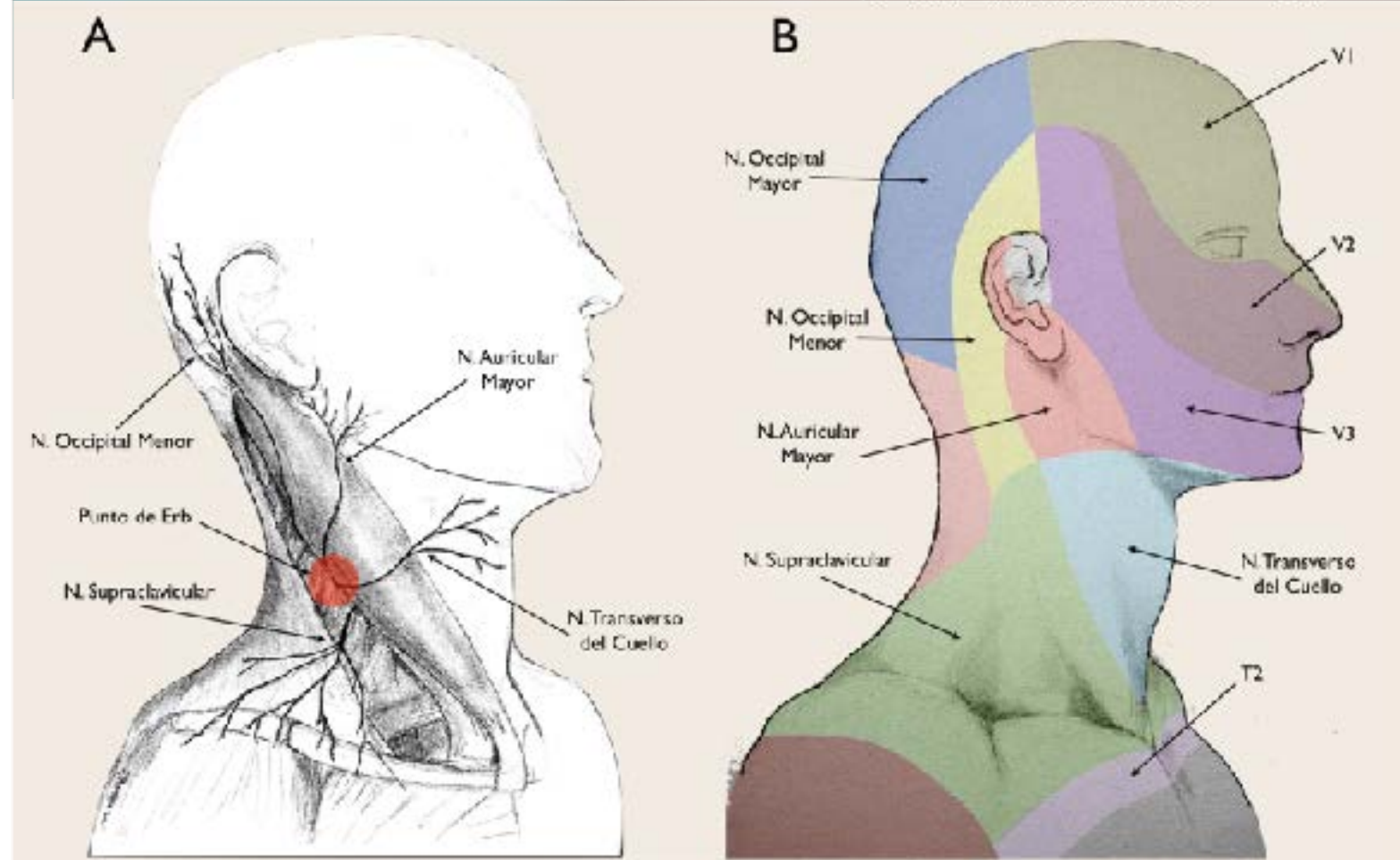
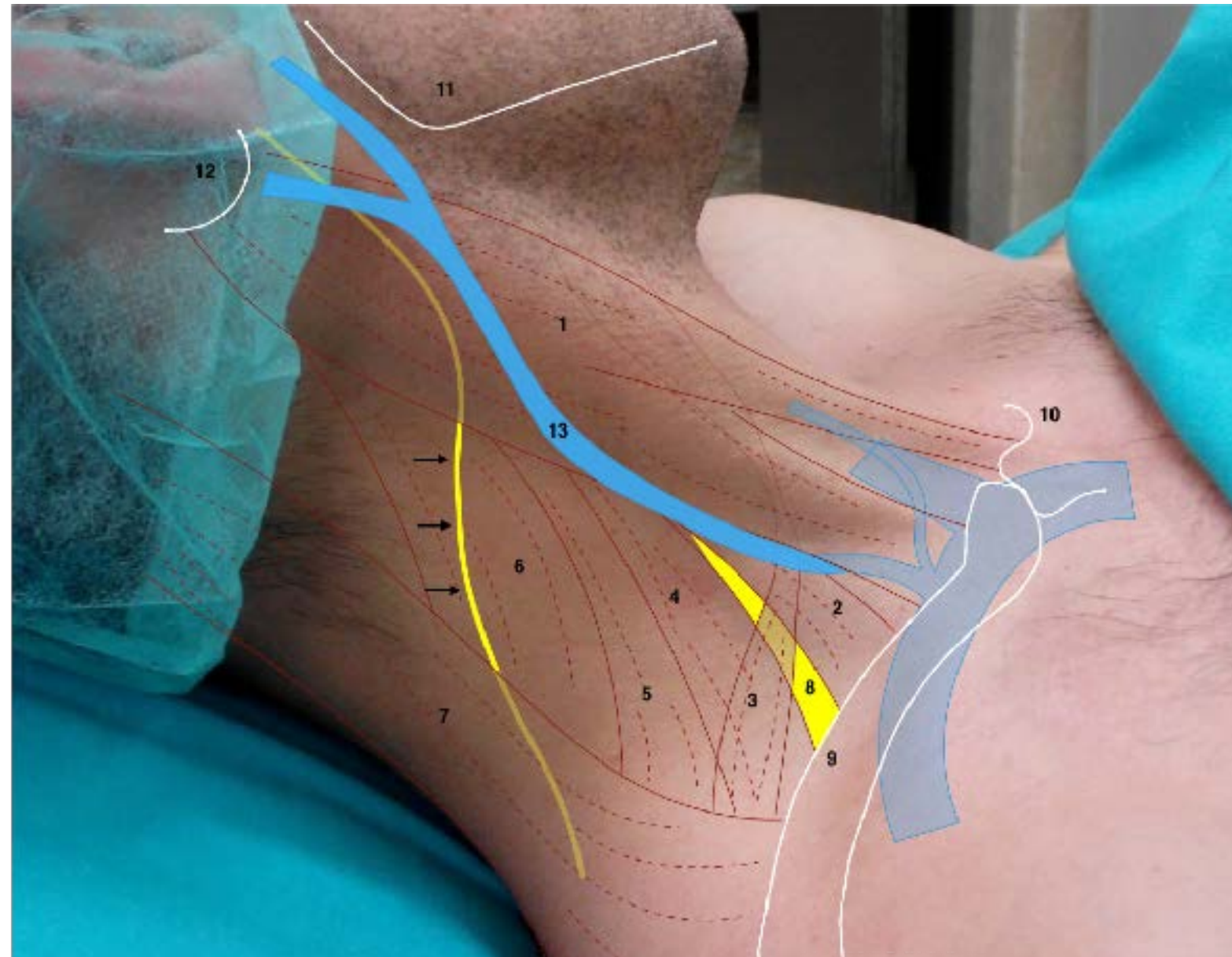
*Papel del bloqueo en el plano del músculo erector de la columna en la región torácica*

Luis F. Valdés Vilches  
Hospital Costa del Sol  
Marbella



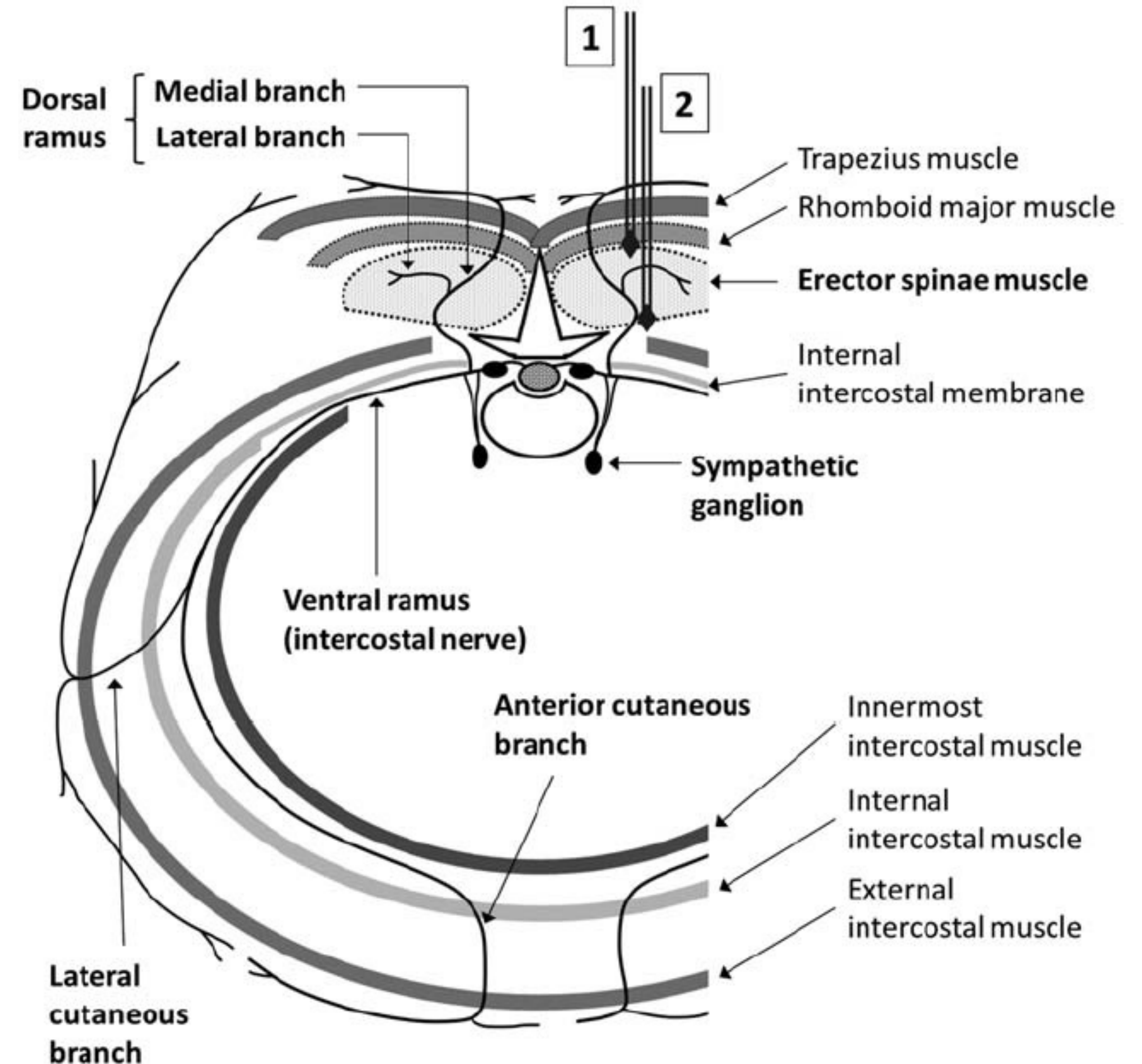
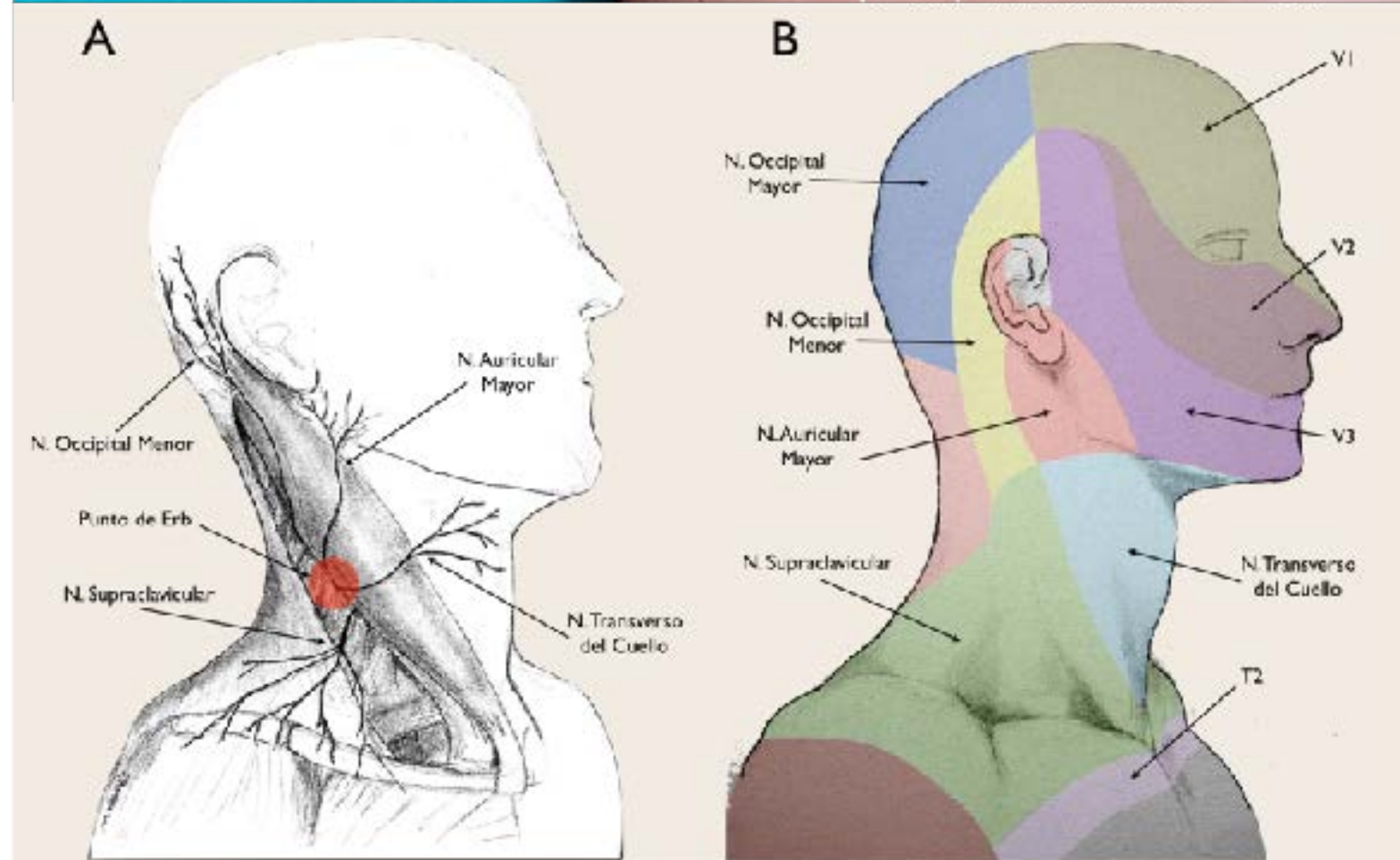
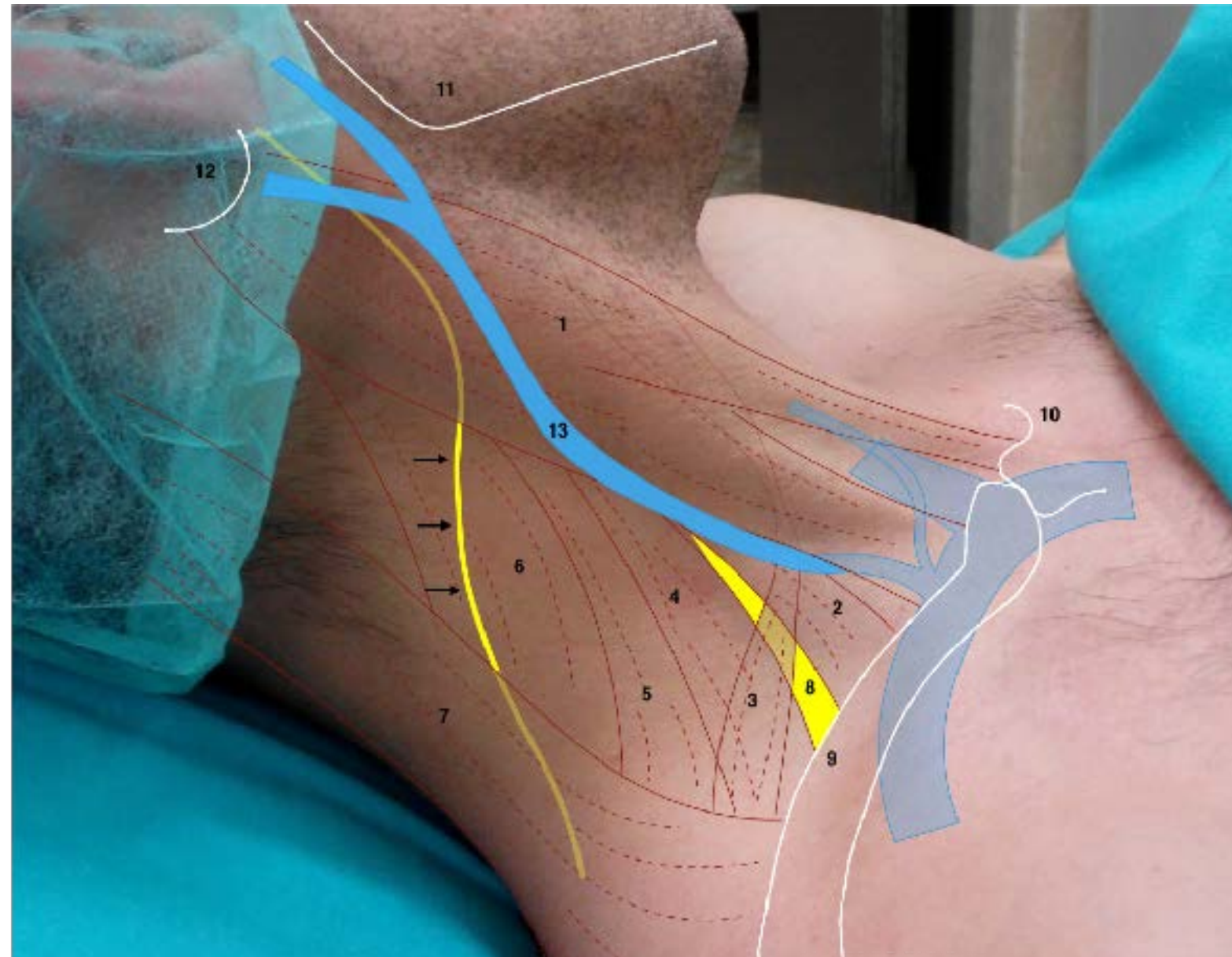
# Bloqueos específicos

## Región Cervical



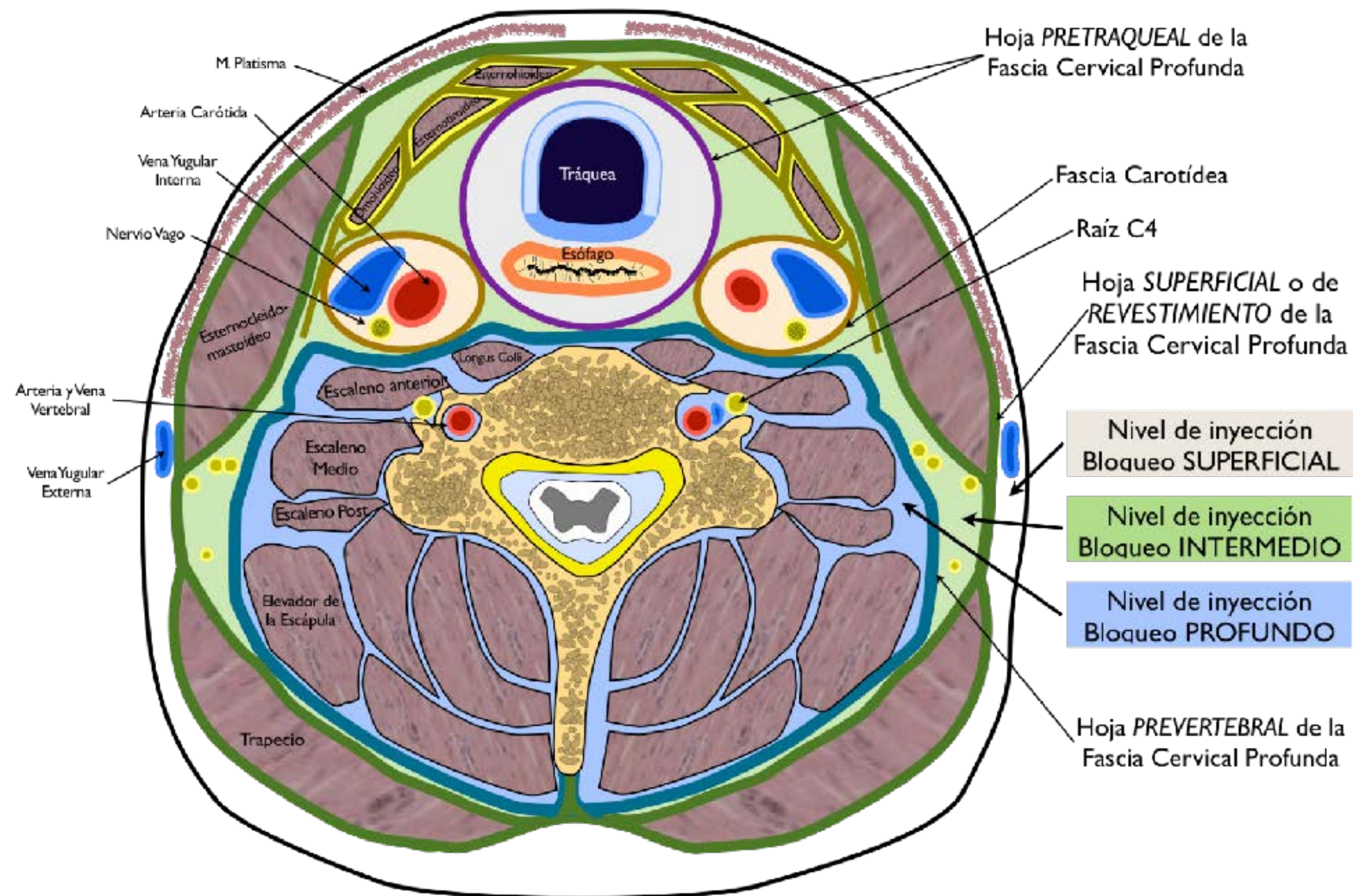
# Bloqueos específicos Región Cervical

## Erector Spinae Plane Block



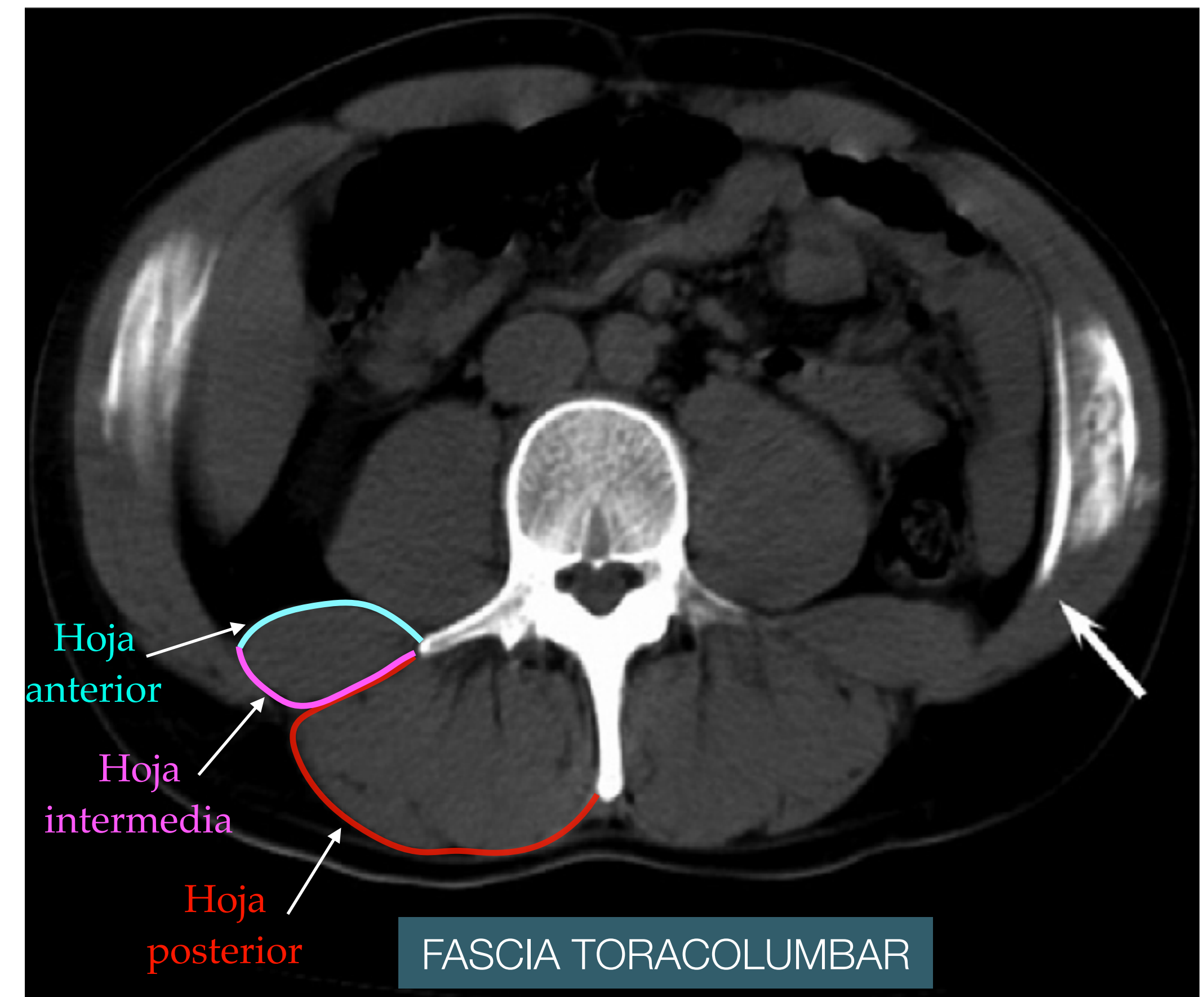
# Bloqueos fasciales

## Región Cervical



FASCIA CERVICAL PROFUNDA

## Región Toracolumbar



# Bloqueos fasciales

Editorial

Anaesthesia 2017, 72, 427-438

The erector spinae plane block: plane and simple

K. El-Boghdadly    A. Pawa

*Aumento progresivo en el número de publicaciones y nuevos tipos de bloqueos fasciales*

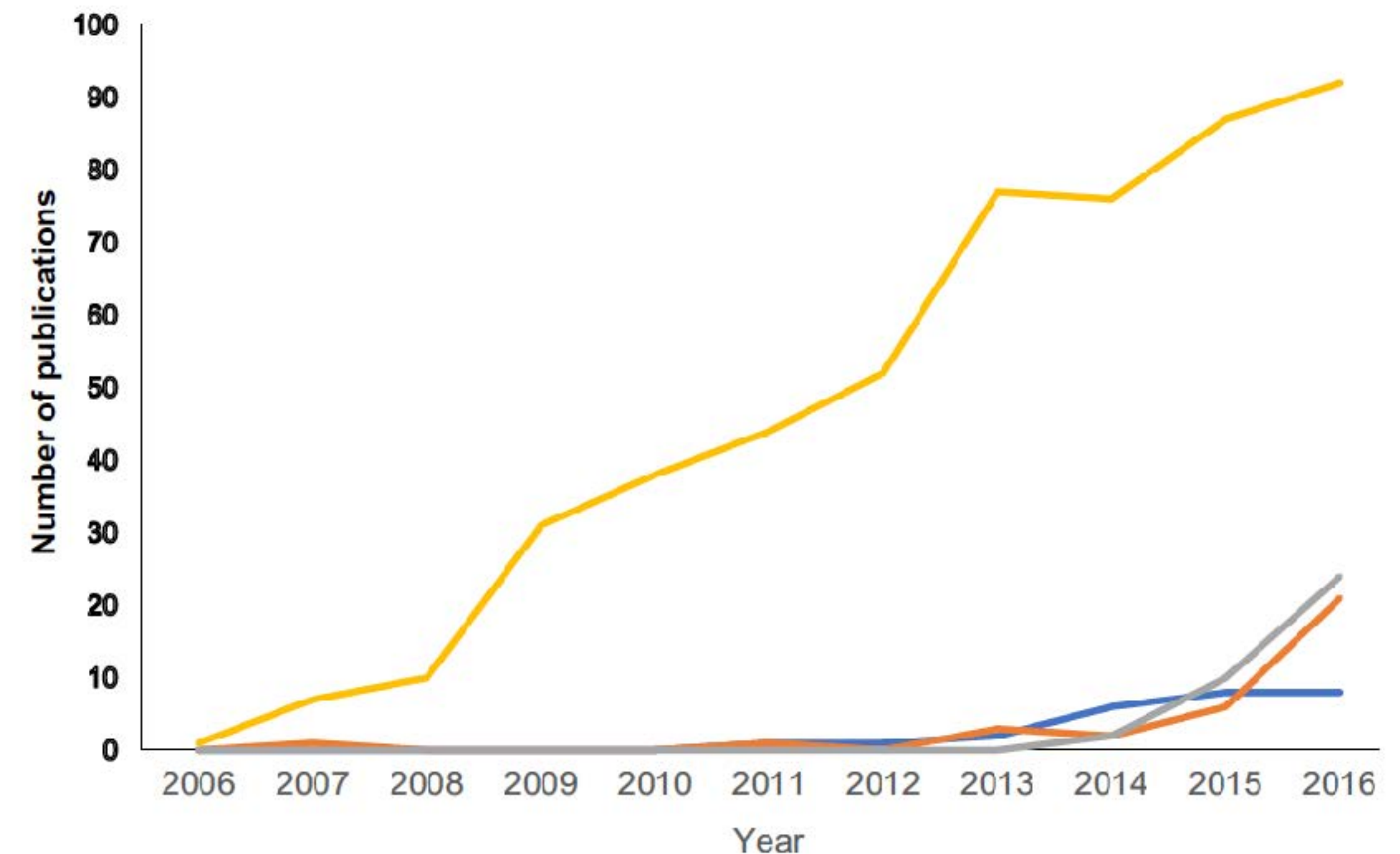
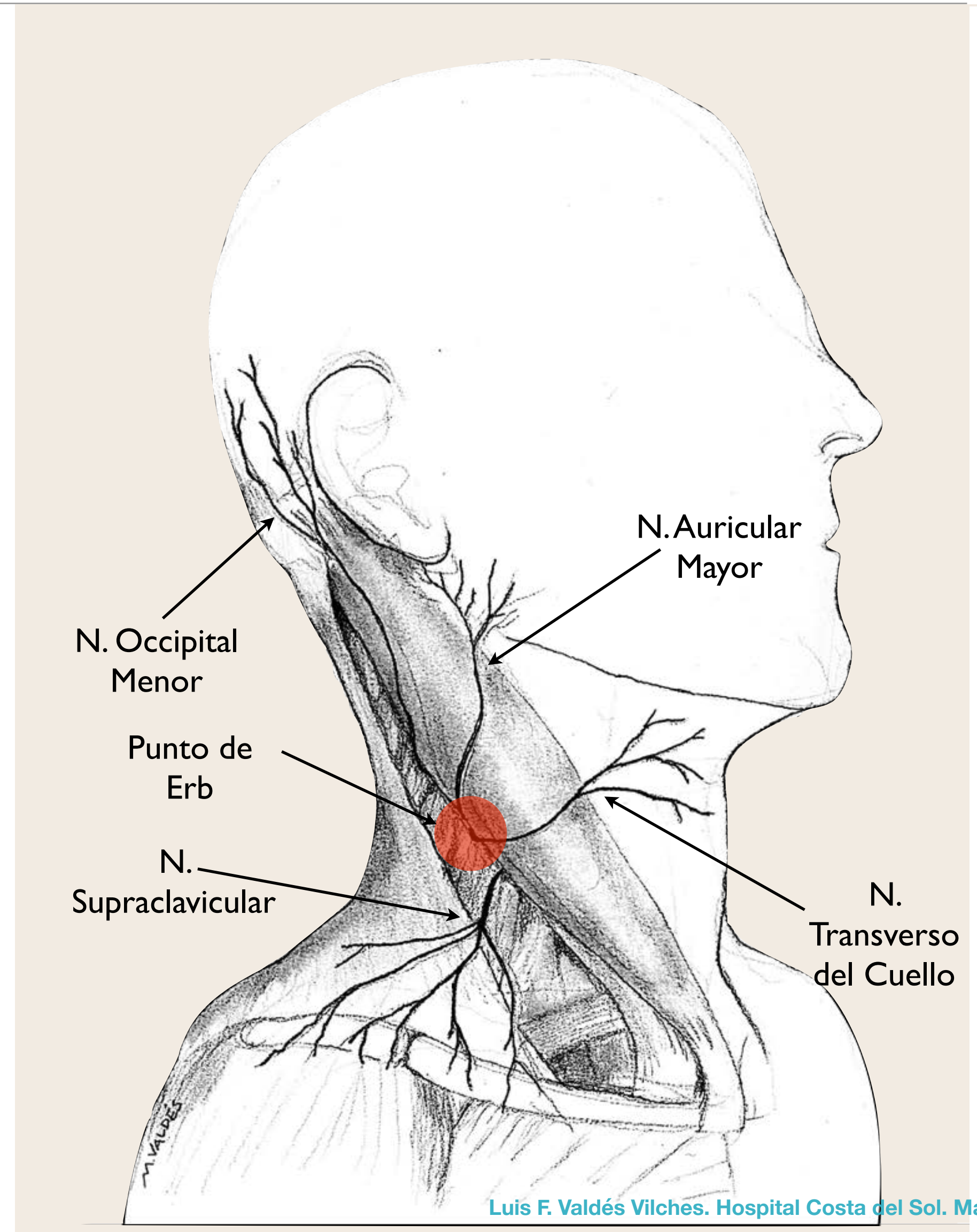
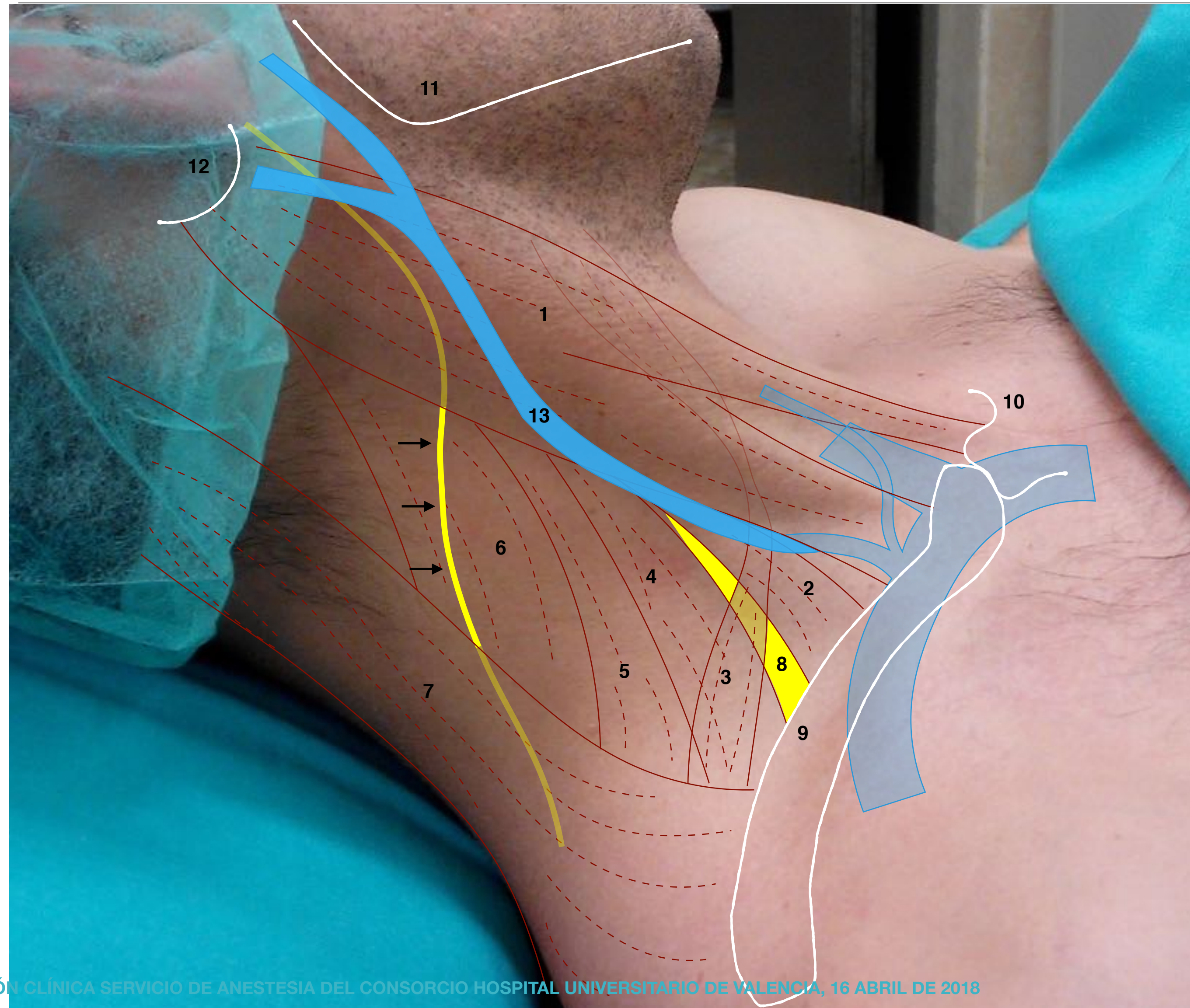


Figure 1 The number of publications per annum over the last 10 years relating to different blocks. Blue, PECS block; orange, quadratus lumborum block; grey, serratus plane block; yellow, transversus abdominis plane block.

Bloqueos específicos de la

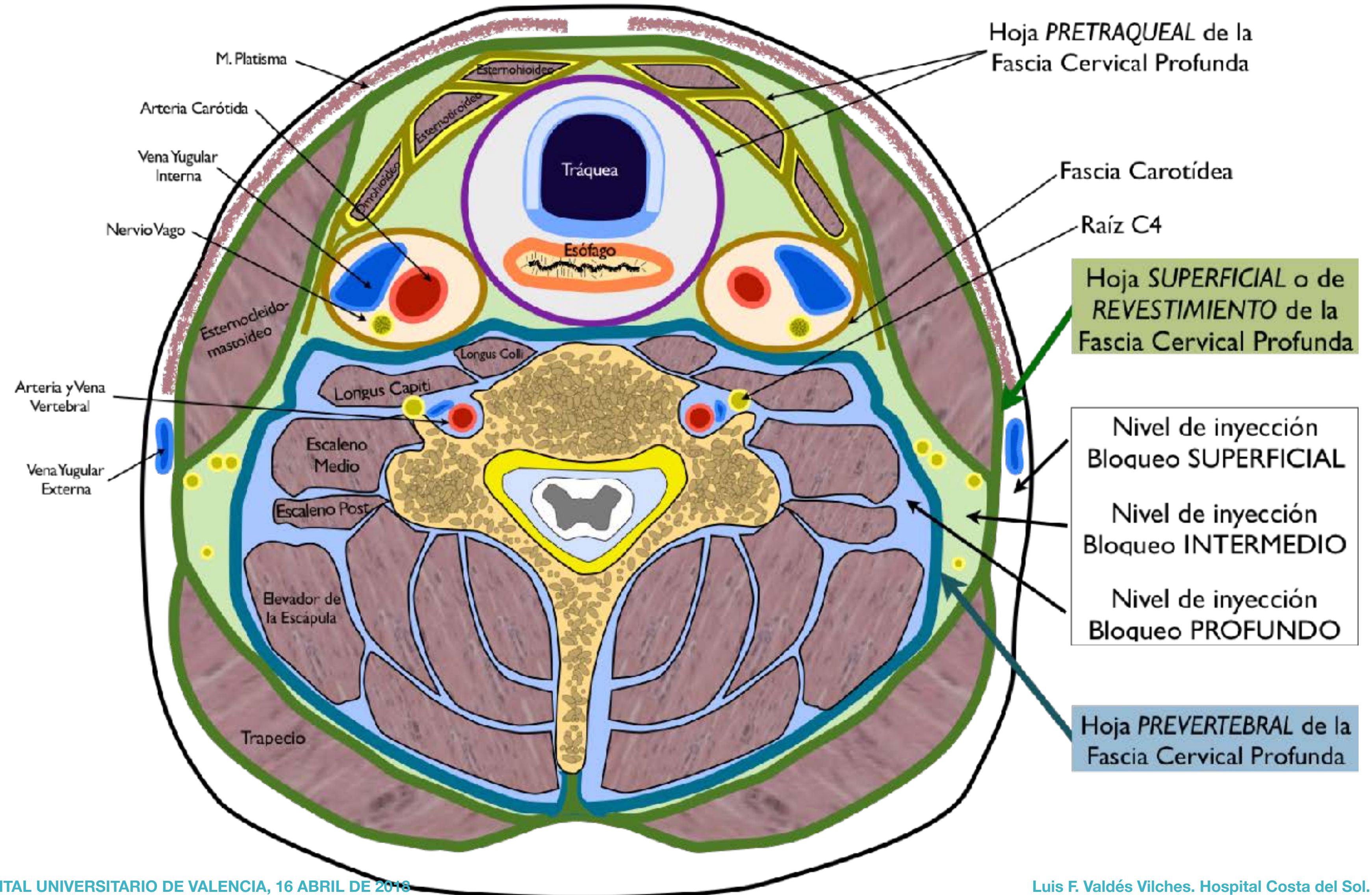
# “Región cervical”

# Región Cervical



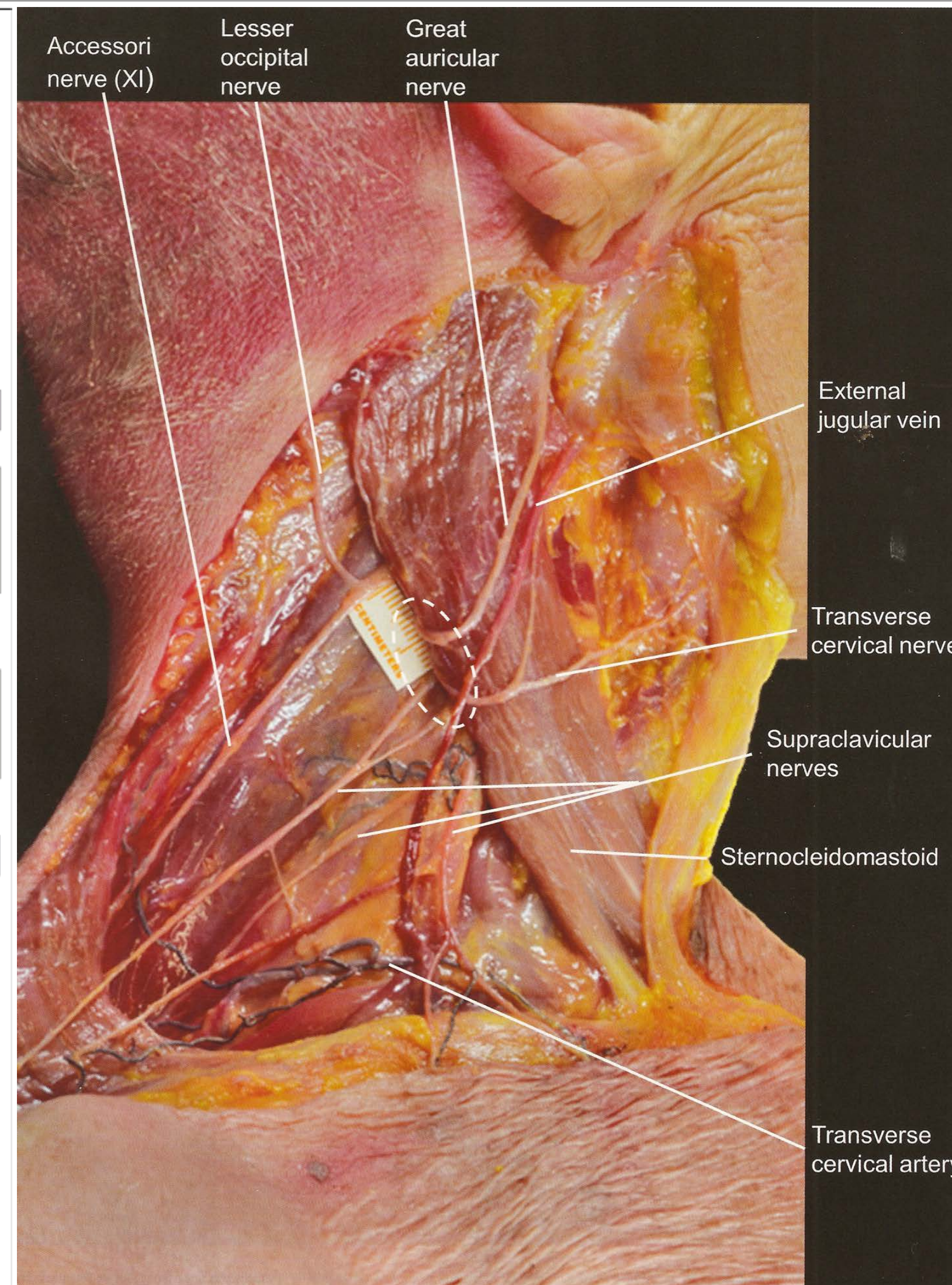
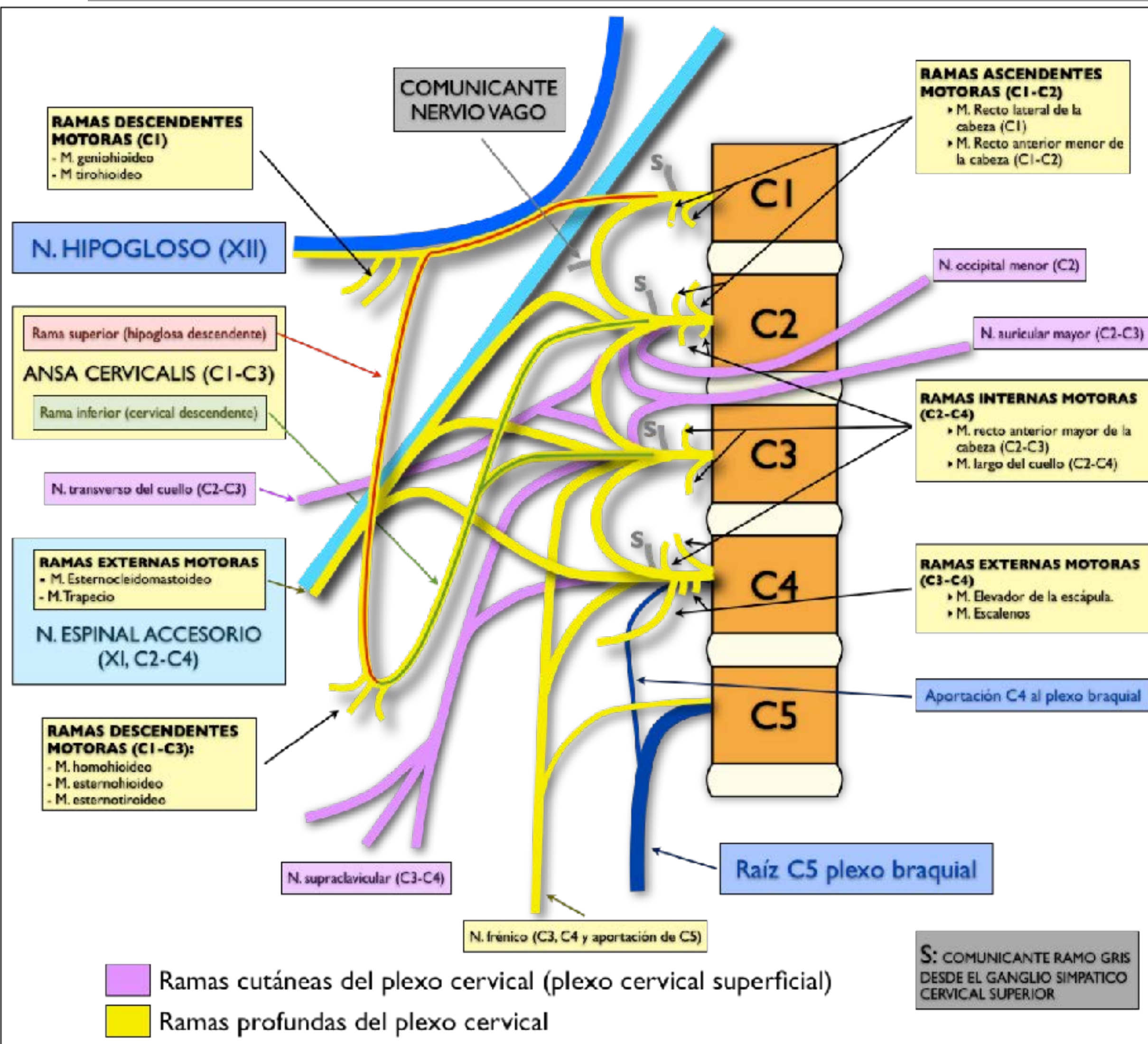
# Región Cervical

*“Fascia Cervical Profunda”*



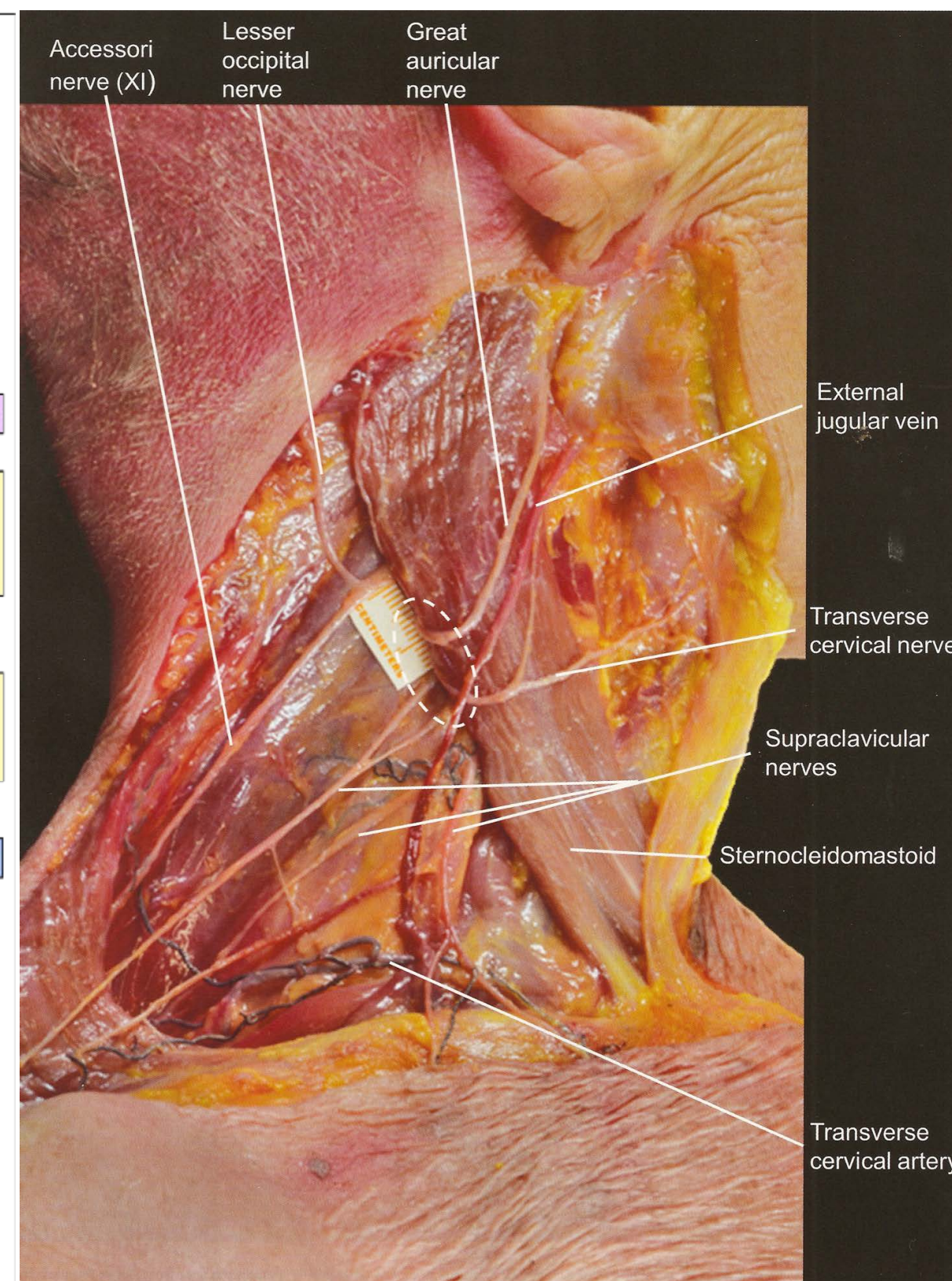
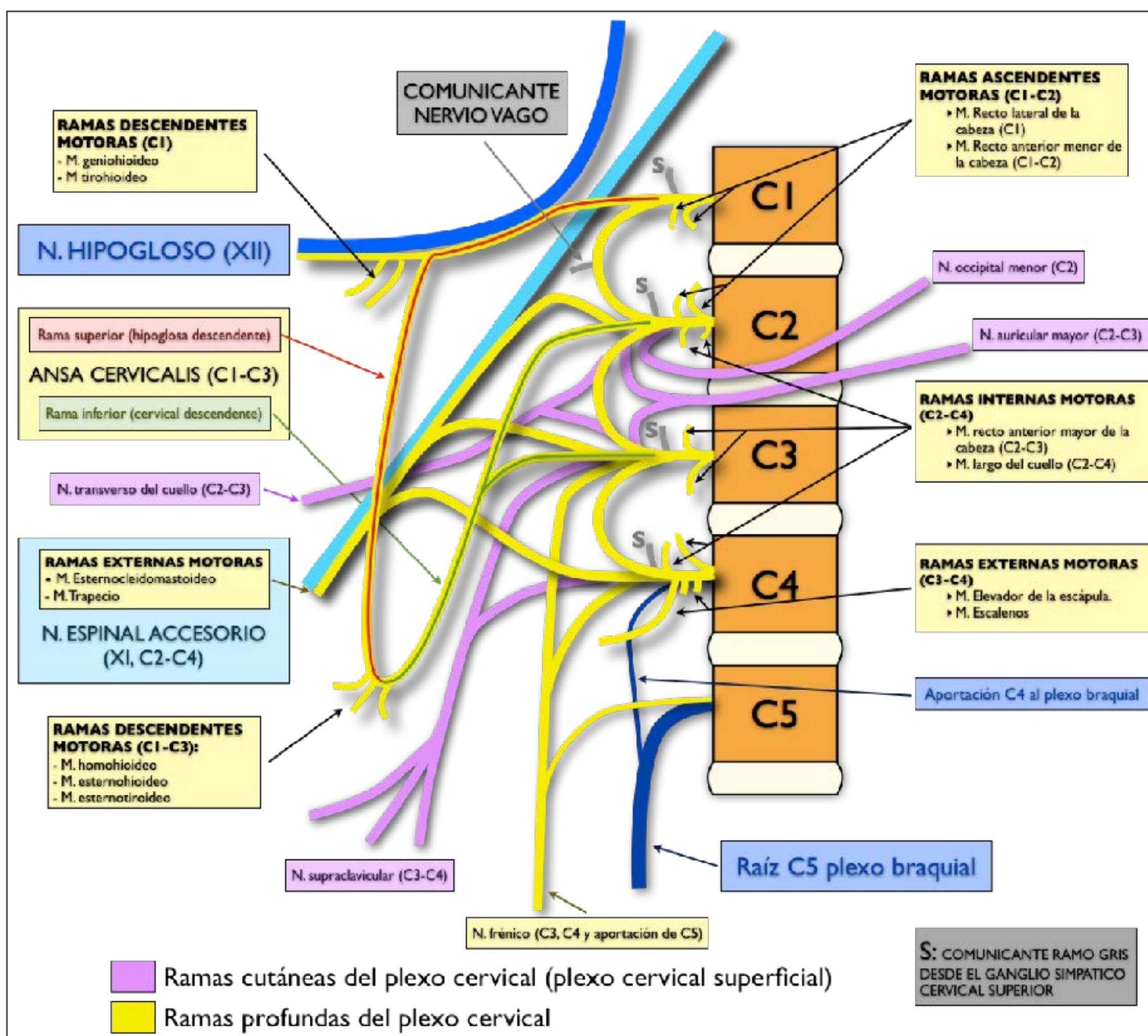


# Región Cervical: Nervios del Plexo Cervical Superficial



❖ Atlas of Functional Anatomy for Regional Anesthesia and Pain Medicine. Human Structure, Ultrastructure and 3D Reconstruction Images. Reina MA et al (Eds.) 2015, Springer International Publishing. ISBN: 978-3-319-09521-9

# Región Cervical: Nervios del Plexo Cervical Superficial



◆ Plexo cervical profundo

◆ Plexo cervical superficial

- ◆ **N. occipital menor**
- ◆ **N. auricular mayor**
- ◆ **N. transverso del cuello**
- ◆ **N. supraclavicular**

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❖ Pandit JJ, Satya-Krishna R, Gration P. Superficial or deep cervical plexus block for carotid endarterectomy: a systematic review of complications. *Br J Anaesth*, 2007; 99(2): 159-69.

❖ Ramachandran SK, Picton P, Shanks A, Dorje P, Pandit JJ. Comparison of intermediate vs subcutaneous cervical plexus block for carotid endarterectomy. *Br J Anaesth*, 2011; 107(2): 157-63.

## • Indicaciones

- ◆ Cirugía carotídea

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❖ Suh YJ, Kim YS, In JH, Joo JD, Jeon YS, Kim HK. Comparison of analgesic efficacy between bilateral superficial and combined (superficial and deep) cervical plexus block administered before thyroid surgery. *Eur J Anaesthesiol*, 2009; 26(12): 1043–7.

❖ Andrieu G, Amrouni H, Robin E, Carnaille B, Wattier JM, Pattou F, et al. Analgesic efficacy of bilateral superficial cervical plexus block administered before thyroid surgery under general anaesthesia. *Br J Anaesth*, 2007; 99(4): 561–6.

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- ◆ Cirugía tiroidea

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❖ Peuker ET, Filler TJ. The nerve supply of the human auricle. *Clin Anat*, 2002; 15(1): 35–7.

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- ◆ Cirugía tiroidea
- ◆ Cirugía auricular

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❖ Brennan PA, Al Gholmy M, Ounnas H, Zaki GA, Puxeddu R, Standring S. Communication of the anterior branch of the great auricular nerve with the marginal mandibular nerve: A prospective study of 25 neck dissections. *Br J Oral Maxillofac Surg*, 2010; 48(6): 431–3.

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- ◆ Cirugía tiroidea
- ◆ Cirugía auricular
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❖ Kline JP. Ultrasound-guided placement of combined superficial cervical plexus and selective C5 nerve root catheters: a novel approach to treating distal clavicle surgical pain. *AANA J*, 2013; 81(1): 19–22.

❖ Tran De QH, Tiyaprasertkul W. Analgesia for Clavicular Fracture and Surgery A Call for Evidence. *Reg Anesth Pain Med*, 2013; 38(6): 539–43.

❖ Valdés-Vilches LF, Sánchez-del Águila MJ. Anesthesia for Clavicular Fracture. Selective Supraclavicular Nerve Block Is the Key. *Reg Anesth Pain Med*, 2014; 39(3): 258–9.

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❖ Maybin J, Townsley P, Bedford N, Allan A. Ultrasound guided supraclavicular nerve blockade: first technical description and the relevance for shoulder surgery under regional anaesthesia. *Anaesthesia*. 2011; 66: 1048–60.



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- ◆ Cefalea cervicogénica y migraña

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❖ Bartsch T, Goadsby PJ. The trigeminocervical complex and migraine: current concepts and synthesis. *Current Pain and Headache Reports* 2003; 7(5):371–376.

❖ Elahi F, Reddy C. Neuromodulation of the Great Auricular Nerve for Persistent Post-Traumatic Headache, *Pain Physician* 2014; 2:531–536.

❖ T. Shinozaki et al. Cervical Plexus Block Helps in Diagnosis of Orofacial Pain Originating from Cervical Structures. *Tohoku J. Exp. Med.* 2006; 210:41-47.

# Región Cervical: Nervios del Plexo Cervical Superficial

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## •Ventajas

- ◆ Permiten disminuir la dosis de anestésico local minimizando, hasta casi desaparecer, el riesgo de bloqueo de otras estructuras nerviosas (*N. frénico, raíces del plexo braquial...*)

# Región Cervical: Nervios del Plexo Cervical Superficial

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- ◆ Mejora en la precisión diagnóstica y terapéutica de cuadros de dolor cervicogénico

# Región Cervical: Nervios del Plexo Cervical Superficial

## •Ventajas

- ◆ Permiten disminuir la dosis de anestésico local minimizando, hasta casi desaparecer, el riesgo de bloqueo de otras estructuras nerviosas (*N. frénico, raíces del plexo braquial...*)
- ◆ Mejora en la precisión diagnóstica y terapéutica de cuadros de dolor cervicogénico
- ◆ Su identificación ayuda a localizar la disposición del plexo cervical superficial

### ↓ Riesgo lesión nerviosa traumática en:

- ◆ Bloqueos plexo cervical por infiltración fascial
- ◆ Abordajes interescalénicos del plexo braquial

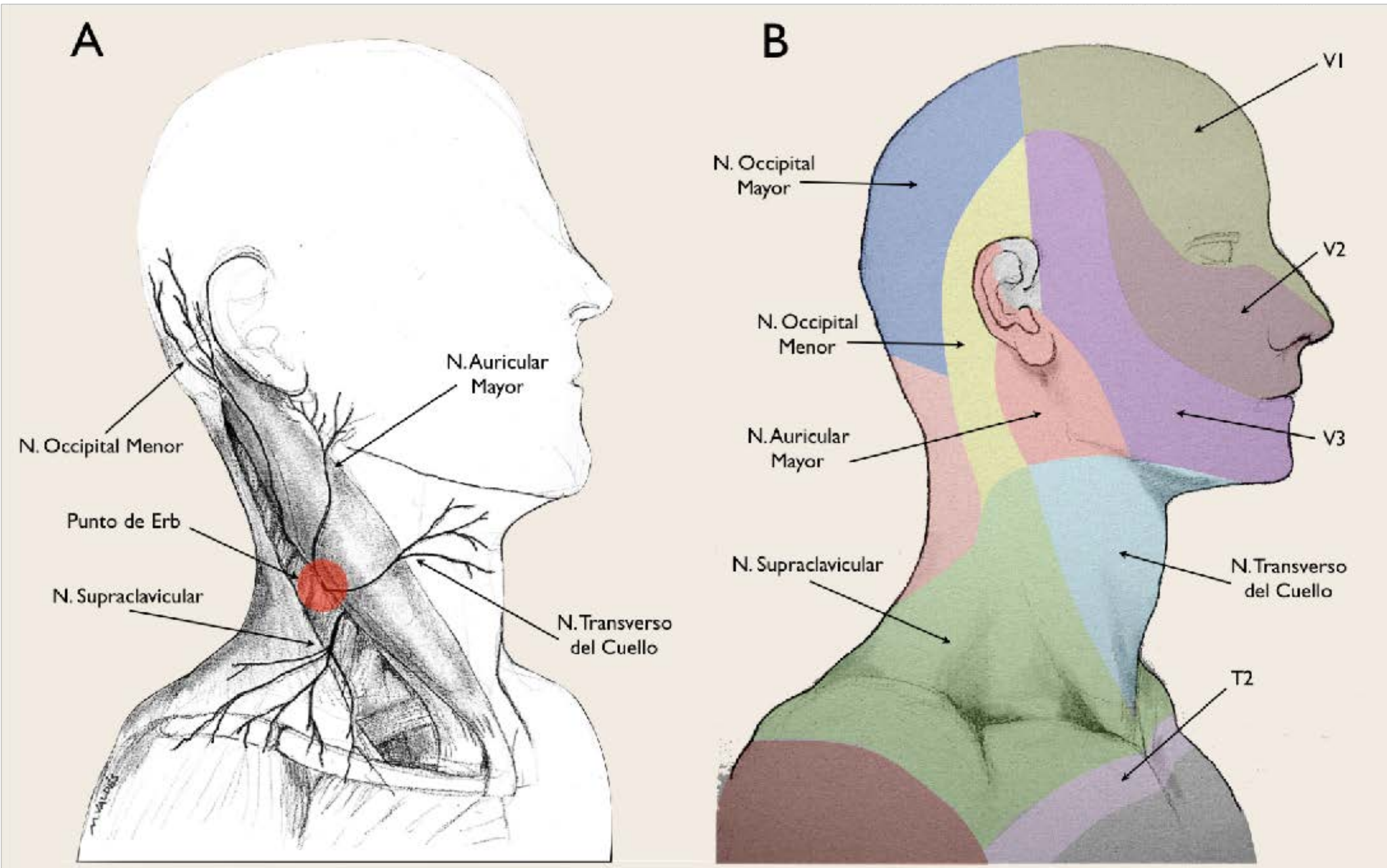
◆ Christ S, Rindfleisch F, Friederich P. Superficial cervical plexus neuropathy after single-injection interscalene brachial plexus block. *Anesth Analg*, 2009; 109: 2008–11.

◆ Fredrickson MJ. Superficial Cervical Plexus Neuropathy With Chronic Pain After Superficial Cervical Plexus Block and Interscalene Catheter Placement. *Reg Anesth Pain Med*, 2011; 36(2): 206.

# Región Cervical: Nervio Supraclavicular

## • Anatomía

◆ C3-C4

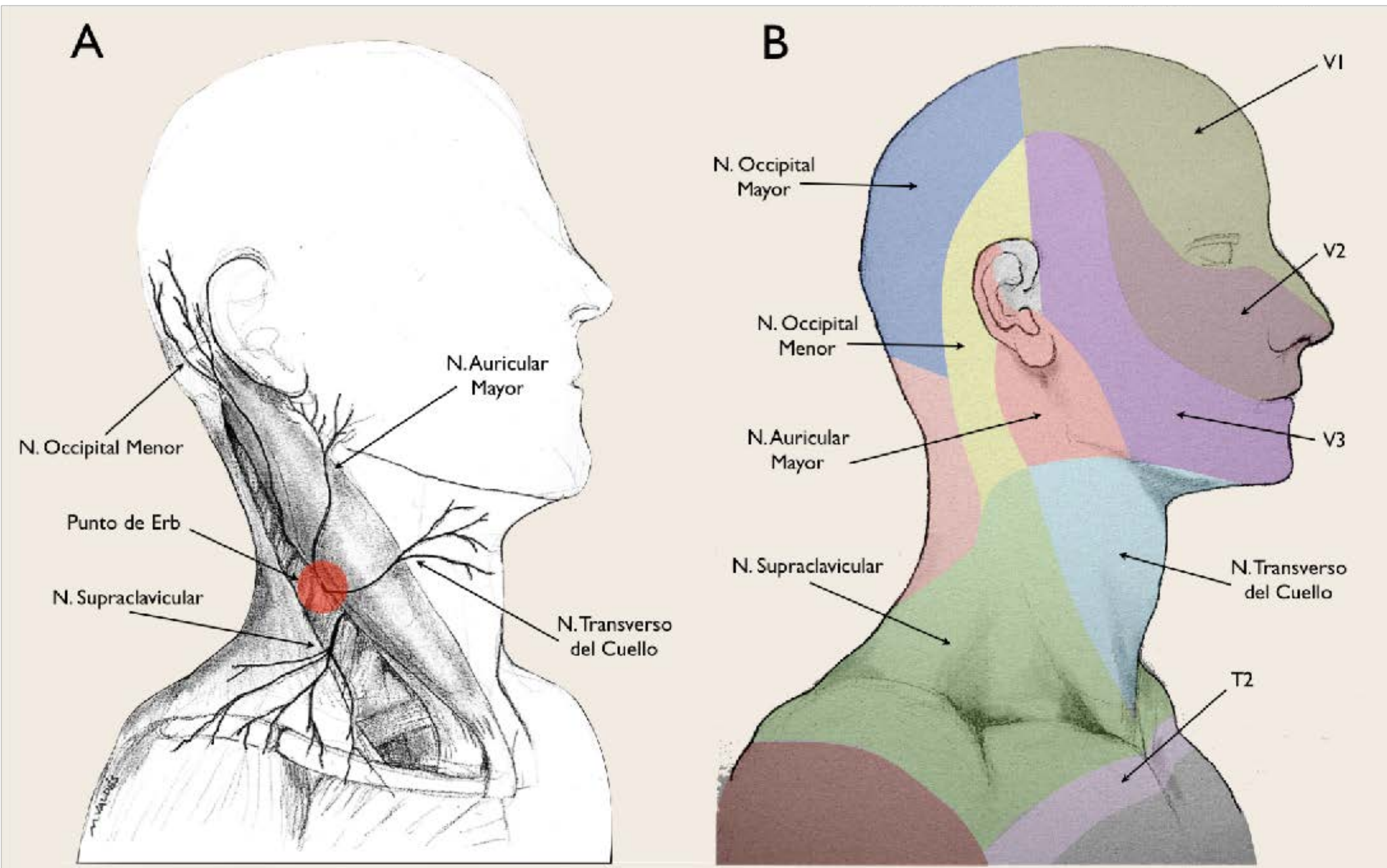


# Región Cervical: Nervio Supraclavicular

## • Anatomía

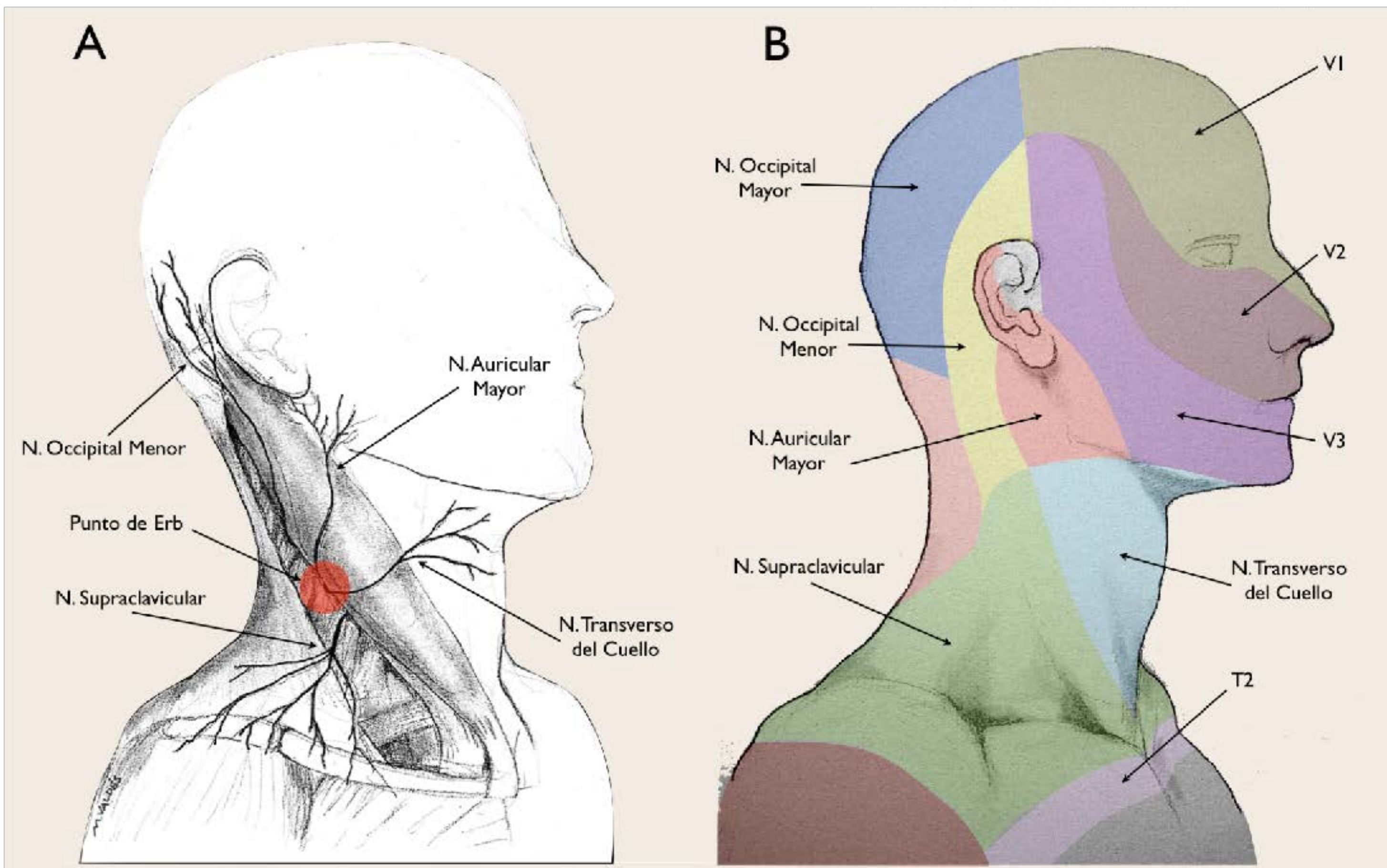
◆ C3-C4

◆ Inervación piel manubrio esternal, la región subclavicular hasta el 2º espacio intercostal y el muñón del hombro



# Región Cervical: Nervio Supraclavicular

## • Anatomía



- ◆ C3-C4
- ◆ Inervación piel manubrio esternal, la región subclavicular hasta el 2º espacio intercostal y el muñón del hombro
- ◆ Probable papel inervación clavícula

❖ Dejerine J. Sémiologie des affections du système nerveux. Paris: Masson et C°; 1914.

❖ Valdés-Vilches LF, Sánchez-del Águila MJ. Anesthesia for Clavicular Fracture. Selective Supraclavicular Nerve Block Is the Key. Reg Anesth Pain Med, 2014; 39(3): 258-9.

❖ Jeleu L, Surchev L. Study of variant anatomical structures (bony canals, fibrous bands, and muscles) in relation to potential supraclavicular nerve entrapment. Clin Anat [Internet]. 2007 Apr;20(3):278-85.

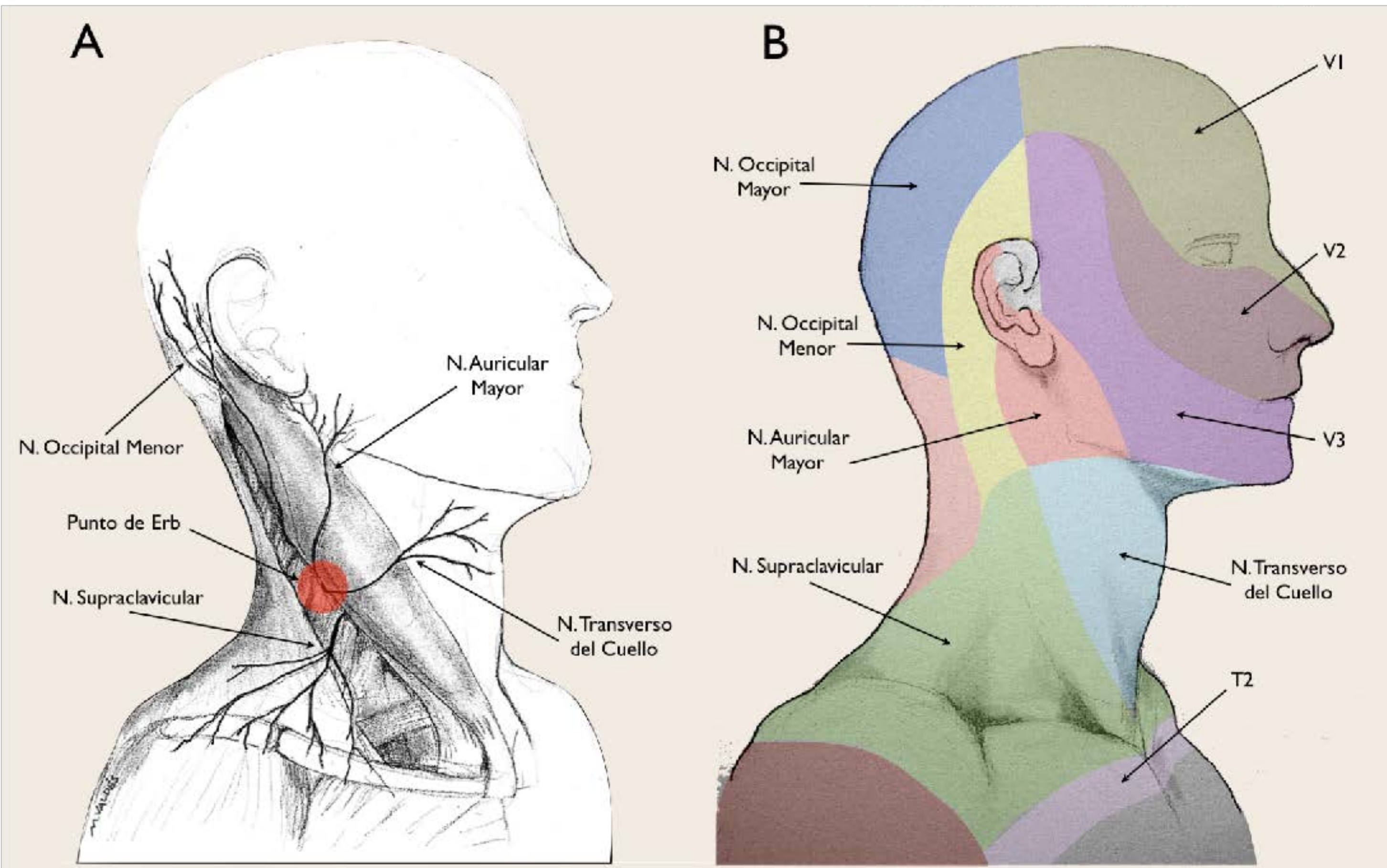
❖ 1. Herring A a, Stone MB, Frenkel O, Chipman A, Nagdev AD. The ultrasound-guided superficial cervical plexus block for anesthesia and analgesia in emergency care settings. Am J Emerg Med. 2014 Jan 27];30(7):1263-7.

# Región Cervical: Nervio Supraclavicular

## • Anatomía

◆ 3 divisiones mayores

- ◆ Rama medial
- ◆ Rama intermedia
- ◆ Rama lateral





# Región Cervical: Nervio Supraclavicular

## • Anatomía

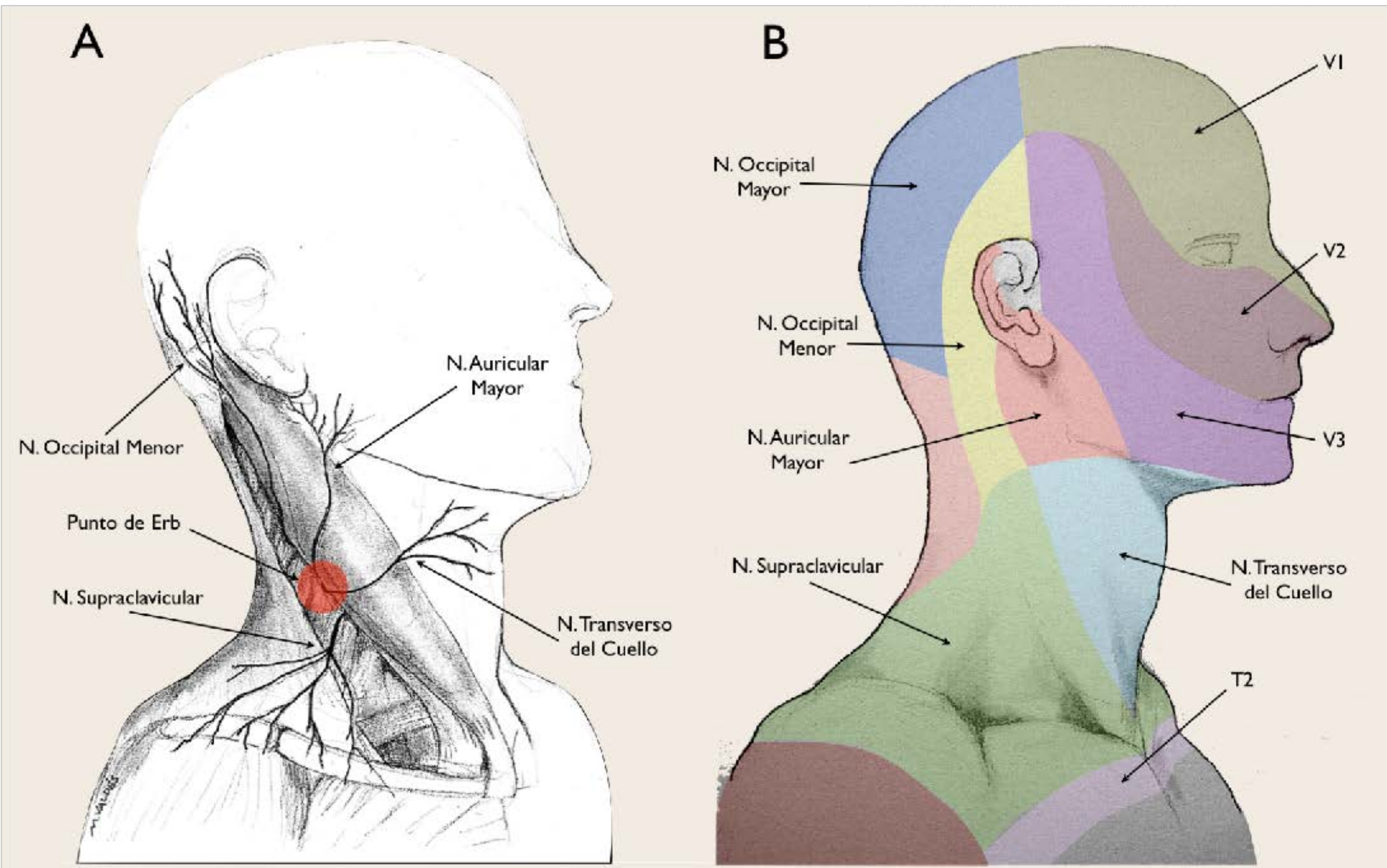
◆ 3 divisiones mayores

◆ **Rama medial**

◆ **Rama intermedia**

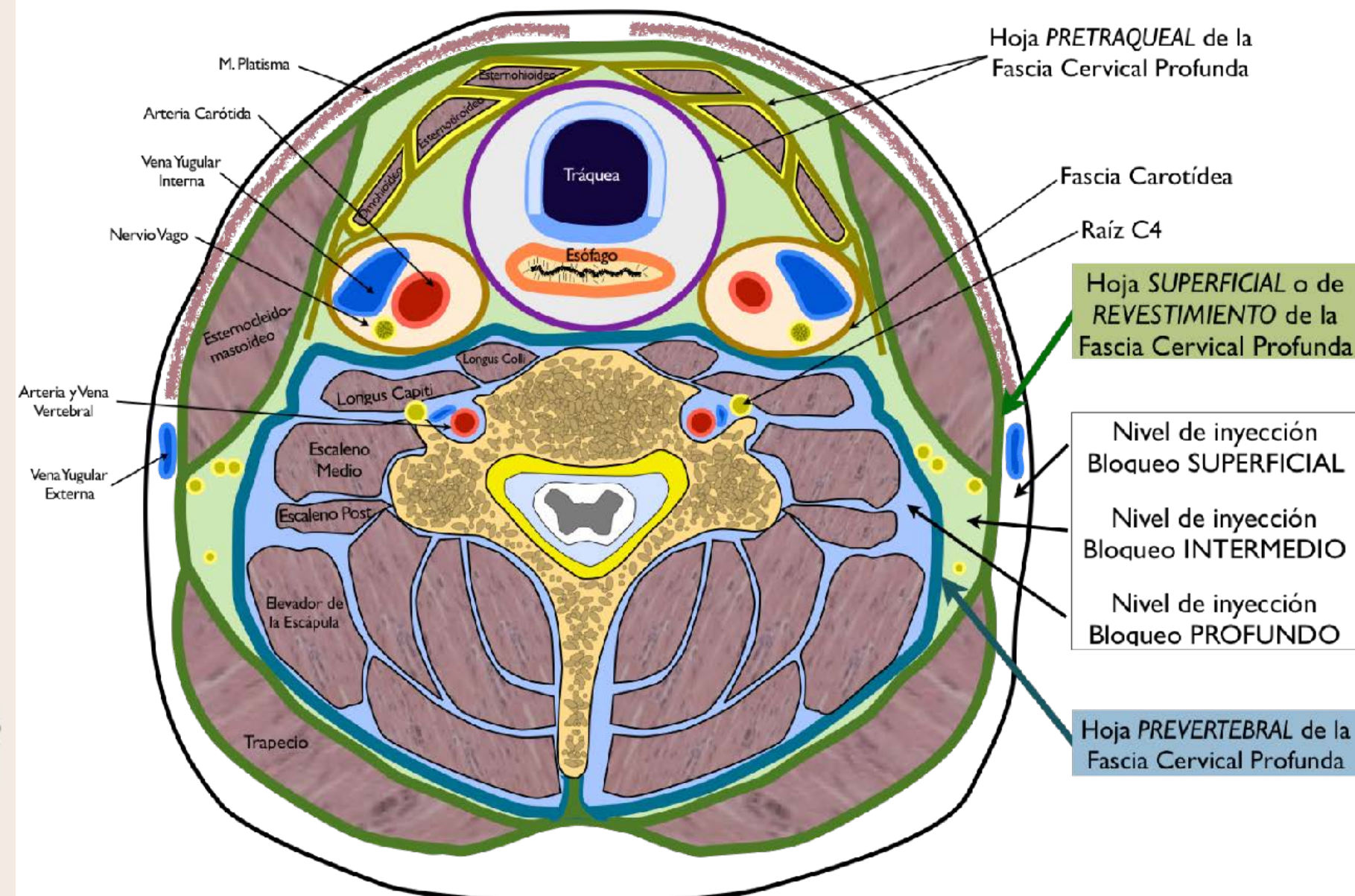
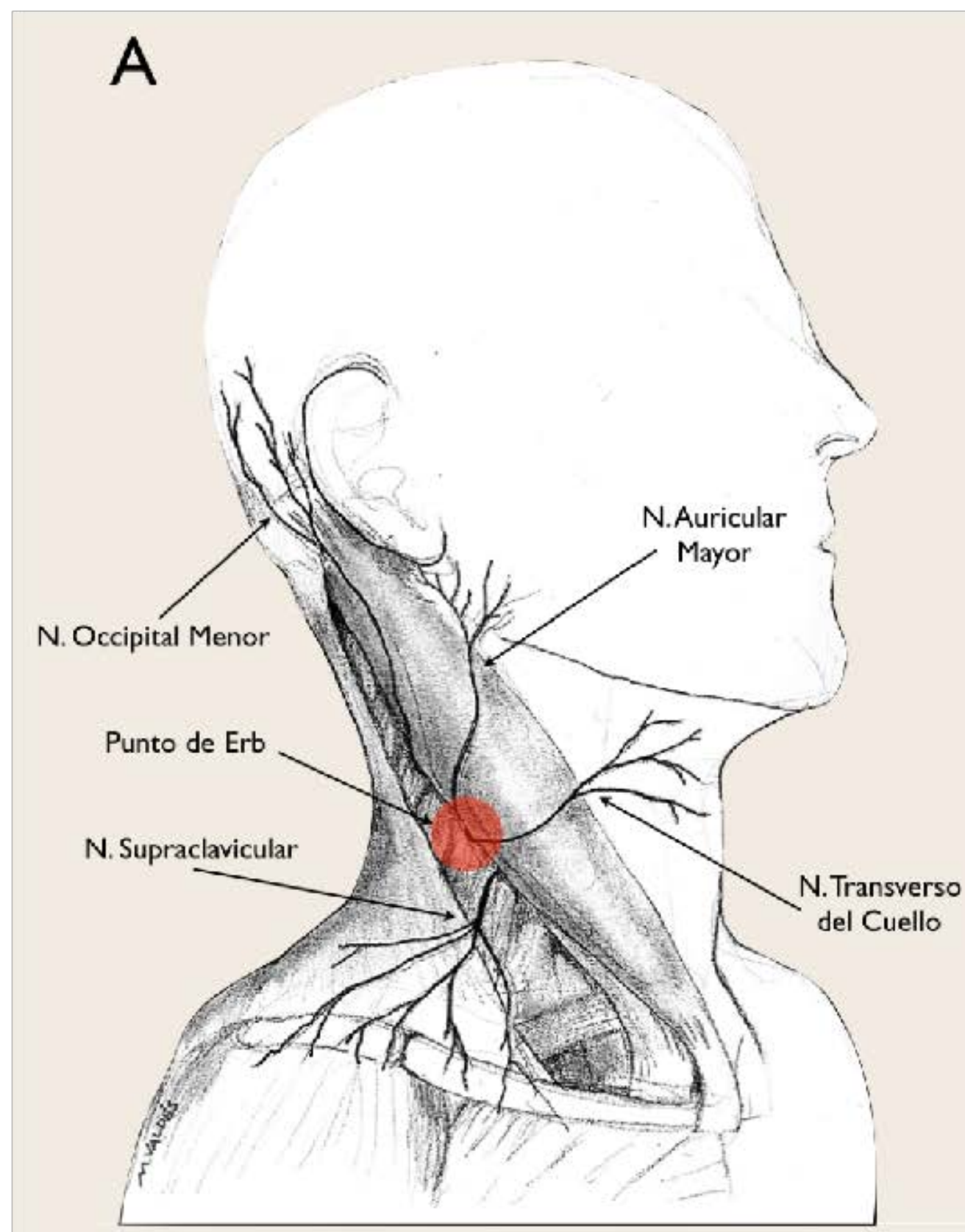
◆ **Rama lateral**

◆ Desciende por debajo del ECM hacia la clavícula y el hombro



# Región Cervical: Nervio Supraclavicular

## • Anatomía



◆ 3 divisiones mayores

◆ **Rama medial**

◆ **Rama intermedia**

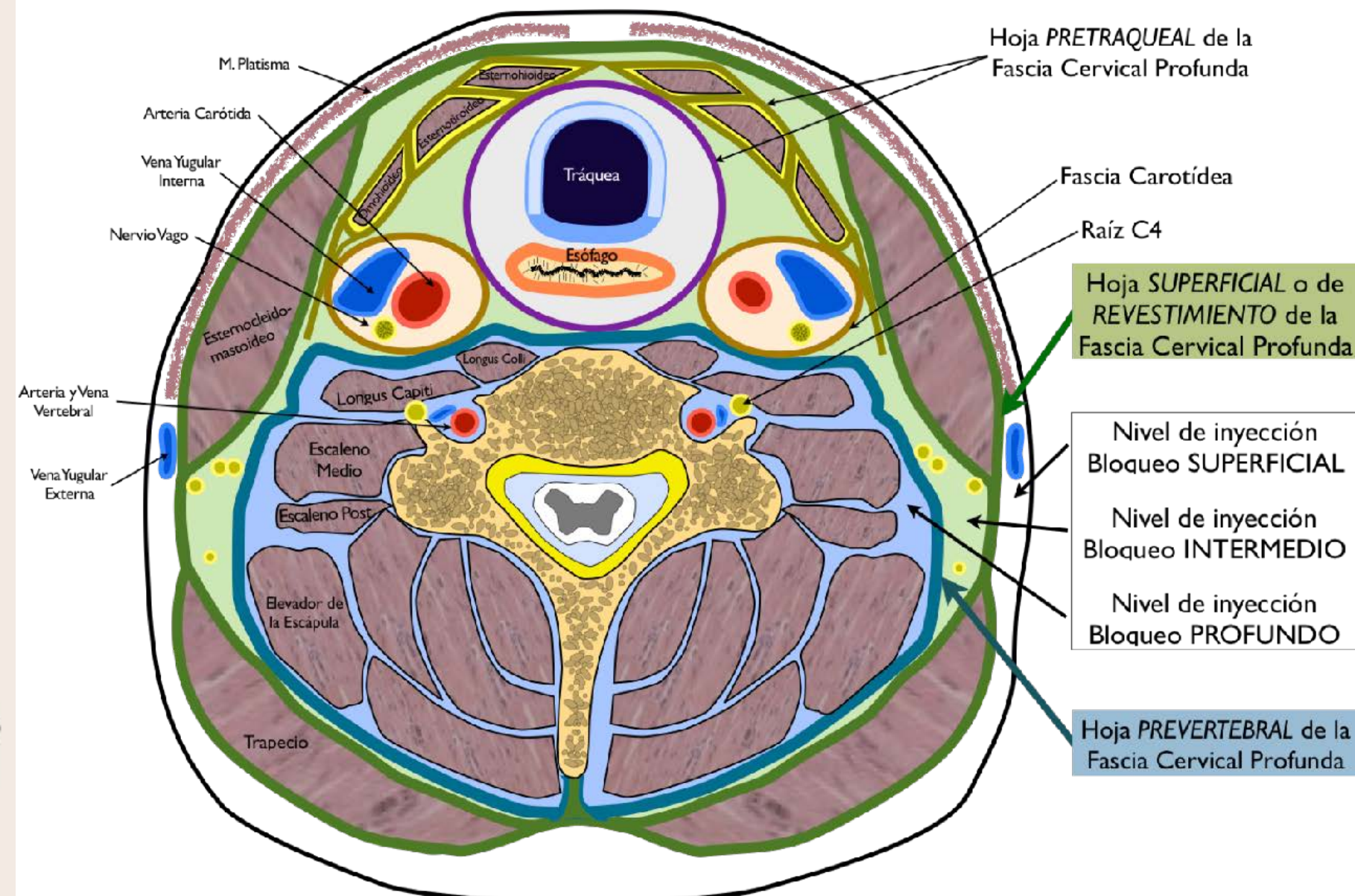
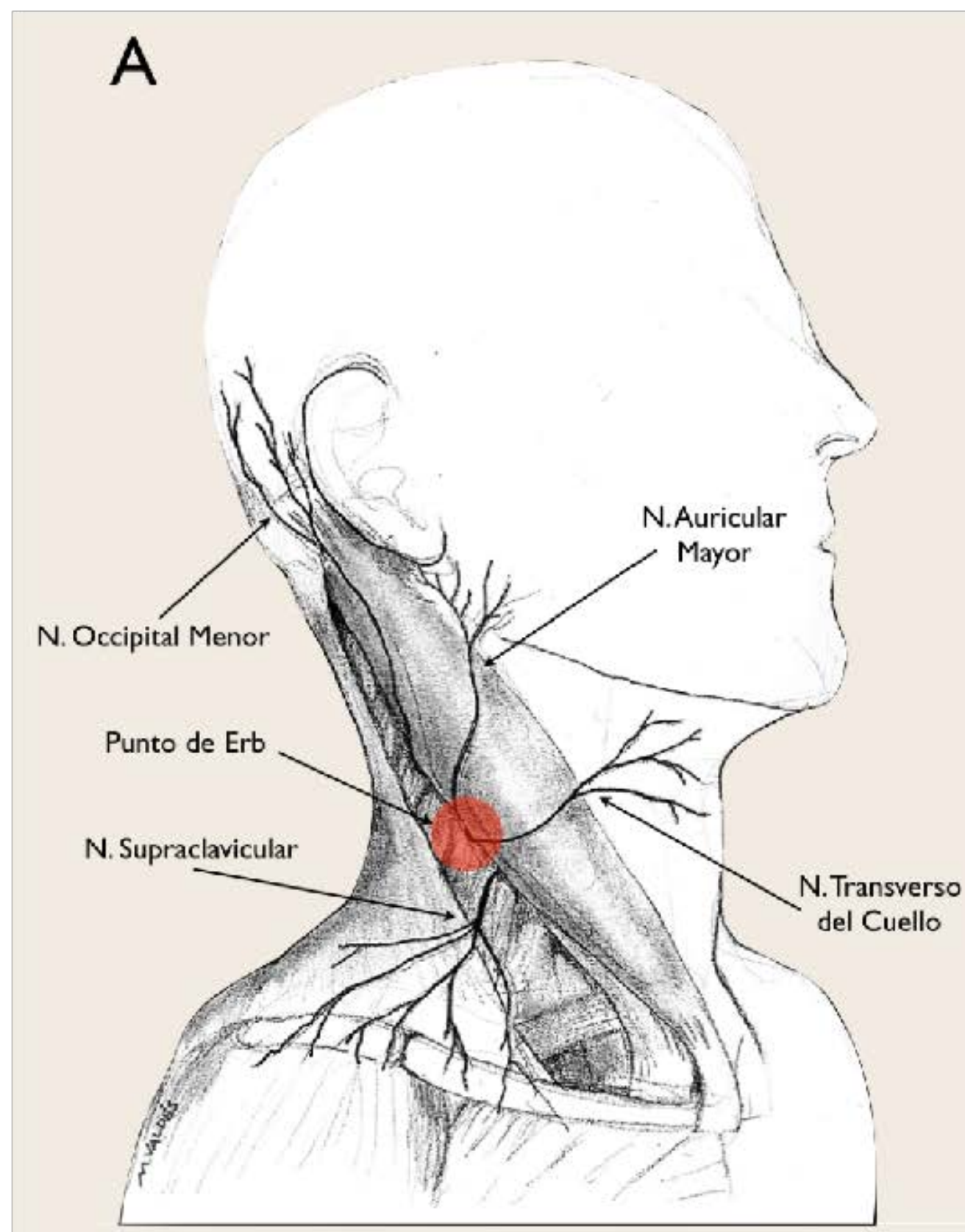
◆ **Rama lateral**

◆ Desciende por debajo del ECM hacia la clavícula y el hombro

◆ Se apoya sobre la hoja prevertebral (*fascia cervical profunda*), por encima del músculo escaleno medio

# Región Cervical: Nervio Supraclavicular

## • Anatomía



◆ 3 divisiones mayores

◆ **Rama medial**

◆ **Rama intermedia**

◆ **Rama lateral**

◆ Desciende por debajo del ECM hacia la clavícula y el hombro

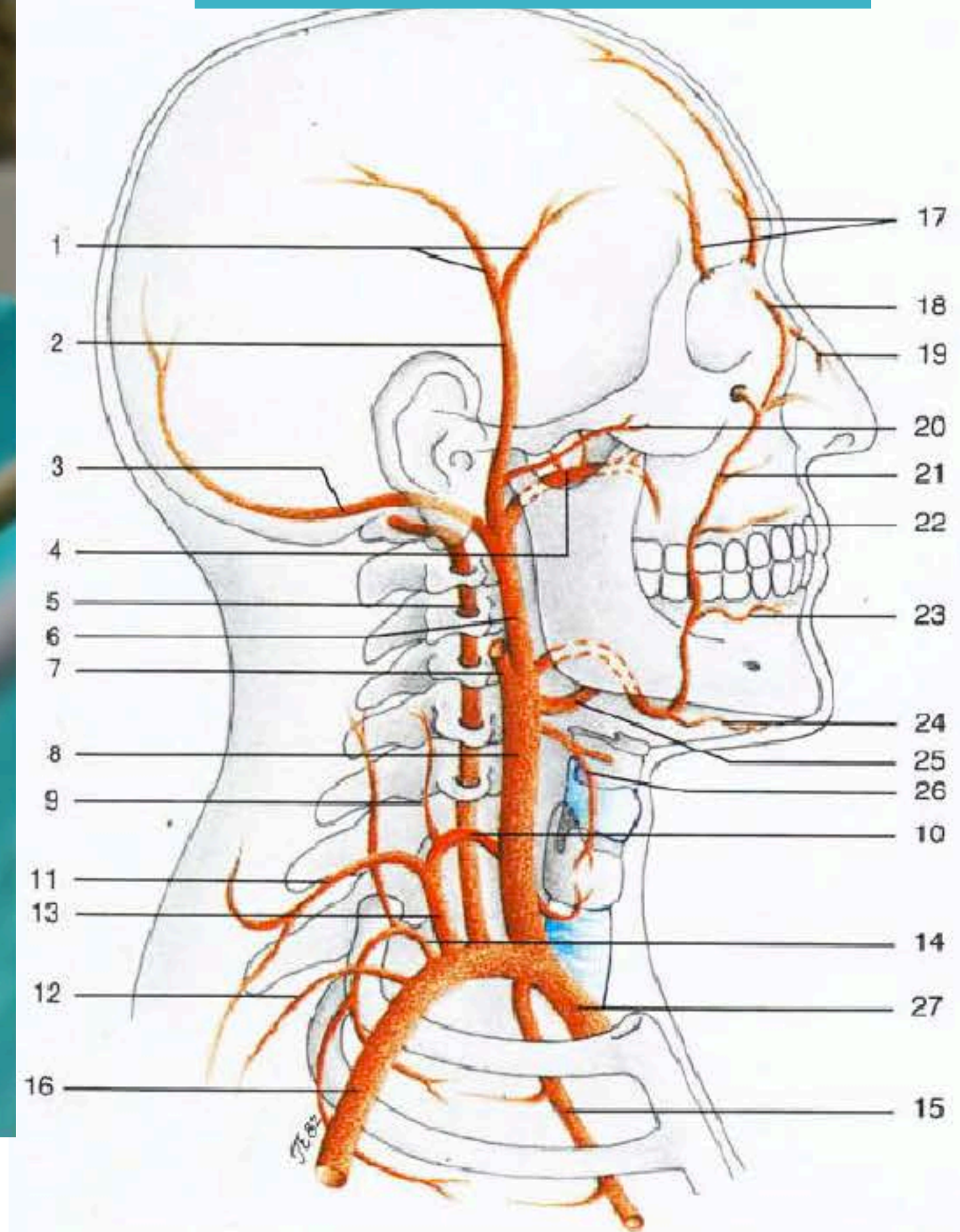
◆ Se apoya sobre la hoja prevertebral (*fascia cervical profunda*), por encima del músculo escaleno medio

◆ Superior y lateral a C5 en el vértice del surco interescalénico

# Región Cervical: Nervio Supraclavicular



• Escaneo



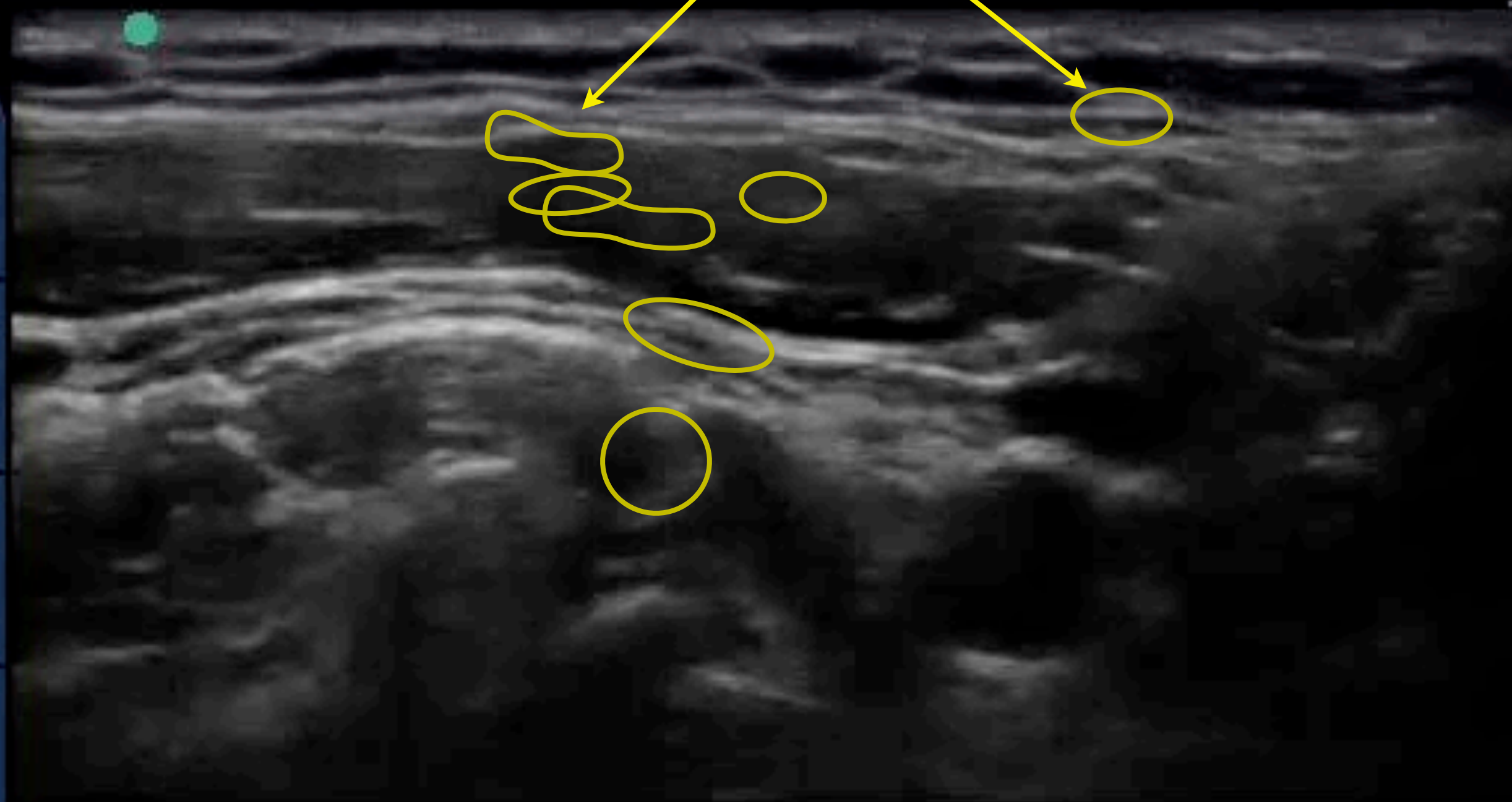
# Región Cervical: Nervio Supraclavicular

SUPRACLAV  
Res MB

2012Jun01 12:59

Ner  
L50  
96%  
MI  
0,9  
TIS  
0,1

Supraclavicular  
nerve



Lateral

Medial

2,7

- Paciente
- Gan auto
- Res
- Clip
- Pág. 1/3

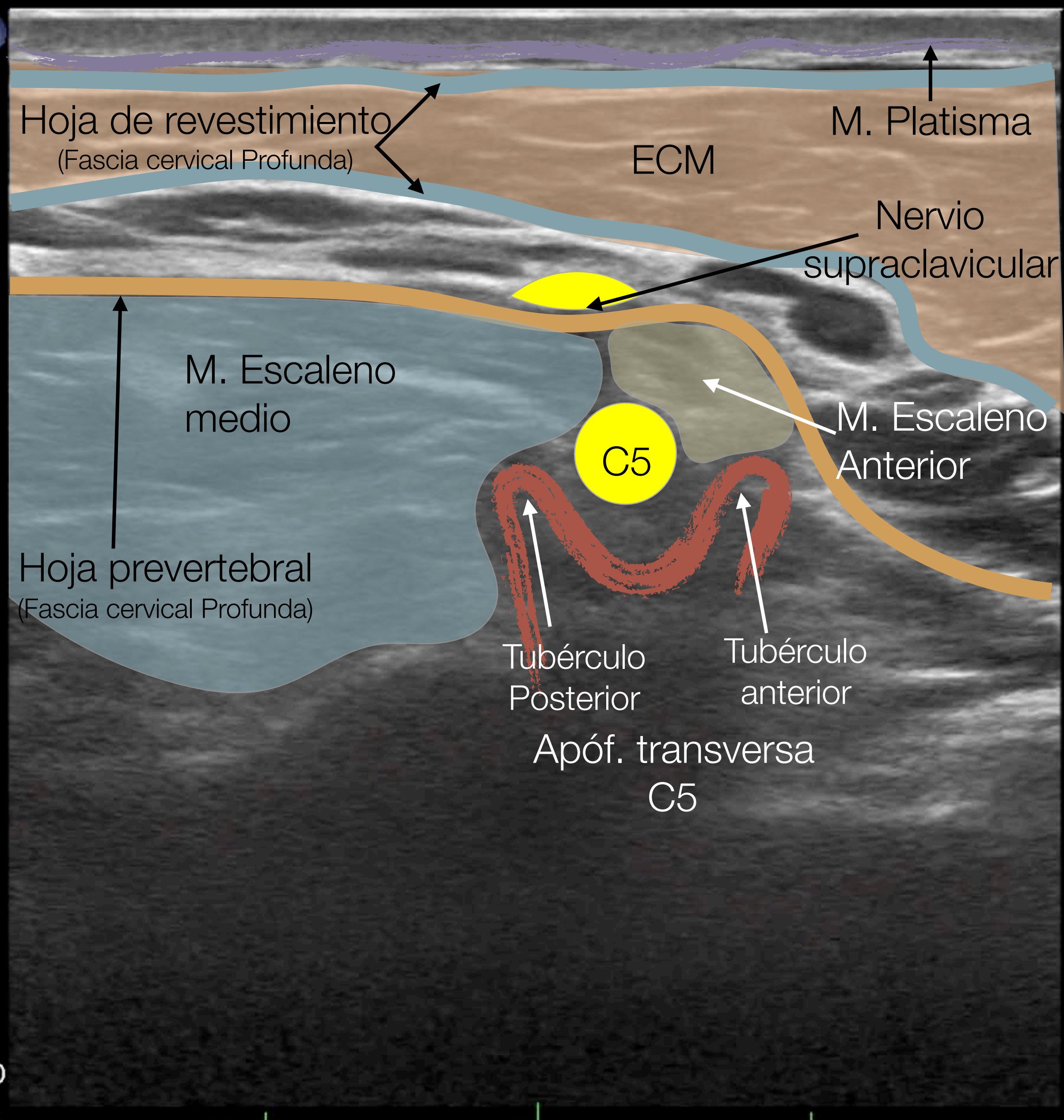
Gan. Profund. Congel. Guardar Opciones Color

• Escaneo

Image size: 1024 x 768  
View size: 1765 x 1324  
WL: 427 WW: 255  
L85  
33Hz  
RS  
2D  
70%  
Rango din. 60  
P Med.  
Res.

Laura 19521120180412 ( - , - )  
TISO.1 MIU.7  
Free Form  
M4 1

# Región Cervical: Nervio Supraclavicular



• Escaneo

Zoom: 172% Angle: 0  
Im: 36/658

4:00:17 T8 12:04:06

Image size: 1024 x 768

View size: 1765 x 1324

WL: 127 WW: 255

L: 85

33Hz

RS

2D

70%

Rango din. 60

P Med.

Res.

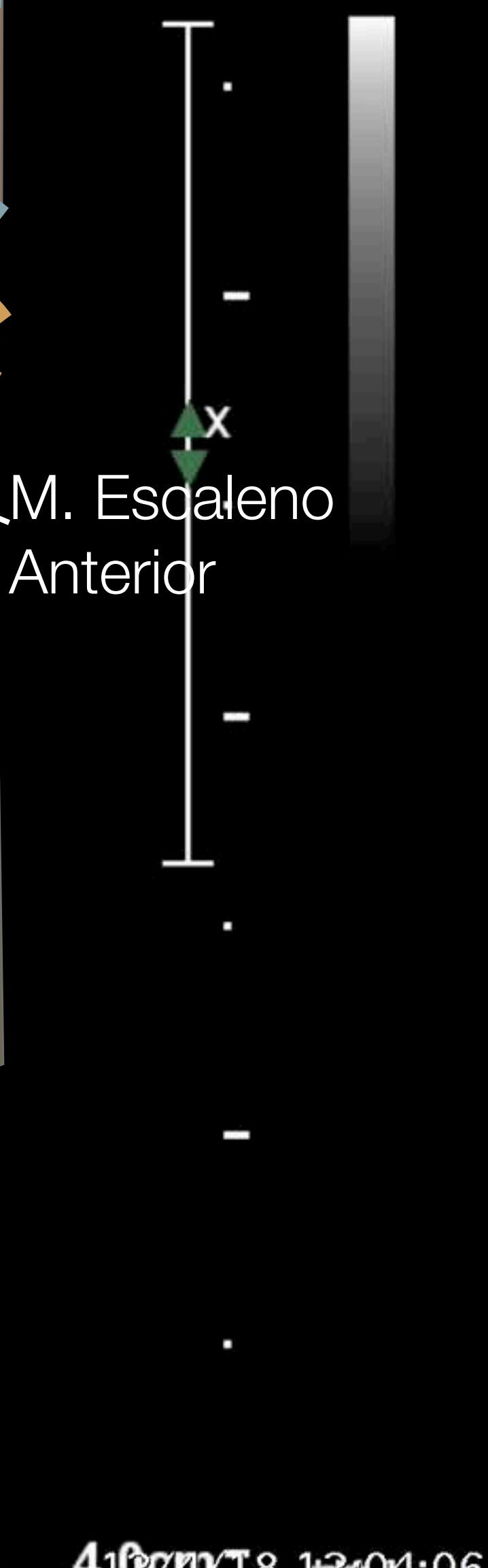
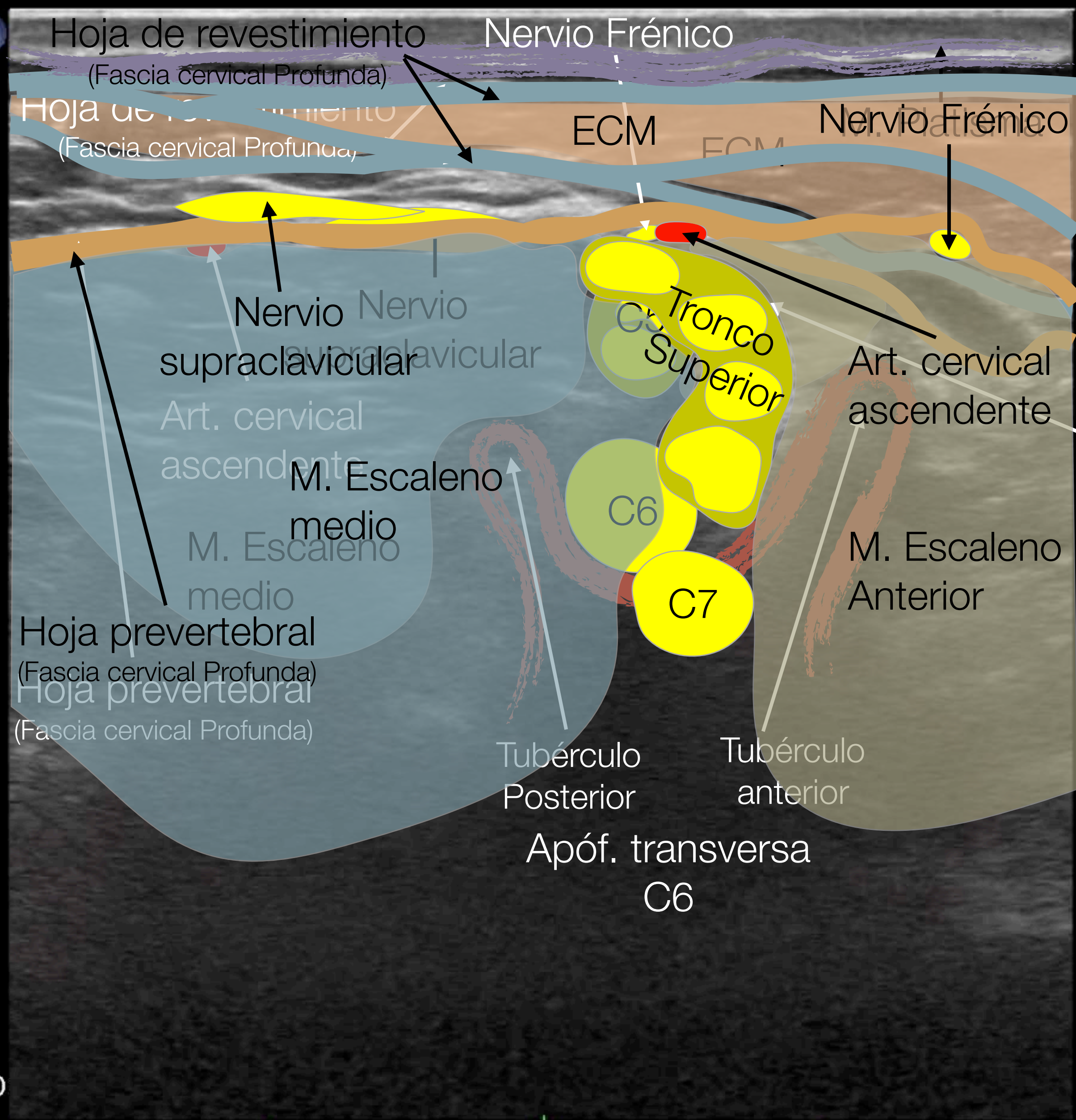
Laura 19521120180412 ( - , - )

TISO.1 MIU.7

Free Form

M4 1

# Región Cervical: Nervio Supraclavicular



• Escaneo

Zoom: 172% Angle: 0

Im: 96/658

JP5G Baseline

SERVICIO DE ANESTESIA DEL CONSORCIO HOSPITAL UNIVERSITARIO DE VALENCIA, 16 ABRIL DE 2018

Made In Horos

Luis F. Valdés Vilches. Hospital Costa del Sol. Marbella

# Región Cervical: Nervio Supraclavicular

2012Jun04 11:48

Gen MB

Ner L50

90%

MI 0,9

TIS 0,1

2,2

Paciente

Gan auto

Gen

Clip

Pág. 1/3

Gan. Profund. Congel. Guardar Opciones Color

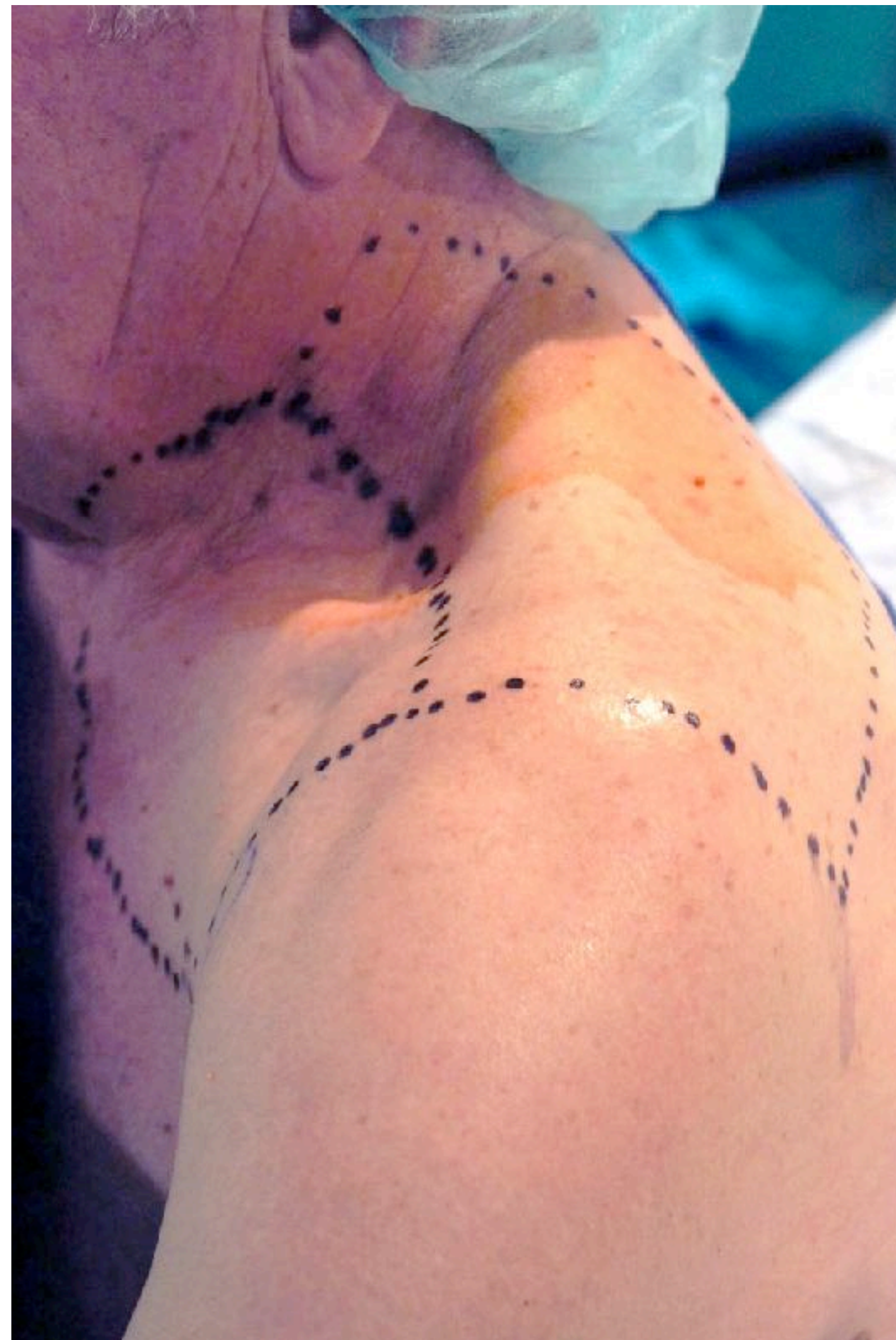


The image is a B-mode ultrasound scan of the supraclavicular region. A yellow circle highlights a nerve bundle. The interface includes a patient information section on the left, a central image area, and a control panel at the bottom. Technical parameters on the right indicate a depth of 90%, MI of 0.9, and TIS of 0.1. The date and time are 2012Jun04 11:48. The patient's name is Gen MB. The page number is 1/3. The control panel includes buttons for Gain (Gan.), Depth (Profund.), Freeze (Congel.), Save (Guardar), Options (Opciones), and Color.

• Escaneo

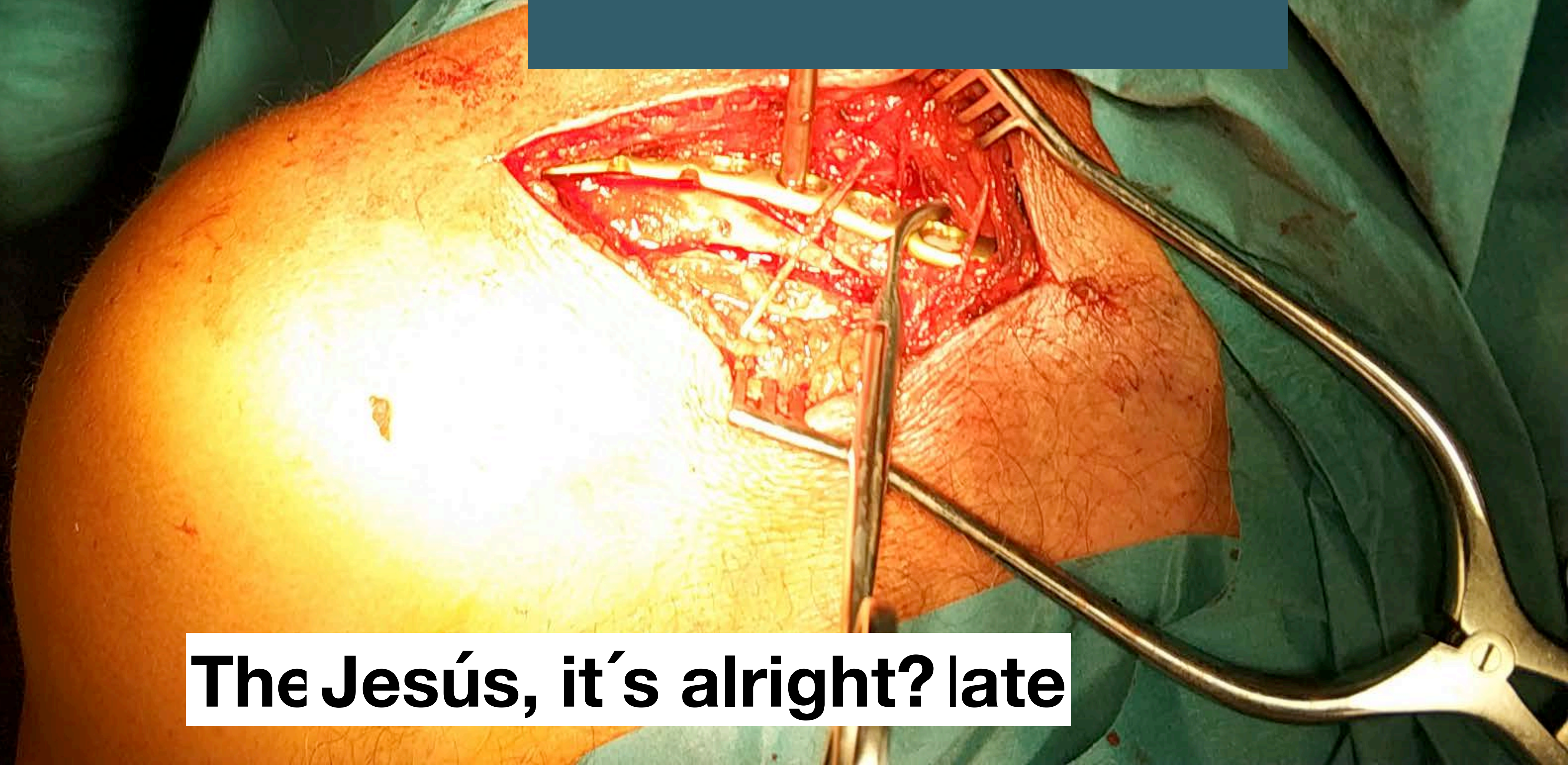


# Región Cervical: Nervio Supraclavicular



• Escaneo

The patient has given written consent to use this images for investigation and educational purposes



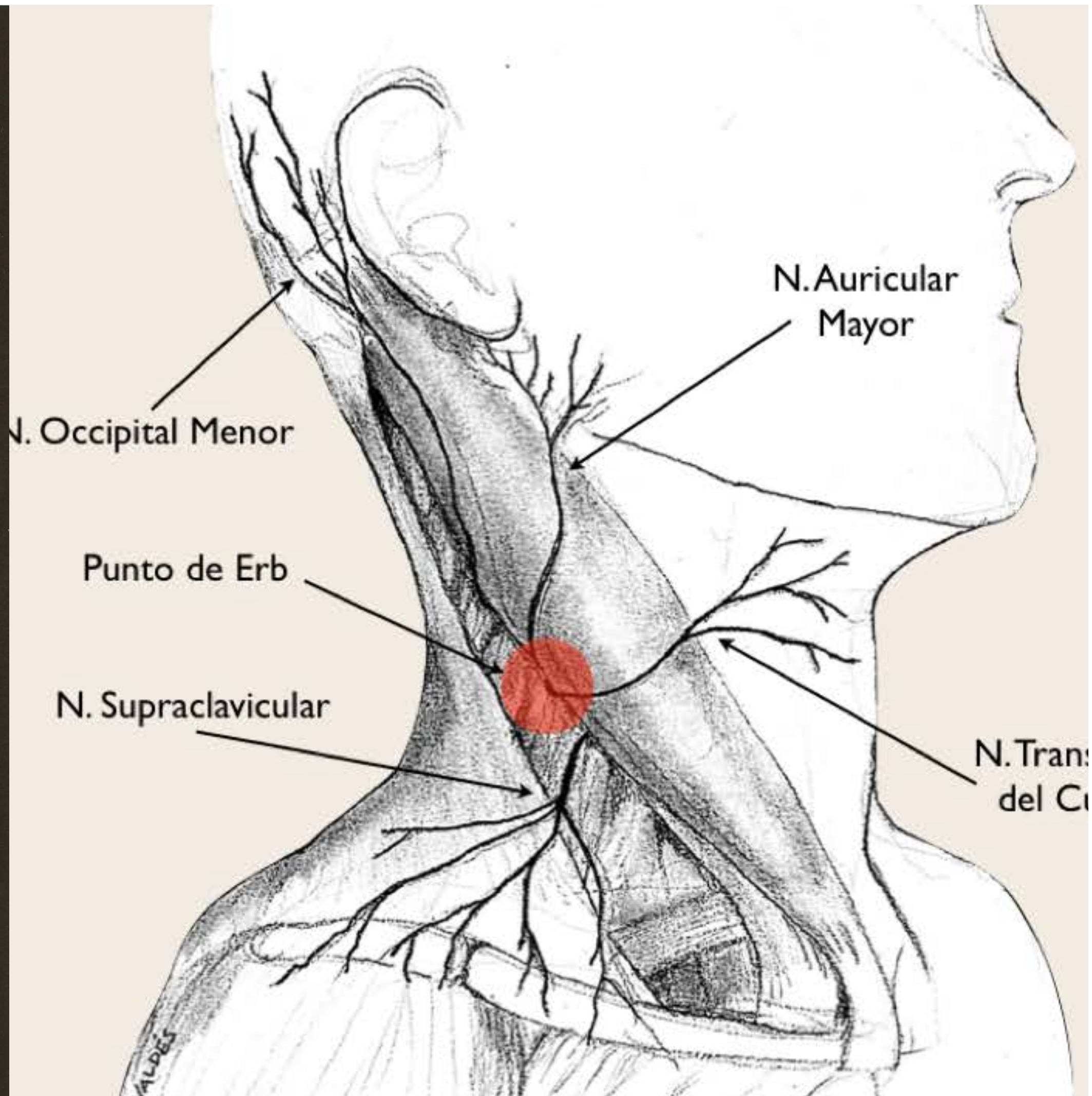
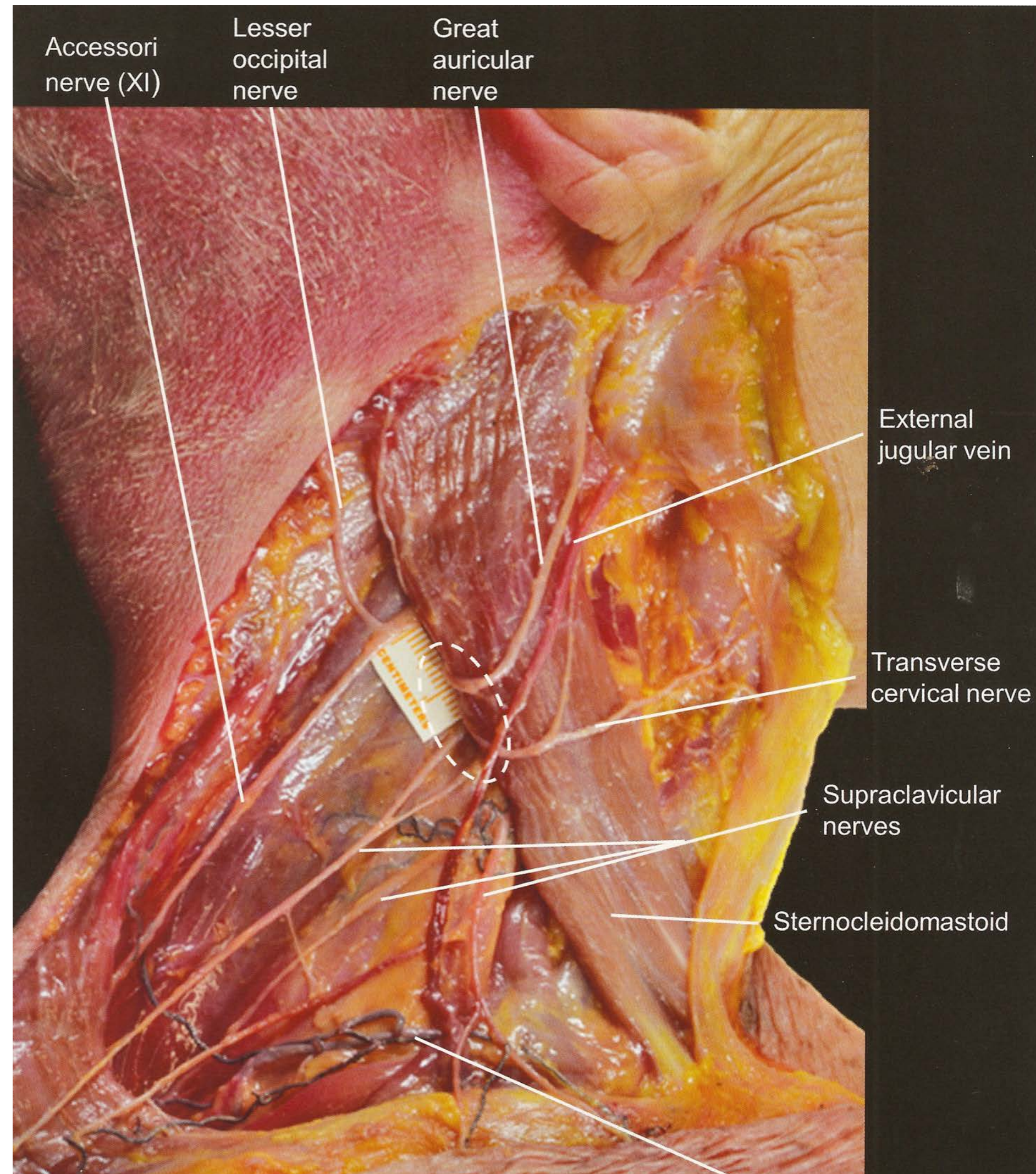
**The Jesús, it's alright? late**

The patient has given written consent to use this images for investigation and educational purposes



**Now, slowly the shoulder**

# Región Cervical: Nervio Auricular Mayor



# Región Cervical: Nervio Auricular Mayor

- ◆ Tratamiento de cefalea cervicogénica rebelde a tratamiento

◆ Selekler M, Kutlu A, Ucar S, Almac A. Immediate response to greater auricular nerve blockade in red ear syndrome. *Cephalalgia* 2009; 29: 478-9.

◆ Elahi F, Reddy C. Neuromodulation of the Great Auricular Nerve for Persistent Post-Traumatic Headache, *Pain Physician* 2014; 2:531-536.

◆ Aoki H, Tokunaga Y. A new approach to the treatment of glossopharyngeal neuralgia, using the great auricular nerve block. *Folia Psychiatrica et Neurologica Japonica* 1965; 19: 346- 54.

• Indicaciones

# Región Cervical: Nervio Auricular Mayor

- ◆ Tratamiento de cefalea cervicogénica rebelde a tratamiento
- ◆ Técnica analgésica en:
  - ◆ **Otoplastias**
  - ◆ **Cir. timpano-mastoidea**
  - ◆ **Tics dolorosos**
  - ◆ **Cir. base de cráneo**

◆ Selekler M, Kutlu A, Ucar S, Almac A. Immediate response to greater auricular nerve blockade in red ear syndrome. *Cephalalgia* 2009; 29: 478-9.

◆ Elahi F, Reddy C. Neuromodulation of the Great Auricular Nerve for Persistent Post-Traumatic Headache, *Pain Physician* 2014; 2:531-536.

◆ Aoki H, Tokunaga Y. A new approach to the treatment of glossopharyngeal neuralgia, using the great auricular nerve block. *Folia Psychiatrica et Neurologica Japonica* 1965; 19: 346- 54.

◆ Burtles R. Analgesia for 'bat ear' surgery. *Annals of the Royal College of Surgeons of England* 1989; 71: 332.

◆ Suresh S, Barcelona SL, Young NM, Heffner CL, Cote CJ. Does a preemptive block of the great auricular nerve improve postoperative analgesia in children undergoing tympanomastoid surgery? *Anesthesia and Analgesia* 2004; 98: 330-3.

◆ Pinosky ML, Fishman RL, Reeves ST, et al. The effect of bupivacaine skull block on the hemodynamic response to craniotomy. *Anesthesia and Analgesia* 1996; 83: 1256-61.

• **Indicaciones**

# Región Cervical: Nervio Auricular Mayor

- ◆ Tratamiento de cefalea cervicogénica rebelde a tratamiento
- ◆ Técnica analgésica en:
  - ◆ **Otoplastias**
  - ◆ **Cir. timpano-mastoidea**
  - ◆ **Tics dolorosos**
  - ◆ **Cir. base de cráneo**
- ◆ Localización del punto de Erb  
(Permite bloqueo eficaz del plexo cervical superficial)
- ◆ Evitar la lesión accidental cuando se realiza un bloqueo interescalénico

◆ Selekler M, Kutlu A, Ucar S, Almac A. Immediate response to greater auricular nerve blockade in red ear syndrome. *Cephalalgia* 2009; 29: 478-9.

◆ Elahi F, Reddy C. Neuromodulation of the Great Auricular Nerve for Persistent Post-Traumatic Headache, *Pain Physician* 2014; 2:531-536.

◆ Aoki H, Tokunaga Y. A new approach to the treatment of glossopharyngeal neuralgia, using the great auricular nerve block. *Folia Psychiatrica et Neurologica Japonica* 1965; 19: 346- 54.

◆ Burtles R. Analgesia for 'bat ear' surgery. *Annals of the Royal College of Surgeons of England* 1989; 71: 332.

◆ Suresh S, Barcelona SL, Young NM, Heffner CL, Cote CJ. Does a preemptive block of the great auricular nerve improve postoperative analgesia in children undergoing tympanomastoid surgery? *Anesthesia and Analgesia* 2004; 98: 330-3.

◆ Pinosky ML, Fishman RL, Reeves ST, et al. The effect of bupivacaine skull block on the hemodynamic response to craniotomy. *Anesthesia and Analgesia* 1996; 83: 1256-61.

◆ Christ S, Rindfleisch F, Friederich P. Superficial cervical plexus neuropathy after single-injection interscalene brachial plexus block. *Anesth Analg*, 2009; 109: 2008-11.

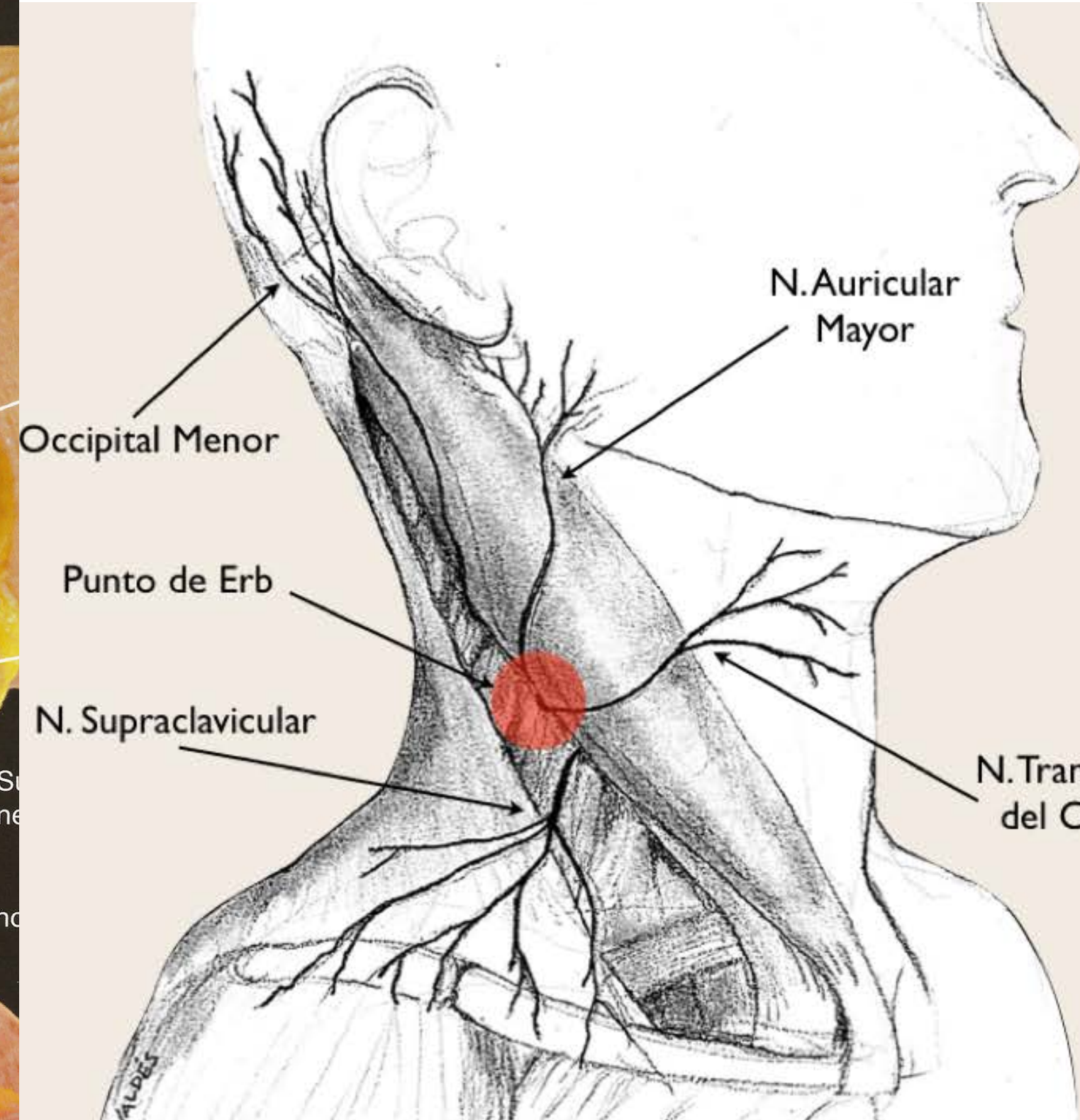
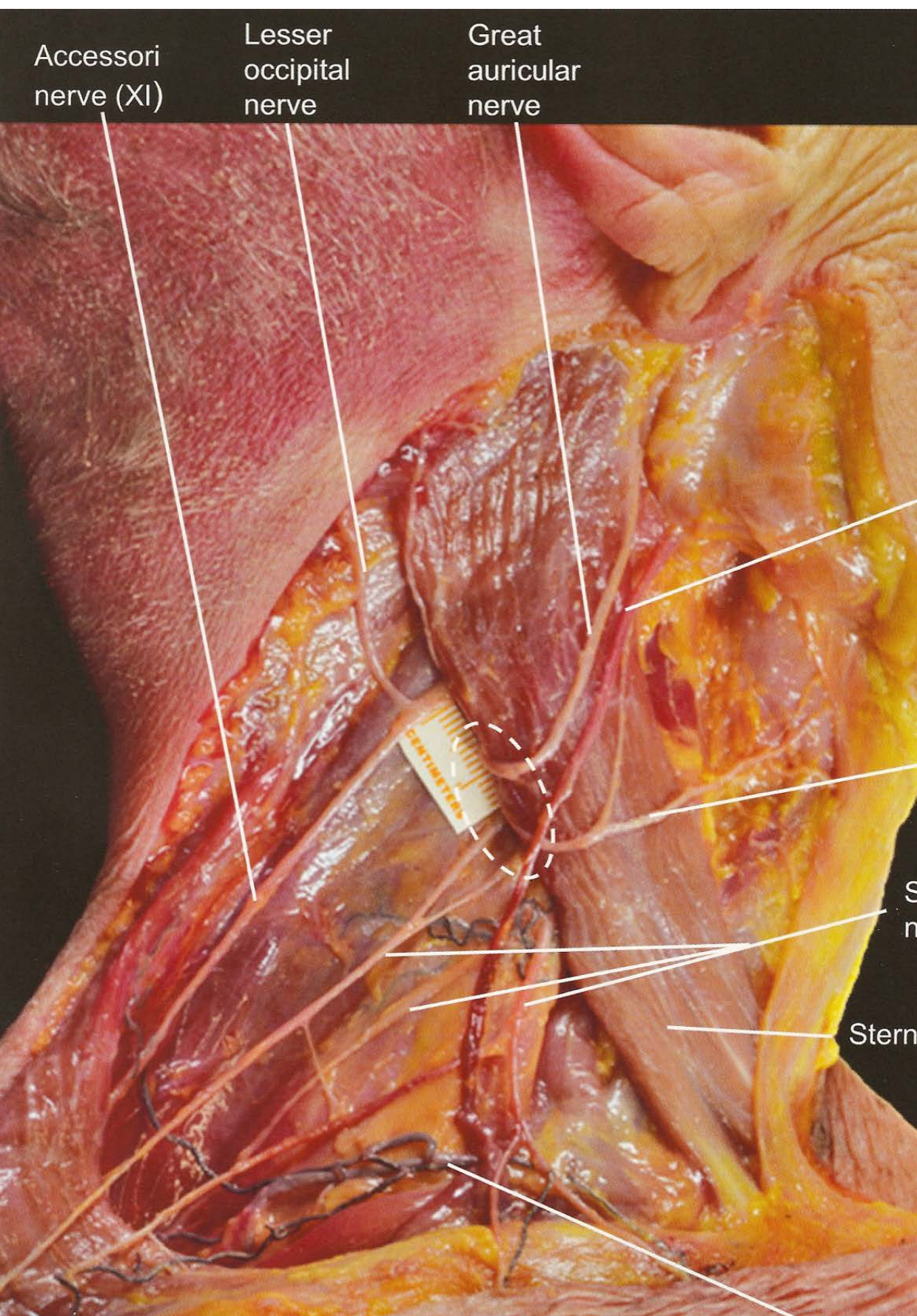
◆ Fredrickson MJ. Superficial Cervical Plexus Neuropathy With Chronic Pain After Superficial Cervical Plexus Block and Interscalene Catheter Placement. *Reg Anesth Pain Med*, 2011; 36(2): 206.

• **Indicaciones**

# Región Cervical: Nervio Auricular Mayor

## • Anatomía

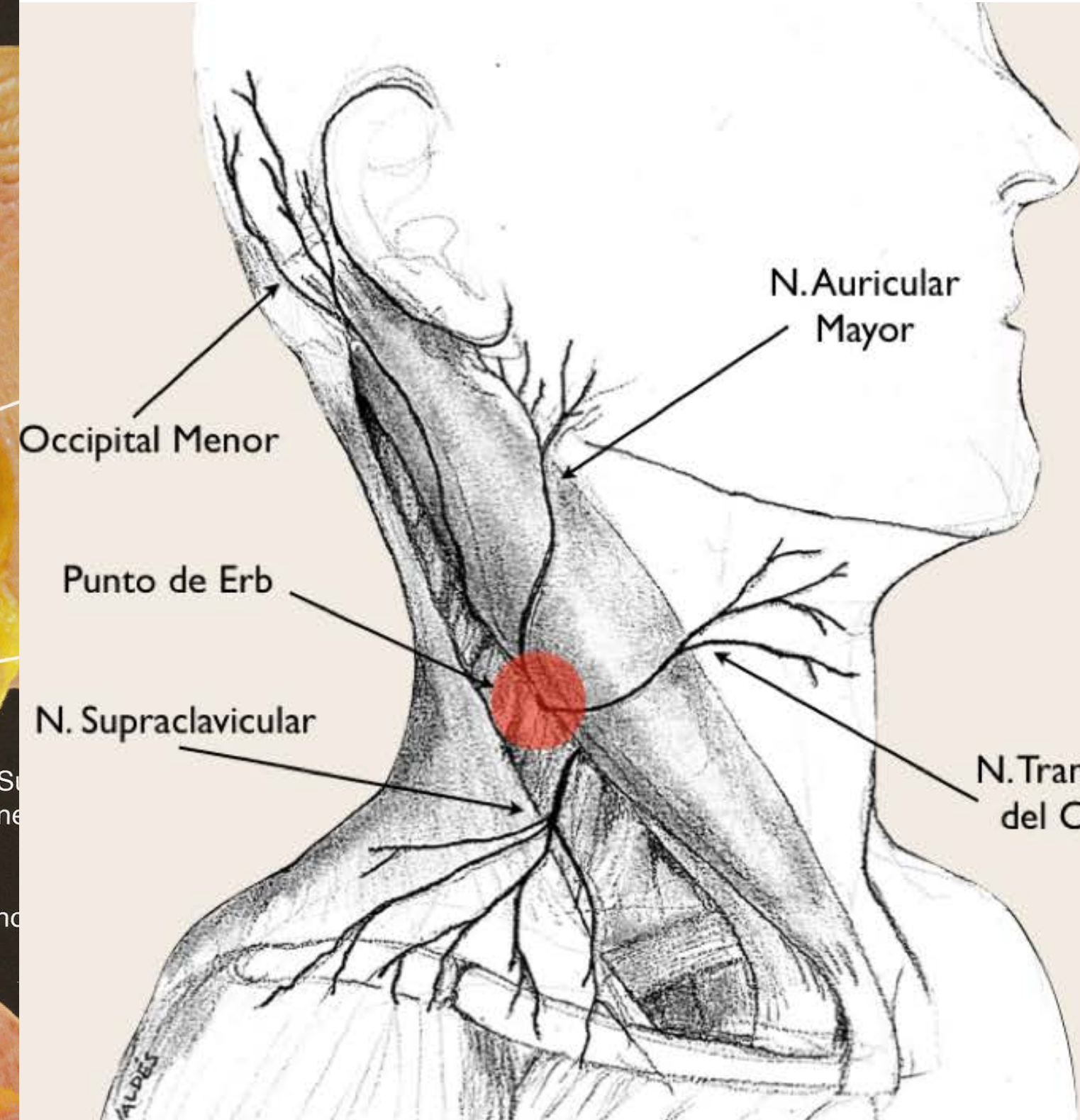
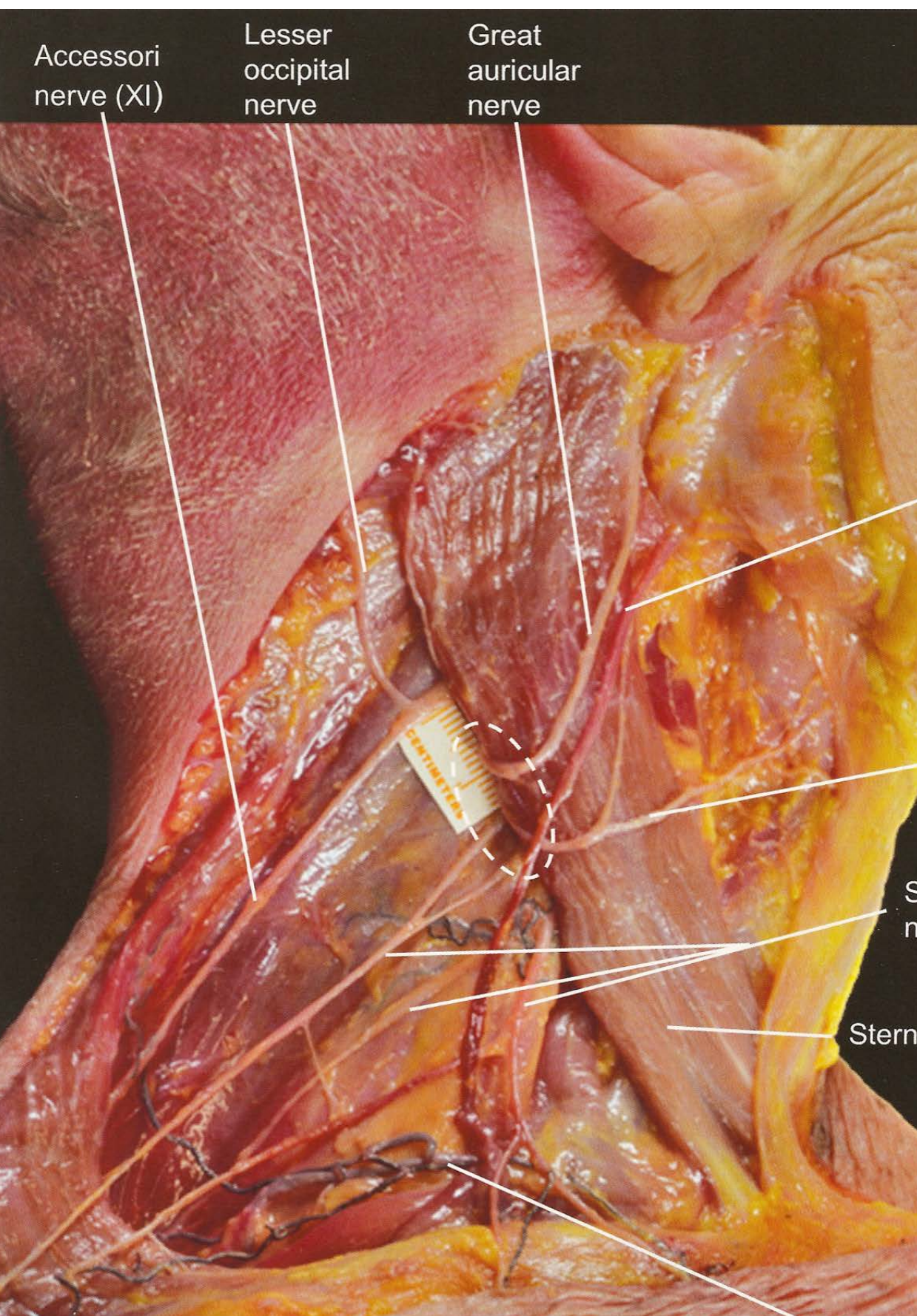
◆ C2-C3





# Región Cervical: Nervio Auricular Mayor

## • Anatomía



◆ C2-C3

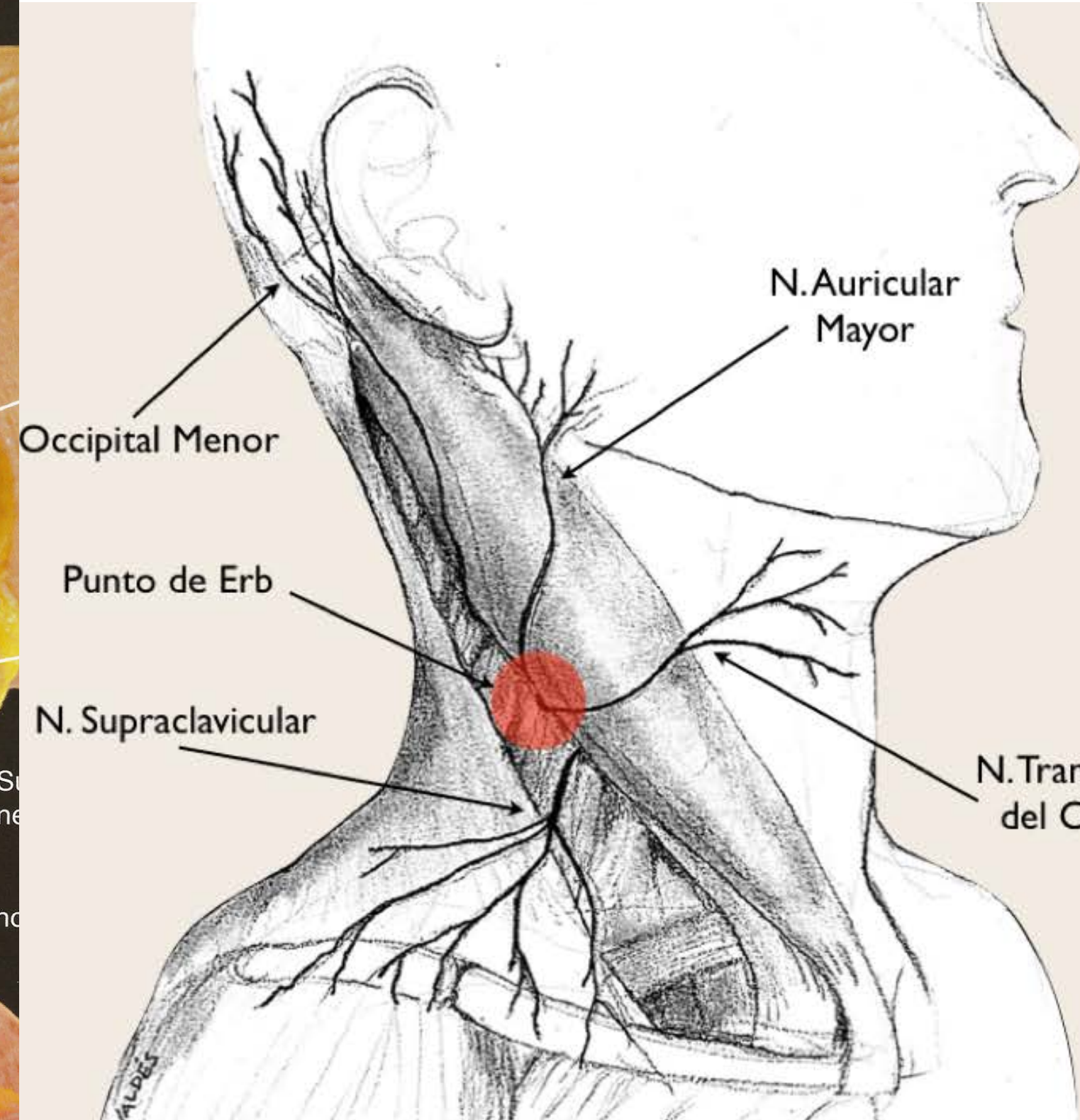
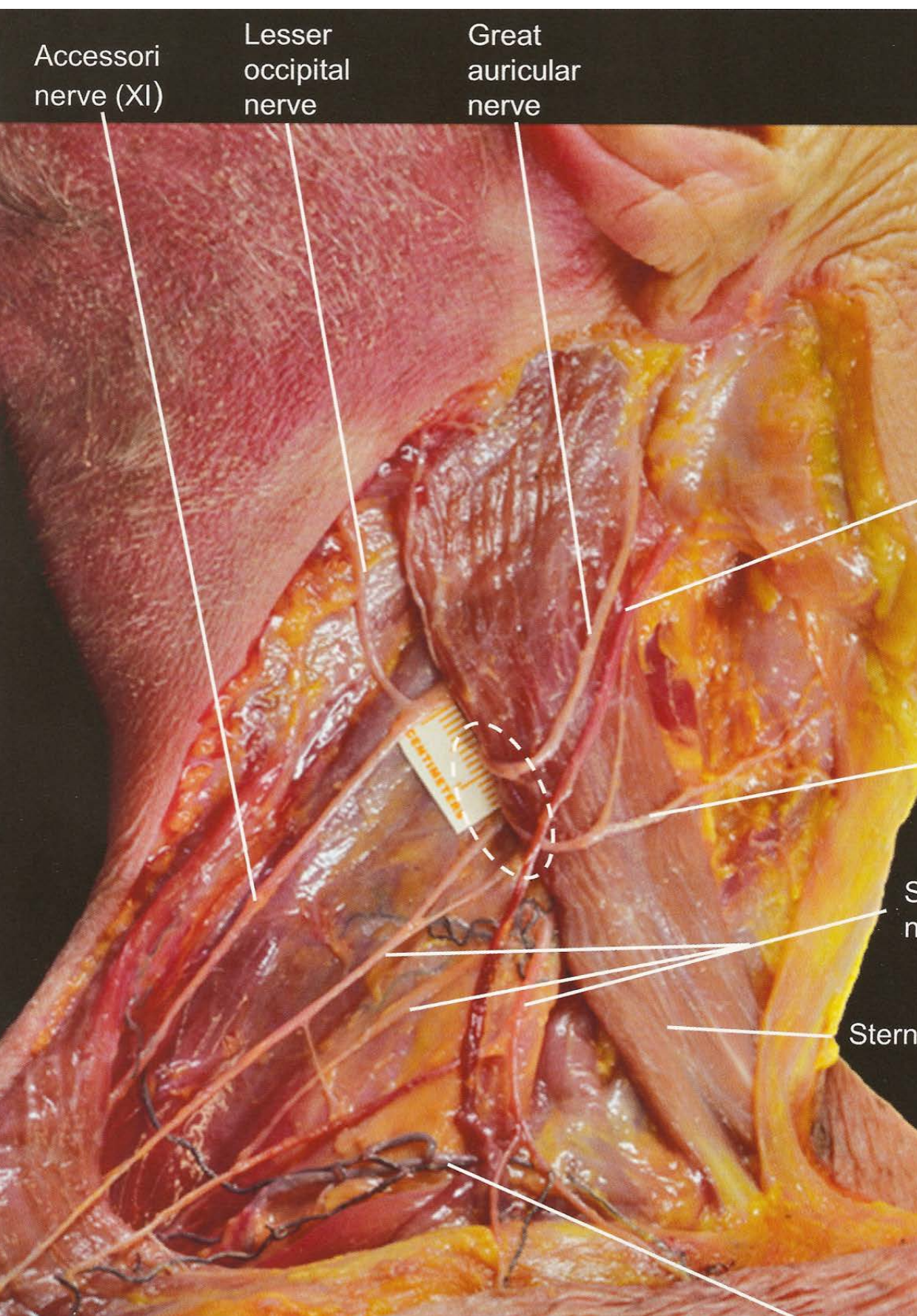
◆ 2 tramos: (Punto de Erb)

◆ **1<sup>er</sup> tramo por debajo del músculo ECM**  
(junto al resto de nervios del plexo cervical superficial)

◆ **2<sup>o</sup> tramo sobre el músculo ECM**

# Región Cervical: Nervio Auricular Mayor

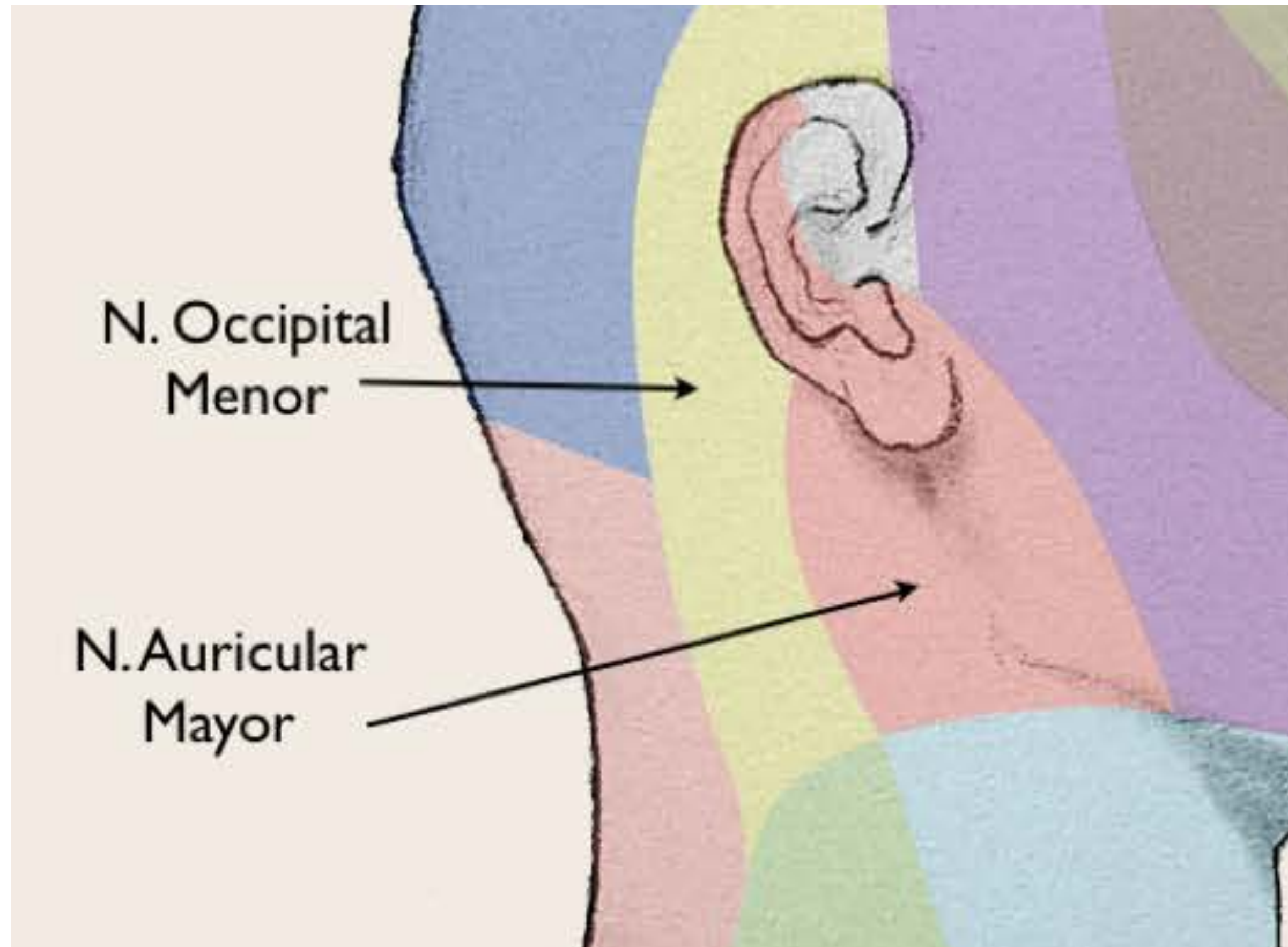
## • Anatomía



- ◆ C2-C3
- ◆ 2 tramos: (Punto de Erb)
  - ◆ **1<sup>er</sup> tramo por debajo del músculo ECM** (junto al resto de nervios del plexo cervical superficial)
  - ◆ **2<sup>o</sup> tramo sobre el músculo ECM**
- ◆ Asciende hacia el pabellón auricular
- ◆ Ramas anteriores y posteriores

# Región Cervical: Nervio Auricular Mayor

## • Anatomía

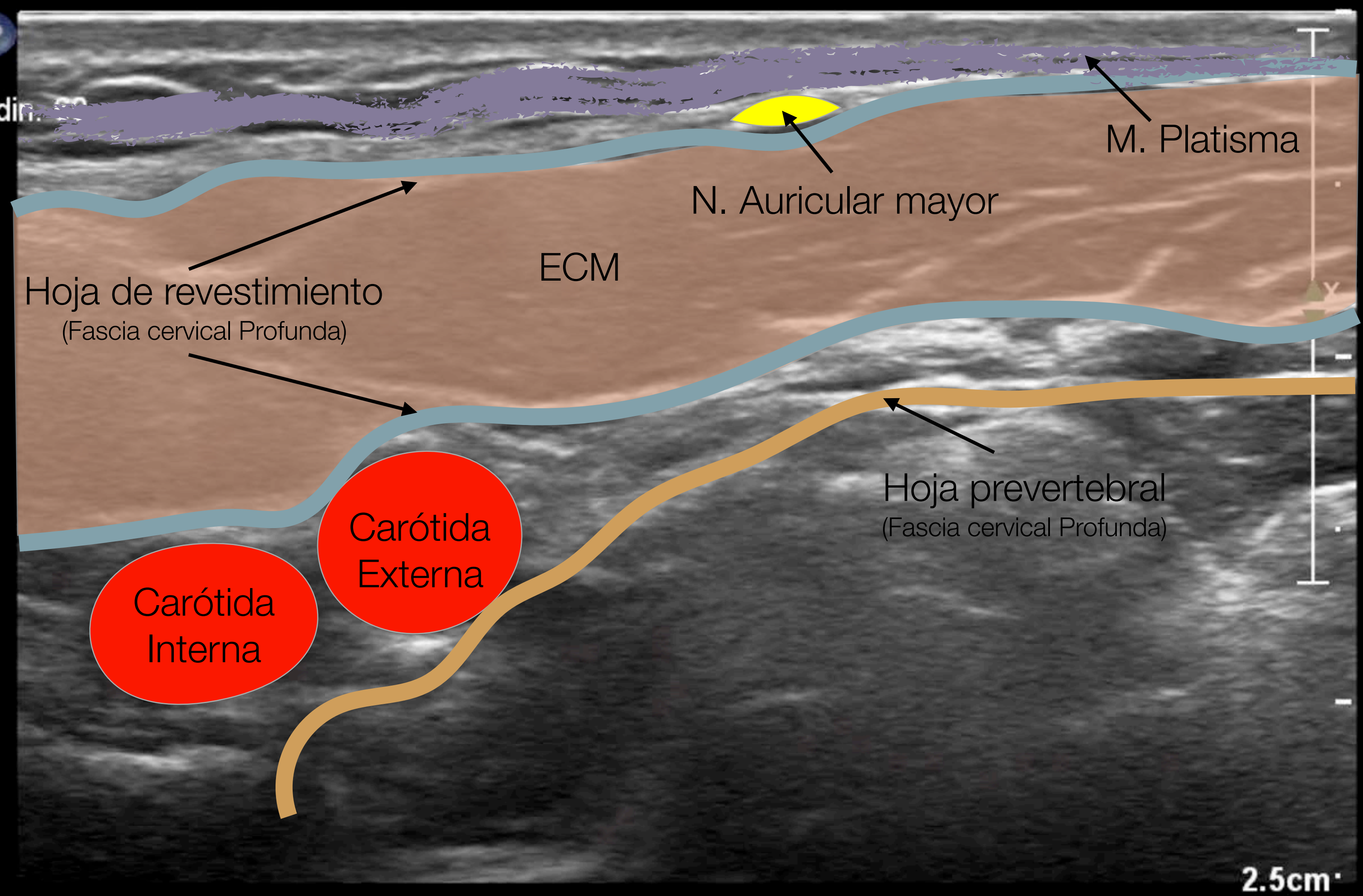


- ◆ C2-C3
- ◆ 2 tramos: (Punto de Erb)
  - ◆ **1<sup>er</sup> tramo por debajo del músculo ECM** (junto al resto de nervios del plexo cervical superficial)
  - ◆ **2<sup>o</sup> tramo sobre el músculo ECM**
- ◆ Asciende hacia el pabellón auricular
- ◆ Ramas anteriores y posteriores
- ◆ Inerva:
  - ◆ **Ángulo mandibular**
  - ◆ **lóbulo de la oreja, el antitrago y la cola del hélix hasta el tubérculo auricular**

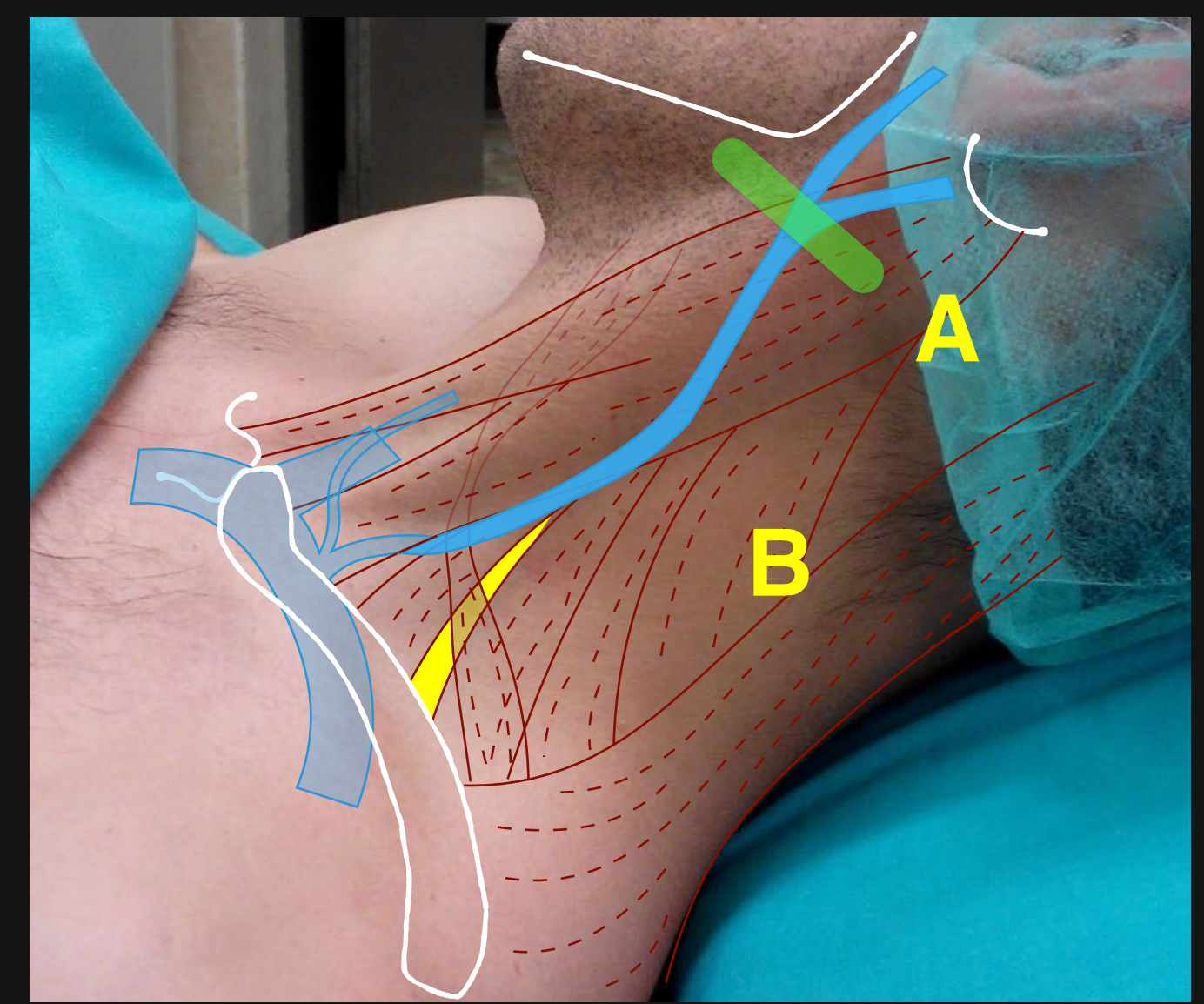
Superior x 1324  
WW: 255

TISO.1 MIO.0  
Unnamed  
Free Form  
M3 1

# Región Cervical: Nervio Auricular Mayor



## • Escaneo



172% Angle: 0  
1/483  
baseline

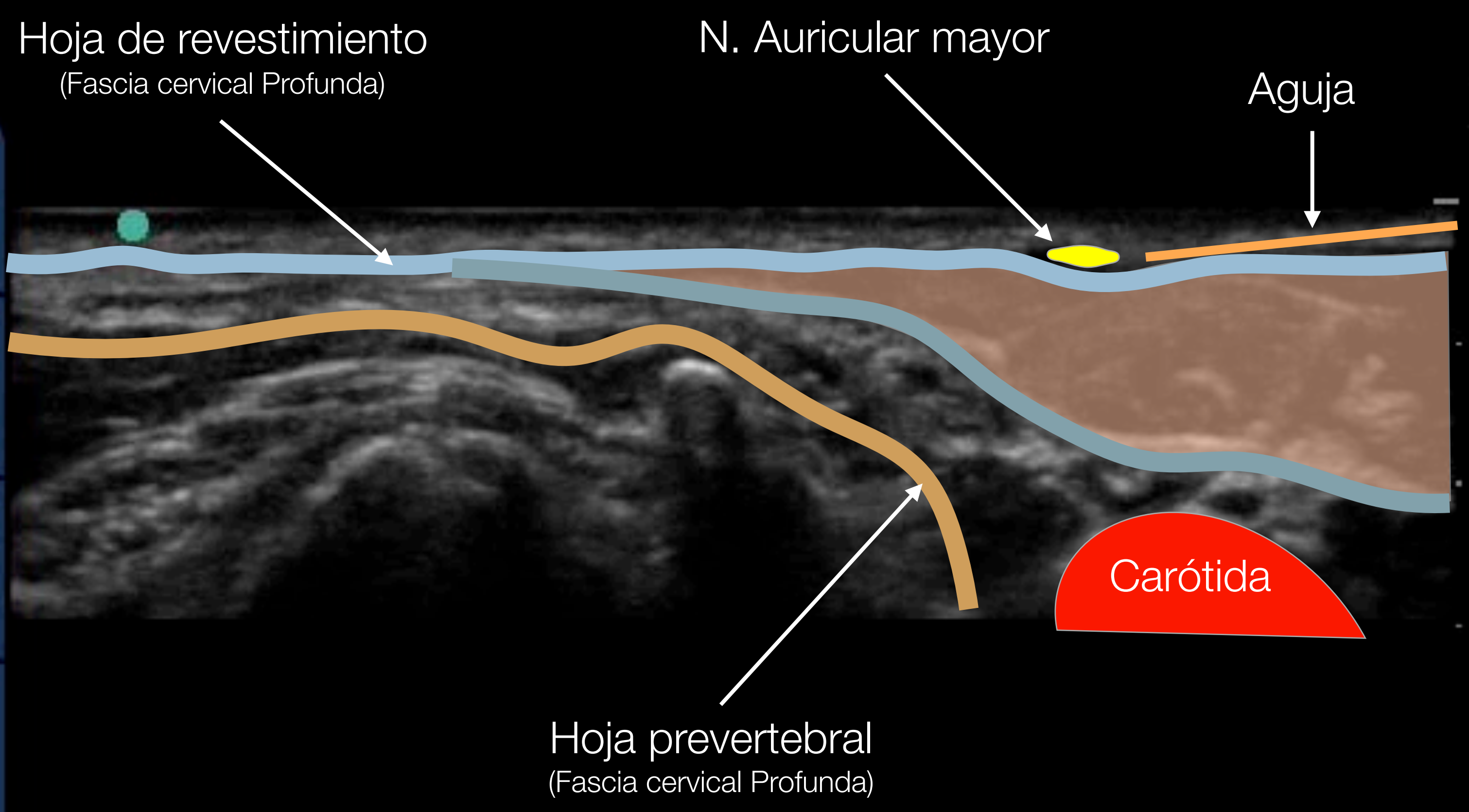
12/4/18 11:56:26  
Made In Horos

# Región Cervical: Nervio Auricular Mayor

2012 Oct 26 12:59

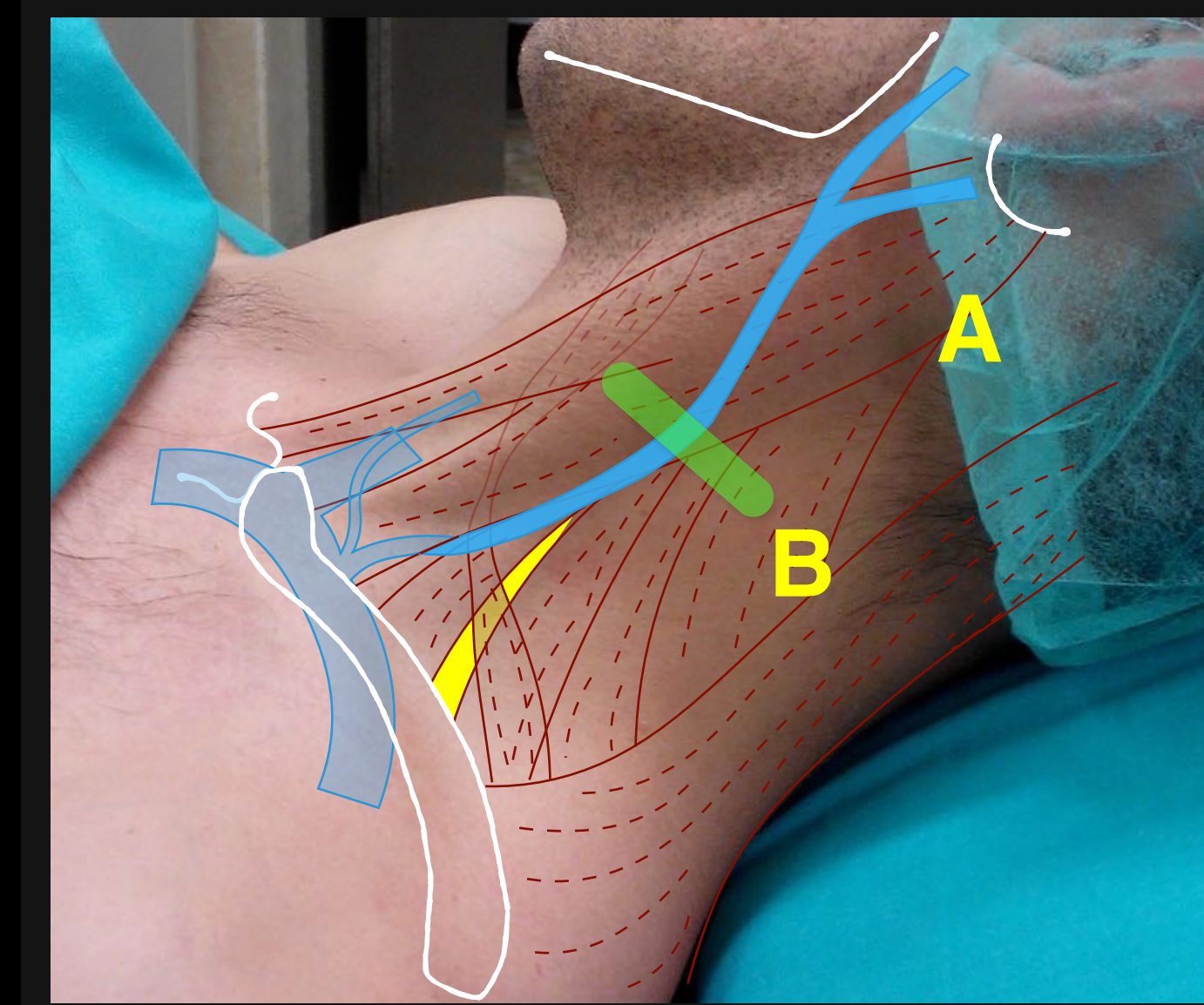
Ner L50  
B4%  
MI 0,7  
TIS 0,1

- Paciente
- Gan auto
- Gen
- Clip
- Pág. 1/3



1,5

## • Escaneo



# Región Cervical

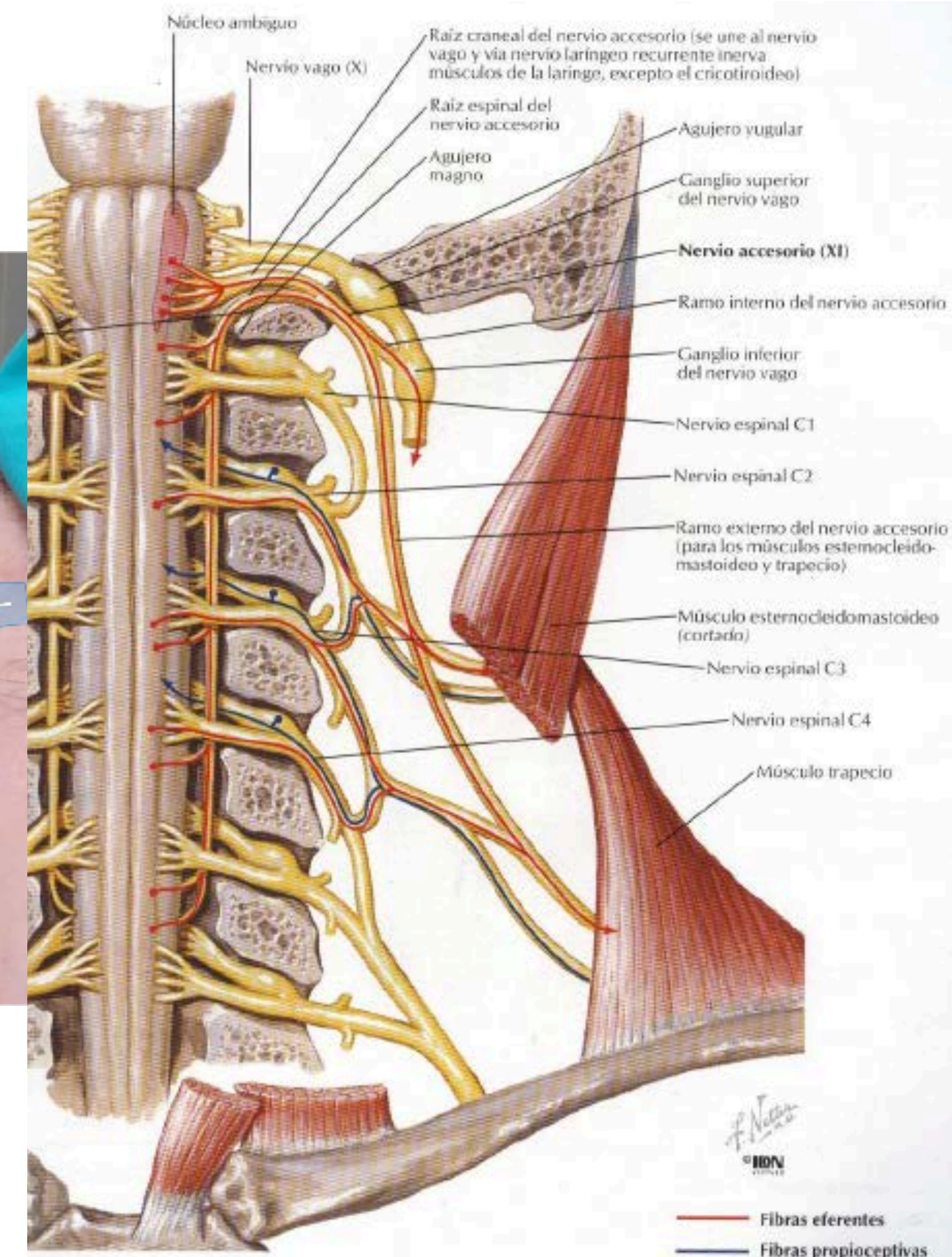
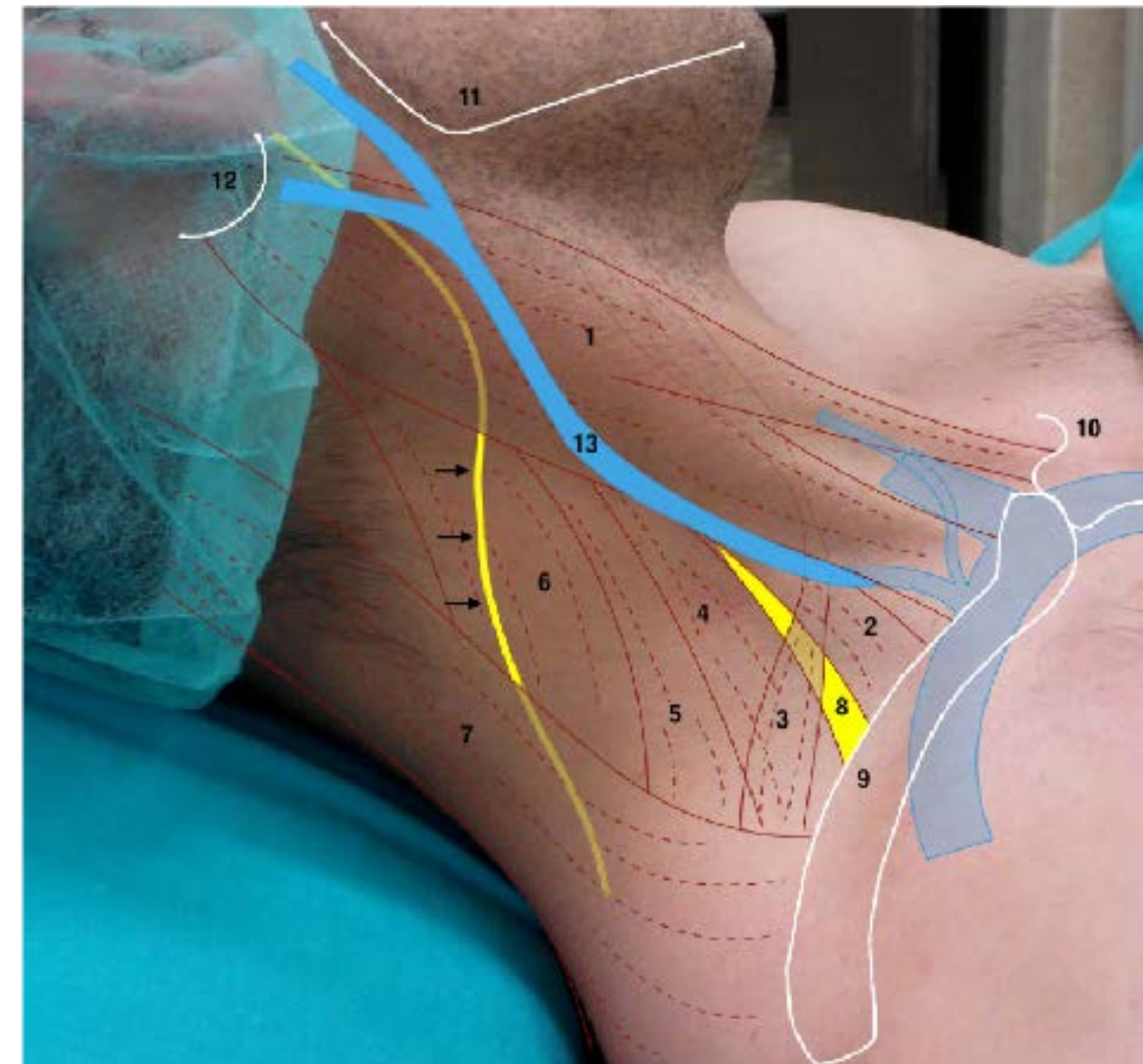
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**“Región cervical”**

**Bloqueo del nervio espinal  
(XI par craneal)**

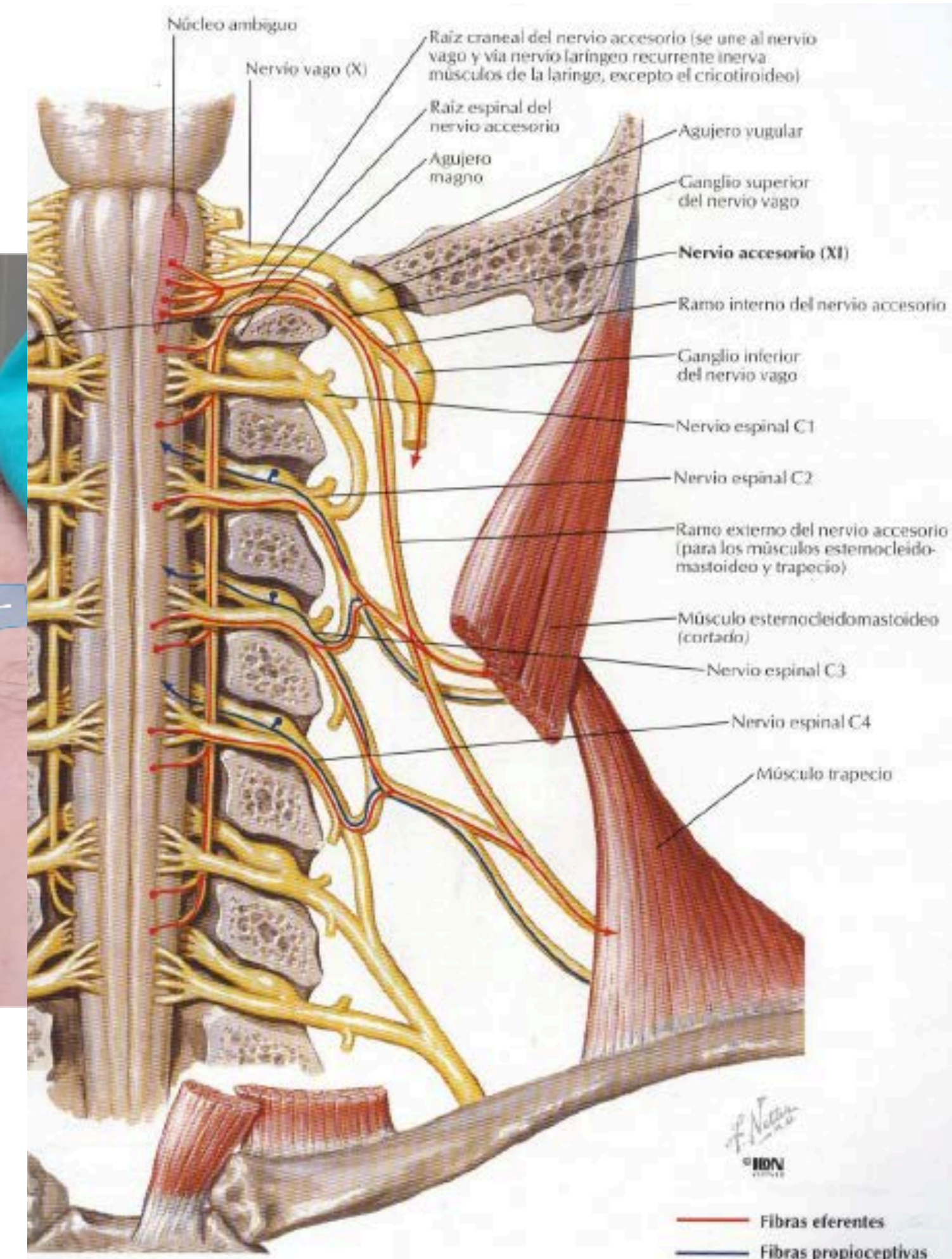
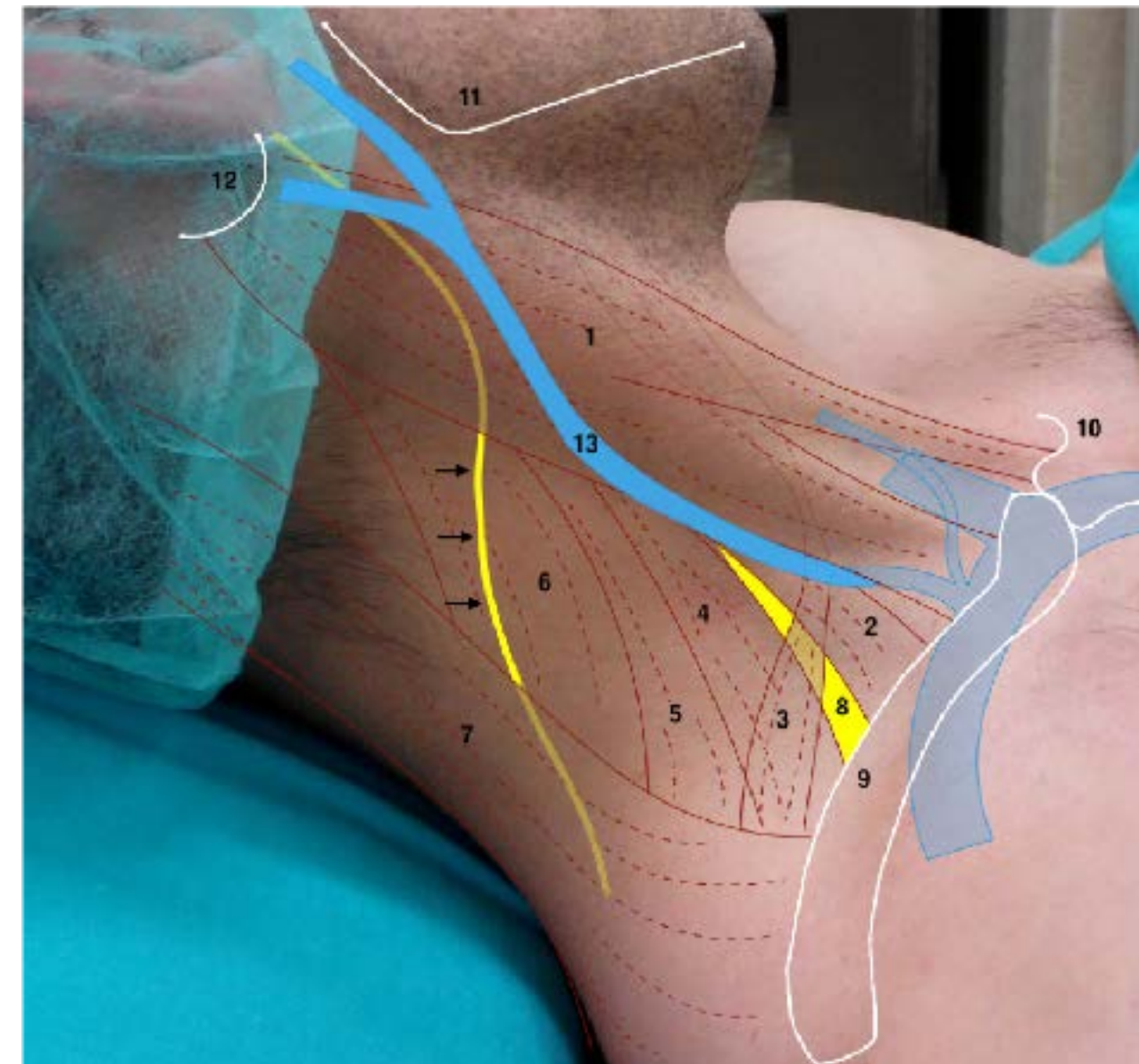
# Región Cervical: Nervio Espinal (XI par)

- ◆ 2 Raíces: Craneal (bulbar) y espinal



# Región Cervical: Nervio Espinal (XI par)

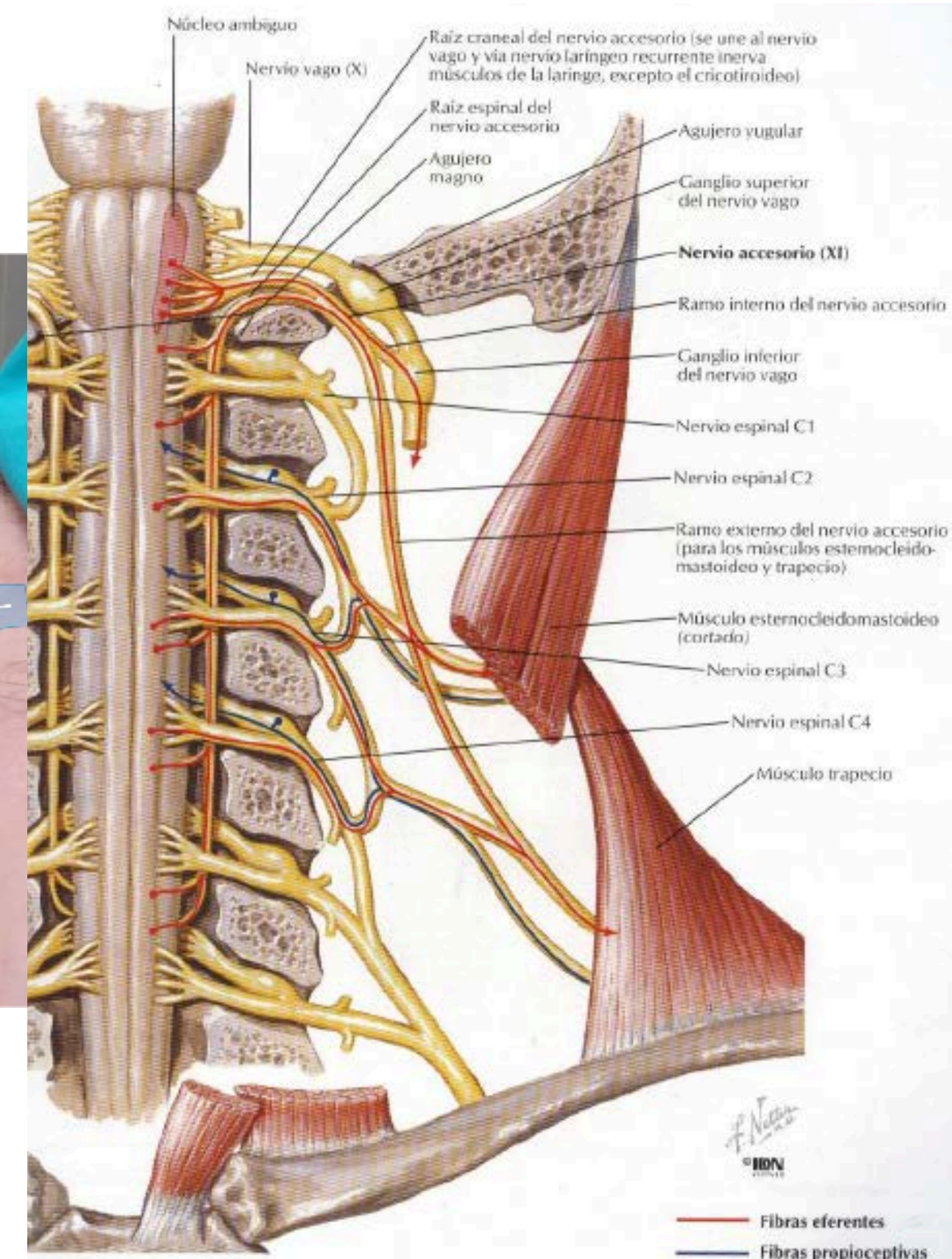
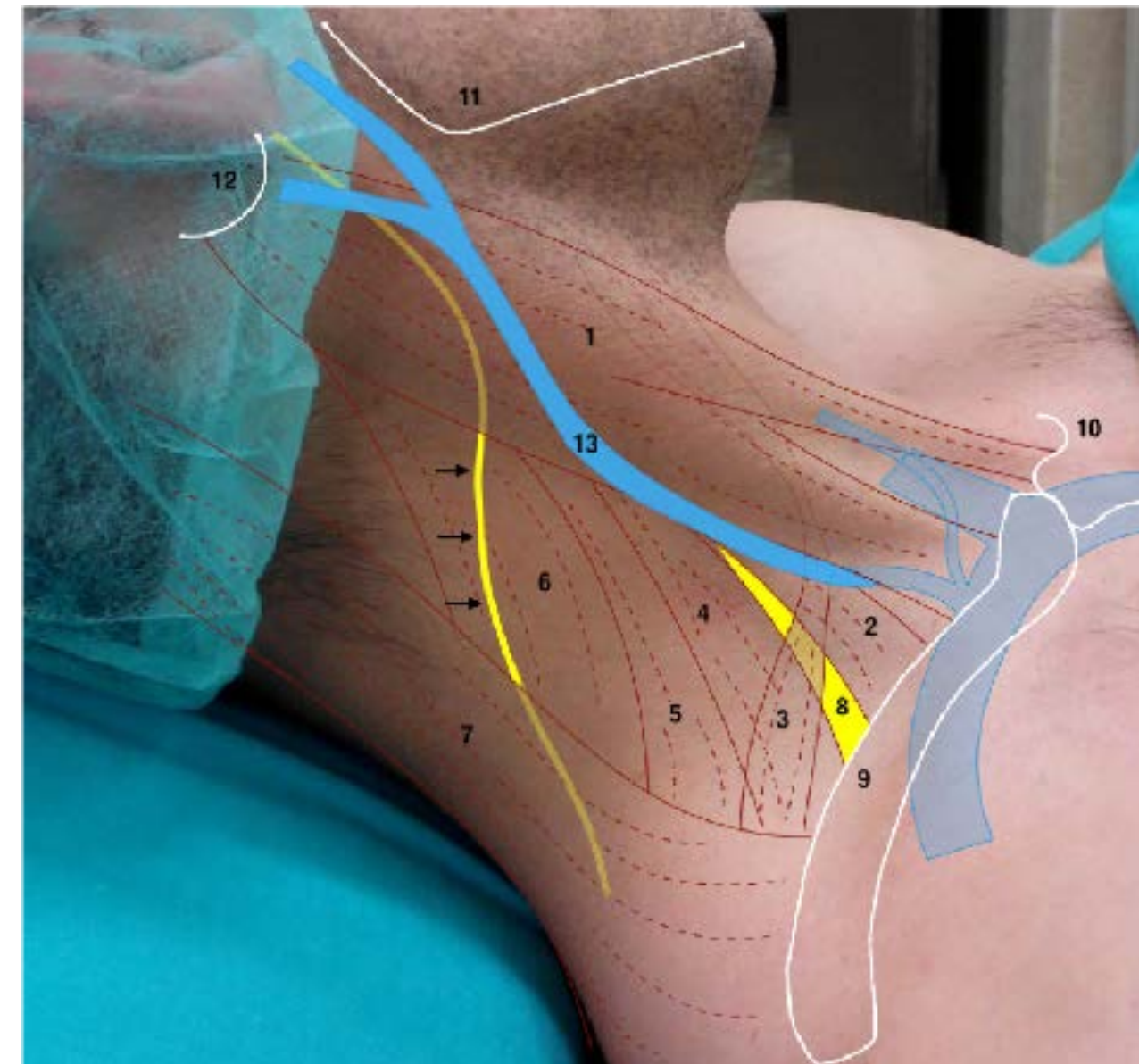
- ◆ 2 Raíces: Craneal (bulbar) y espinal
- ◆ Emerge del cráneo por el agujero yugular





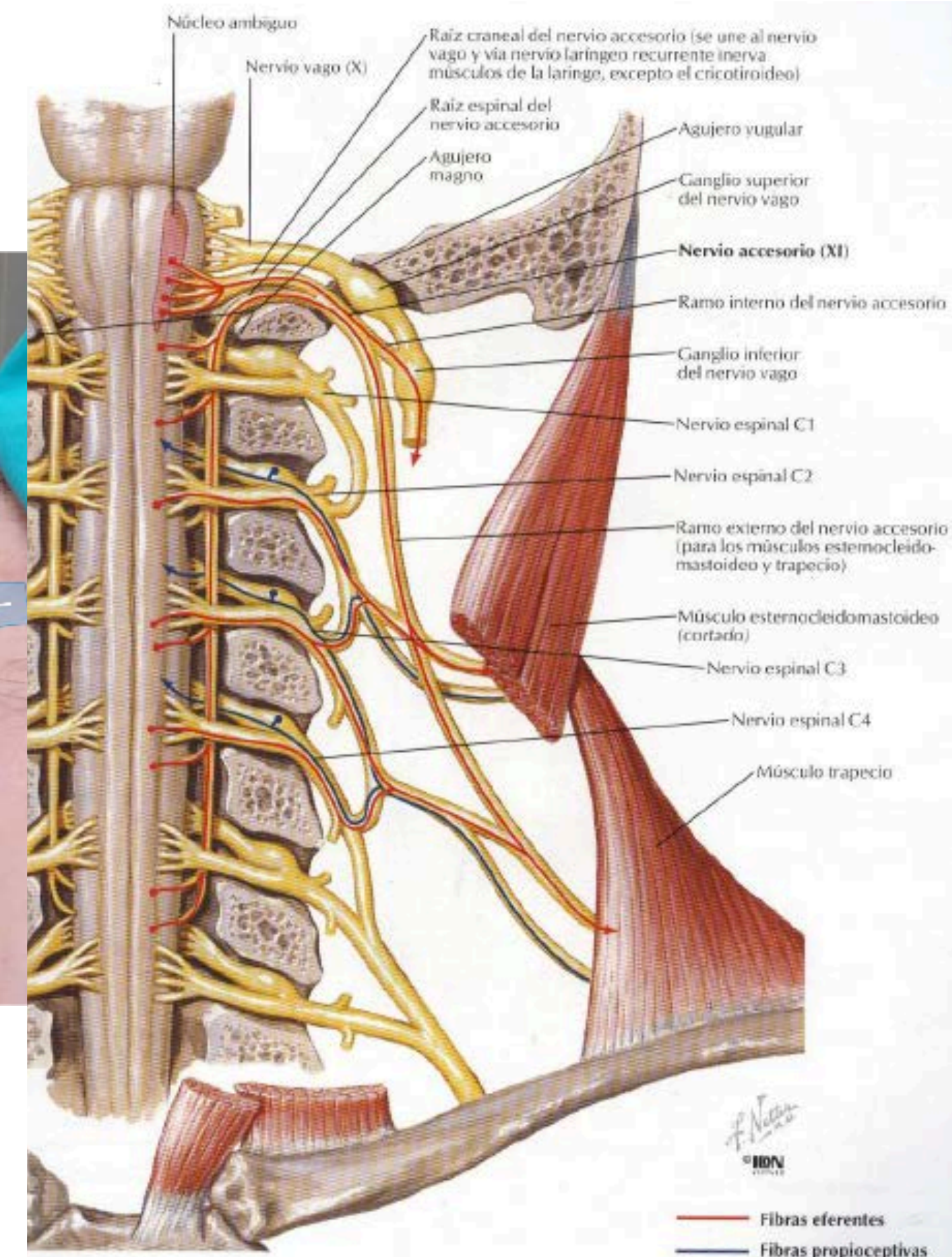
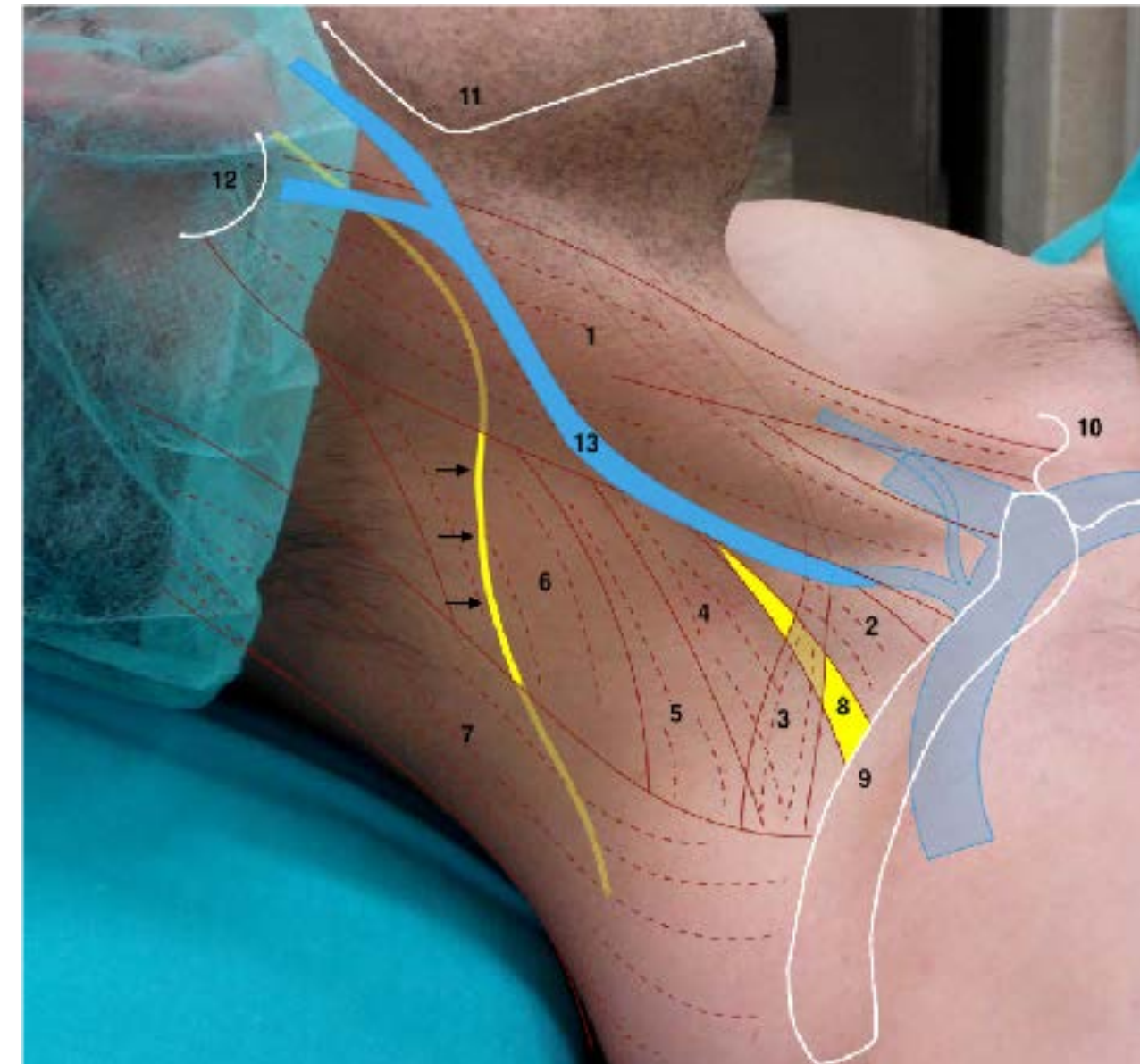
# Región Cervical: Nervio Espinal (XI par)

- ◆ 2 Raíces: Craneal (bulbar) y espinal
- ◆ Emerge del cráneo por el agujero yugular
- ◆ Acompaña a la yugular y carótida



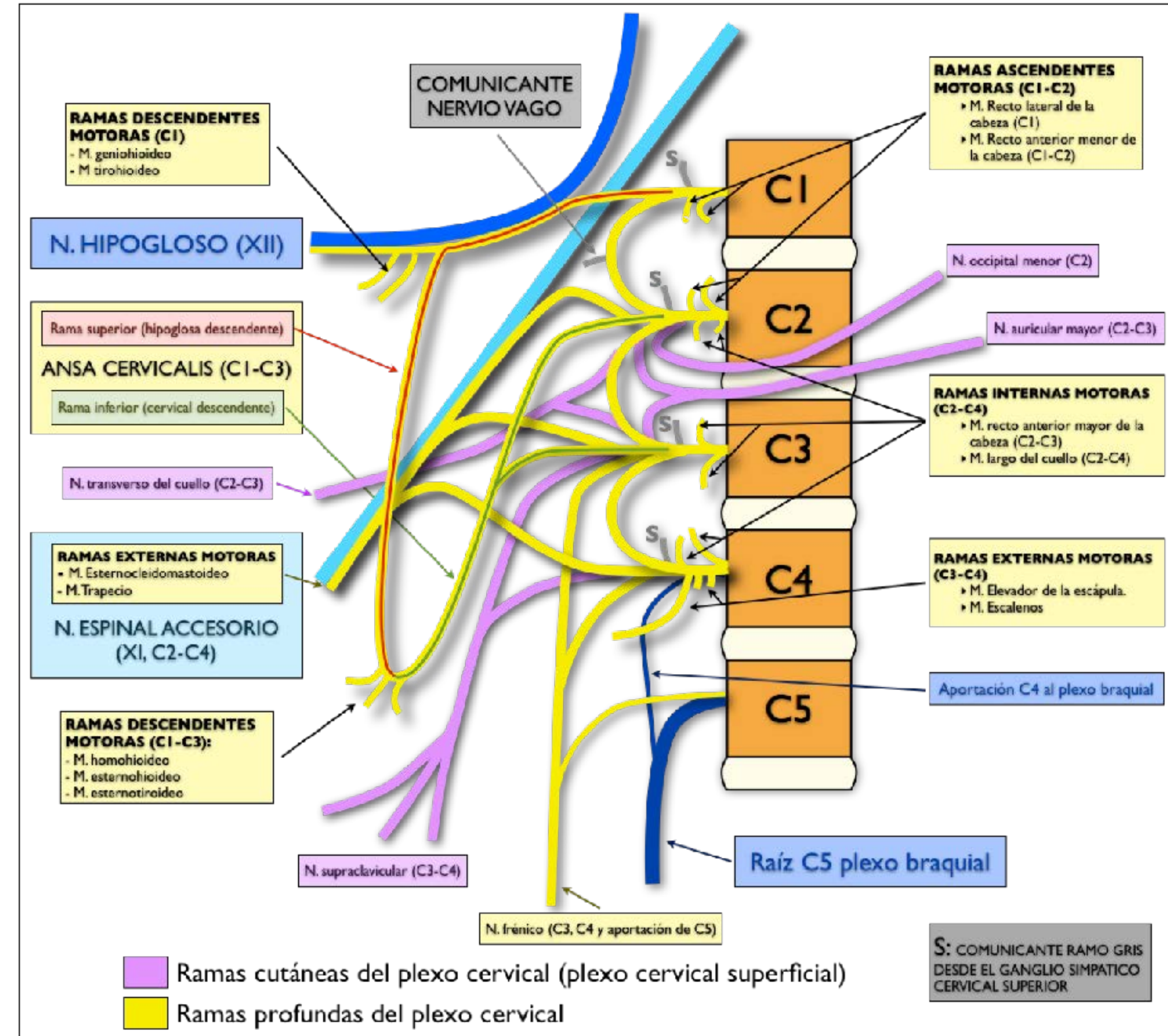
# Región Cervical: Nervio Espinal (XI par)

- ◆ 2 Raíces: Craneal (bulbar) y espinal
- ◆ Emerge del cráneo por el agujero yugular
- ◆ Acompaña a la yugular y carótida
- ◆ La rama interna (bulbar) se une al vago



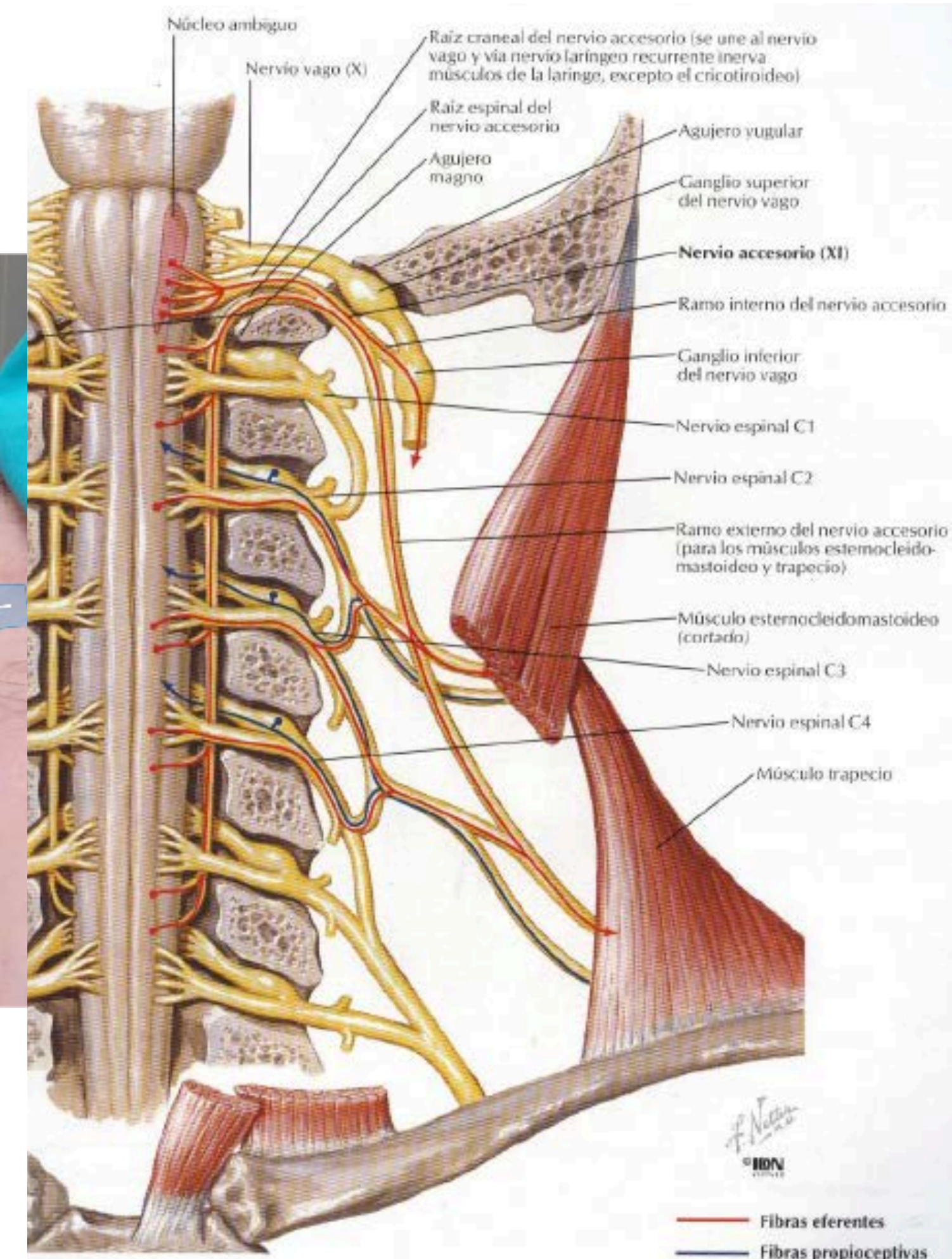
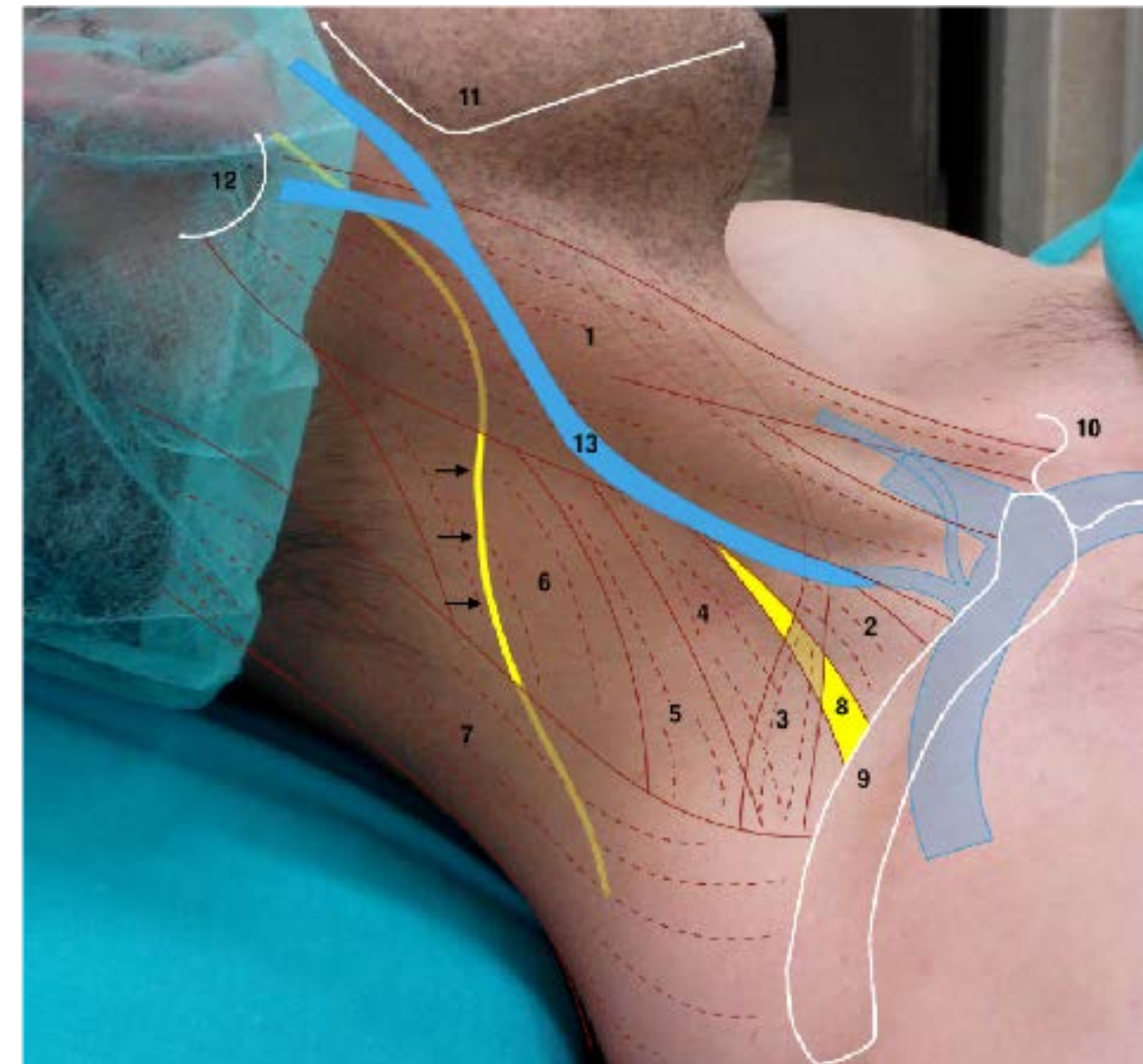
# Región Cervical: Nervio Espinal (XI par)

- ◆ 2 Raíces: Craneal (bulbar) y espinal
- ◆ Emerge del cráneo por el agujero yugular
- ◆ Acompaña a la yugular y carótida
- ◆ La rama interna (bulbar) se une al vago
- ◆ La rama externa inerva los mm. Externocleidomastoideo y trapecio



# Región Cervical: Nervio Espinal (XI par)

- ◆ 2 Raíces: Craneal (bulbar) y espinal
- ◆ Emerge del cráneo por el agujero yugular
- ◆ Acompaña a la yugular y carótida
- ◆ La rama interna (bulbar) se une al vago
- ◆ La rama externa inerva los mm. Externocleidomastoideo y trapecio
- ◆ Atraviesa el ECM y llega al trapecio sobre el m. elevador de la escápula, entre las hojas de revestimiento y prevertebral de la fascia cervical profunda



# Región Cervical: Nervio Espinal (XI par)

## •Indicaciones

- ◆ Diagnóstico y tratamiento de lesiones del nervio espinal

❖ Brown KE, Stickler L. Shoulder pain and dysfunction secondary to neural injury. *Int J Sports Phys Ther.* 2011 Sep; 6(3):224-33.

❖ Zeidenberg J1, Burks SS, Jose J, Subhawong TK, Levi AD. The utility of ultrasound in the assessment of traumatic peripheral nerve lesions: report of 4 cases. *Neurosurg Focus.* 2015 Sep;39(3):E3.

❖ Seok JI, Kim JW, Walker FO. . Spontaneous spinal accessory nerve palsy: the diagnostic usefulness of ultrasound. *Muscle Nerve.* 2014 Jul;50(1):149-50.

❖ Bodner G, Harpf C, Gardetto A, Kovacs P, Gruber H, Peer S, Mallhoui A. Ultrasonography of the Accessory Nerve. Normal and Pathologic Findings in Cadavers and Patients With Iatrogenic Accessory Nerve Palsy. *J Ultrasound Med* 2002; 21:1159–1163.

❖ Wiater JM, Bigliani LU. Spinal accessory nerve injury. *Clin Orthop* 1999; 368:5–16.

❖ Harpf C, Rhomberg M, Rumer A, Hussl H. Iatrogenic lesion of the accessory nerve in cervical lymph node biopsy. *Chirurg* 1999; 70:690–693.

❖ Miyata K, Kitamura H. Accessory nerve damages and impaired shoulder movements after neck dissections. *Am J Otolaryngol* 1997; 18:197–201.

# Región Cervical: Nervio Espinal (XI par)

## •Indicaciones

- ◆ Diagnóstico y tratamiento de lesiones del nervio espinal
- ◆ Adyuvante a la rehabilitación en cuadros de tortícolis y/o contracturas del trapecio extremas.

◆ Brown KE, Stickler L. Shoulder pain and dysfunction secondary to neural injury. *Int J Sports Phys Ther.* 2011 Sep; 6(3):224-33.

◆ Zeidenberg J1, Burks SS, Jose J, Subhawong TK, Levi AD. The utility of ultrasound in the assessment of traumatic peripheral nerve lesions: report of 4 cases. *Neurosurg Focus.* 2015 Sep;39(3):E3.

◆ Seok JI, Kim JW, Walker FO. . Spontaneous spinal accessory nerve palsy: the diagnostic usefulness of ultrasound. *Muscle Nerve.* 2014 Jul;50(1):149-50.

◆ Bodner G, Harpf C, Gardetto A, Kovacs P, Gruber H, Peer S, Mallhoui A. Ultrasonography of the Accessory Nerve. Normal and Pathologic Findings in Cadavers and Patients With Iatrogenic Accessory Nerve Palsy. *J Ultrasound Med* 2002; 21:1159–1163.

◆ Wiater JM, Bigliani LU. Spinal accessory nerve injury. *Clin Orthop* 1999; 368:5–16.

◆ Harpf C, Rhomberg M, Rumer A, Hussl H. Iatrogenic lesion of the accessory nerve in cervical lymph node biopsy. *Chirurg* 1999; 70:690–693.

◆ Miyata K, Kitamura H. Accessory nerve damages and impaired shoulder movements after neck dissections. *Am J Otolaryngol* 1997; 18:197–201.

# Región Cervical: Nervio Espinal (XI par)

## •Indicaciones

- ◆ Diagnóstico y tratamiento de lesiones del nervio espinal
- ◆ Adyuvante a la rehabilitación en cuadros de tortícolis y/o contracturas del trapecio extremas.
- ◆ Minimizar el riesgo de lesión del nervio durante la inserción de catéteres a nivel interescalénico (abordajes en plano muy posteriores)

◆ Brown KE, Stickler L. Shoulder pain and dysfunction secondary to neural injury. *Int J Sports Phys Ther.* 2011 Sep; 6(3):224-33.

◆ Zeidenberg J1, Burks SS, Jose J, Subhawong TK, Levi AD. The utility of ultrasound in the assessment of traumatic peripheral nerve lesions: report of 4 cases. *Neurosurg Focus.* 2015 Sep;39(3):E3.

◆ Seok JI, Kim JW, Walker FO. . Spontaneous spinal accessory nerve palsy: the diagnostic usefulness of ultrasound. *Muscle Nerve.* 2014 Jul;50(1):149-50.

◆ Bodner G, Harpf C, Gardetto A, Kovacs P, Gruber H, Peer S, Mallhoui A. Ultrasonography of the Accessory Nerve. Normal and Pathologic Findings in Cadavers and Patients With Iatrogenic Accessory Nerve Palsy. *J Ultrasound Med* 2002; 21:1159–1163.

◆ Wiater JM, Bigliani LU. Spinal accessory nerve injury. *Clin Orthop* 1999; 368:5–16.

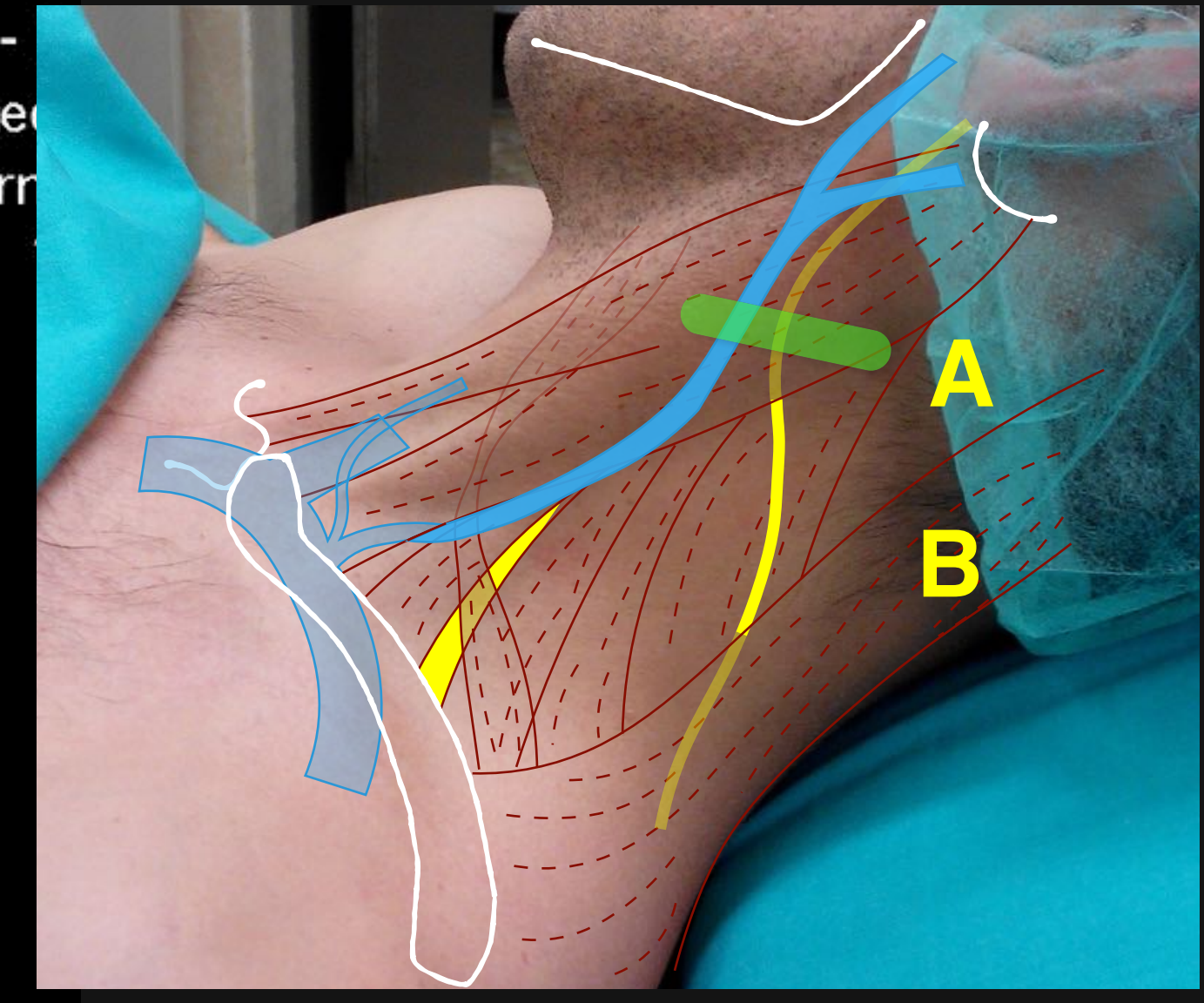
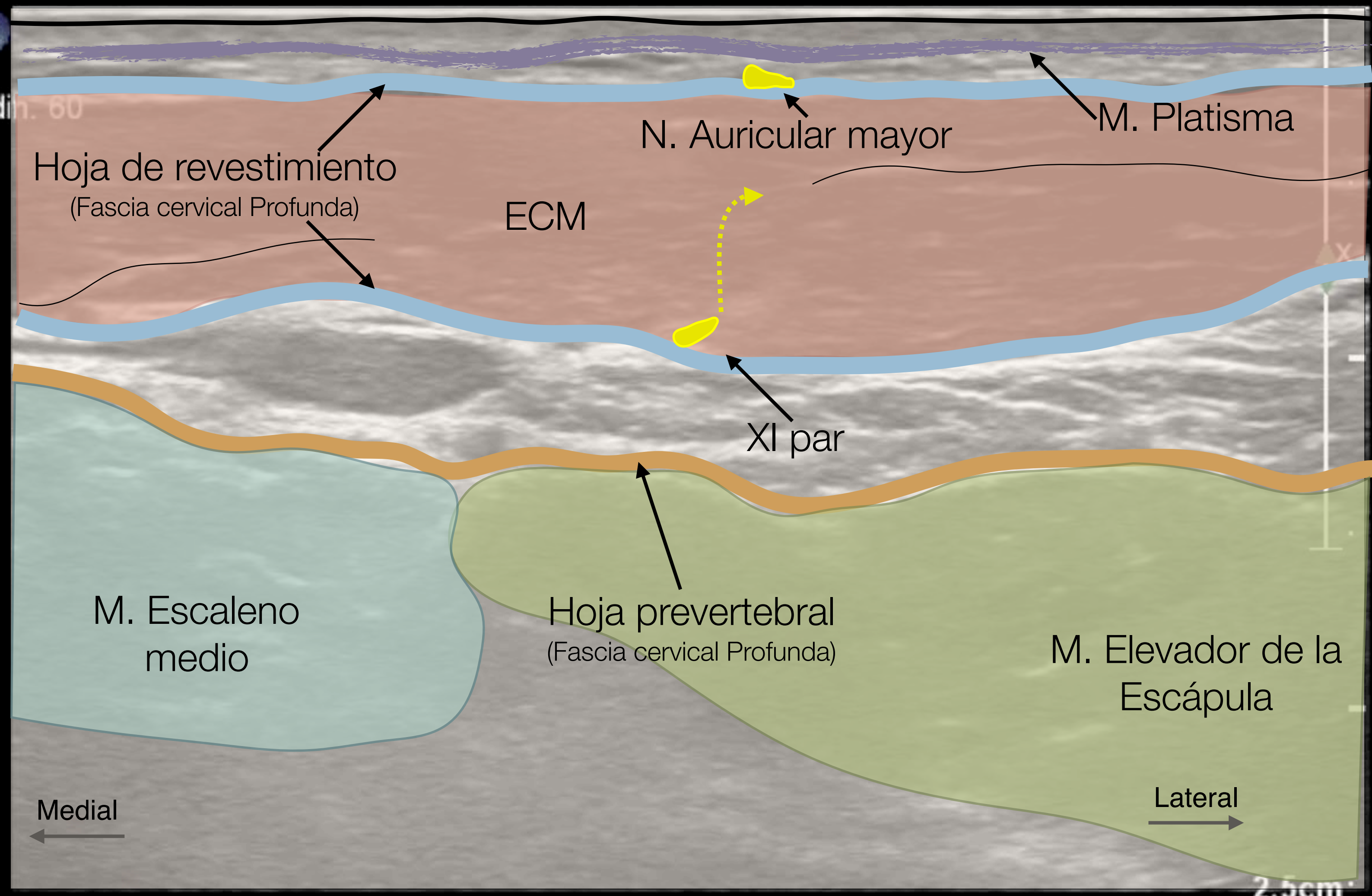
◆ Harpf C, Rhomberg M, Rumer A, Hussl H. Iatrogenic lesion of the accessory nerve in cervical lymph node biopsy. *Chirurg* 1999; 70:690–693.

◆ Miyata K, Kitamura H. Accessory nerve damages and impaired shoulder movements after neck dissections. *Am J Otolaryngol* 1997; 18:197–201.

Image size: 800 x 600  
View size: 1754 x 1316  
WL: 127 WW: 255  
L18.5  
32Hz  
RS

Nervio Espinal 37251220160218 ( - , - )  
TISO.1 MIO.0  
Free Form  
M3

# Región Cervical: Nervio Espinal (XI par)



Inicio escaneo a nivel de C4 (división carotídea)

Zoom: 219% Angle: 0  
Im: 1/965

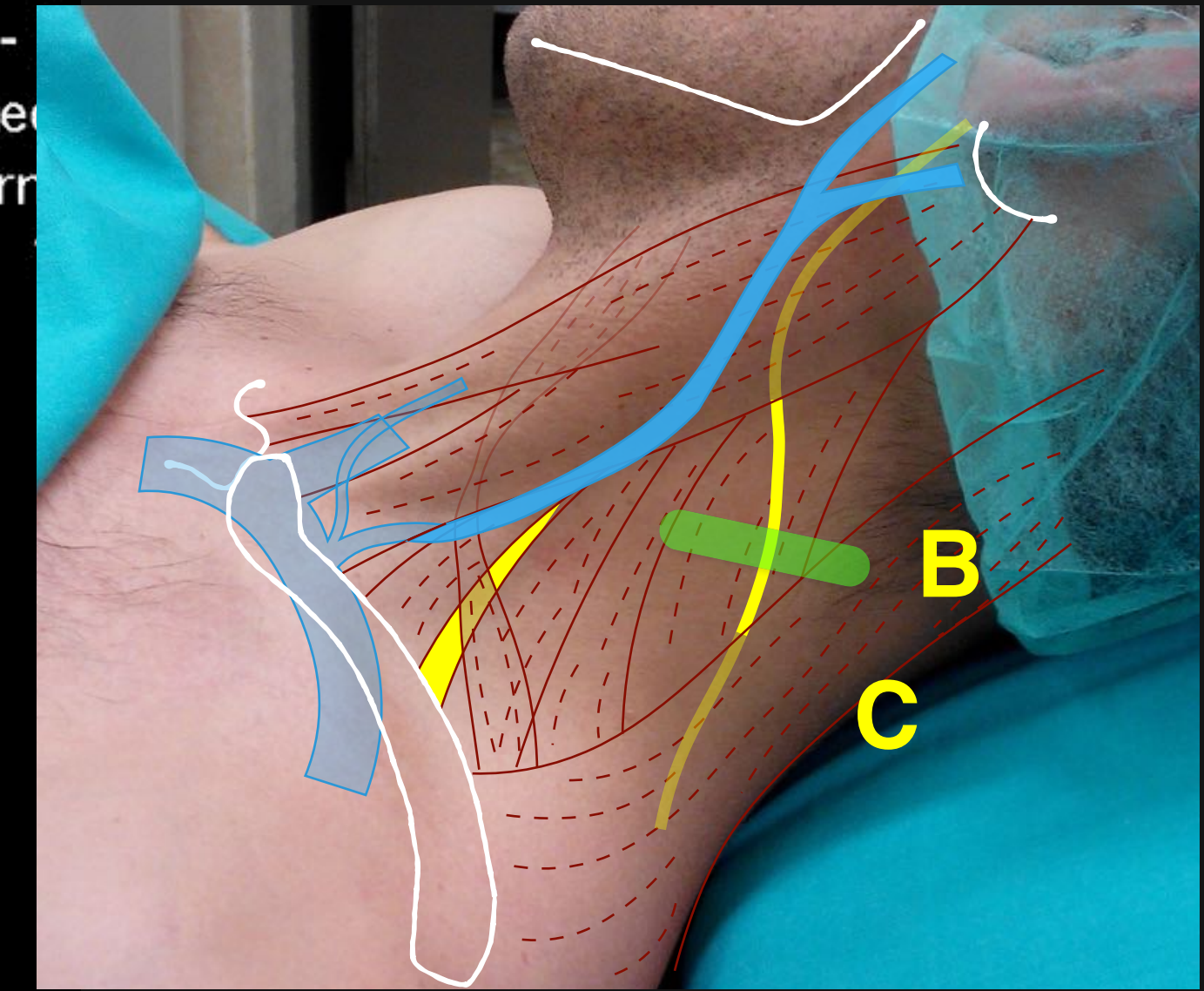
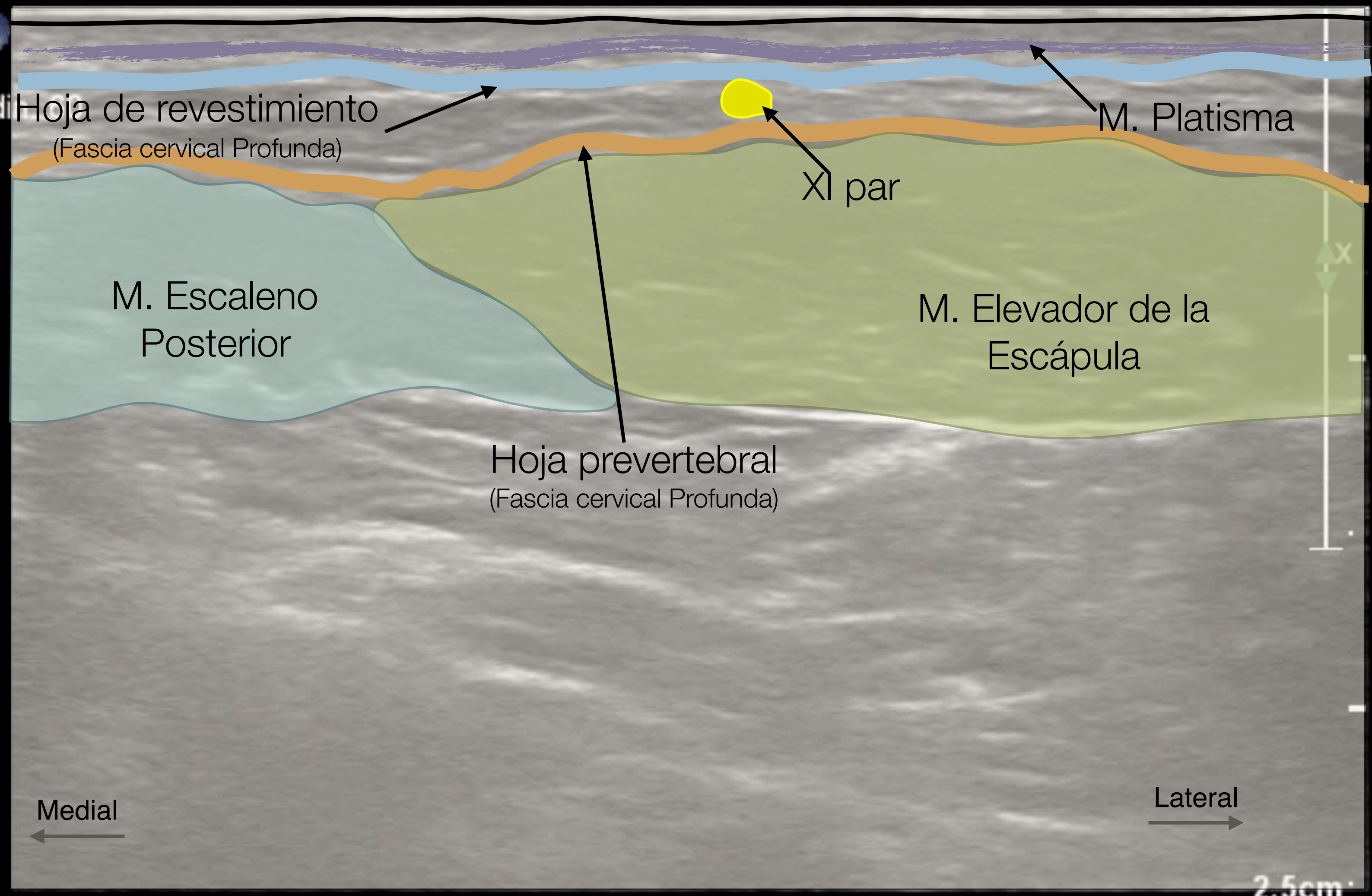
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Image size: 800 x 600  
View size: 1754 x 1316  
WL: 127 WW: 255  
L18.5  
32Hz  
RS

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M3

# Región Cervical: Nervio Espinal (XI par)



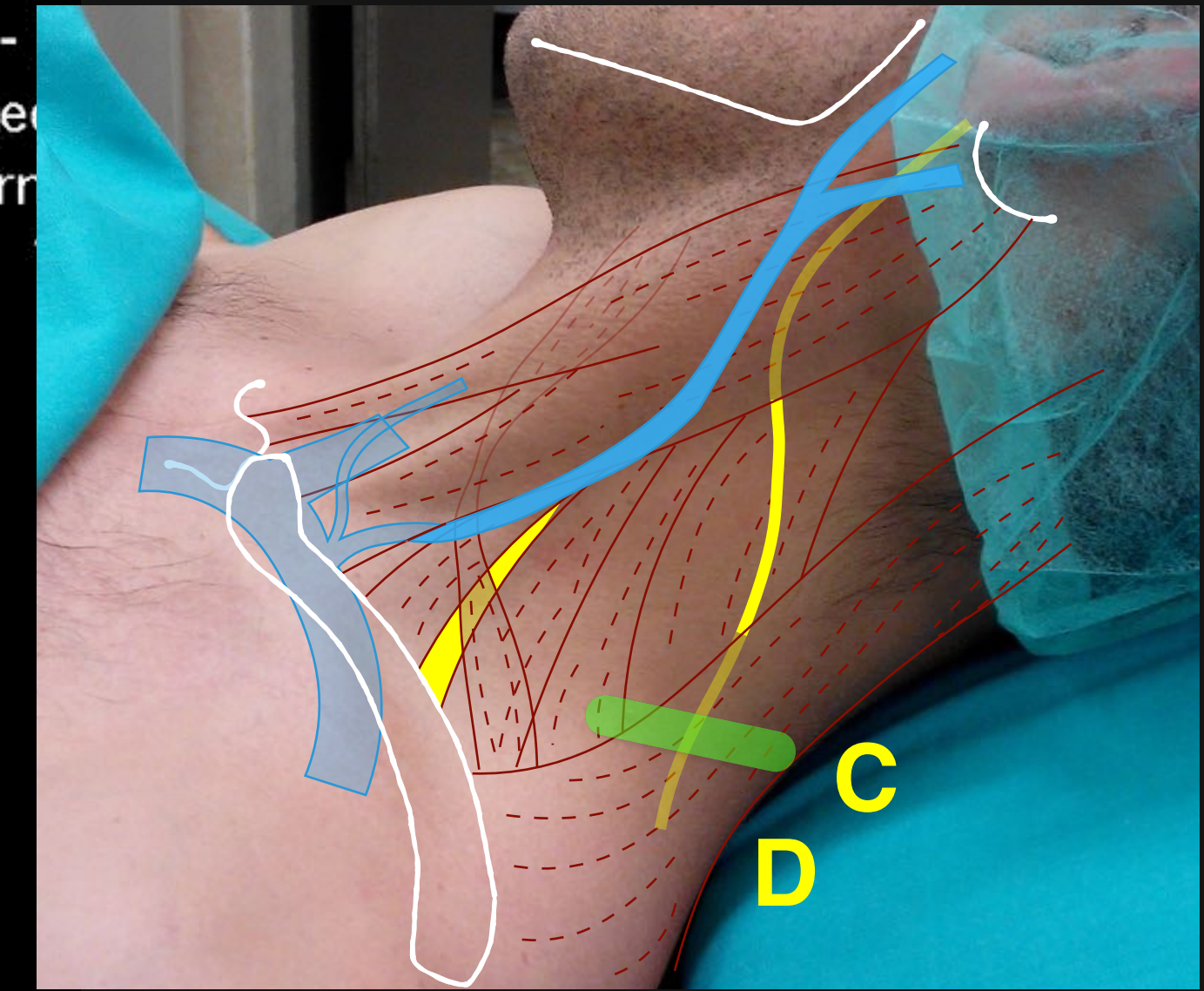
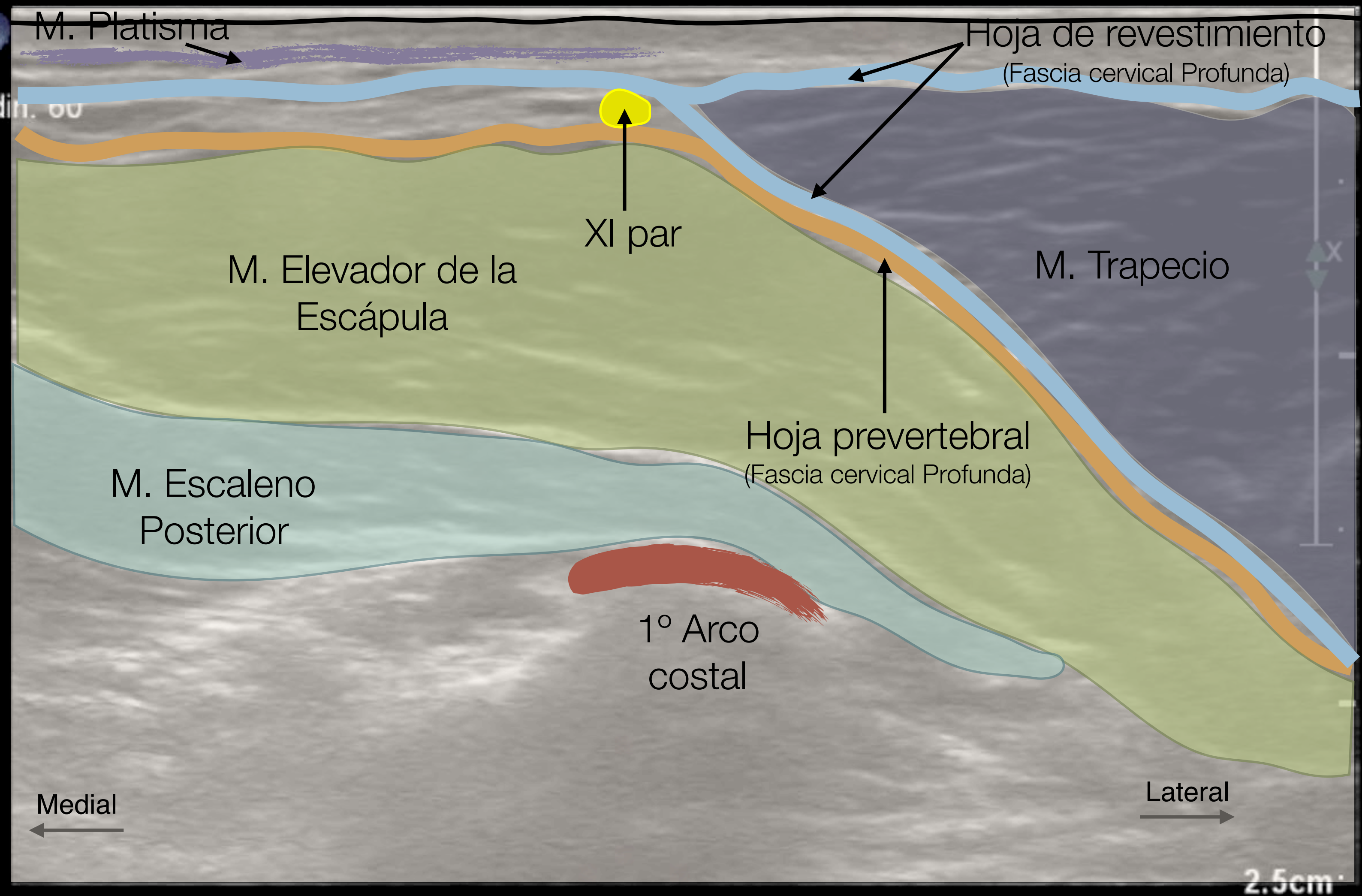
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Im: 384/965

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View size: 1754 x 1316  
WL: 127 WW: 255  
L18-3  
32Hz  
RS

Nervio Espinal 37251220160218 ( - , -  
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Free Form  
M3

# Región Cervical: Nervio Espinal (XI par)



Zoom: 219% Angle: 0  
Im: 581/965

18/2/16 12:26:08

**Bloqueo en el plano del  
músculo erector de la columna**

**“ESP”**

# Erector Spinae Plane Block

CHRONIC AND INTERVENTIONAL PAIN

BRIEF TECHNICAL REPORT

*Reg Anesth Pain Med* 2016;41: 621–627

## The Erector Spinae Plane Block

*A Novel Analgesic Technique in Thoracic Neuropathic Pain*

*Mauricio Forero, MD, FIPP,\* Sanjib D. Adhikary, MD,† Hector Lopez, MD,‡  
Calvin Tsui, BMSc,§ and Ki Jinn Chin, MBBS (Hons), MMed, FRCPC||*

4 pacientes

- ◆ **2 dolor neuropático**
- ◆ **2 Cirugía pulmonar**  
(toracoscopia videoasistida)

# Erector Spinae Plane Block

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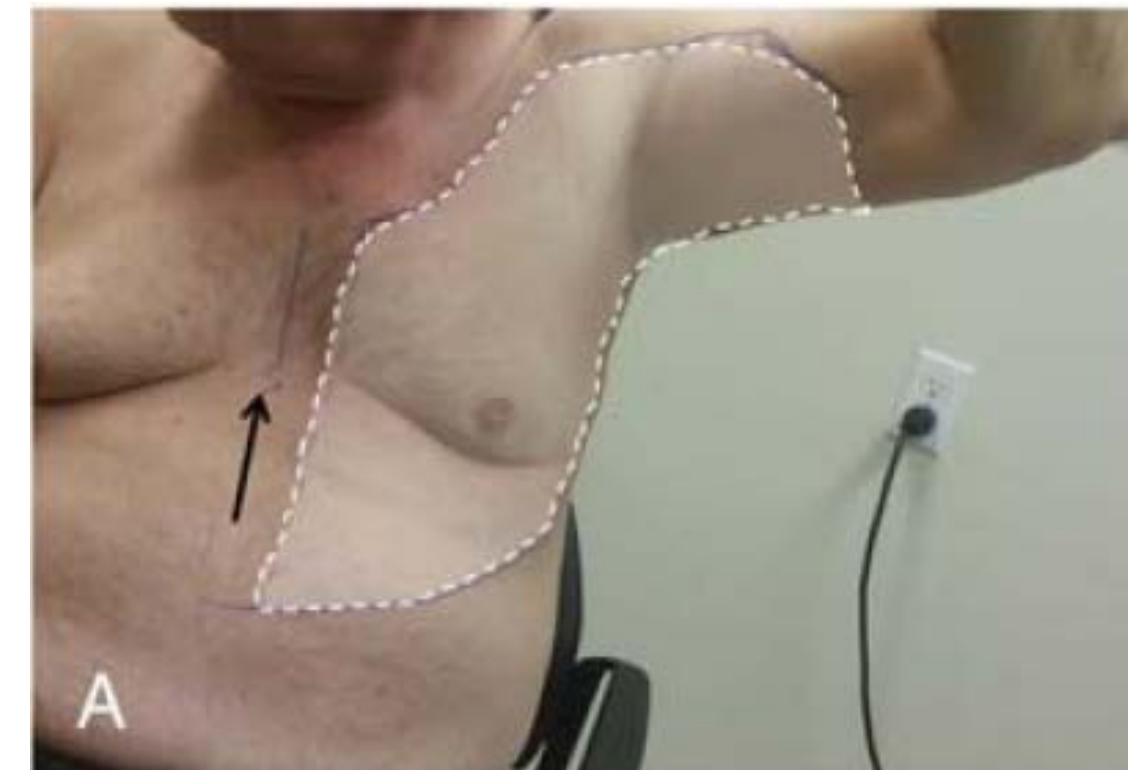
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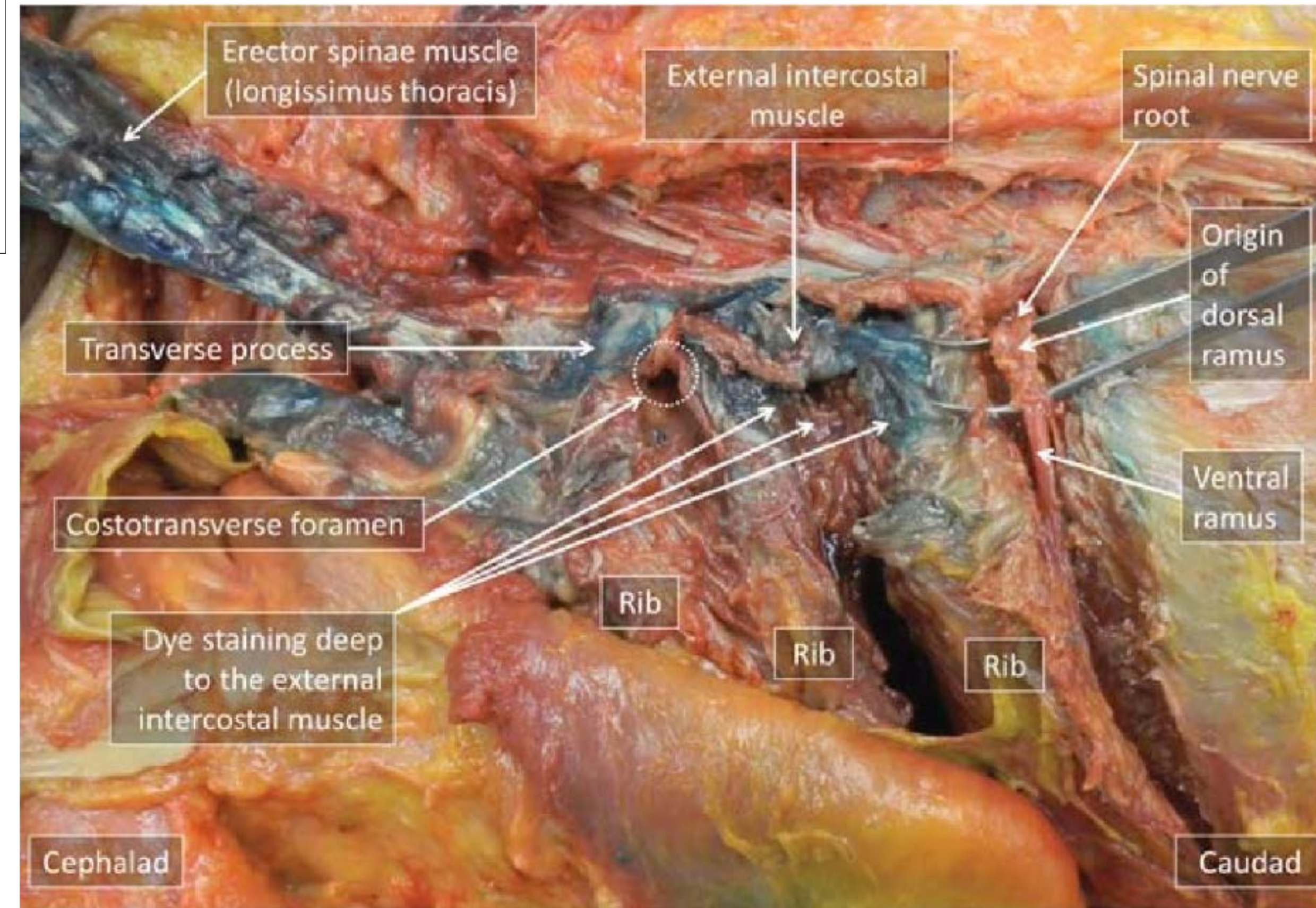
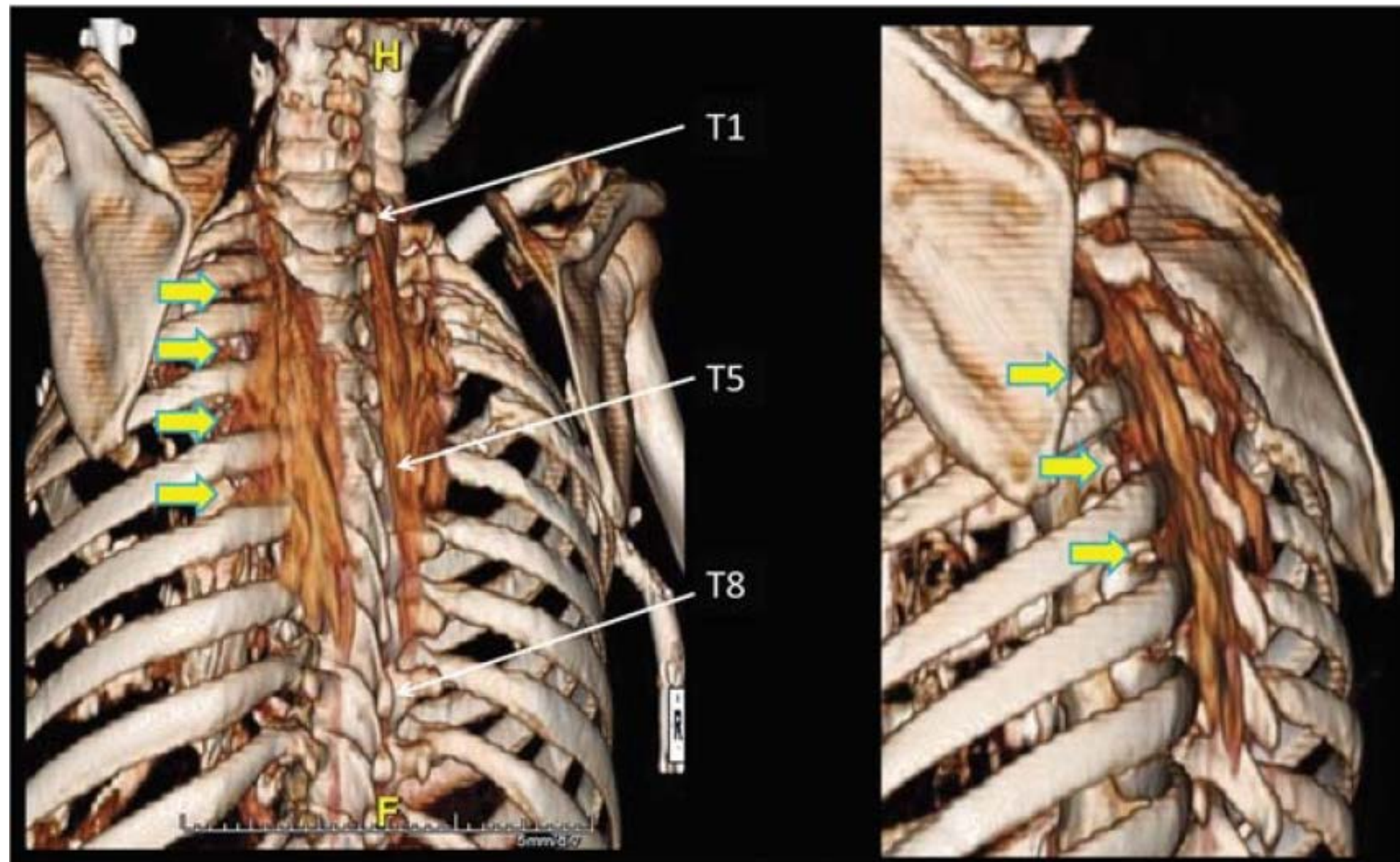
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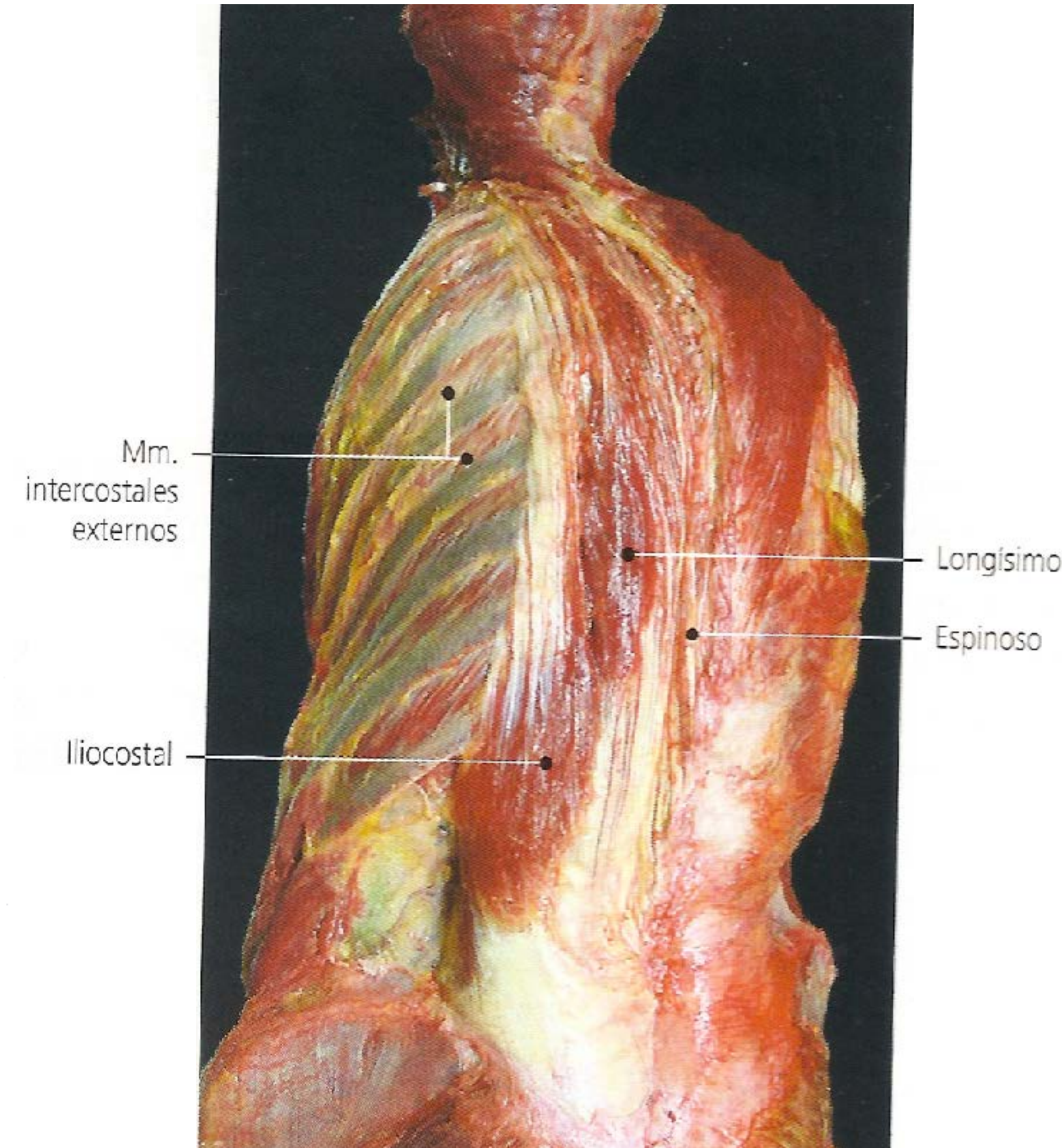
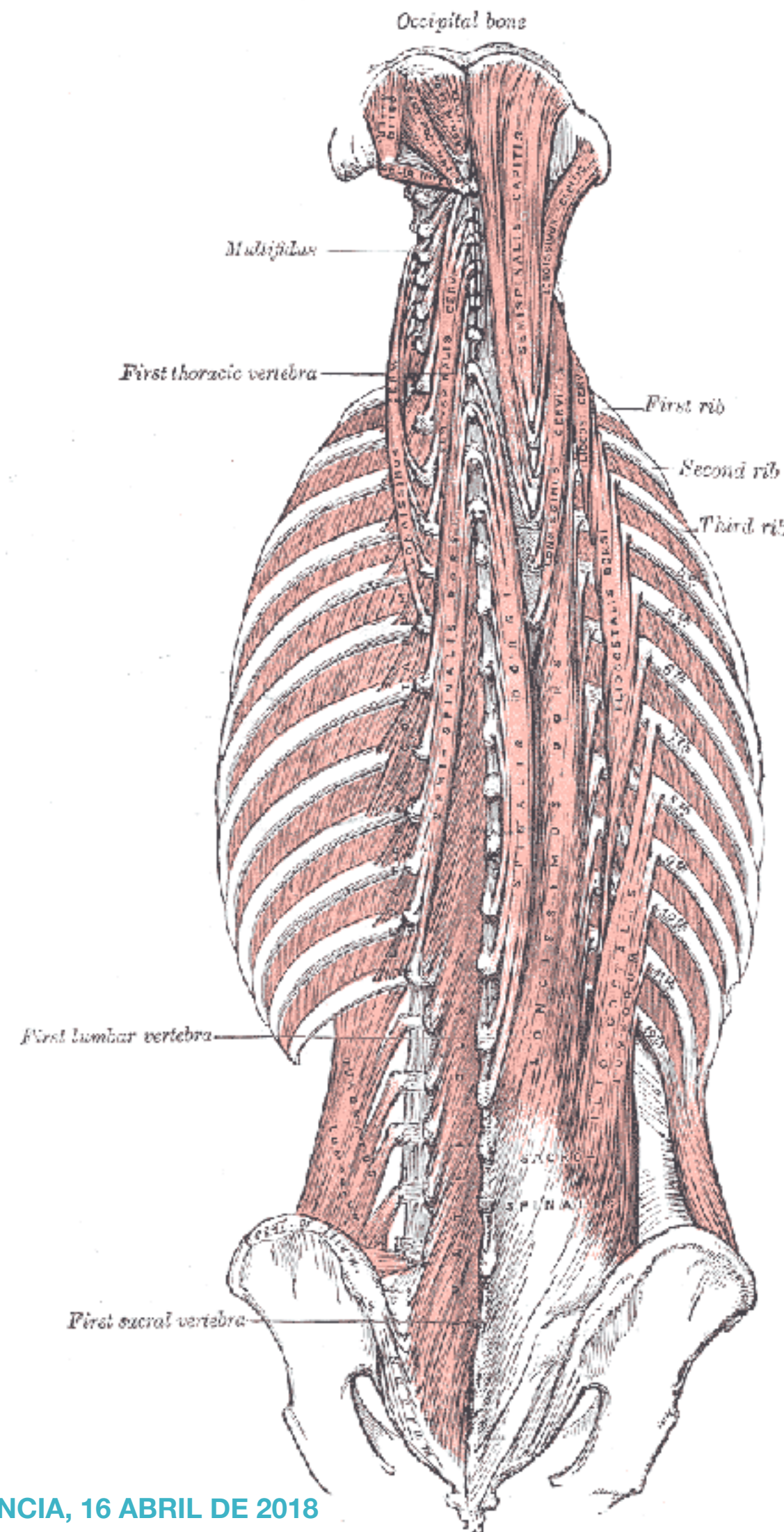
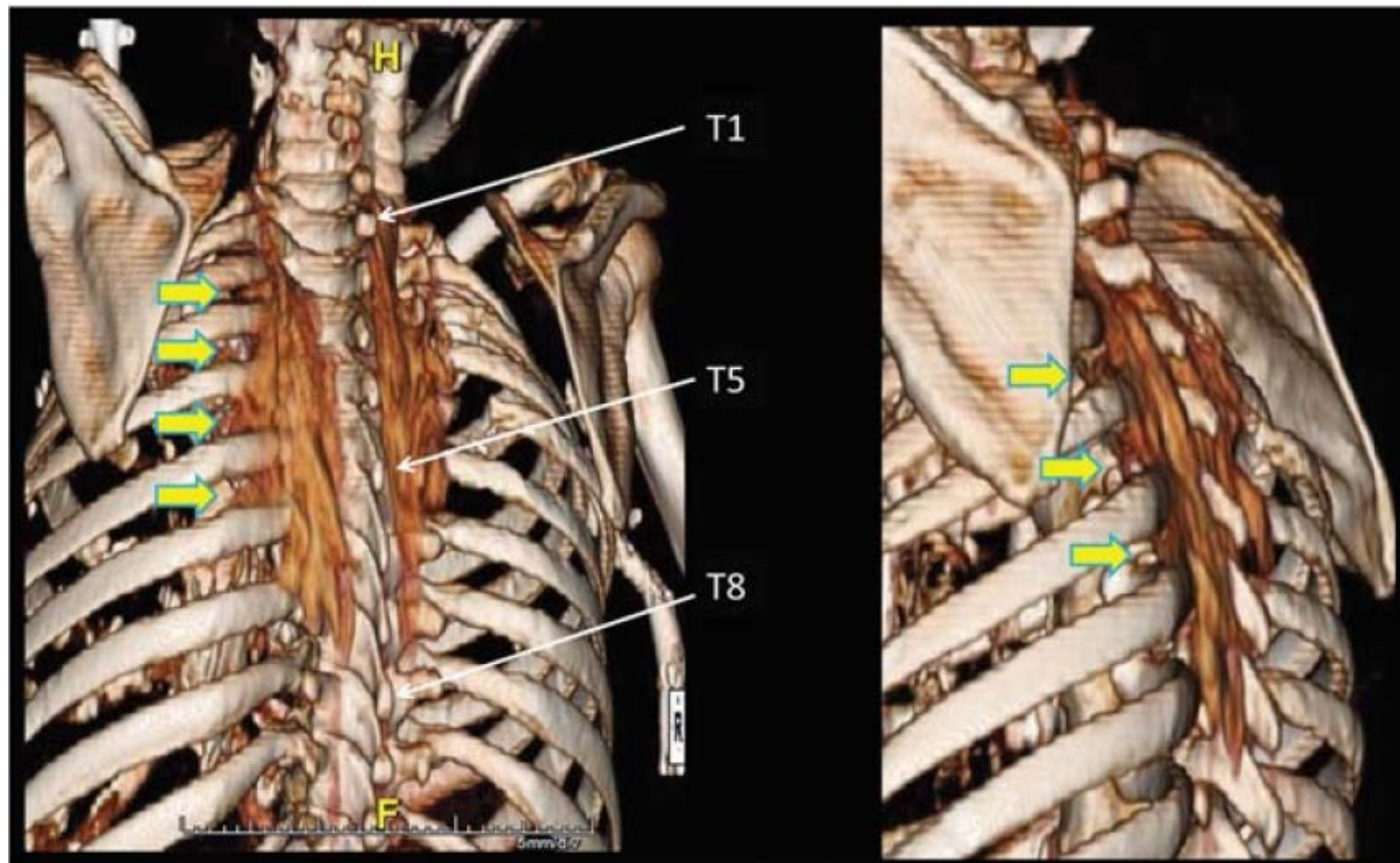
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Calvin Tsui, BMSc,§ and Ki Jinn Chin, MBBS (Hons), MMed, FRCPC||



# • Anatomía

## Erector Spinae Plane Block

*“Inyección por debajo del músculo erector de la columna”*



# • Anatomía

## Erector Spinae Plane Block

Tab 1 Home Reset Recent

Anatomical System Vertebral Column Deep Group Transversospinales Transversospinales (Left) Semispinalis (Left)

### Semispinalis (Left)

ISOLATE  
HIDE  
FADE  
HIDE OTHERS  
FADE OTHERS  
MULTI SELECTION

**i**  
Info

The semispinalis muscle is one of the three muscles of the transversospinales, which itself belongs to the deep group of muscles of the vertebral column. The semispinalis is located superficial to the other two transversospinales muscles, which are the multifidus and rotatores muscles. It extends the vertebral column.

For descriptive purposes, the semispinalis is divided into three regions:

- Semispinalis capitis
- Semispinalis cervicis
- Semispinalis thoracis

Anterior Lateral Posterior



# • Anatomía

## Erector Spinae Plane Block

Journal of **Anatomy**

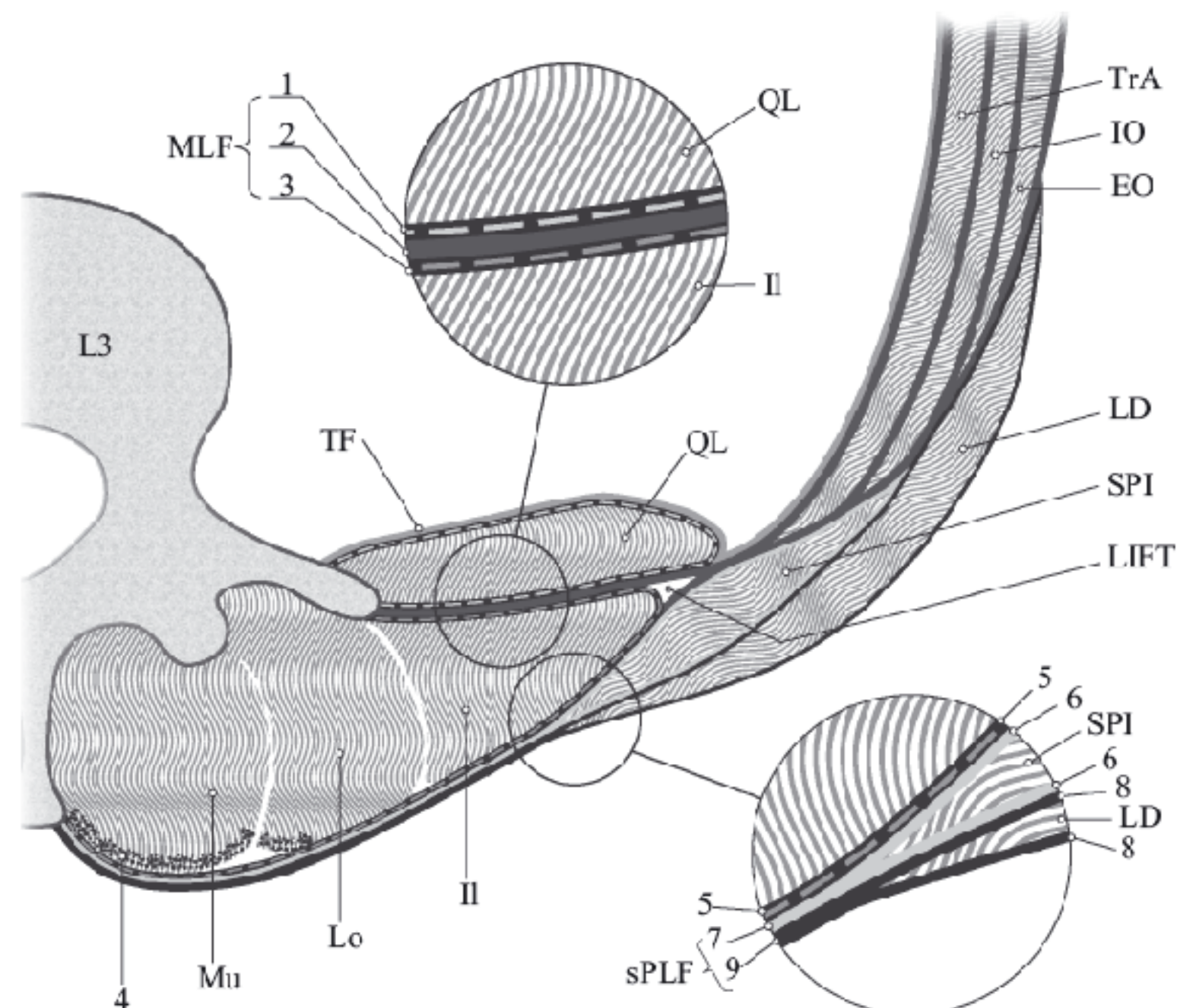
J. Anat. (2012) 221, pp507–536

doi: 10.1111/j.1469-7580.2012.01511.x

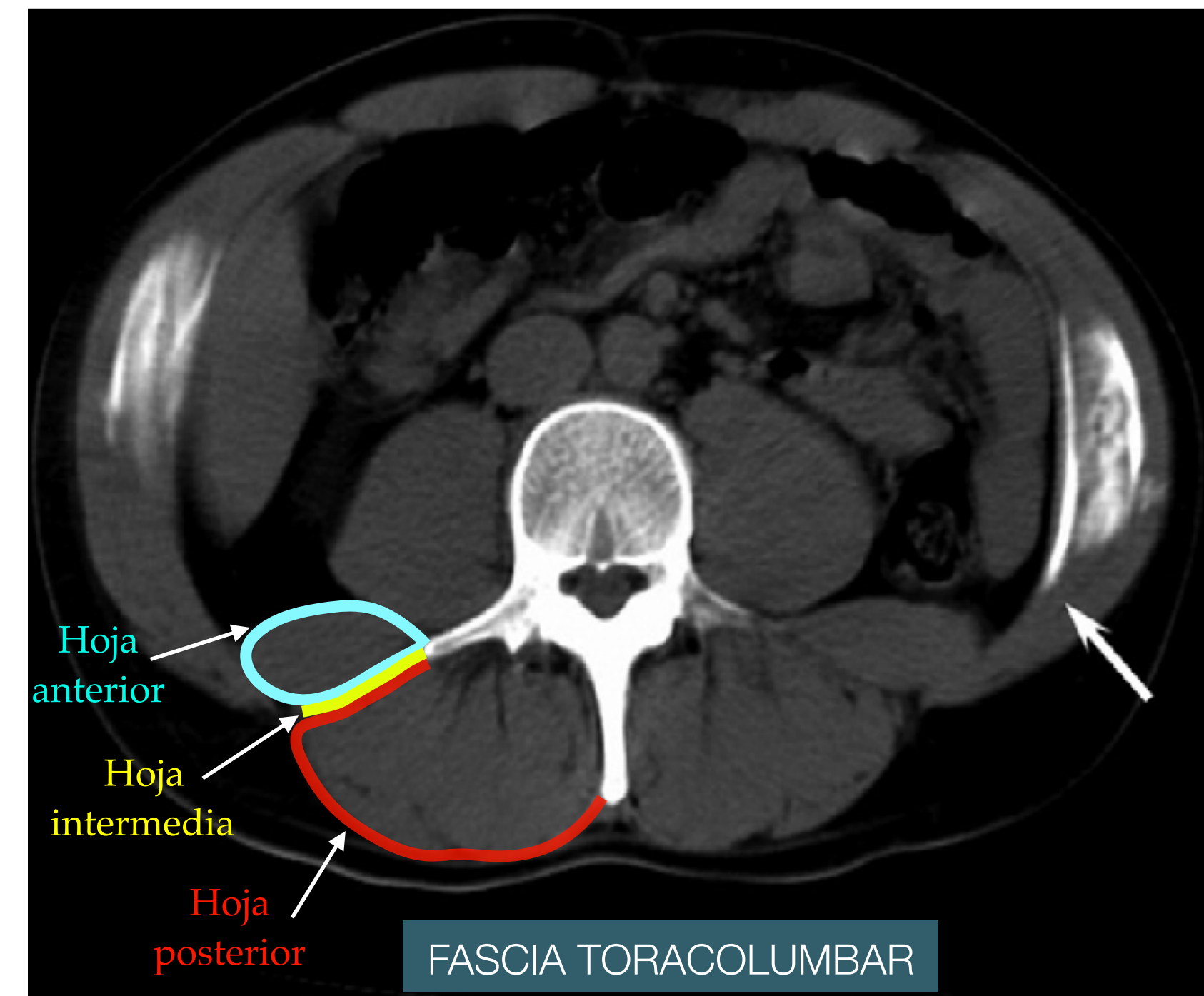
REVIEW

**The thoracolumbar fascia: anatomy, function and clinical considerations**

F. H. Willard,<sup>1</sup> A. Vleeming,<sup>1,2</sup> M. D. Schuenke,<sup>1</sup> L. Danneels<sup>2</sup> and R. Schleip<sup>3</sup>



*“El músculo erector de la espina está delimitado por la hoja posterior de la fascia toracolumbar”*



# • Anatomía

## Erector Spinae Plane Block

Journal of **Anatomy**

J. Anat. (2012) 221, pp507–536

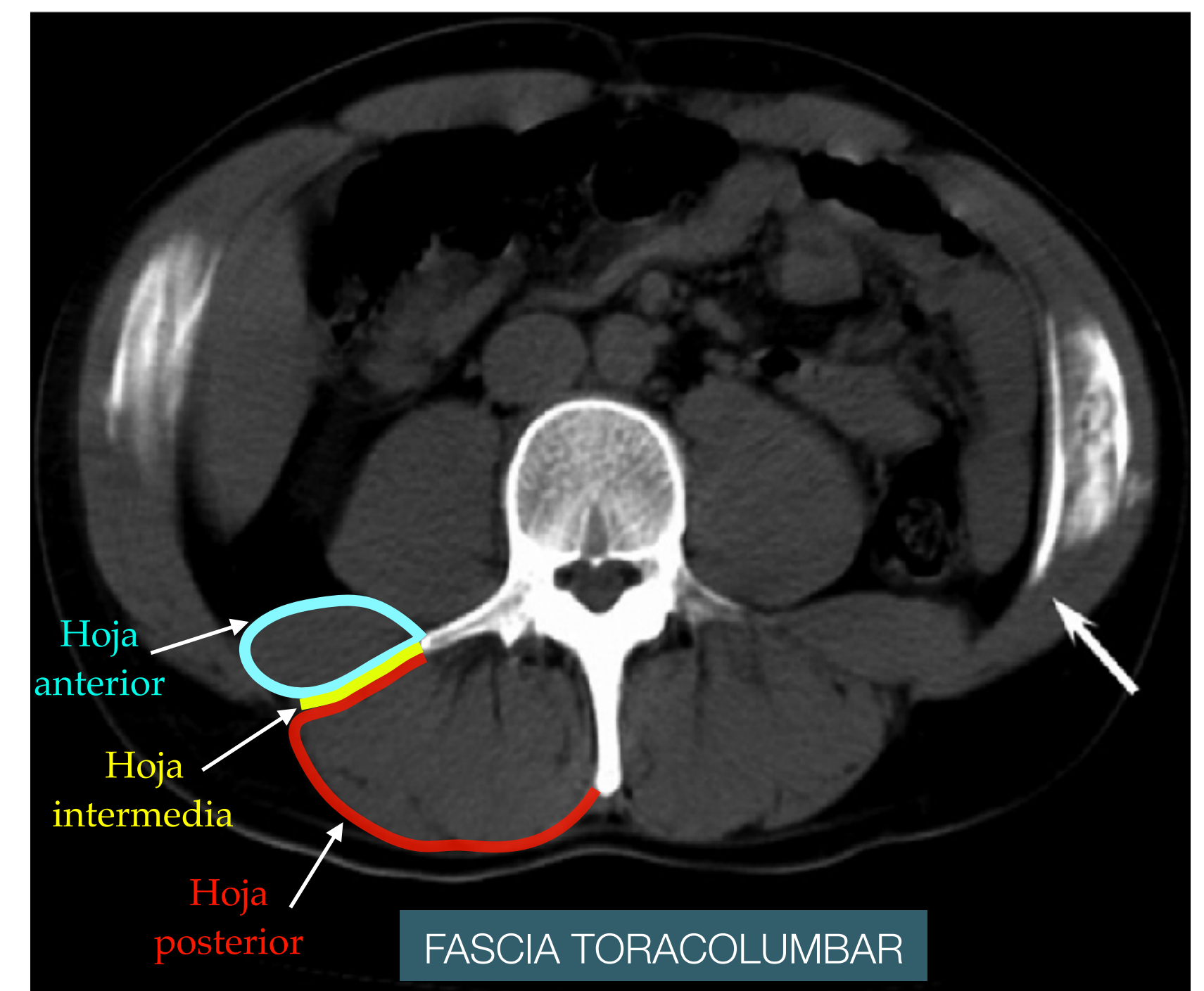
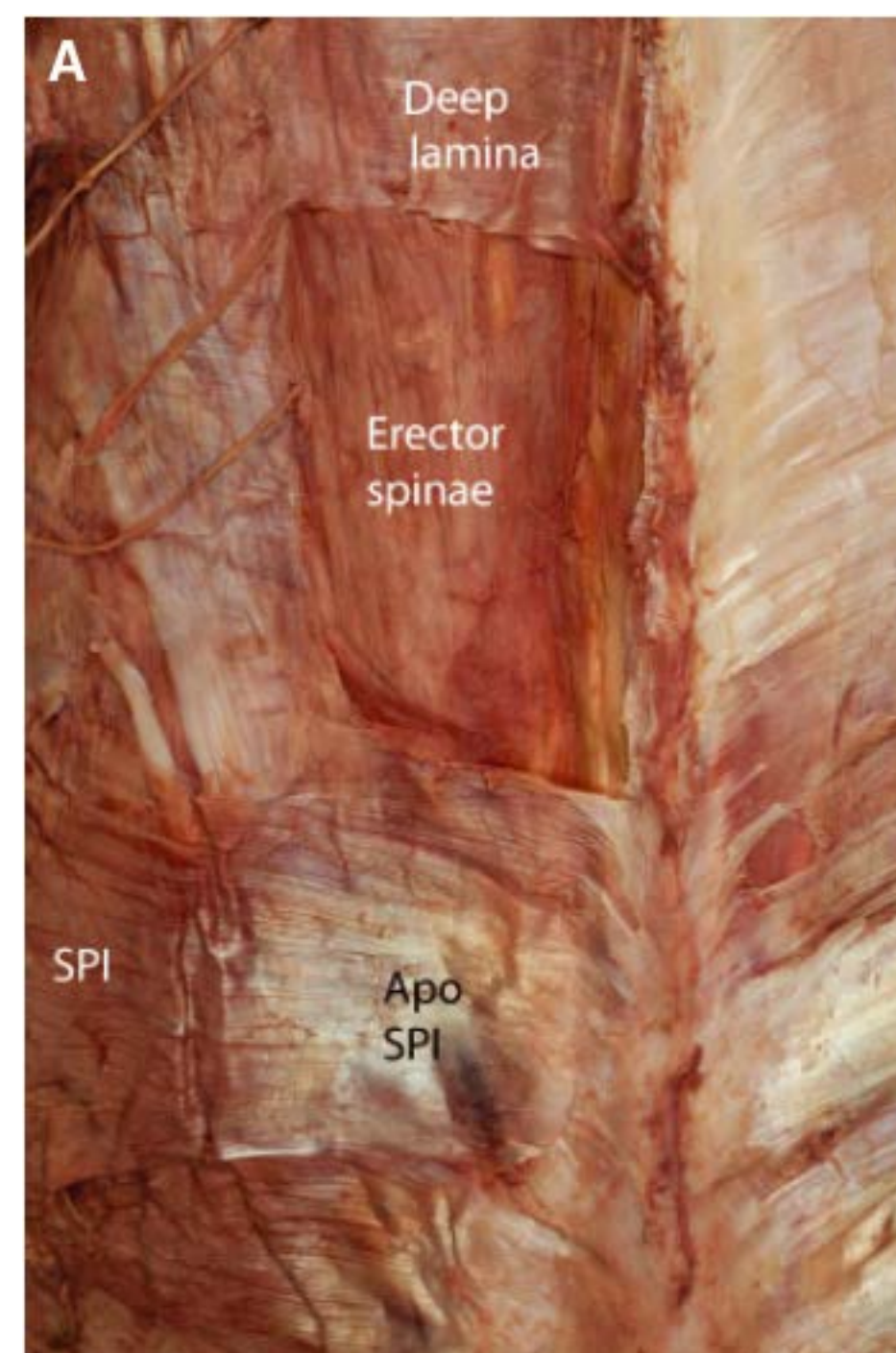
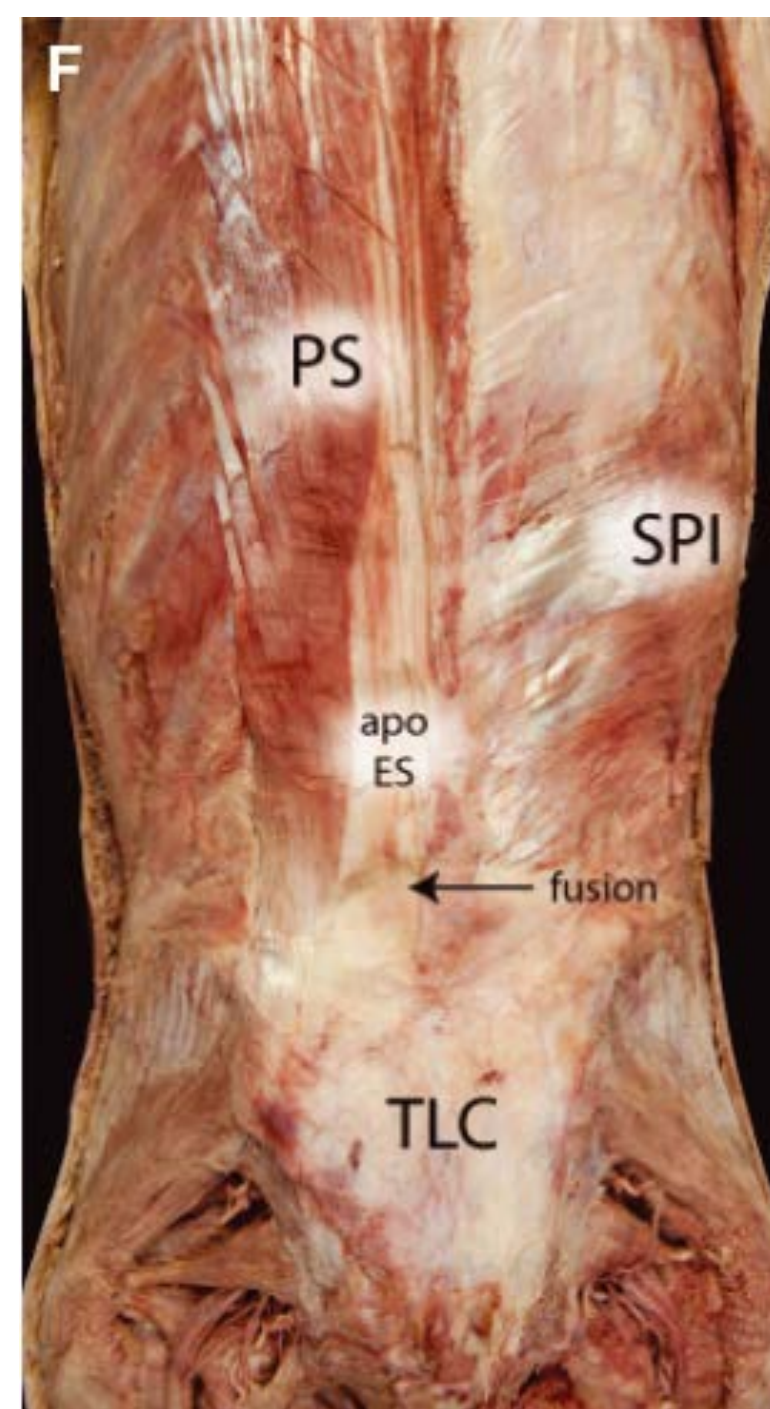
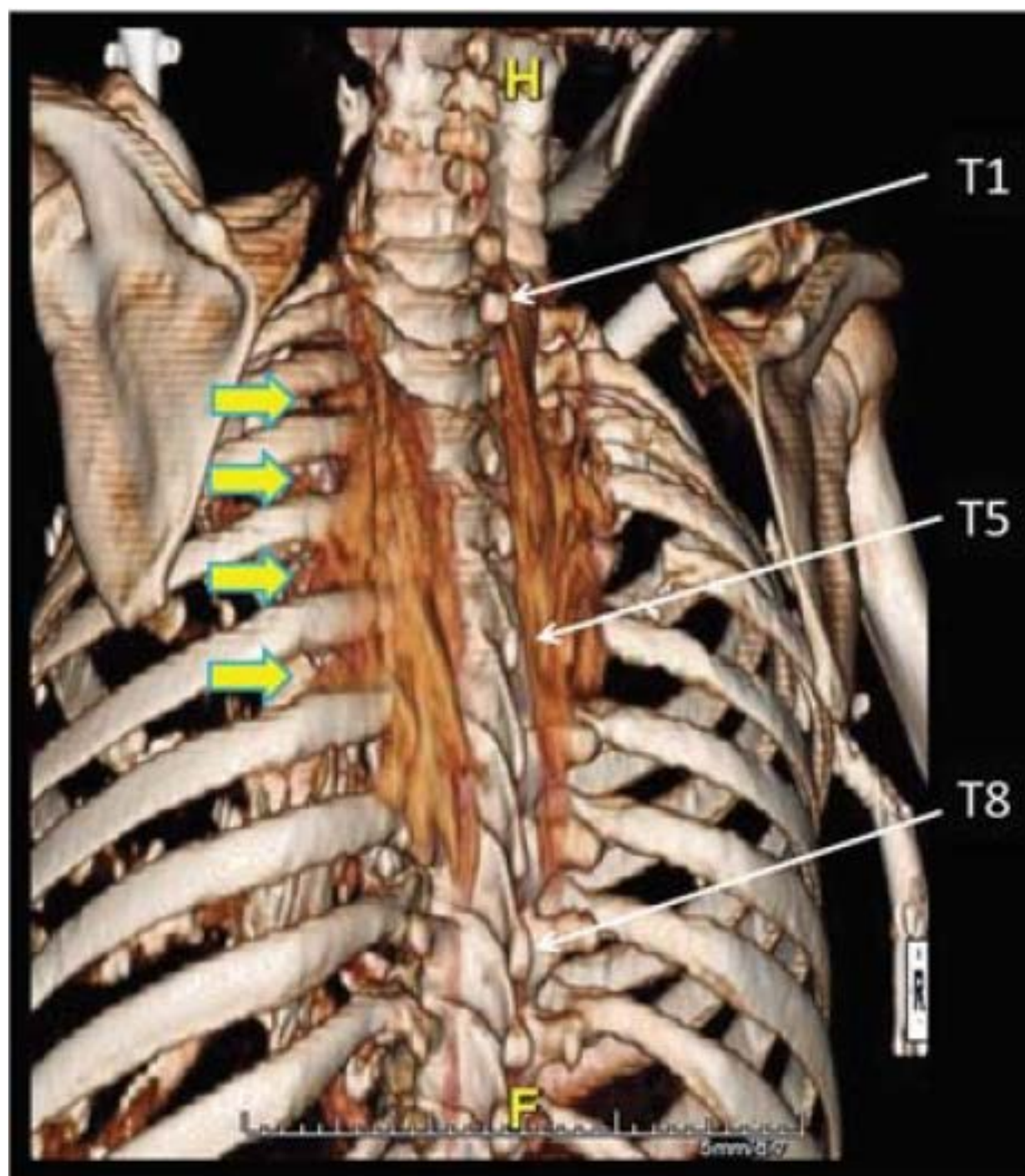
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REVIEW

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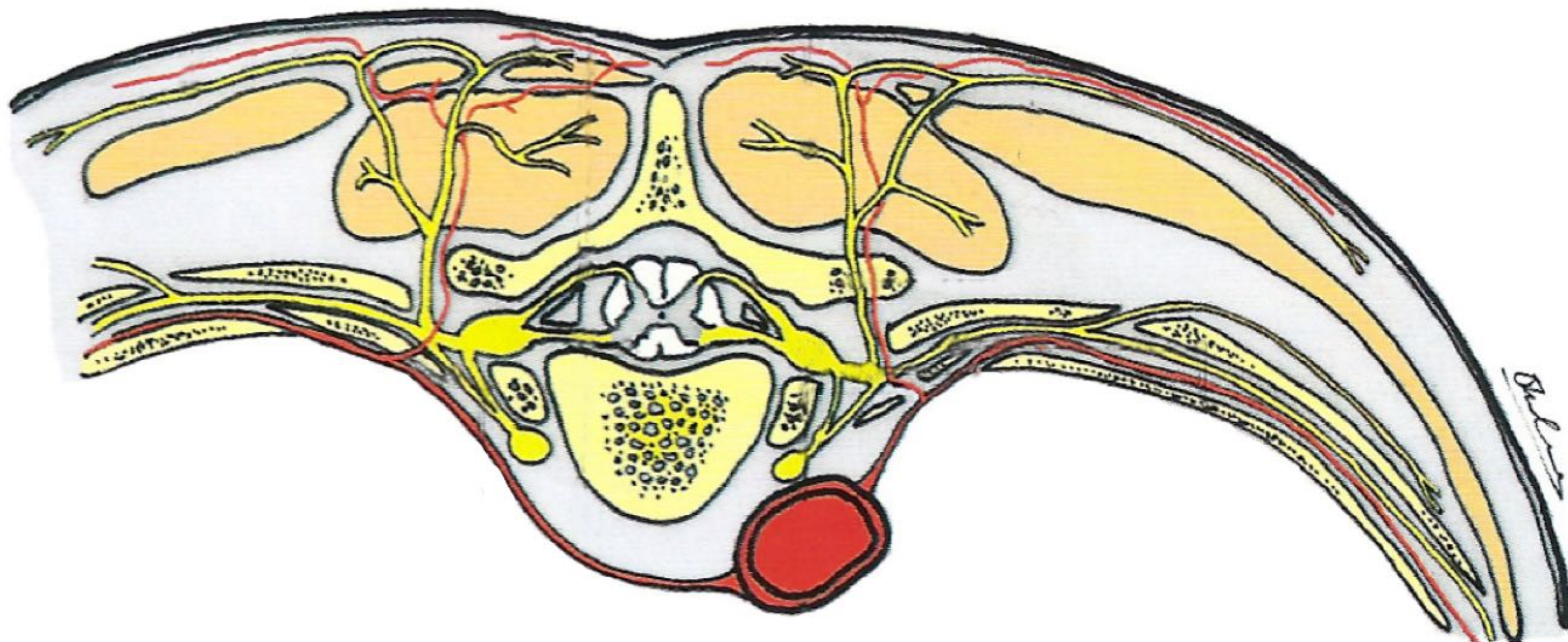
F. H. Willard,<sup>1</sup> A. Vleeming,<sup>1,2</sup> M. D. Schuenke,<sup>1</sup> L. Danneels<sup>2</sup> and R. Schleip<sup>3</sup>

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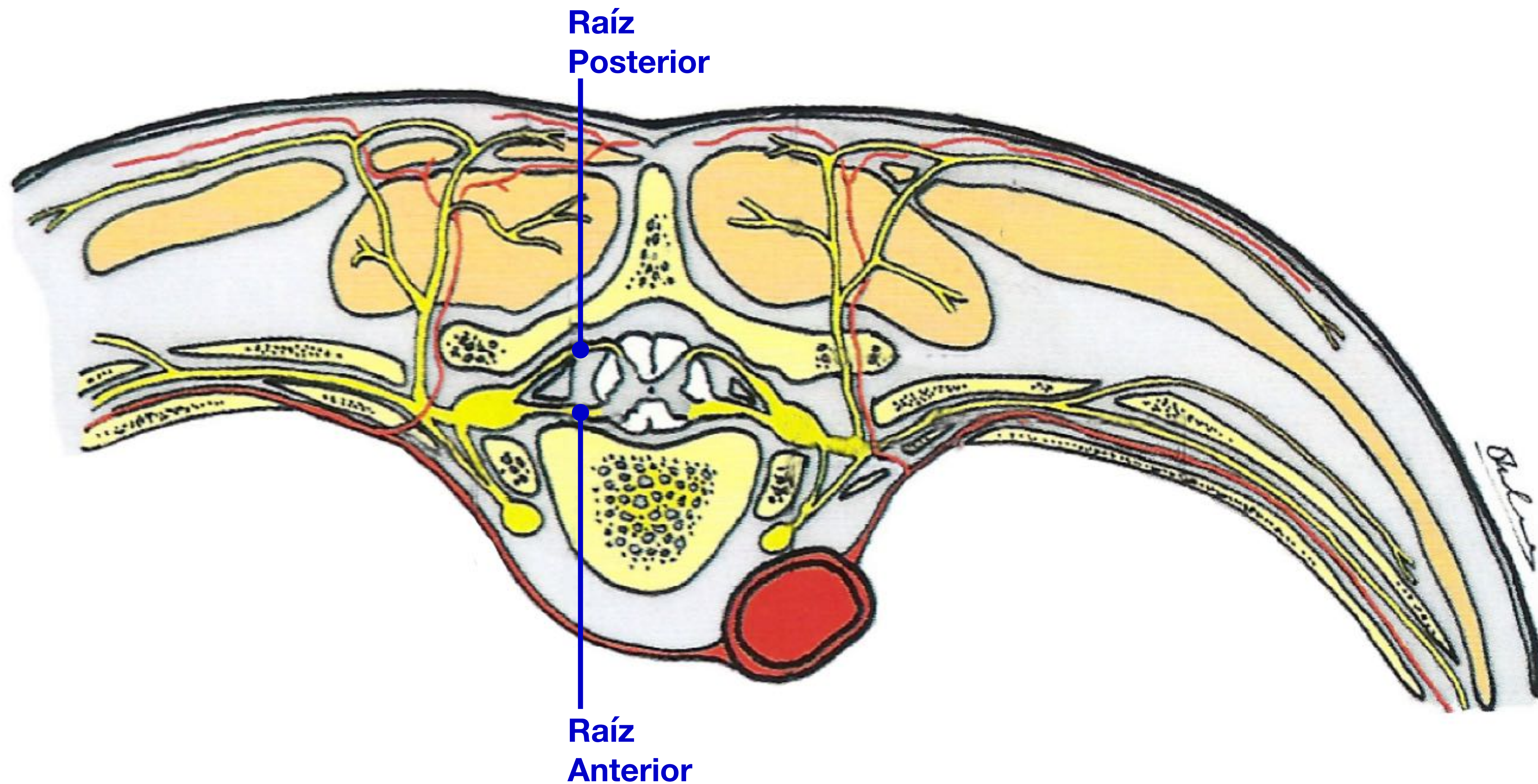
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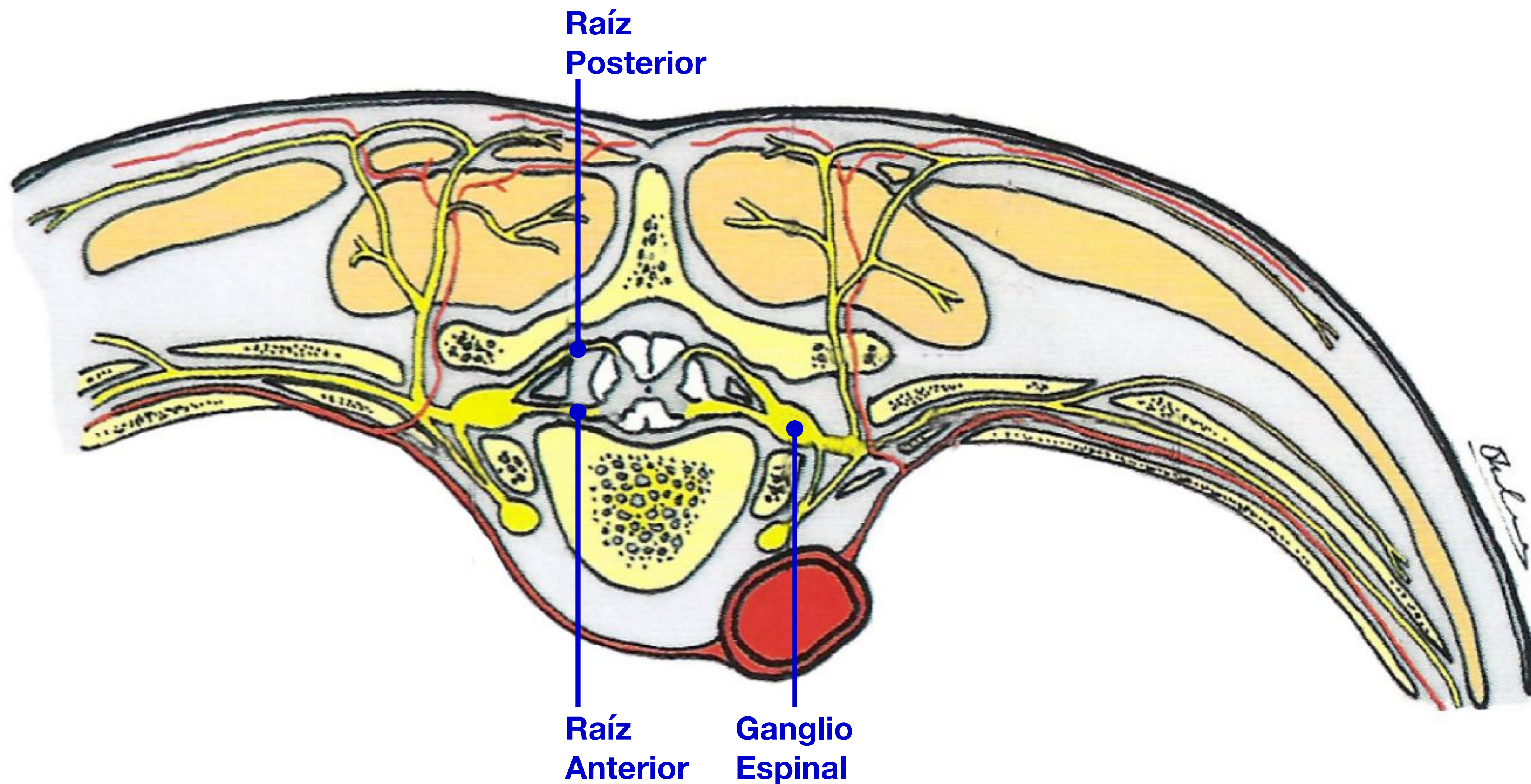
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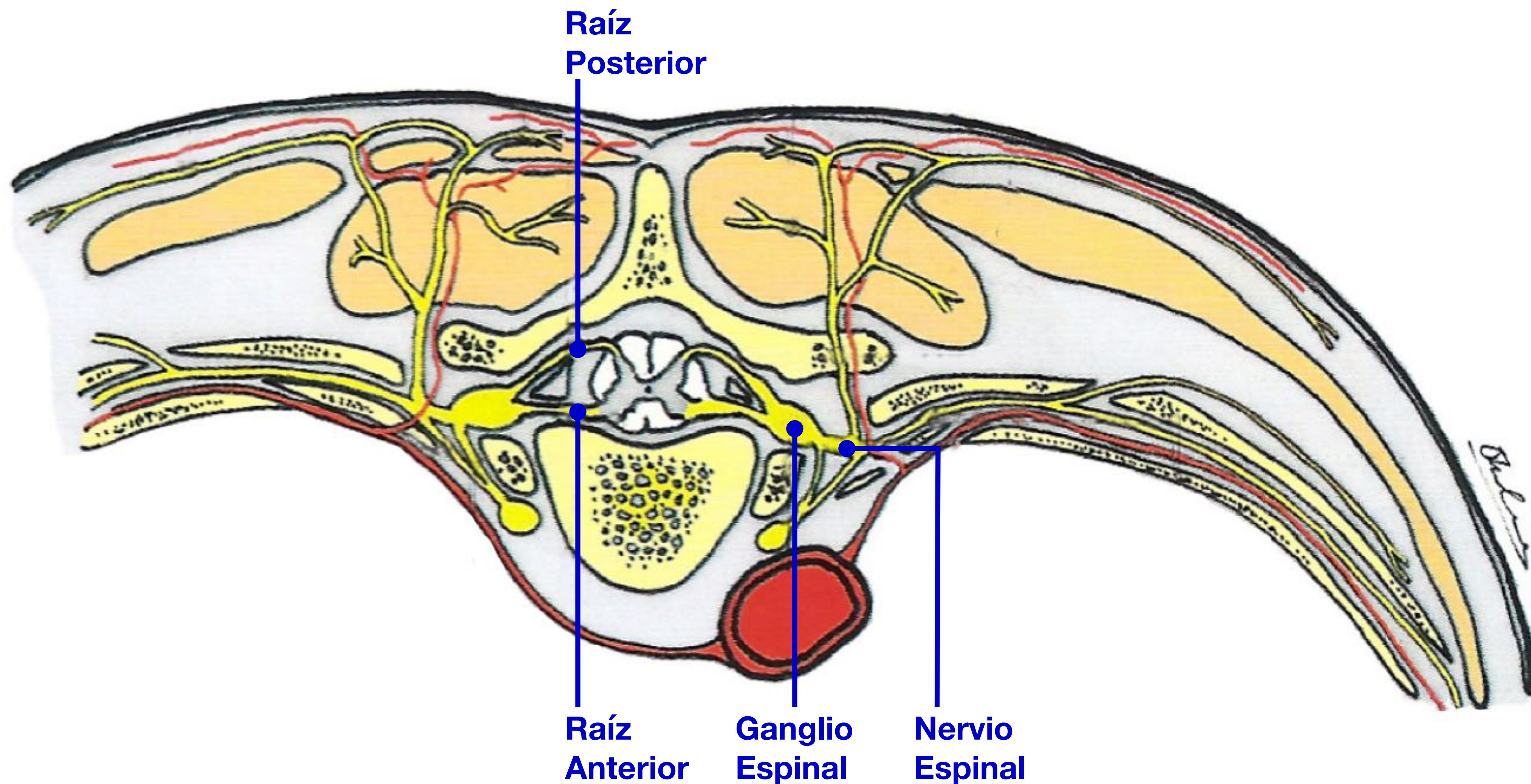
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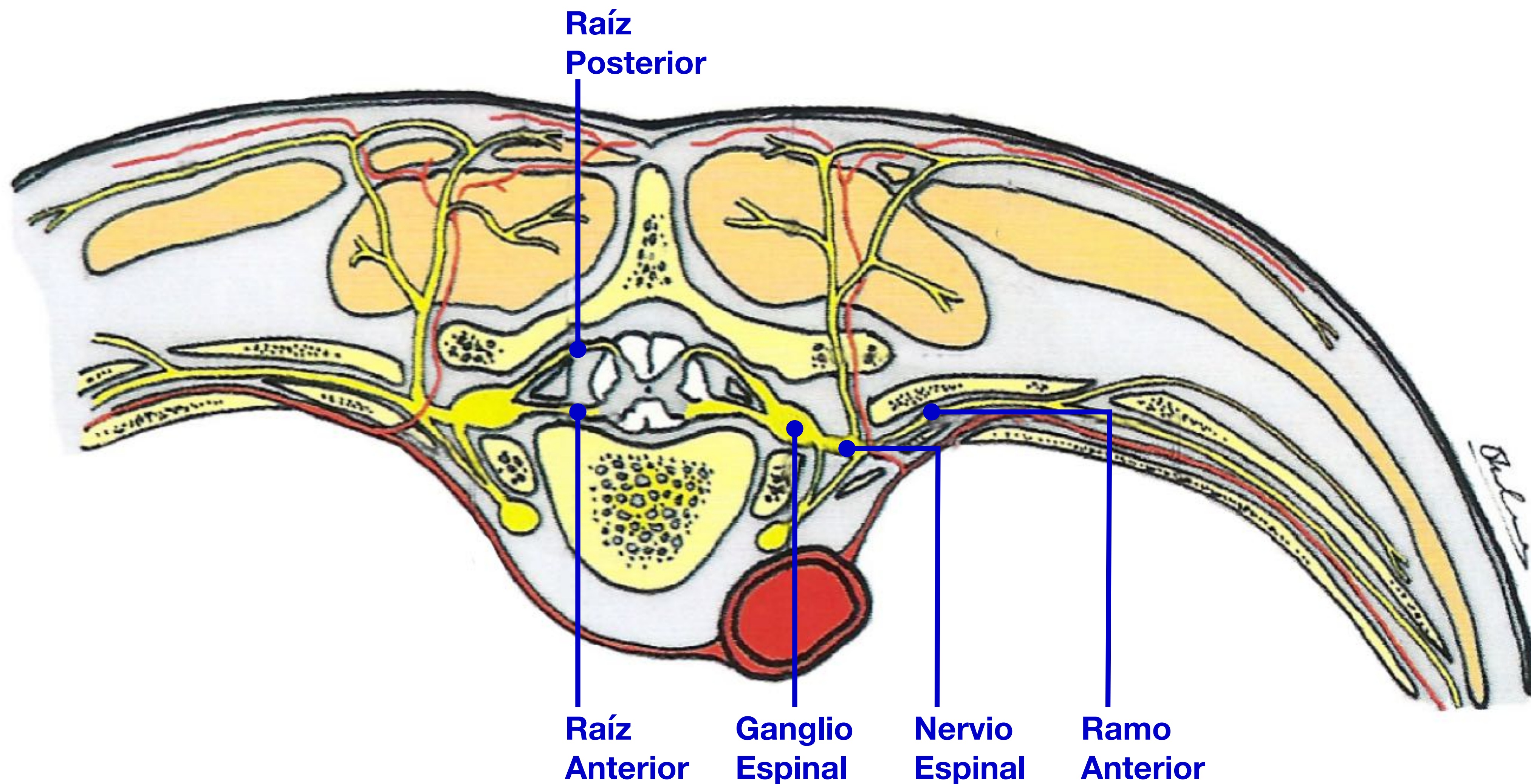
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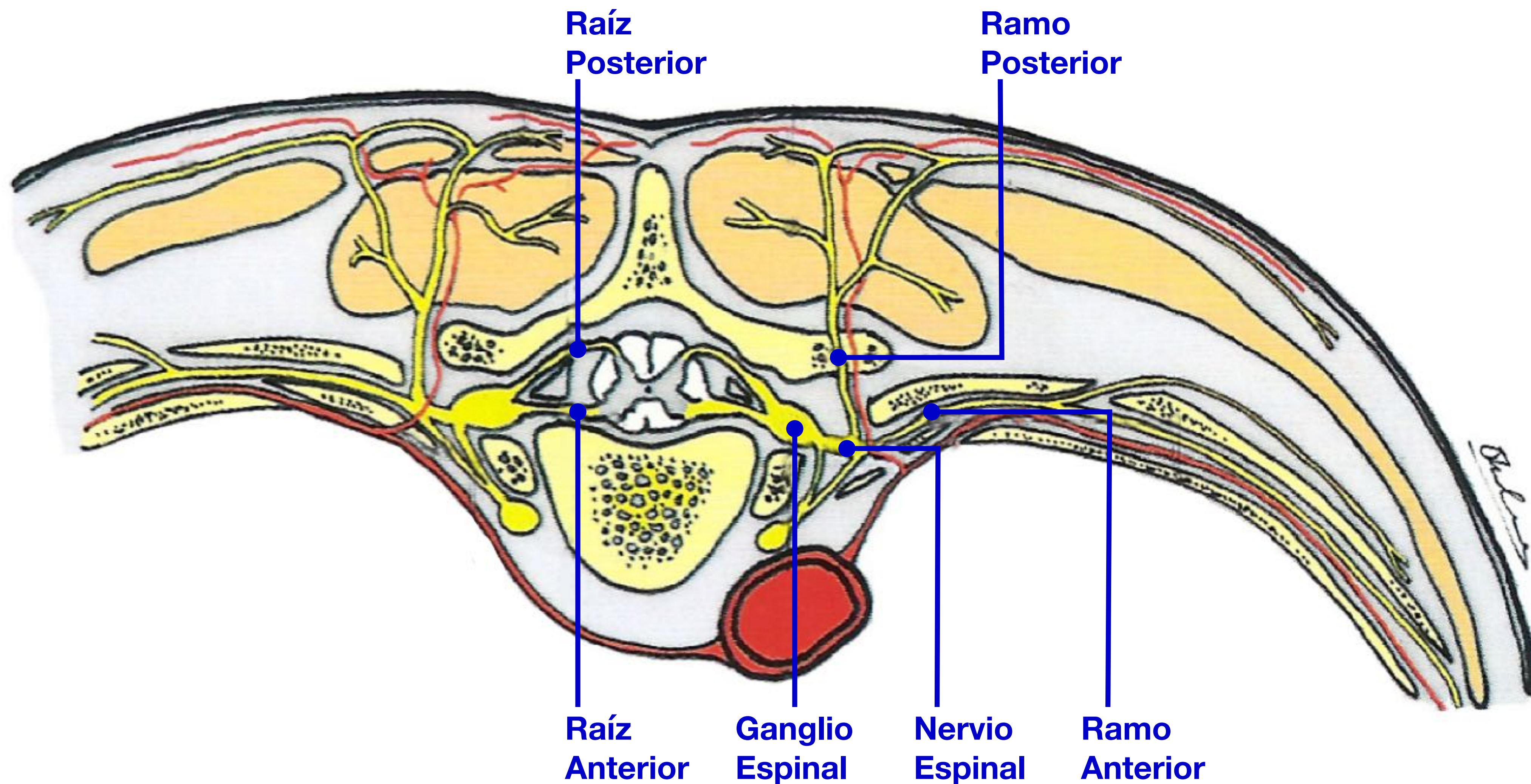
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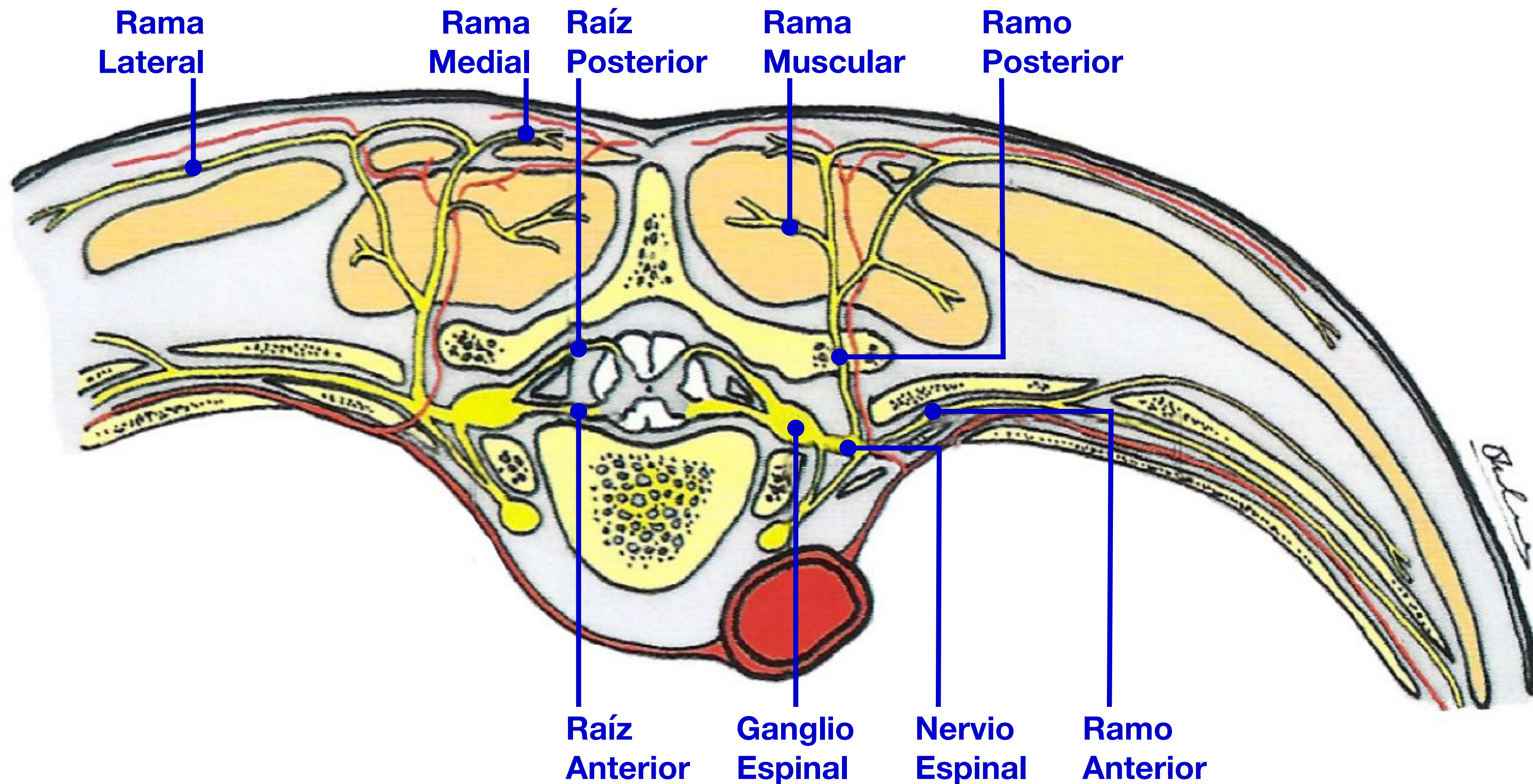
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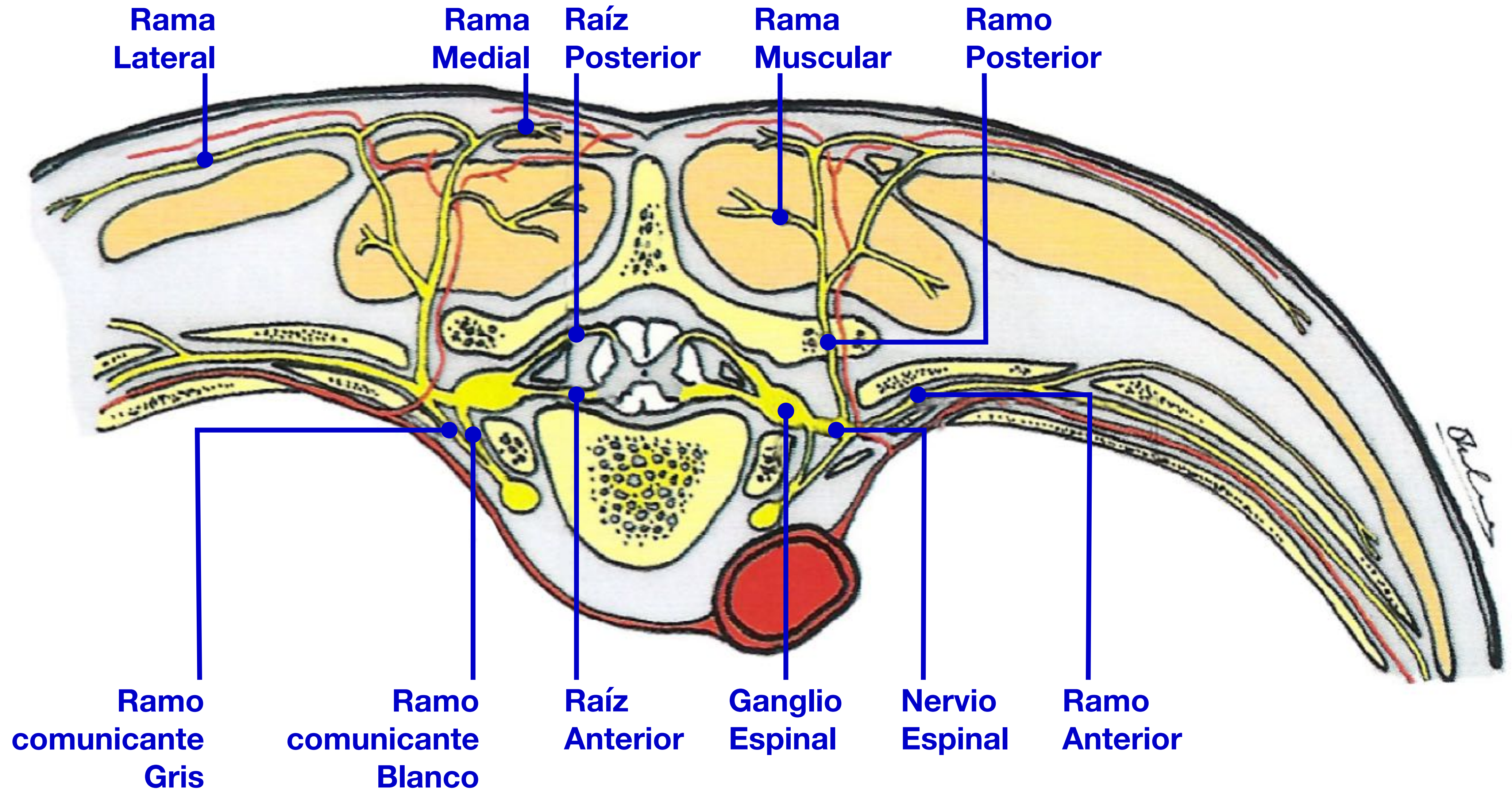
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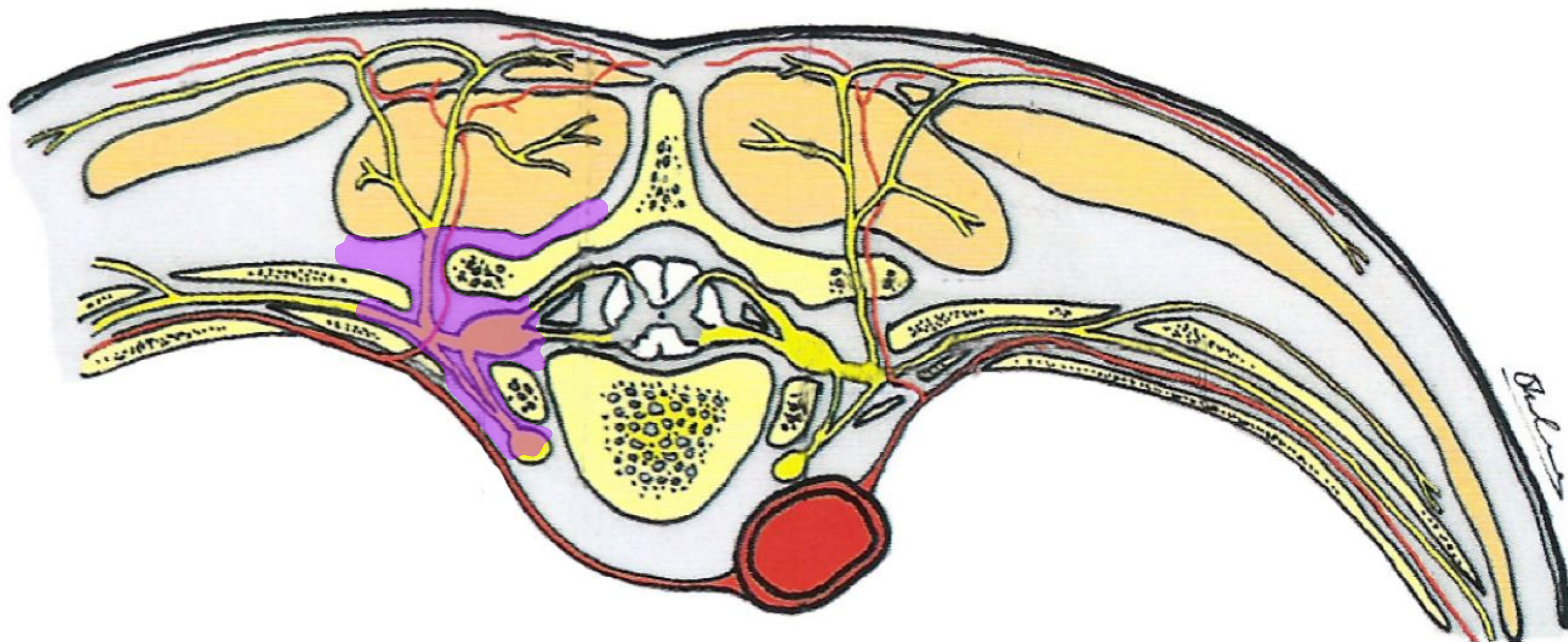
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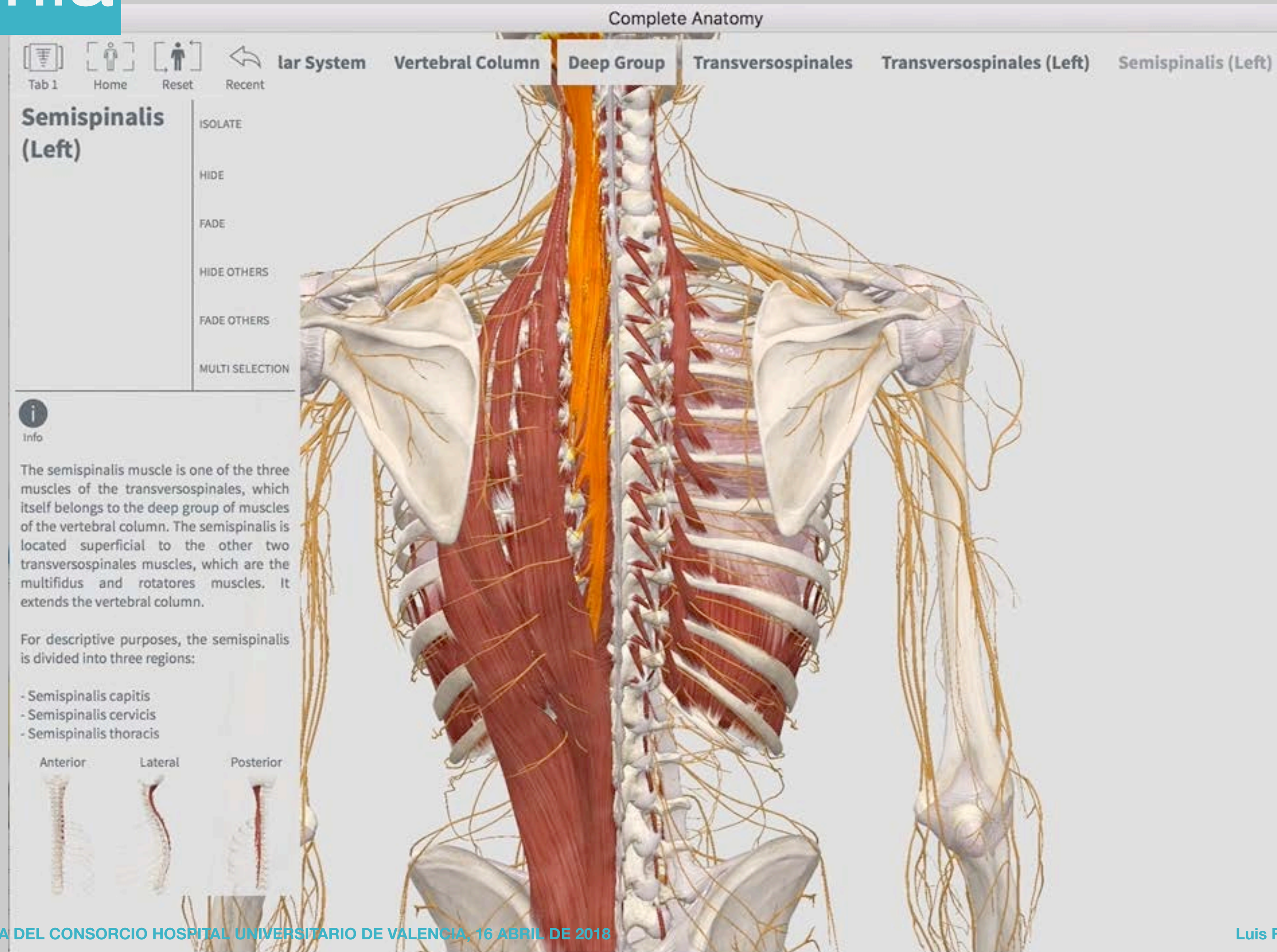
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## Erector Spinae Plane Block



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## Erector Spinae Plane Block



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## Erector Spinae Plane Block

CHRONIC AND INTERVENTIONAL PAIN

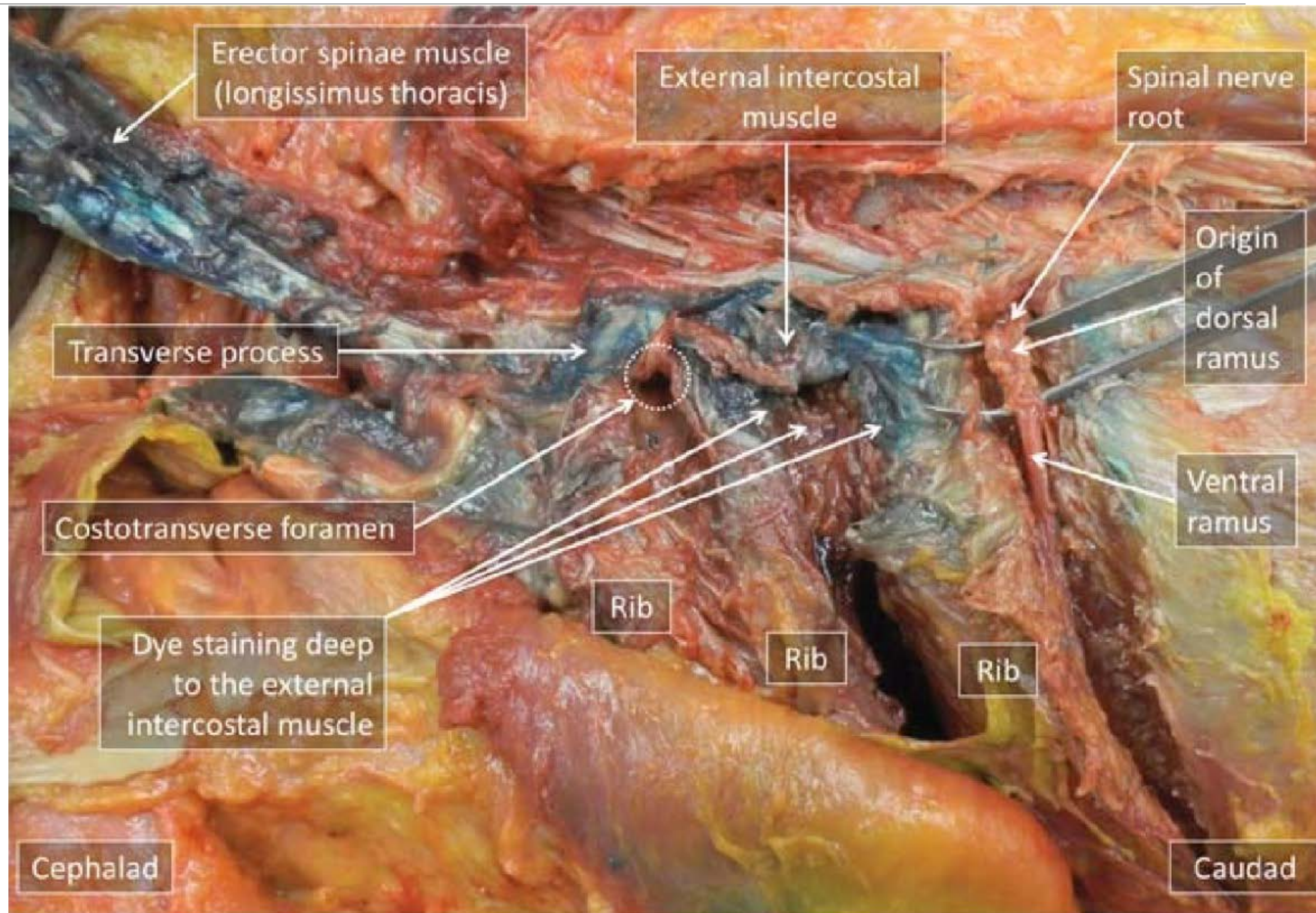
BRIEF TECHNICAL REPORT

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# Erector Spinae Plane Block

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# Erector Spinae Plane Block

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**Clinical experiences of ultrasound-guided  
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vertebra surgery**

◆ **Cirugía de raquis torácica**

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Contents lists available at ScienceDirect

Journal of Clinical Anesthesia

Journal of Clinical Anesthesia 38 (2017) 137

Correspondence

Clinical experiences of ultrasound-guided  
erector spinae plane block for thoracic  
vertebra surgery

A&A Case Reports. 2017;XXX:00–00

## The Use of Liposomal Bupivacaine in Erector Spinae Plane Block to Minimize Opioid Consumption for Breast Surgery: A Case Report

Amanda Kumar, MD,\* Alina Hulseley, MD,\* Hector Martinez-Wilson, MD, PhD,\*  
James Kim, MD,† and Jeff Gadsden, MD\*

- ◆ Cirugía de raquis torácica
- ◆ **Mastectomía simple + ganglio centinela**



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### American Journal of Emergency Medicine

American Journal of Emergency Medicine xxx (2017) xxx–xxx

journal homepage: [www.elsevier.com/locate/ajem](http://www.elsevier.com/locate/ajem)

Successful emergency pain control for posterior rib fractures with ultrasound-guided erector spinae plane block

Josh Luftig, PA<sup>a,\*</sup>, Daniel Mantuani, MD<sup>a,b</sup>, Andrew A. Herring, MD<sup>a,b</sup>, Brittany Dixon, MD, MPH<sup>a</sup>, Eben Clattenburg, MD<sup>a</sup>, Arun Nagdev, MD<sup>a,b</sup>

- ◆ Cirugía de raquis torácica
- ◆ Mastectomía simple + ganglio centinela
- ◆ **Fracturas costales múltiples** (personal de urgencias)

# Erector Spinae Plane Block

## • Indicaciones

A&A Case Reports. 2017;9:319–21

■ CASE REPORT

### **Bilateral Continuous Erector Spinae Plane Block Contributes to Effective Postoperative Analgesia After Major Open Abdominal Surgery: A Case Report**

Carlos Eduardo Restrepo-Garces, MD,\* Ki Jinn Chin, MBBS (Hons), MMed, FRCPC,† Patricia Suarez, MD,‡  
and Alejandro Diaz, MD§

- ◆ Cirugía de raquis torácica
- ◆ Mastectomía simple + ganglio centinela
- ◆ Fracturas costales múltiples (personal de urgencias)
- ◆ **Prostatectomía radical** (ESP bilateral, con 2 catéteres)

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Can J Anesth/J Can Anesth

DOI 10.1007/s12630-017-1010-1

### Erector spinae plane block for the management of chronic shoulder pain: a case report

Mauricio Forero, MD, FIPP • Manikandan Rajarathinam, MD, FIPP •  
Sanjib Das Adhikary, MD • Ki Jinn Chin, MBBS (Hons), MMed, FRCPC 

- ◆ Cirugía de raquis torácica
- ◆ Mastectomía simple + ganglio centinela
- ◆ Fracturas costales múltiples (personal de urgencias)
- ◆ Prostatectomía radical (ESP bilateral, con 2 catéteres)
- ◆ **Dolor crónico espalda**

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■ CASE REPORT

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Mauricio Forero, MD, FIPP,\* Manikandan Rajarathinam, MD,\* Sanjib Adhikary, MD,†  
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- ◆ Cirugía de raquis torácica
- ◆ Mastectomía simple + ganglio centinela
- ◆ Fracturas costales múltiples (personal de urgencias)
- ◆ Prostatectomía radical (ESP bilateral, con 2 catéteres)
- ◆ Dolor crónico espalda
- ◆ Toracotomía/toracoscopia

# Erector Spinae Plane Block

## • Indicaciones

Anaesthesia 2017, 72, 452-460

doi:10.1111/anae.13814

## Original Article

The analgesic efficacy of pre-operative bilateral erector spinae plane (ESP) blocks in patients having ventral hernia repair

K. J. Chin,<sup>1</sup> S. Adhikary,<sup>2</sup> N. Sarwani<sup>3</sup> and M. Forero<sup>4</sup>

- ✦ Cirugía de raquis torácica
- ✦ Mastectomía simple + ganglio centinela
- ✦ Fracturas costales múltiples (personal de urgencias)
- ✦ Prostatectomía radical (ESP bilateral, con 2 catéteres)
- ✦ Dolor crónico espalda
- ✦ Toracotomía/toracoscopia
- ✦ **Hernioplastia LPC**

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Case Report

Continuous Erector Spinae Plane (ESP) Block for Postoperative Analgesia after Minimally Invasive Mitral Valve Surgery

Felipe Muñoz Leyva, MD\*, Wilman E. Mendiola, MD\*,  
Antonio J. Bonilla, MD\*, Javier Cubillos, MD\*,  
Diego A. Moreno, MD\*, Ki Jinn Chin, FRCPC<sup>†,1</sup>

- ✦ **Cirugía de raquis torácica**
- ✦ **Mastectomía simple + ganglio centinela**
- ✦ **Fracturas costales múltiples** (personal de urgencias)
- ✦ **Prostatectomía radical** (ESP bilateral, con 2 catéteres)
- ✦ **Dolor crónico espalda**
- ✦ **Toracotomía/toracoscopia**
- ✦ **Hernioplastia LPC**
- ✦ **Toracotomía** (valvuloplastia mitral)

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**Journal of Clinical Anesthesia**

**Ultrasound guided erector spinae block for postoperative analgesia in pediatric nephrectomy surgeries**

Can Aksu, Asistant Professor\*  
Yavuz Gürkan, Professor

◆ **Nefrectomía pediátrica** (2 casos)

- ◆ **Cirugía de raquis torácica**
- ◆ **Mastectomía simple + ganglio centinela**
- ◆ **Fracturas costales múltiples** (personal de urgencias)
- ◆ **Prostatectomía radical** (ESP bilateral, con 2 catéteres)
- ◆ **Dolor crónico espalda**
- ◆ **Toracotomía/toracoscopia**
- ◆ **Hernioplastia LPC**
- ◆ **Toracotomía** (valvuloplastia mitral)

# Erector Spinae Plane Block

## •Indicaciones

Contents lists available at ScienceDirect

Journal of Clinical Anesthesia

Journal of Clinical Anesthesia 45 (2018) 60–61

Ultrasound guided low thoracic erector spinae plane  
block for management of acute herpes zoster



Ali Ahiskalioglu, MD\*

- ◆ Nefrectomía pediátrica (2 casos)
- ◆ **Herpes Zóster**

- ◆ Cirugía de raquis torácica
- ◆ Mastectomía simple + ganglio centinela
- ◆ Fracturas costales múltiples (personal de urgencias)
- ◆ Prostatectomía radical (ESP bilateral, con 2 catéteres)
- ◆ Dolor crónico espalda
- ◆ Toracotomía/toracoscopia
- ◆ Hernioplastia LPC
- ◆ Toracotomía (valvuloplastia mitral)



# Erector Spinae Plane Block

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Ali Ahiskalioglu, MD\*

Contents lists available at ScienceDirect

Journal of Clinical Anesthesia

Journal of Clinical Anesthesia 44 (2018) 68

Ultrasound guided Erector Spinae Plane block at L-4 transverse process level provides effective postoperative analgesia for total hip arthroplasty

Serkan Tulgar\*  
Ozgur Senturk

- ◆ Nefrectomía pediátrica (2 casos)
- ◆ Herpes Zóster
- ◆ **Analgesia PTR (L4)**

- ◆ Cirugía de raquis torácica
- ◆ Mastectomía simple + ganglio centinela
- ◆ Fracturas costales múltiples (personal de urgencias)
- ◆ Prostatectomía radical (ESP bilateral, con 2 catéteres)
- ◆ Dolor crónico espalda
- ◆ Toracotomía/toracoscopia
- ◆ Hernioplastia LPC
- ◆ Toracotomía (valvuloplastia mitral)

# Erector Spinae Plane Block

## Indicaciones

Contents lists available at ScienceDirect

Journal of Clinical Anesthesia

Journal of Clinical Anesthesia 45 (2018) 60–61

Ultrasound guided low thoracic erector spinae plane block for management of acute herpes zoster



Ali Ahiskalioglu, MD\*

Contents lists available at ScienceDirect

Journal of Clinical Anesthesia

Journal of Clinical Anesthesia 44 (2018) 68

Ultrasound guided Erector Spinae Plane block at L-4 transverse process level provides effective postoperative analgesia for total hip arthroplasty

Serkan Tulgar\*  
Ozgur Senturk

Contents lists available at ScienceDirect

Journal of Clinical Anesthesia

Journal of Clinical Anesthesia 44 (2018) 1–2

Continuous erector spinae plane block provides effective perioperative analgesia for breast reconstruction using tissue expanders: A report of two cases

Yuichi Ohgoshi, MD, Staff Anesthesiologist\*  
Toshiaki Ikeda, MD, Senior Resident

Contents lists available at ScienceDirect

Journal of Clinical Anesthesia

Journal of Clinical Anesthesia 44 (2018) 3–4

Bilateral ultrasound-guided erector spinae plane blocks in breast cancer and reconstruction surgery

Daniele Bonvicini\*  
Lorenzo Tagliapietra

- ◆ Nefrectomía pediátrica (2 casos)
- ◆ Herpes Zóster
- ◆ Analgesia PTR (L4)
- ◆ **Mastectomía + reconstrucción**

- ◆ Cirugía de raquis torácica
- ◆ Mastectomía simple + ganglio centinela
- ◆ Fracturas costales múltiples (personal de urgencias)
- ◆ Prostatectomía radical (ESP bilateral, con 2 catéteres)
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### PEDIATRIC ANALGESIA

#### CASE REPORT

*Reg Anesth Pain Med* 2018;43: 217-219

### Erector Spinae Plane Block for Surgery of the Posterior Thoracic Wall in a Pediatric Patient

*Maria Alejandra Hernandez, MD,\* Lucio Palazzi, MD,† Julio Lapalma, MD,†  
Mauricio Forero, MD,‡ and Ki Jinn Chin, MD§*

- ◆ Nefrectomía pediátrica (2 casos)
- ◆ Herpes Zóster
- ◆ Analgesia PTR (L4)
- ◆ Mastectomía + reconstrucción
- ◆ **Lipoma paraespinal gigante en niño (T4-T7)**
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- ◆ Mastectomía simple + ganglio centinela
- ◆ Fracturas costales múltiples (personal de urgencias)
- ◆ Prostatectomía radical (ESP bilateral, con 2 catéteres)
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Accepted: 20 December 2017

DOI: 10.1111/pan.13325

#### CASE REPORT

WILEY **Pediatric Anesthesia**

### Erector spinae plane block for inguinal hernia repair in preterm infants

Maria A. Hernandez<sup>1</sup> | Lucio Palazzi<sup>2</sup> | Julio Lapalma<sup>2</sup> | Joseph Cravero<sup>3</sup>

- ◆ Nefrectomía pediátrica (2 casos)
- ◆ Herpes Zóster
- ◆ Analgesia PTR (L4)
- ◆ Mastectomía + reconstrucción
- ◆ Lipoma paraespinal gigante en niño (T4-T7)
- ◆ Hernioplastia inguinal (prematuro)
- ◆ Cirugía de raquis torácica
- ◆ Mastectomía simple + ganglio centinela
- ◆ Fracturas costales múltiples (personal de urgencias)
- ◆ Prostatectomía radical (ESP bilateral, con 2 catéteres)
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*Can J Anesth/J Can Anesth*  
<https://doi.org/10.1007/s12630-018-1097-z>



#### CORRESPONDENCE

### Long-term continuous erector spinae plane block for palliative pain control in a patient with pleural mesothelioma

Julio Ramos, MD • Philip Peng, MBBS, FRCPC • Mauricio Forero, MD, FIPP

- ◆ Nefrectomía pediátrica (2 casos)
- ◆ Herpes Zóster
- ◆ Analgesia PTR (L4)
- ◆ Mastectomía + reconstrucción
- ◆ Lipoma paraespinal gigante en niño (T4-T7)
- ◆ Hernioplastia inguinal (prematuro)
- ◆ Mesotelioma pleural 66 días (somático, neuropático y visceral)
- ◆ Cirugía de raquis torácica
- ◆ Mastectomía simple + ganglio centinela
- ◆ Fracturas costales múltiples (personal de urgencias)
- ◆ Prostatectomía radical (ESP bilateral, con 2 catéteres)
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- ◆ Hernioplastia LPC
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# Erector Spinae Plane Block

## Indicaciones

Rev Esp Anestesiol Reanim. 2018;xxx(xx):xxx-xxx



Revista Española de Anestesiología  
y Reanimación

www.elsevier.es/redar



### CASO CLÍNICO

**Bloqueo del plano del erector del espinal para analgesia tras cesárea del segmento inferior: informe de caso**

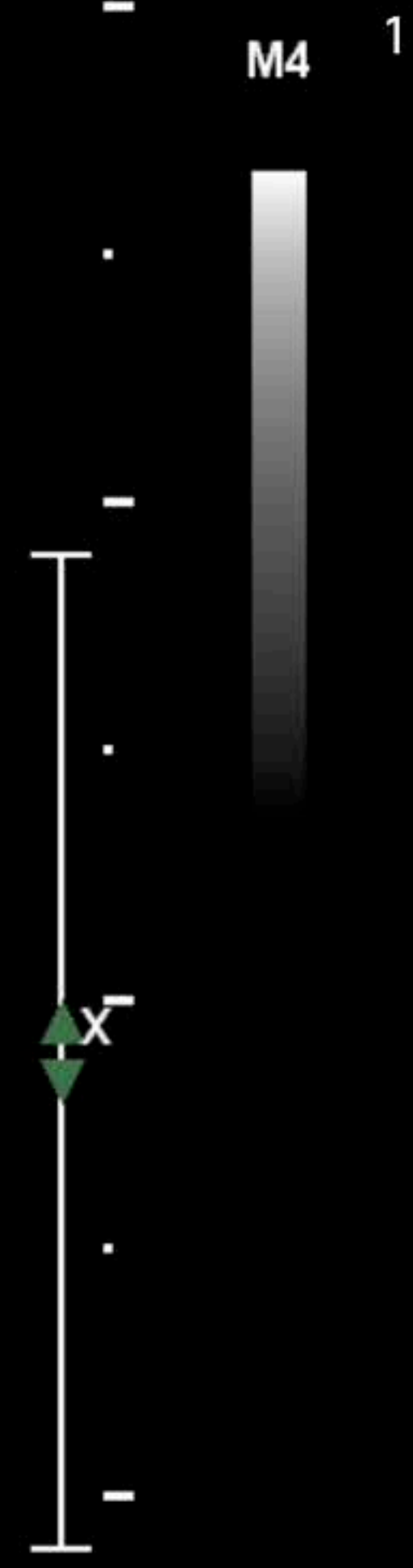
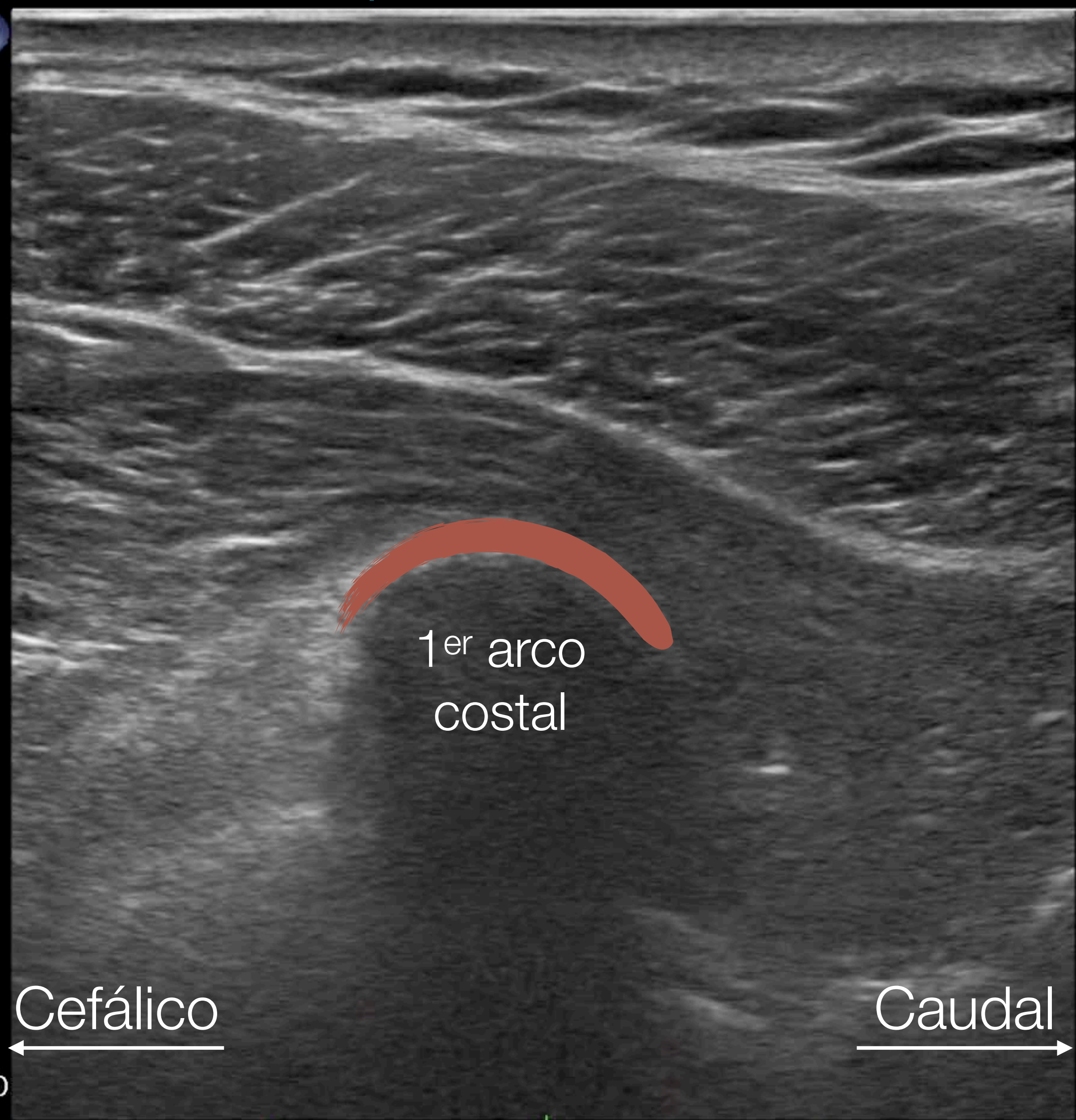
E. Yamak Altinpulluk<sup>a,\*</sup>, D. García Simón<sup>b</sup> y M. Fajardo-Pérez<sup>b</sup>

- ◆ Nefrectomía pediátrica (2 casos)
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- ◆ Lipoma paraespinal gigante en niño (T4-T7)
- ◆ Hernioplastia inguinal (prematuro)
- ◆ Mesotelioma pleural 66 días (somático, neuropático y visceral)
- ◆ Cesárea (T9)
- ◆ Cirugía de raquis torácica
- ◆ Mastectomía simple + ganglio centinela
- ◆ Fracturas costales múltiples (personal de urgencias)
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- ◆ Dolor crónico espalda
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L18.5  
33Hz  
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2D  
70%  
Rango din. 60  
P Med.  
Res.

# Erector Spinae Plane Block

Esp Mama 36240820180410 ( - , - )  
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Free Form



• Escaneo

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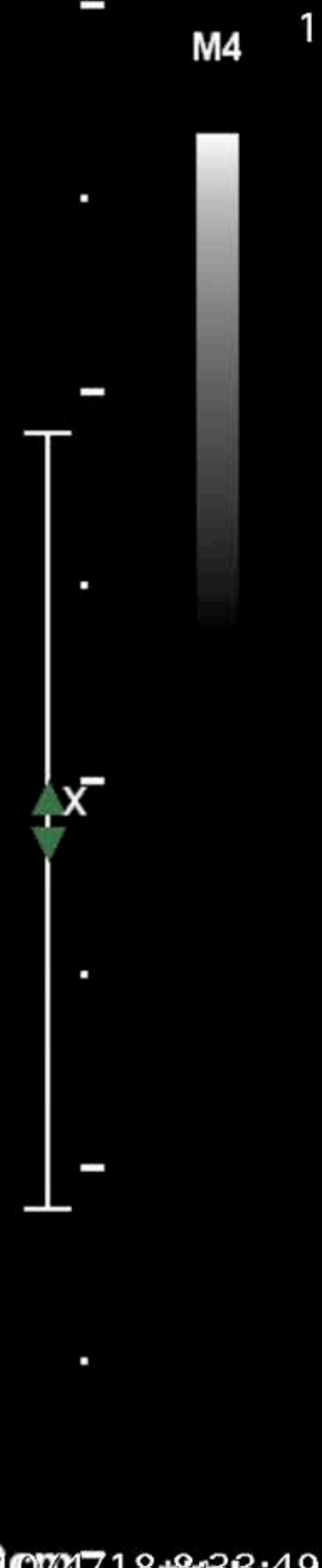
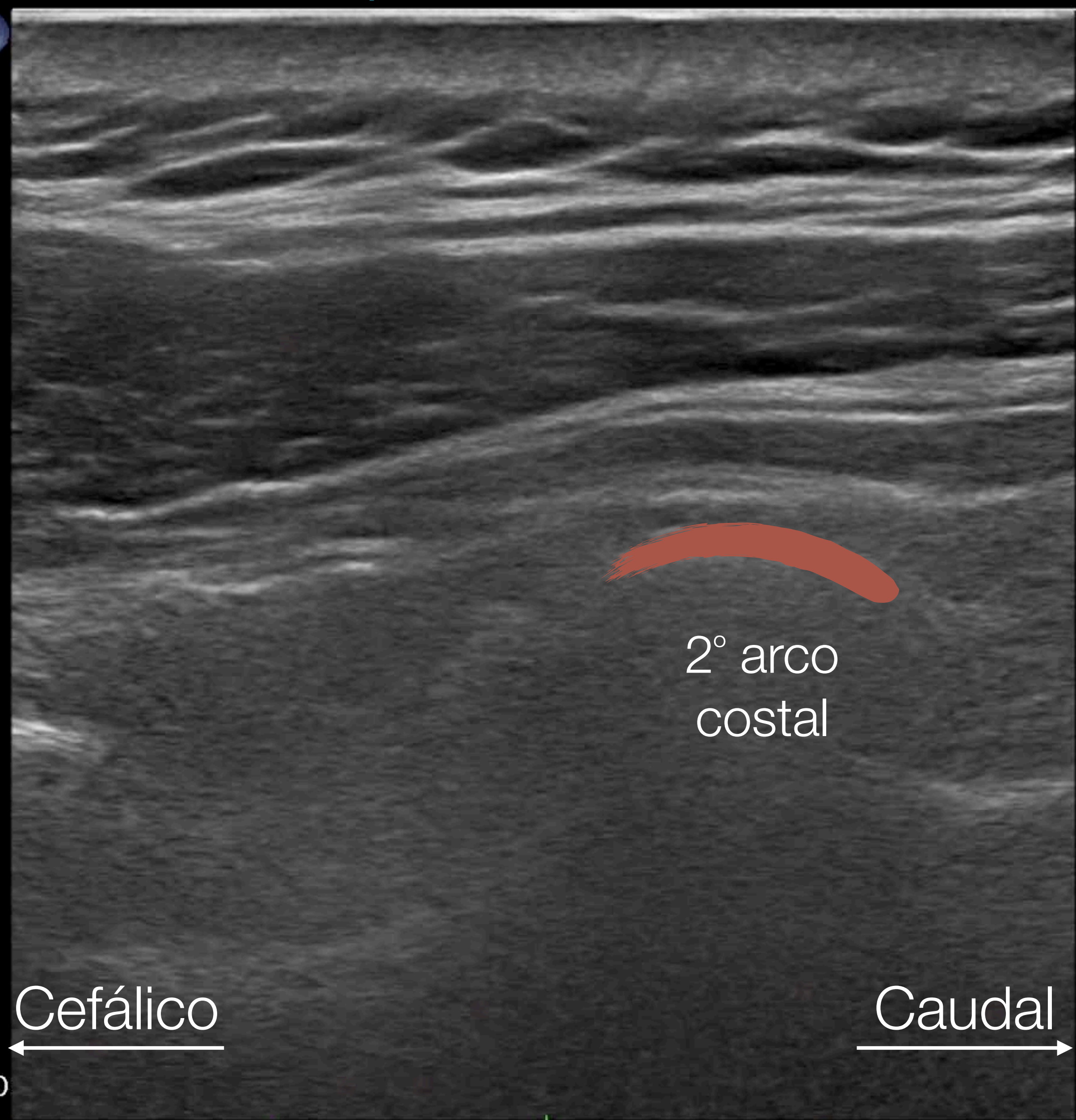
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P Med.  
Res.

Esp Mama 36240820180410 ( - , - )

# Erector Spinae Plane Block

TISO.1 MIOG

Unrnamed  
Free Form



Zoom: 172% Angle: 0  
Im: 69/980

4.0cm 4718.838.49

• Escaneo



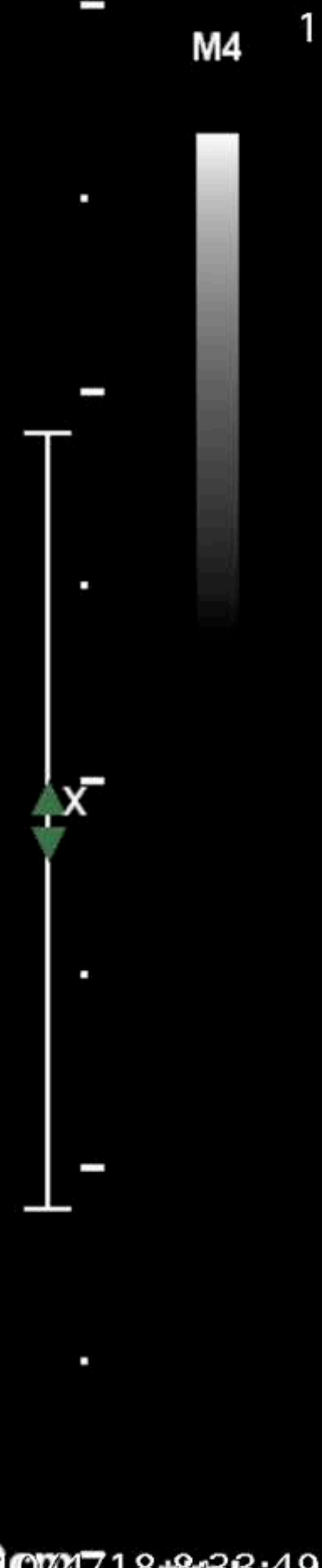
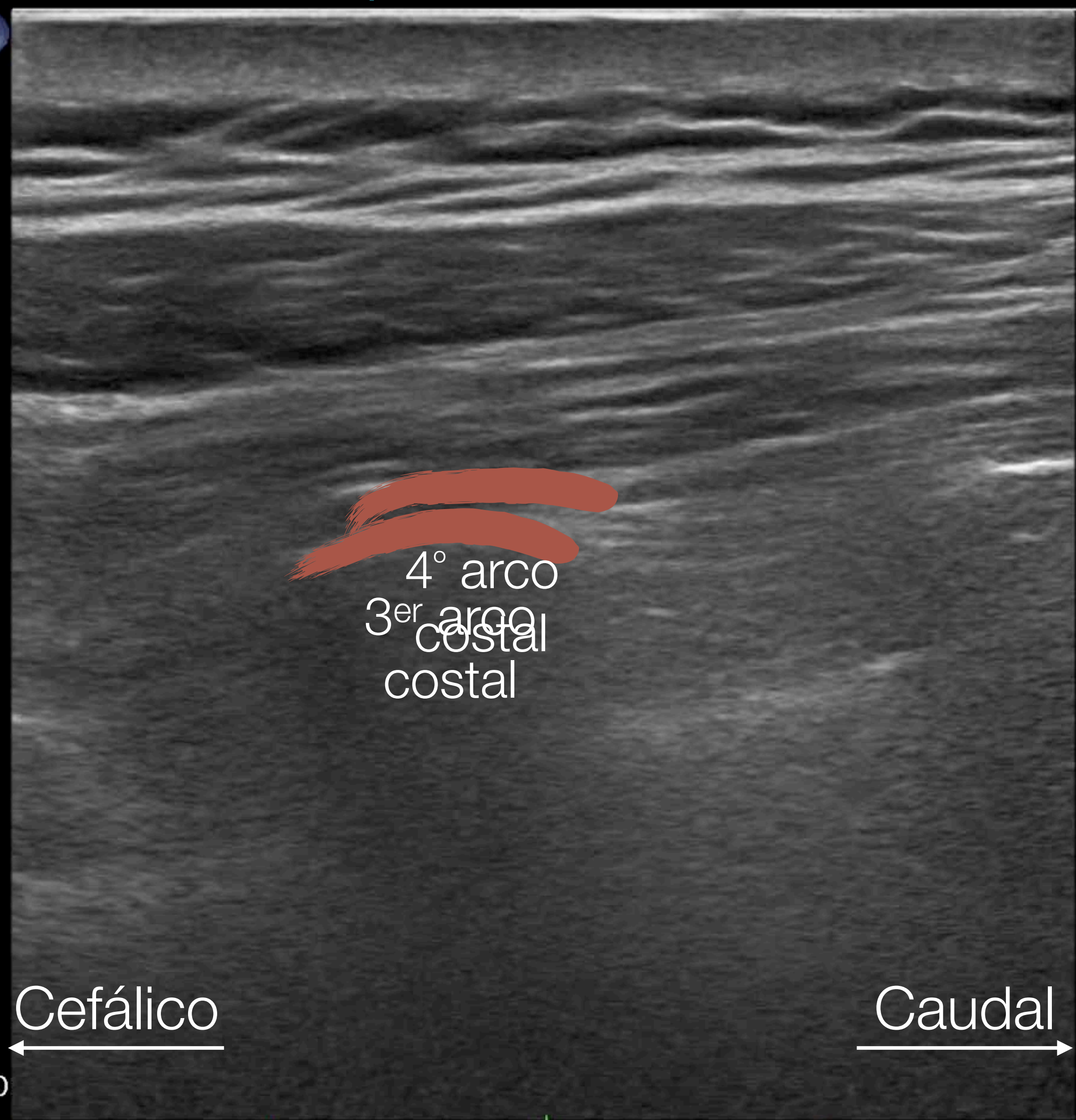
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Res.

Esp Mama 36240820180410 ( - , - )

# Erector Spinae Plane Block

TISO.1 MIOG

Unrnamed  
Free Form



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4.00m 4718.838.49

• Escaneo

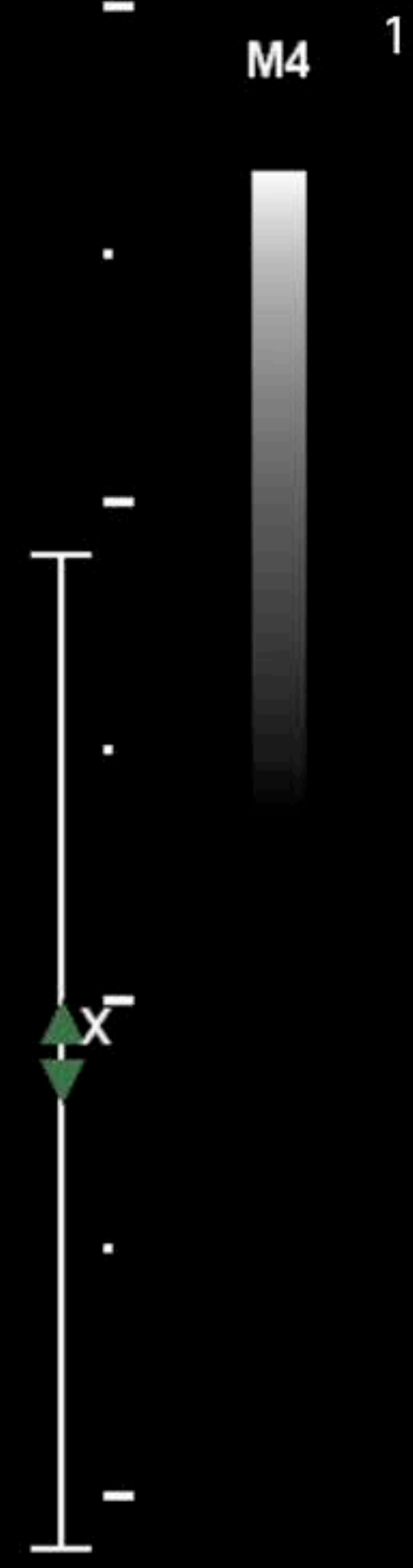
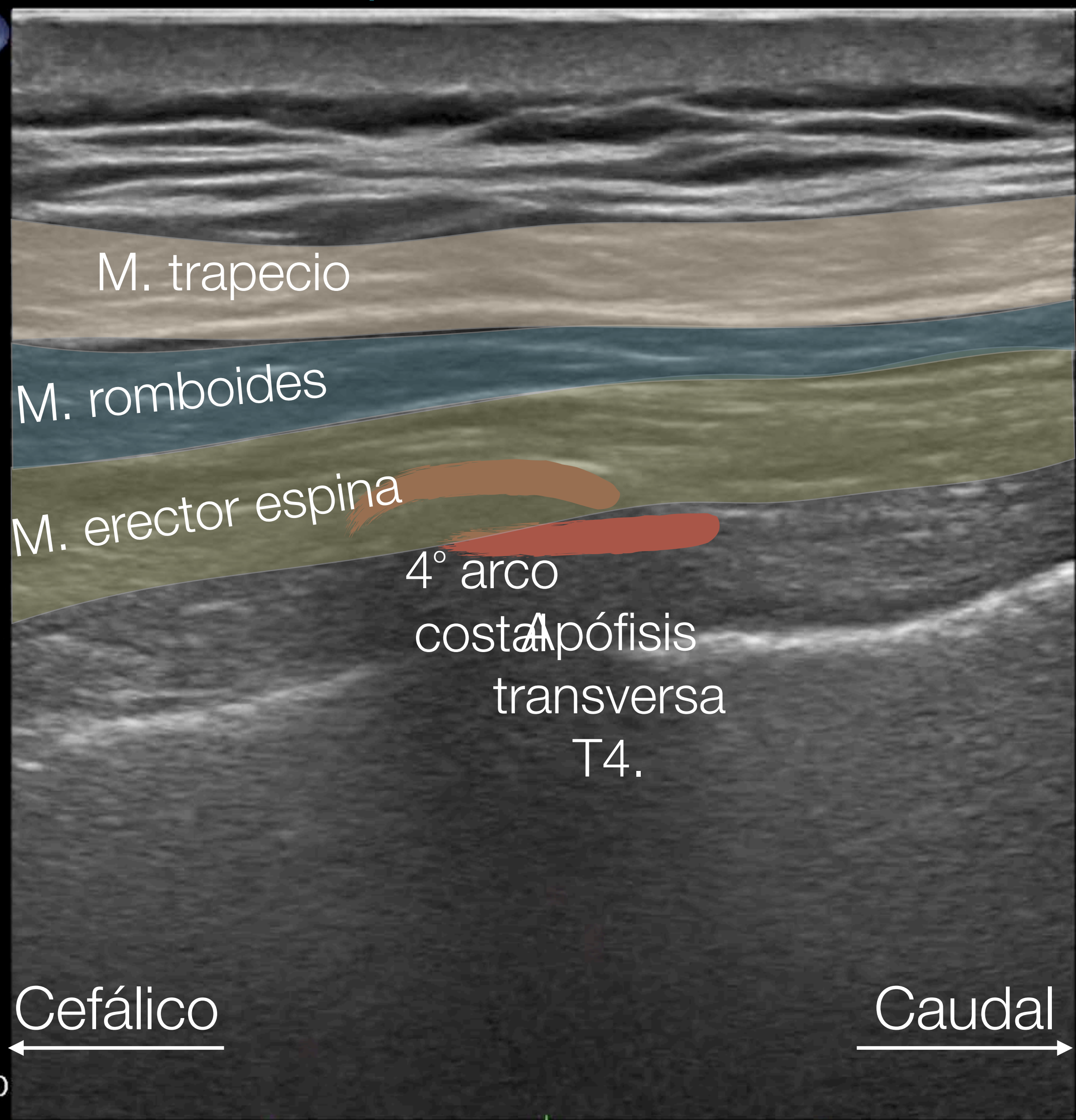
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Rango din. 60  
P Med.  
Res.

# Erector Spinae Plane Block

Esp Mama 36240820180410 ( - , - )

TISO.1 MIOG

Unnamed  
Free Form



• Escaneo

Zoom: 172% Angle: 0  
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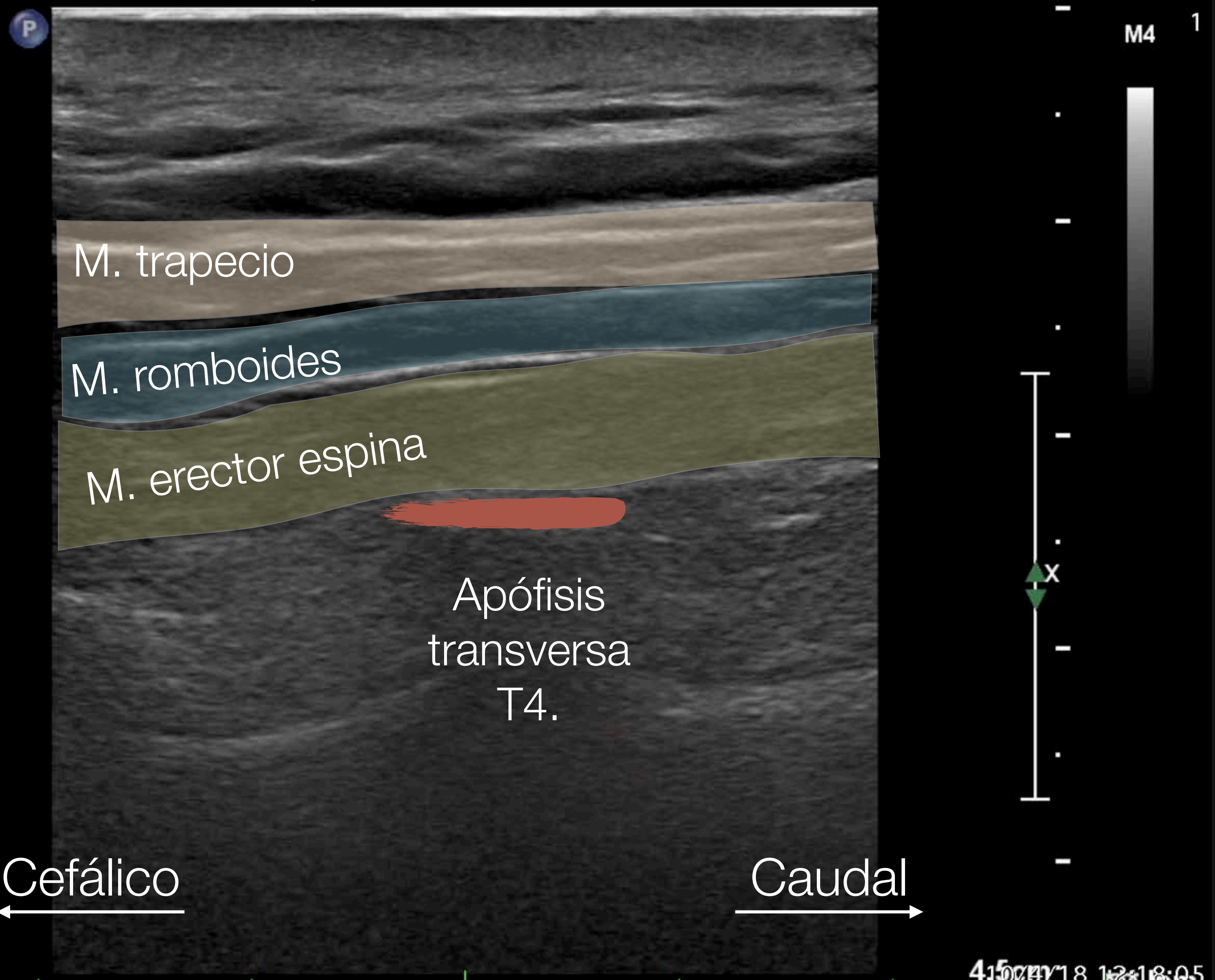
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Rango din. 60  
P Med.  
Res.

Esp Mama 2 37111220180410 ( - , - )

# Erector Spinae Plane Block

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M4 1



Zoom: 172% Angle: 0  
Im: 126/905

4.5cm 18 12:18:05

• Escaneo

# ECOGRAFÍA EN ANESTESIA REGIONAL:

Región cervical y sus bloqueos específicos. Papel del ESP en la región torácica

• Para finalizar

Los nuevos abordajes fasciales abren un campo de investigación



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El bloqueo ESP se presenta como una alternativa al bloqueo paravertebral, con mejor perfil de seguridad

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Hay indicios de que el bloqueo ESP puede ser efectivo en toda la columna vertebral, desde el nivel lumbar hasta el cervical

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Los bloqueos selectivos en la región cervical pueden ser útiles en el diagnóstico y tratamiento del dolor cervicogénico

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Los bloqueos selectivos en la región cervical pueden ser útiles en el diagnóstico y tratamiento del dolor cervicogénico

Pueden minimizar el riesgo de bloqueo accidental de otras estructuras nerviosas adyacentes o la lesión nerviosa de este



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*Suelta las amarras, empieza a navegar y  
aprovecha los vientos a tu favor. Explora, sueña,  
descubre.*

- Mark Twain



# ESRA 2018 ESPAÑA

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**24<sup>a</sup> Reunión Anual**  
Palacio de Congresos  
3, 4 y 5 octubre 2018



Sociedad Europea  
de Anestesia Regional  
y Tratamiento del Dolor

[www.esra-spain.org](http://www.esra-spain.org)

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**MUCHAS  
GRACIAS**