

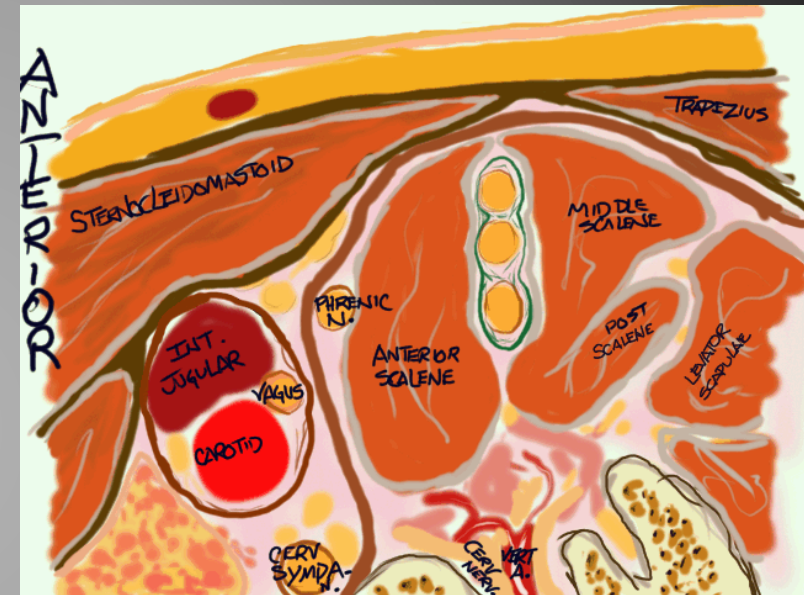
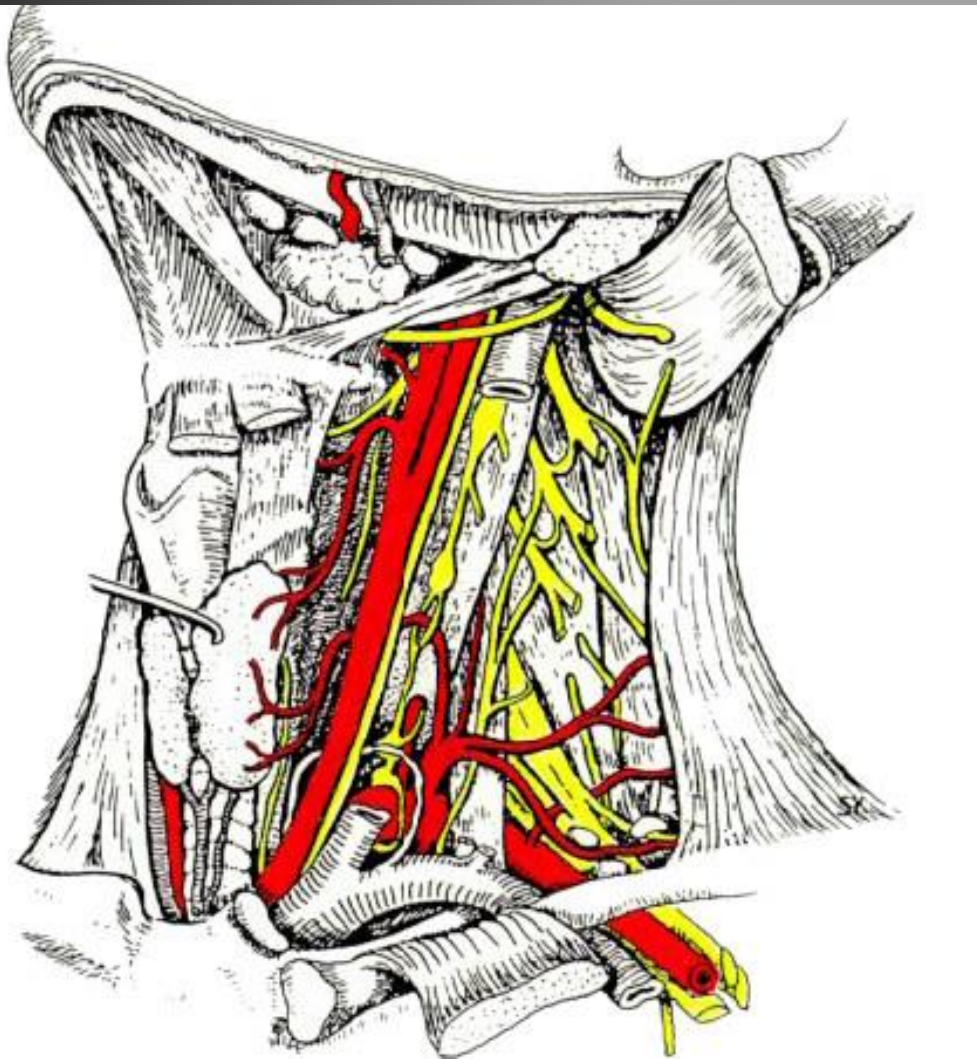
Regionální anestézie u menších a ambulantních výkonů

MUDr. Milan Jelínek
ČSARIM 2025

Artroskopie ramenního kloubu

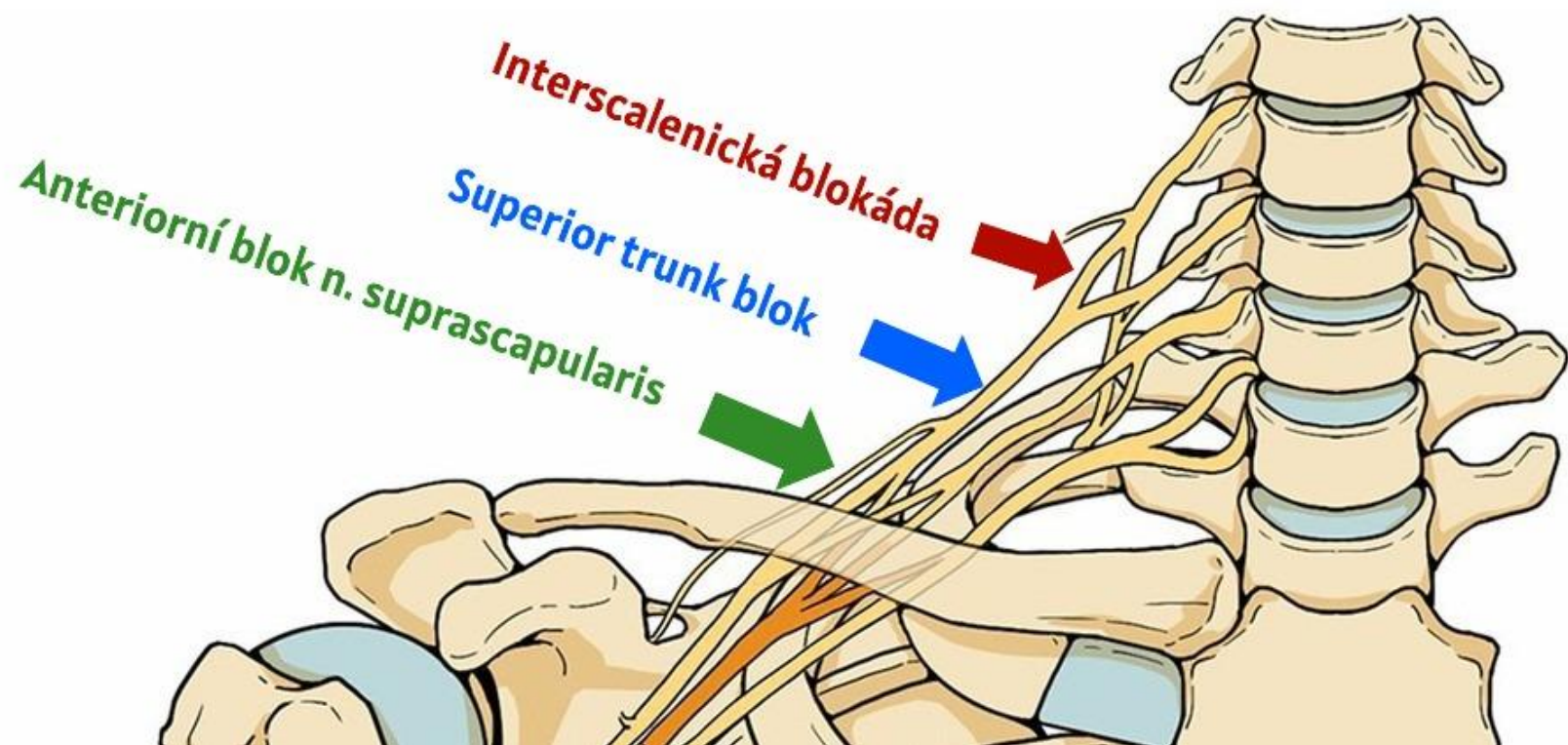
- ▶ Miniinvazivní, přesto bolestivá
- ▶ Často prováděna ambulantně
- ▶ Panuje shoda na použití RA k léčbě pooperační bolesti v rámci multimodální analgesie
- ▶ Snaha využít bloky šetřící n. phrenicus a minimalizovat motorickou blokádu distální části HK

N. phrenicus a brachiální plexus



Bloky šetřící n. phrenicus

- ▶ Jednostranná blokáda n. phrenicus vede k poklesu plicních funkcí o 20–25%
- ▶ Jedinou bariérou pro šíření LA u blokády nad klíčkem je hluboká krční fascie
- ▶ Principem je aplikace LA k brachiálnímu plexu (C5+C6) a jeho větví co nejdále od n.phrenicus, tedy periferněji a dorzálně od BP nebo aplikace úplně mimo supraclaviculární oblast
- ▶ Minimalizace objemu LA 5–10 ml



Superior trunk blok

- ▶ Blokáda trunks superior těsně před odstupem n. suprascapularis
- ▶ Incidence blokády n. phrenicus 4.8–26.7%(76%)
- ▶ 8–10 ml LA
- ▶ Anestetická i analgetická účinnost shodná s ISB

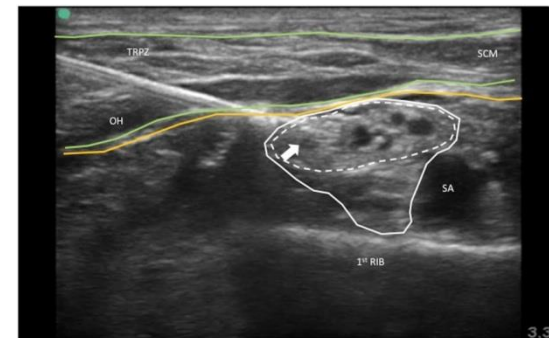
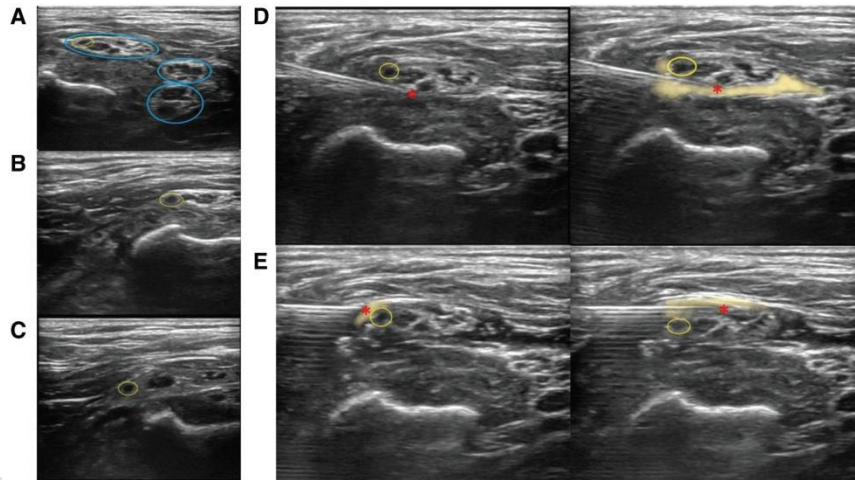
ANESTHESIOLOGY

Superior Trunk Block

A Phrenic-sparing Alternative to the Interscalene Block: A Randomized Controlled Trial

David H. Kim, M.D., Yi Lin, M.D., Ph.D.,
Jonathan C. Beathe, M.D., Jiabin Liu, M.D., Ph.D.,
Joseph A. Oxendine, M.D., Stephen C. Haskins, M.D.,
Michael C. Ho, M.D., Douglas S. Wetmore, M.D.,
Answorth A. Allen, M.D., Lauren Wilson, M.P.H.,
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Ph.D., M.B.A.

ANESTHESIOLOGY 2019; 131:521–33



Ultrasound-Guided Suprascapular Nerve Block, Description of a Novel Supraclavicular Approach

Andreas Siegenthaler, MD,* Bernhard Moriggl, MD,† Sabine Mlekusch, MD,‡ Juerg Schliessbach, MD,‡ Matthias Haug, MD,‡ Michele Curatolo, MD, PhD,‡ and Urs Eichenberger, MD‡

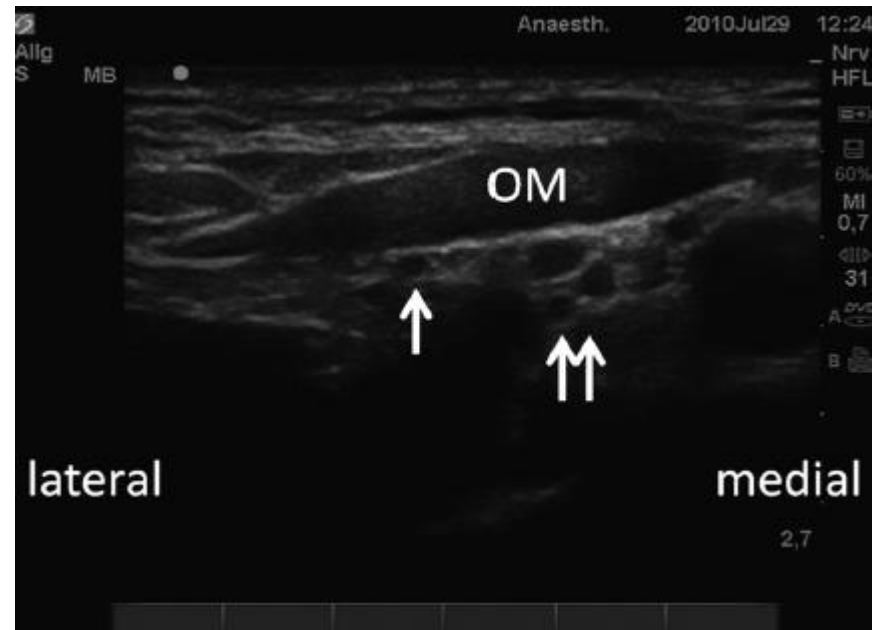
Background and Objectives: The suprascapular nerve (SSN) block is frequently performed for different shoulder pain conditions and for perioperative and postoperative pain control after shoulder surgery. Blind and image-guided techniques have been described, all of which target the nerve within the supraspinous fossa or at the suprascapular notch. This classic target point is not always ideal when ultrasound (US) is used because it is located deep under the muscles, and hence the nerve is not always visible. Blocking the nerve in the supraclavicular region, where it passes underneath the omohyoid muscle, could be an attractive alternative.

Methods: In the first step, 60 volunteers were scanned with US, both in the supraclavicular and the classic target area. The visibility of the SSN in both regions was compared. In the second step, 20 needles were placed into or immediately next to the SSN in the supraclavicular region of 10 cadavers. The accuracy of needle placement was determined by injection of dye and following dissection.

Results: In the supraclavicular region of volunteers, the nerve was identified in 81% of examinations (95% confidence interval [CI], 74%–88%) and located at a median depth of 8 mm (interquartile range, 6–9 mm). Near the suprascapular notch (supraspinous fossa), the nerve was unambiguously identified in 36% of examinations (95% CI, 28%–44%) ($P < 0.001$) and located at a median depth of 35 mm (interquartile range, 31–38 mm; $P < 0.001$). In the cadaver investigation, the rate of correct needle placement of the supraclavicular approach was 95% (95% CI, 86%–100%).

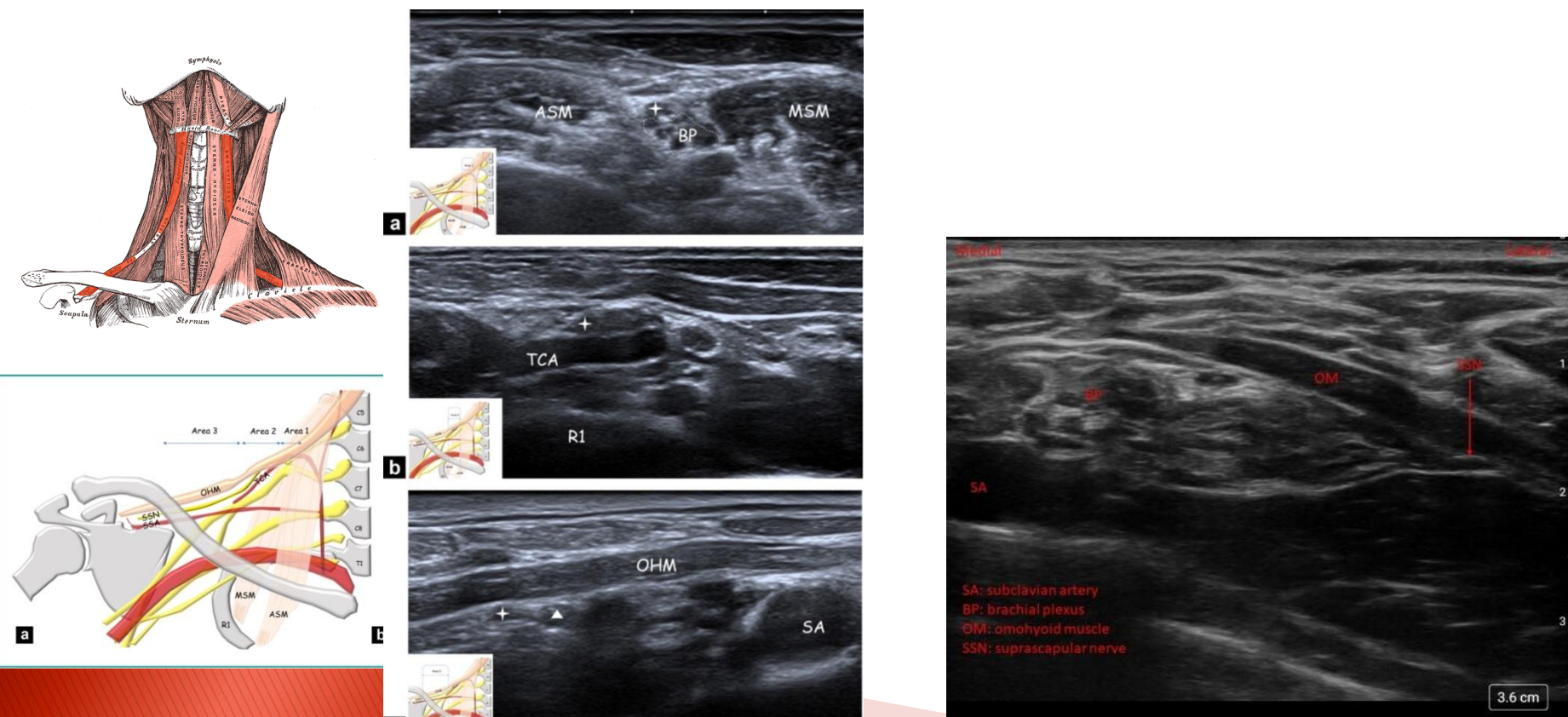
Conclusions: Visualization of the SSN with US is better in the supraclavicular region as compared with the supraspinous fossa. The anatomic dissections confirmed that our novel supraclavicular SSN block technique is accurate.

(*Reg Anesth Pain Med* 2012;37: 325–328)

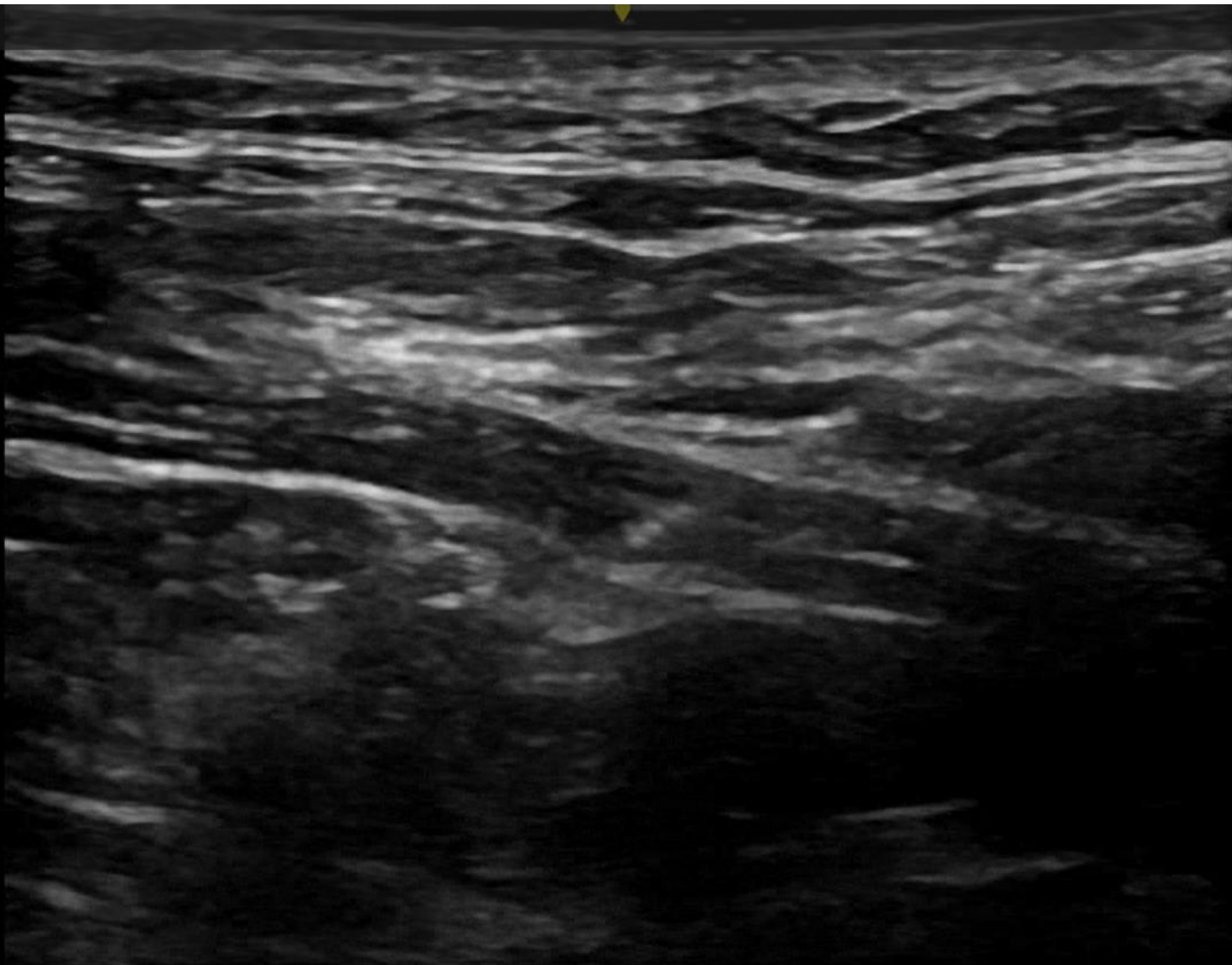


Blokáda n. suprascapularis anteriorním přístupem = subomohyoideálně

- ▶ 2–3 ml LA dorzálně k nervu, pod sval
- ▶ 5–10 ml většinou skončí jako blokáda C5–6
- ▶ Incidence blokády n.phrenicus pod 5–10%



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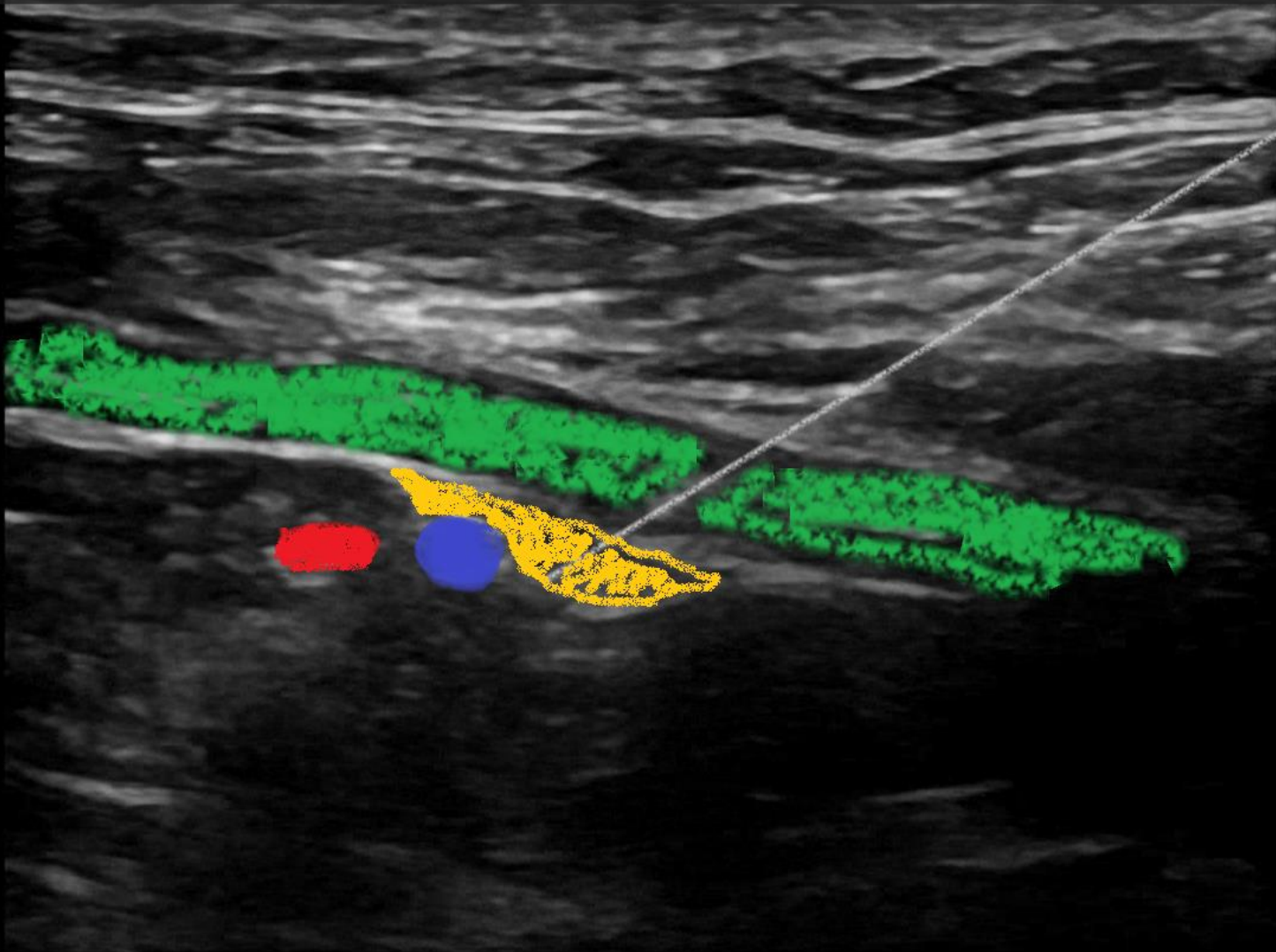


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Pathway from anterior suprascapular nerve block to the phrenic nerve: a cadaveric dye study

Sandeep Diwan¹, Deepika Sathe², Anjali Sabnis³, Prakash Mane³, and Anju Gupta⁴

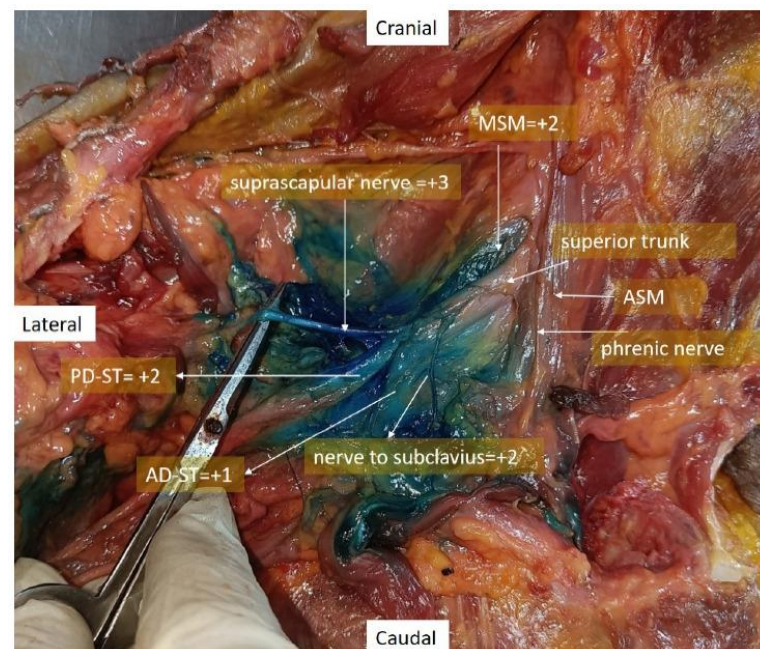
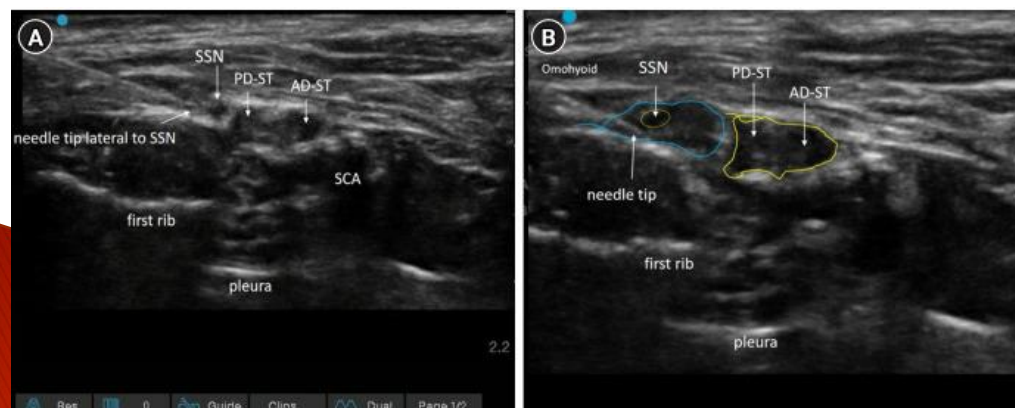
¹Department of Anesthesiology, Sancheti Hospital, Pune, ²Department of Anesthesia, MGM Hospital, ³Department of Anatomy, MGM Hospital, Navi Mumbai, ⁴Department of Anesthesiology, Critical Care and Pain Medicine, All India Institute of Medical Sciences, New Delhi, India

Background: Anterior suprascapular nerve block is widely used for postoperative shoulder pain management. Although cadaveric studies show the spread and smudging of the phrenic nerve, our cadaveric injection investigation was conducted to investigate the pathway of diffusion of the dye toward the phrenic nerve from a more distal injection at the suprascapular nerve.

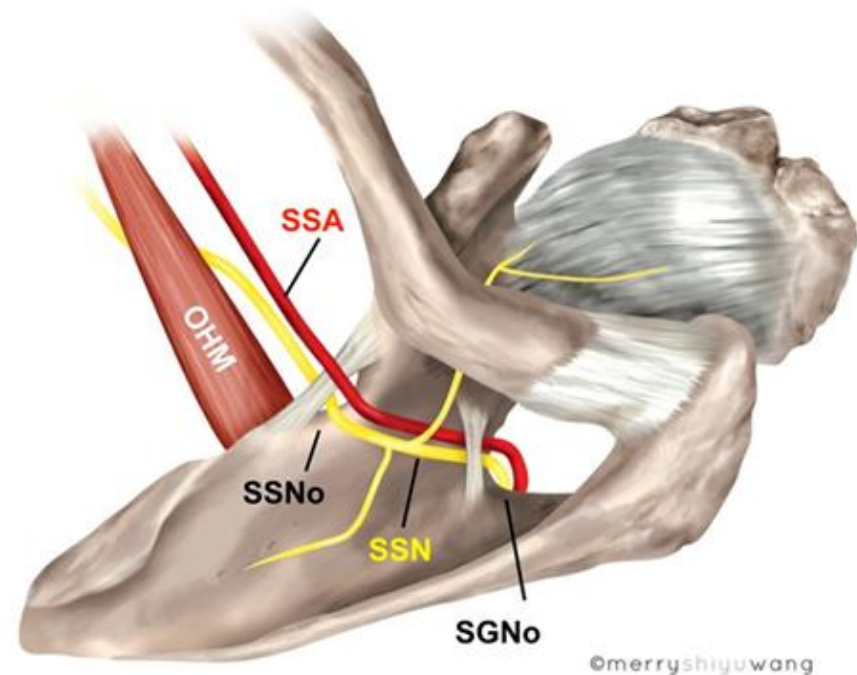
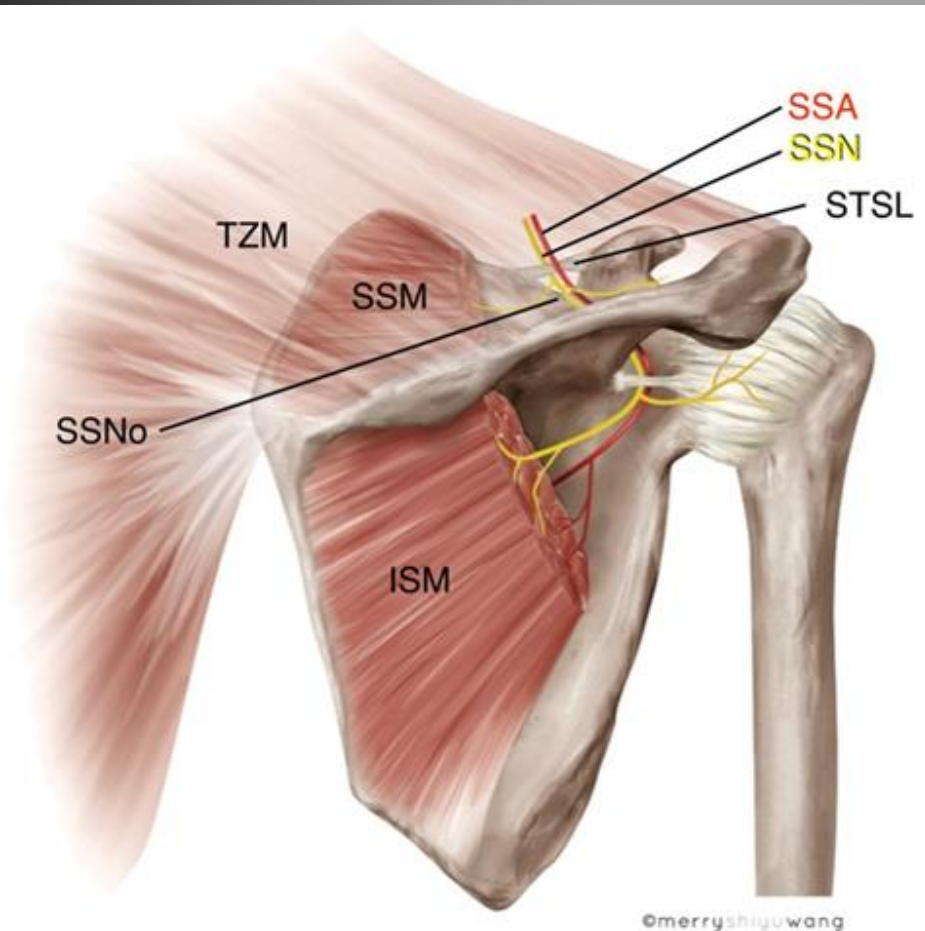
Methods: We injected 5 ml of 0.1% methylene blue dye into the proximal portion of the suprascapular nerve (infra-omohyoid in the posterior triangle) in 12 neck specimens from six cadavers. Following meticulous dissection, we assessed the spread of the dye along the brachial plexus to the nerve roots and traced the phrenic nerve for staining.

Results: The phrenic nerve was stained in 41.7% of the cases, the inferior trunk of the brachial plexus was unstained in all cases (100%), and the posterior division and suprascapular nerve were stained in all cases (100%). The nerves to the subclavius, dorsal aspect of the superior trunk, and C5 and C6 roots were stained in all cases. Anterior division of the superior trunk was observed in 75% of the specimens. The dye-spread pathway along the brachial plexus was dorsal, sparing the ventral aspect.

Conclusions: Our study demonstrated that the dye-spread pathway from the suprascapular nerve at the infra-omohyoid level to the phrenic nerve is dorsal to the brachial plexus.

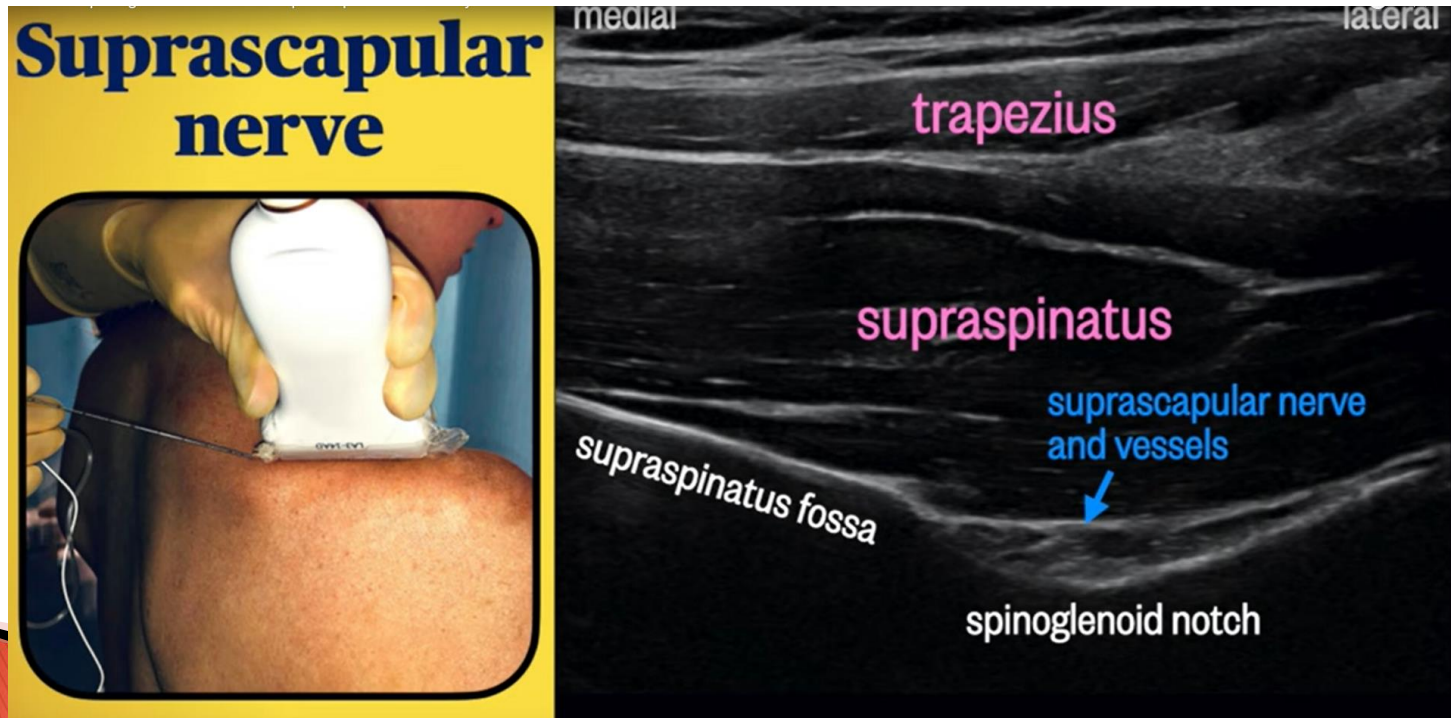


Blokáda n. suprascapularis posteriorním přístupem



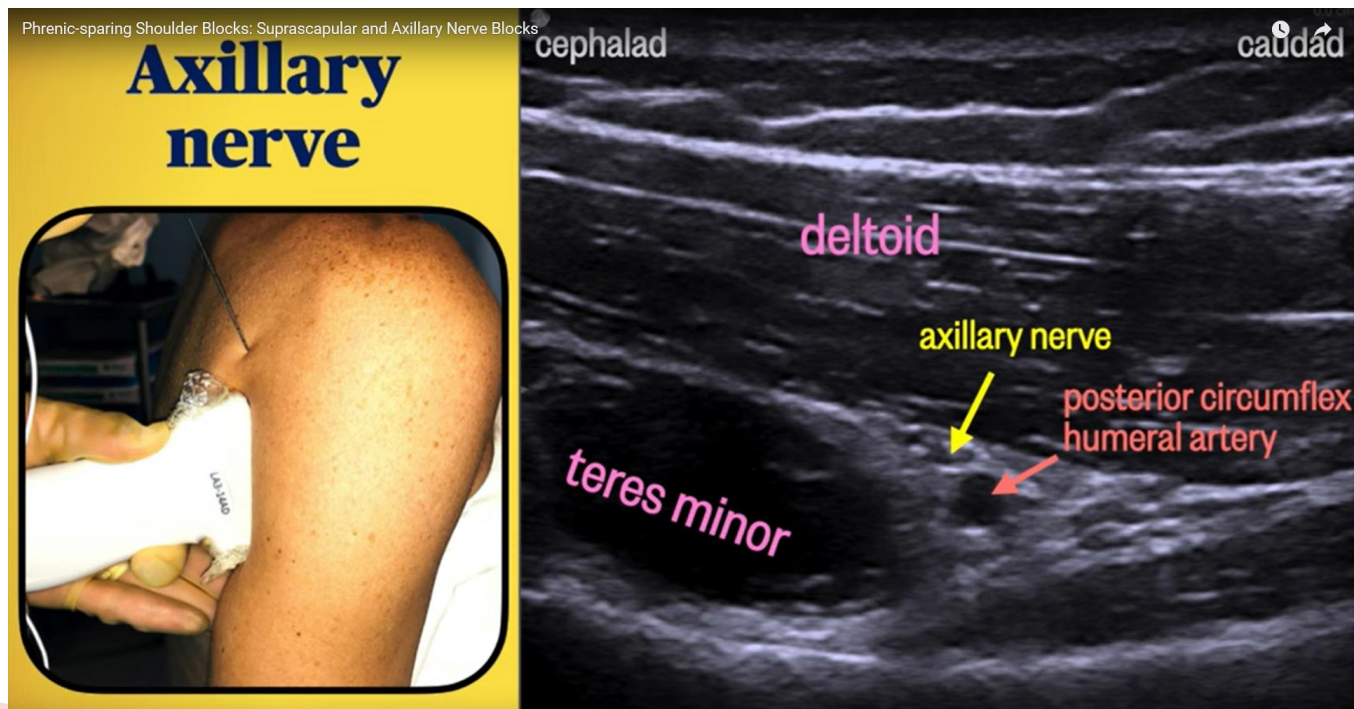
Blokáda n. suprascapularis posteriorním přístupem

- ▶ 10 ml LA v supraspinální fosse
- ▶ Riziko blokády n.phrenicus 0%



Blokáda n. axilaris

- ▶ 5–10ml LA
- ▶ Shoulder block= SSNB+ blok n.axilaris



ISB x SSNB

- ▶ Analgeticky srovnatelné pro artroscopické výkony (první 2 h lepší ISB)
- ▶ Riziko omezení plicních funkcí nesrovnatelně favorizuje SSNB 100% vs 0–10%

PAIN MEDICINE

Suprascapular and Interscalene Nerve Block for Shoulder Surgery

A Systematic Review and Meta-analysis

Nasir Hussain, M.Sc., M.D., Goldar Ghazaleh, M.D. (Cand.), Neli Ragina, M.Sc., Ph.D., Laura Banfield, M.L.S., John G. Laffey, M.D., M.A., F.C.A.I., Faraj W. Abdallah, M.D.

ABSTRACT

Background: Interscalene block provides optimal shoulder surgery analgesia, but concerns over its association prompted the search for alternatives. Suprascapular block was recently proposed as an interscalene block with evidence of its comparative analgesic effect is conflicting. This meta-analysis compares the analgesic effect and side effects of suprascapular block *versus* interscalene block for shoulder surgery.

Methods: Databases were searched for randomized trials comparing interscalene block with suprascapular block for shoulder surgery. Postoperative 24-h cumulative oral morphine consumption and the difference in the area under the curve (AUC) for pain scores were designated as primary outcomes. Analgesic and safety outcomes, particularly block-related complications, were evaluated as secondary outcomes. Results were pooled using random-effects modeling.

Results: Data from 16 studies (1,152 patients) were analyzed. Interscalene block and suprascapular block were compared for 24-h morphine consumption. The difference in area under the curve of pain scores for the 24-h interval favored suprascapular block by 1.1 cm/h, but this difference was not clinically important. Compared with suprascapular block, interscalene block reduced postoperative pain but not opioid consumption during recovery room stay by a weighted mean difference (WMD) of 1.5 cm (0.6 to 2.5 cm; $P < 0.0001$). Pain scores were not different at any other time. In contrast, suprascapular block reduced the odds of block-related and respiratory complications.

Conclusions: This review suggests that there are no clinically meaningful analgesic differences between suprascapular and interscalene block except for interscalene block providing better pain control during recovery room stay; however, suprascapular block has fewer side effects. These findings suggest that suprascapular block may be considered an effective interscalene block alternative for shoulder surgery. (ANESTHESIOLOGY 2017; XXX:00-00)

Review

Suprascapular Nerve Blockade for Postoperative Pain Control After Arthroscopic Shoulder Surgery

A Systematic Review and Meta-analysis

Jeffrey Kay,¹ MD, Muzammil Memon,² MD, Thomas Hu,³ Nicole Simunovic,⁴ MSc, Andrew Duong,⁵ MSc, James Paul,⁶ MD, MSc, FRCPC, George Athwal,¹ MD, FRCSC, and Olufemi R. Ayeni,¹ MD, PhD, FRCSC

Investigation performed at McMaster University, Hamilton, Ontario, Canada

Background: Regional nerve blocks are commonly used to manage postoperative pain after arthroscopic shoulder procedures. The interscalene brachial plexus block (ISB) is commonly used; however, because of the reported side effects of ISB, the use of a suprascapular nerve block (SSNB) has been described as an alternative strategy with fewer reported side effects.

Purpose: To examine the efficacy of SSNB for pain control after shoulder arthroscopy compared with ISB as well as anesthesia without a nerve block.

Study Design: Systematic review; Level of evidence, 1.

Methods: Three databases (PubMed, MEDLINE, and EMBASE) were searched on April 20, 2018, to systematically identify and screen the literature for randomized controlled trials (RCTs). A meta-analysis of standard mean differences (SMDs) was performed to pool the estimated effects of the nerve blocks.

Results: The search identified 14 RCTs that included 1382 patients, with a mean age of 54 years (SD, 13 years). The mean follow-up time was 3 days (range, 24 hours to 6 weeks). Postoperative pain control was significantly more effective in the SSNB groups compared with the control groups within 1 hour (SMD, -0.76; 95% CI, -1.45 to -0.07; $P = .03$) and 4 to 6 hours (SMD, -0.81; 95% CI, -1.53 to -0.09; $P = .03$) postoperatively. However, pain control was significantly less effective in the SSNB groups compared with ISB within 1 hour (SMD, 0.87; 95% CI, 0.28 to 1.46; $P = .004$). No major complications were noted in the SSNB groups, and minor complications such as hoarseness and prolonged motor block were significantly less common for SSNB compared with ISB.

Conclusions: Although not more efficacious than ISB in terms of pain control for patients undergoing shoulder arthroscopy, SSNB provides significantly improved pain control in comparison with analgesia without a nerve block. Moreover, few major and minor complications are associated with SSNB reported across the literature.

Keywords: nerve block; regional; suprascapular; shoulder; arthroscopy

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<https://doi.org/10.1186/s13018-021-02515-1>

Journal of Orthopaedic
Surgery and Research

RESEARCH ARTICLE

Open Access

Suprascapular nerve block is a clinically attractive alternative to interscalene nerve block during arthroscopic shoulder surgery: a meta-analysis of randomized controlled trials



Anesteziologické možnosti

Výkon čistě v RA

- ▶ Interscalenická blokáda
 - ▶ Superior trunk blok
 - ▶ Costoclaviculární blokáda
 - ▶ blok n. suprascapularis
- + infraclaviculární blokáda

Blokáda nn.
supraclaviculares s výhodou

supraserratus blok (PECS II)

RA jako analgetický doplněk CA

- ▶ Interscalenická blokáda
- ▶ Superior trunk blok
- ▶ Anteriorní blok n.
suprascapularis
- ▶ Posteriovní blok n.
suprascapularis
+ blok n. axilaris

supraserratus blok (PECS II)

Děkuji za pozornost