Interventions for Cervical Facet-Related Pain

CIPC 2021

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No conflicts of interest to declare

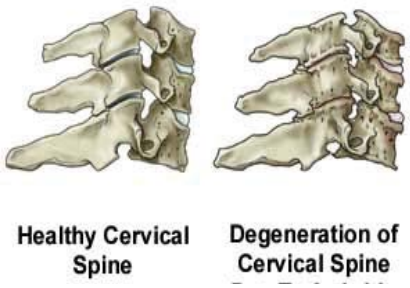
Learning objectives for this presentation

- Review the epidemiology, clinical presentations and diagnosis of cervical facet related pain.
- Review interventional treatments including blocks and radiofrequency ablation
- Discuss the uses of ultrasound guidance for these procedures

Cervical facet syndrome

Pathology

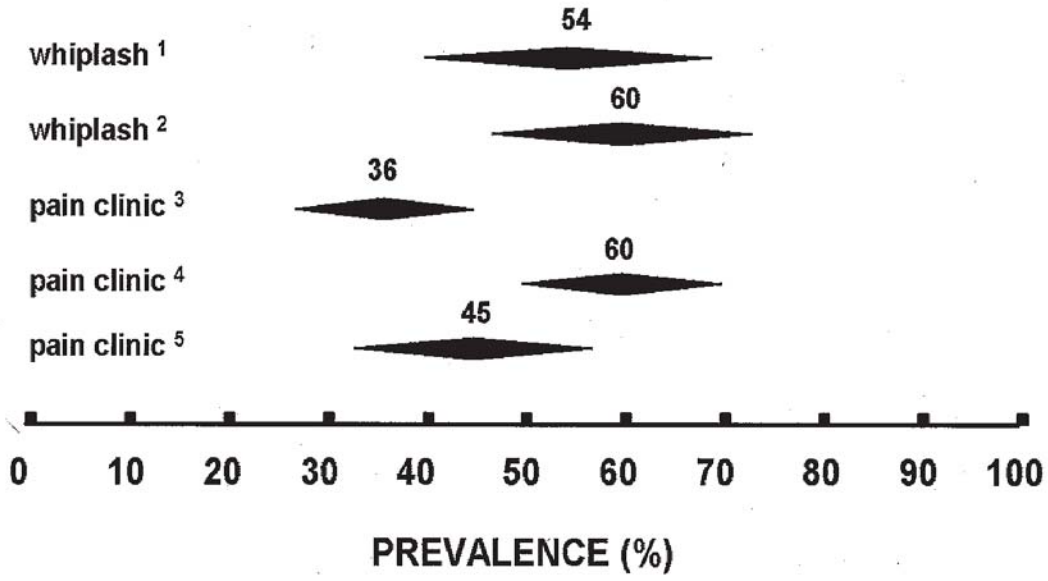
- **Traumatic neck pain**
  - Subchondral fractures
  - Contusions of the intra-articular meniscoids.
- **Atraumatic neck pain**
  - Osteoarthritis
  - Degenerative changes
    - 25% at the age of 50
    - Up to 75% at the age of 70



Healthy Cervical Spine

Degeneration of Cervical Spine

Prevalence of Cervical Facet Related Pain



Practice guidelines for spinal diagnostic and treatment procedures,
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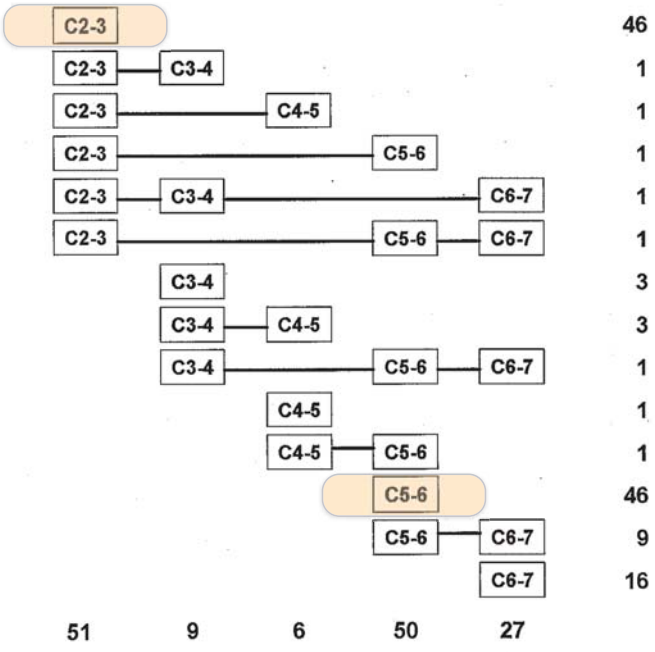
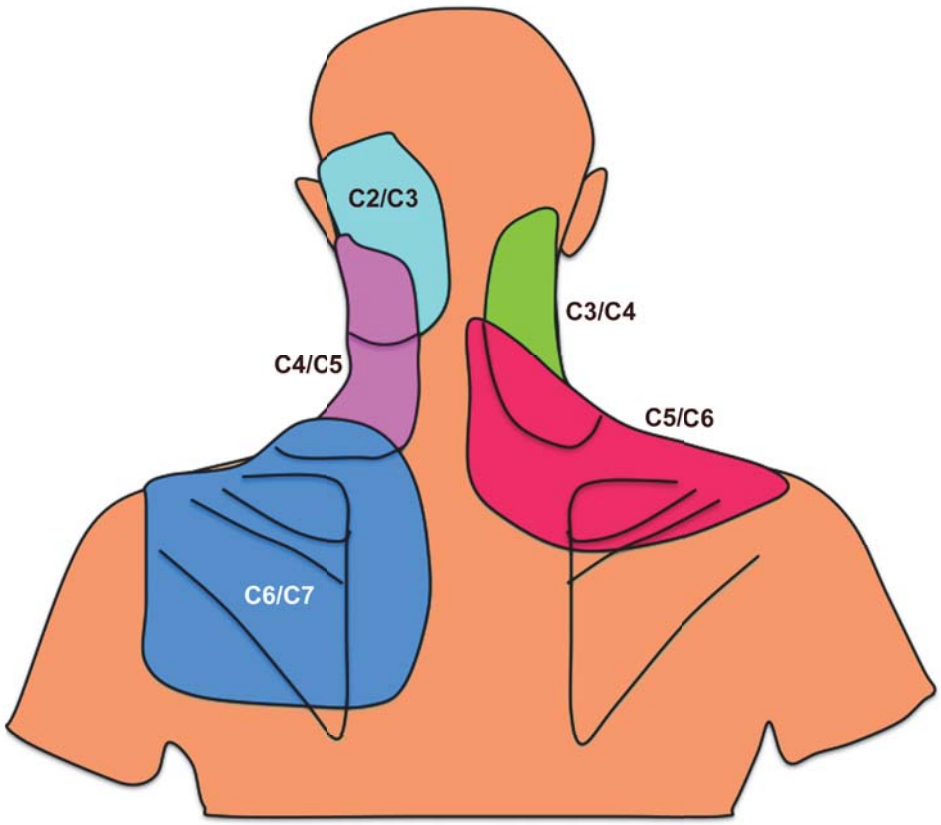
Frequency of Symptomatic Cervical Levels

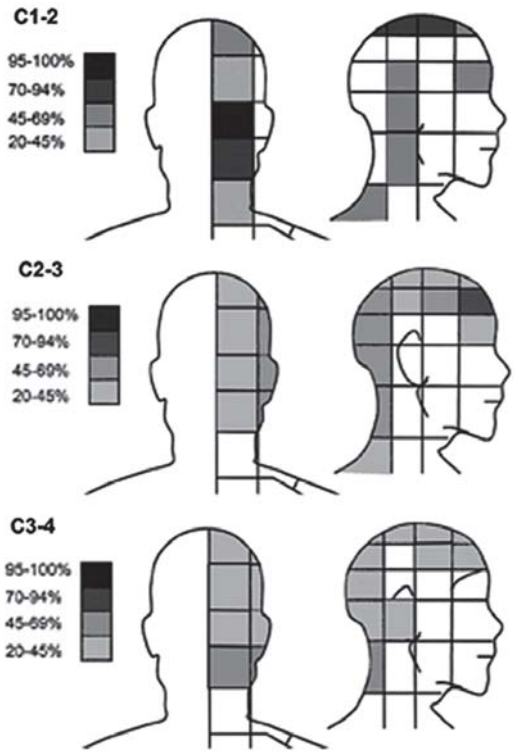


Cooper et al



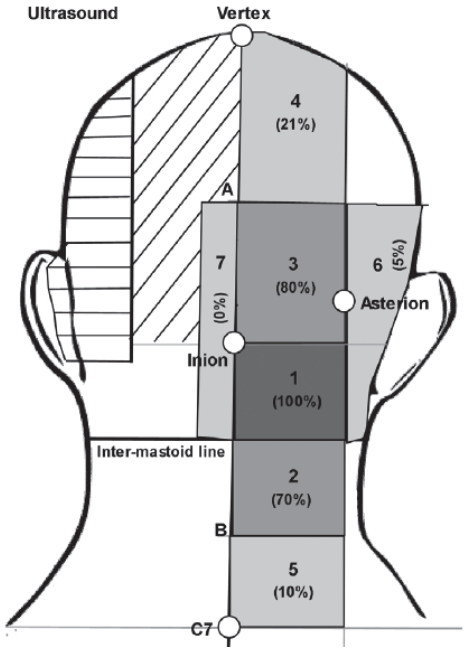
Cervicogenic Headaches

- Overall incidence of 0.5 to 4%
- Represent 10-20% of chronic headaches
- Prevalence of 53% after whiplash injury
- Associated with greater disability than other types of HA
- Caused by pain generators in the cervical spine
- Positive response to nerve blocks is an important feature

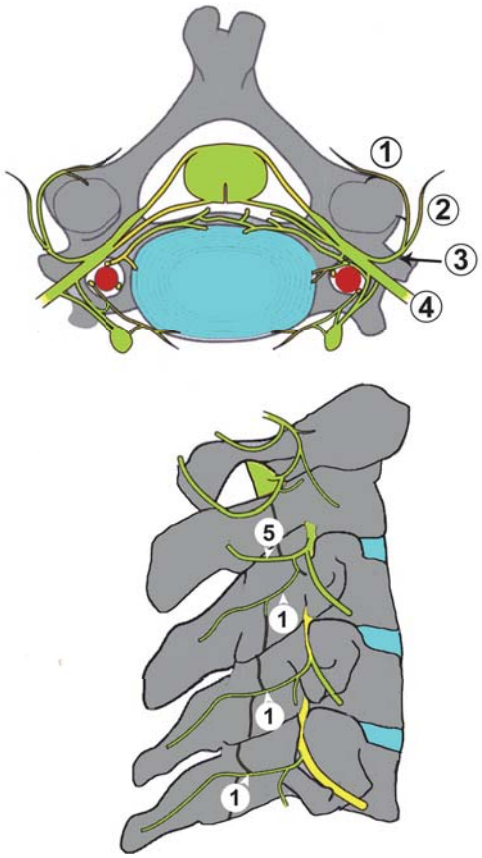


Cooper G, Bailey B, Bogduk N. Cervical zygapophysial joint pain maps. Pain Med 2007;8:344–53;

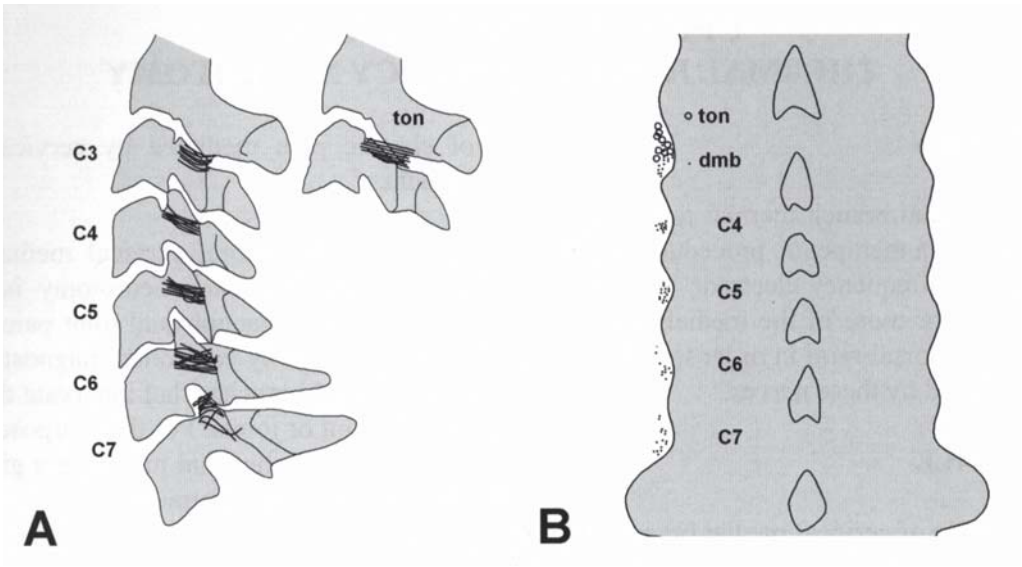
TON Block



Finlayson RJ, et al. Reg Anesth Pain Med. 2013;38: 212-217



Distribution of Cervical Medial Branches



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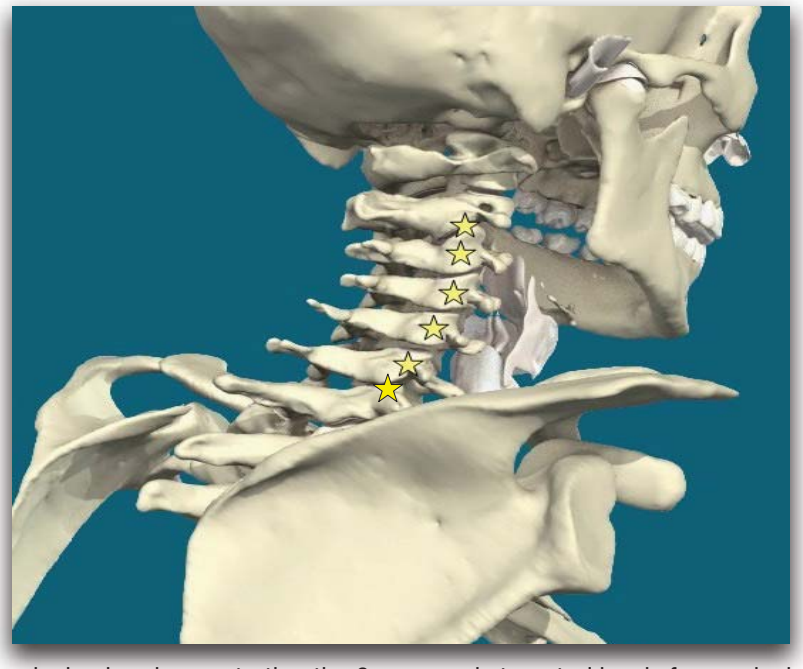
Cervical Medial Branch Blocks



Posterolateral view of the cervical spine demonstrating the 6 commonly targeted levels for cervical medial branch block

Therapeutic Blocks

Comparative Outcomes of a 2-Year Follow-Up of Cervical Medial Branch Blocks in Management of Chronic Neck Pain: A Randomized, Double-Blind Controlled Trial

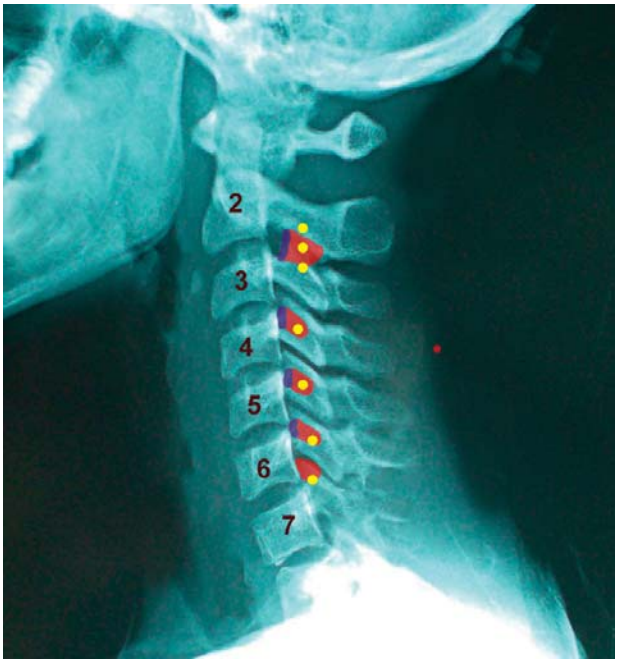
Laxmaiah Manchikanti, MD[1], Vijay Singh, MD[2], Frank J.E. Falco, MD[3], Kimberly A. Cash, RT[1], and Bert Fellows, MA[1]

Pain Physician 2010; 13:437-450

Results: Eighty-five percent of patients in Group I and 93% of patients in Group II showed significant pain relief (≥ 50%) at 2 years. The average number of treatments for 2 years was 5.7. The duration of average pain relief with each procedure was 17-19 weeks on average in both groups. Significant improvement of pain and function was demonstrated for 83 to 89 weeks over a period of 2 years.

Limitations: The study limitations include the lack of a placebo group.

Conclusions: In this study, therapeutic cervical medial branch blocks instituted after the diagnosis, with controlled comparative local anesthetic blocks with 80% concordant pain relief, repeated approximately 6 times over a period of 2 years, provided significant improvement over a period of 2 years.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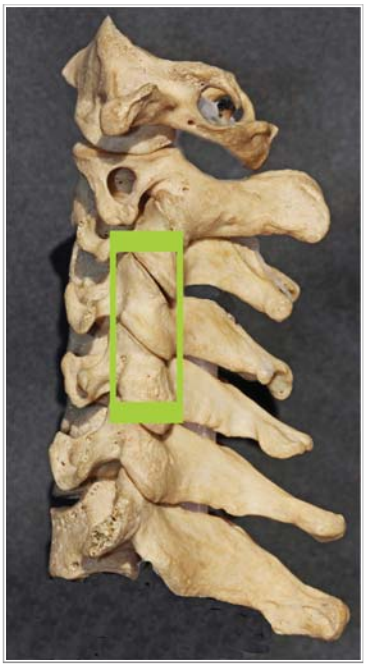
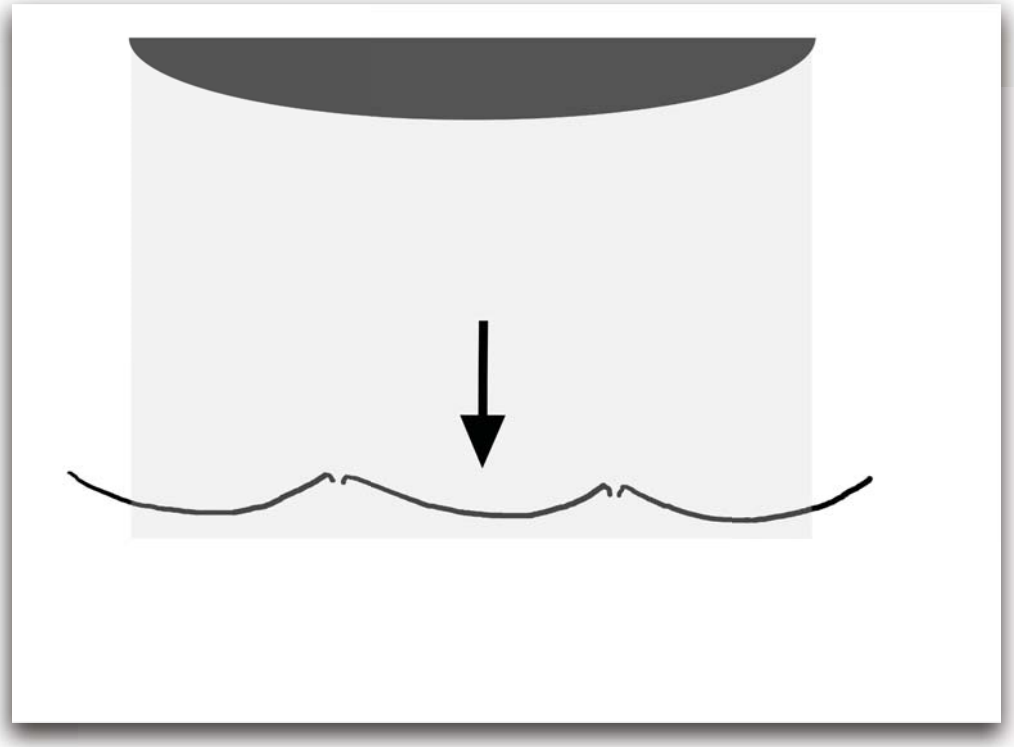
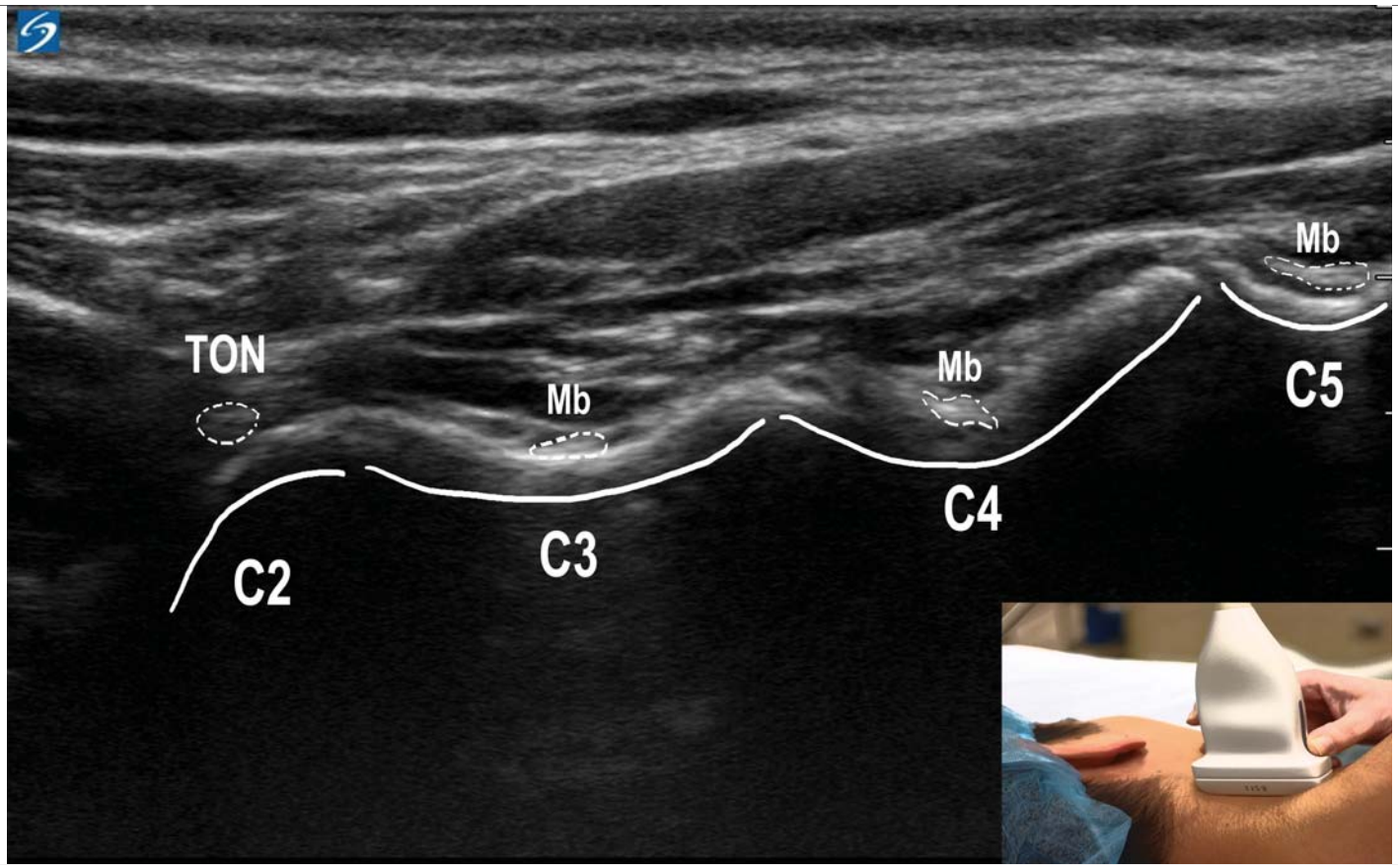
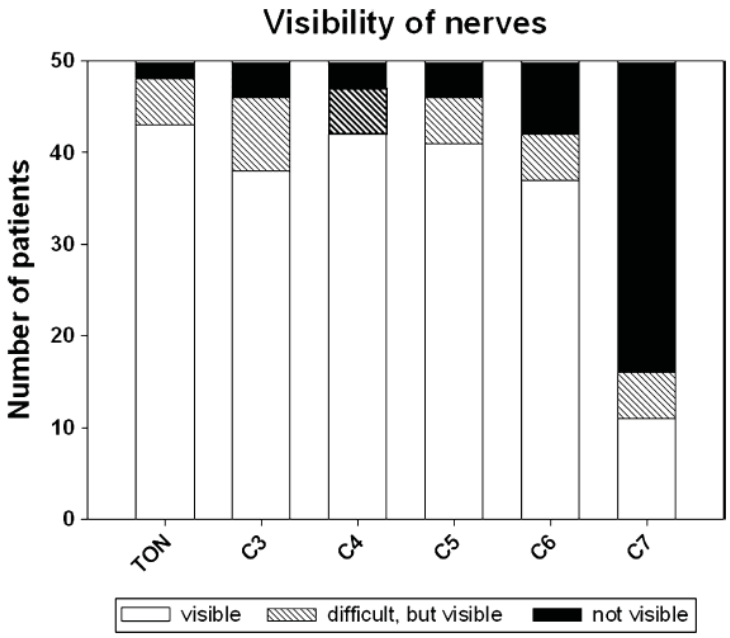


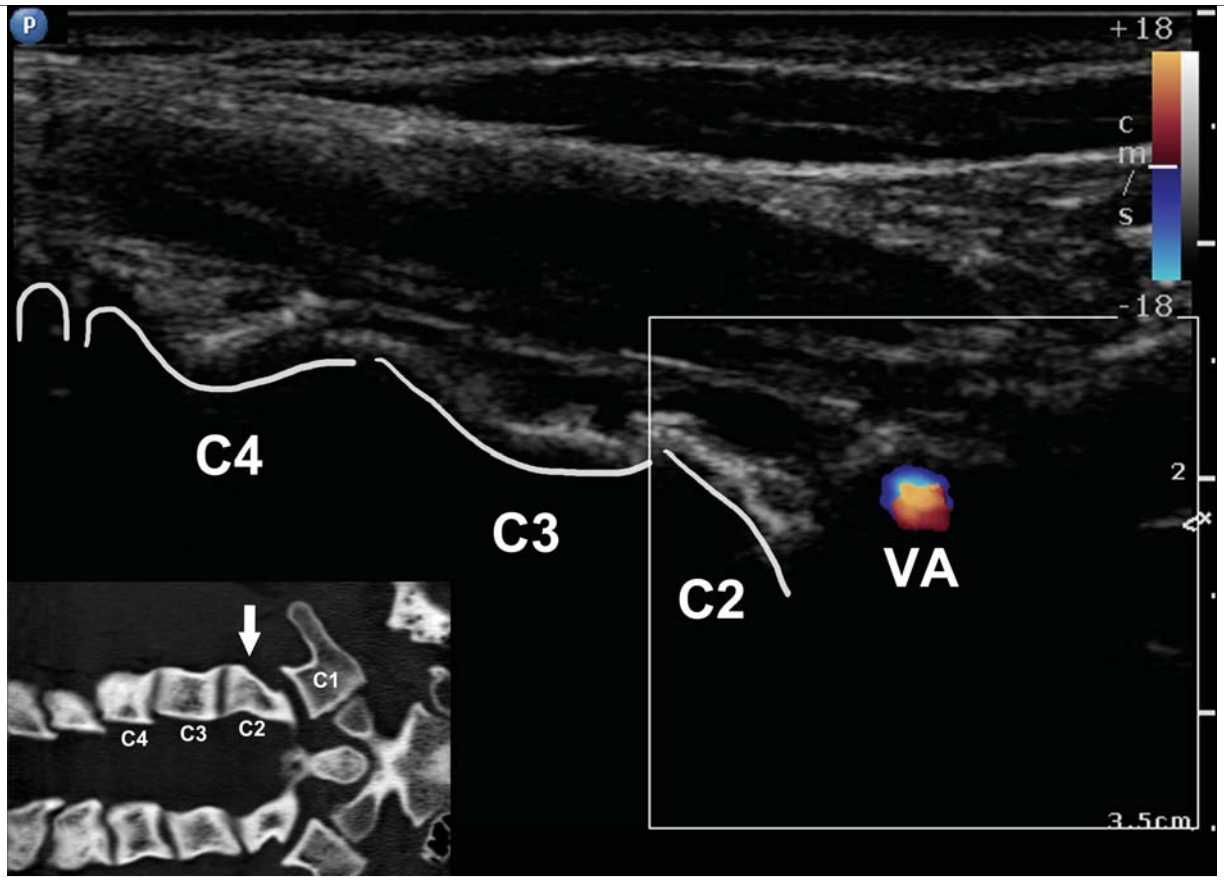


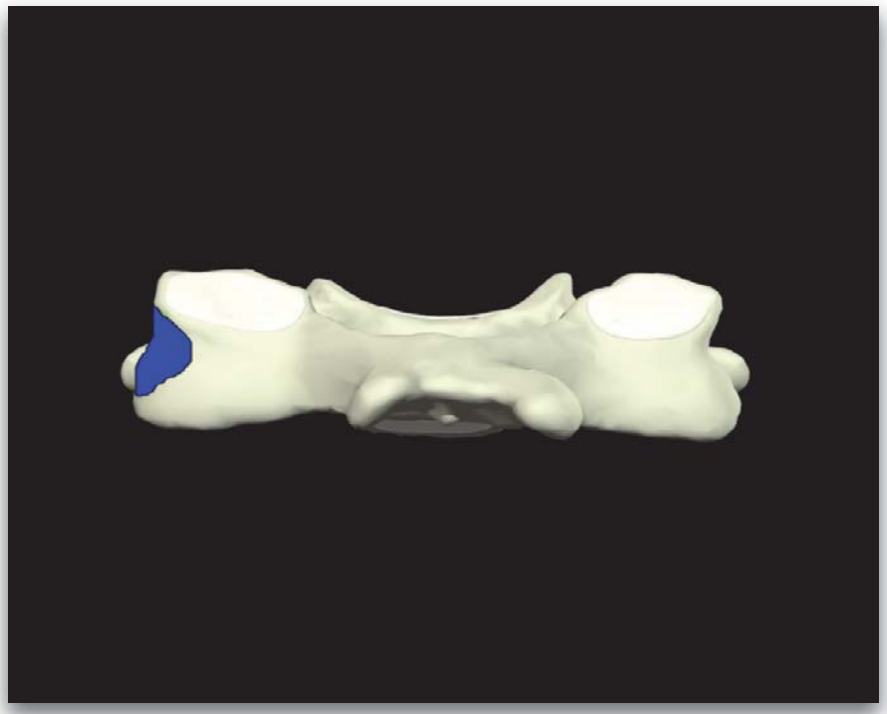
Explanatory diagram demonstrating the target point on the bony contour for a cervical medial branch block in the coronal view



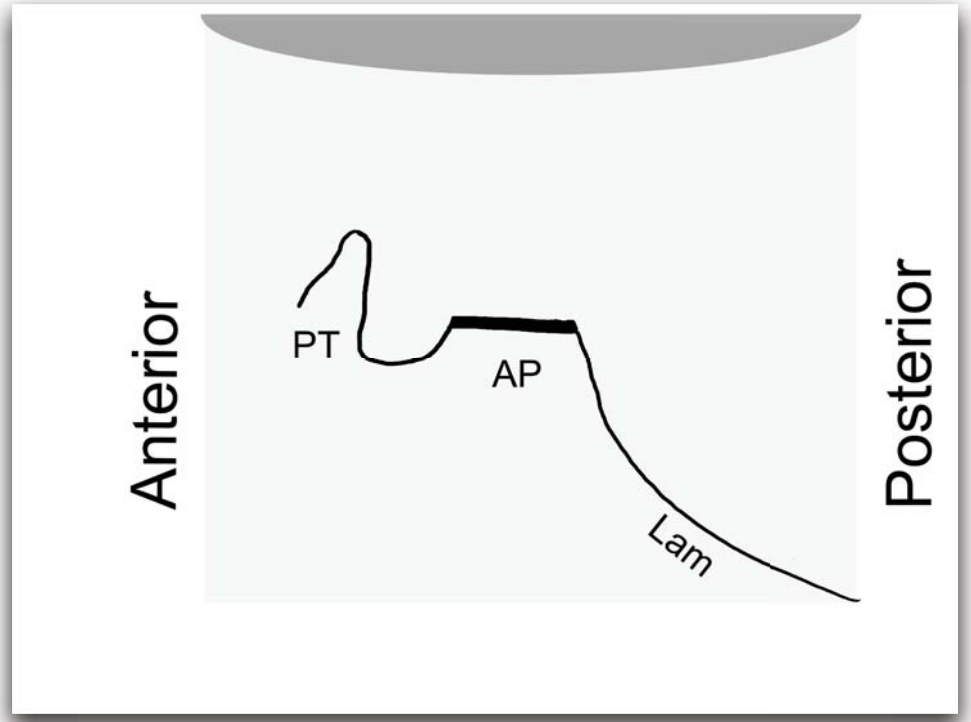


Siegenthaler et al. Regional Anesthesia and Pain Medicine 2011

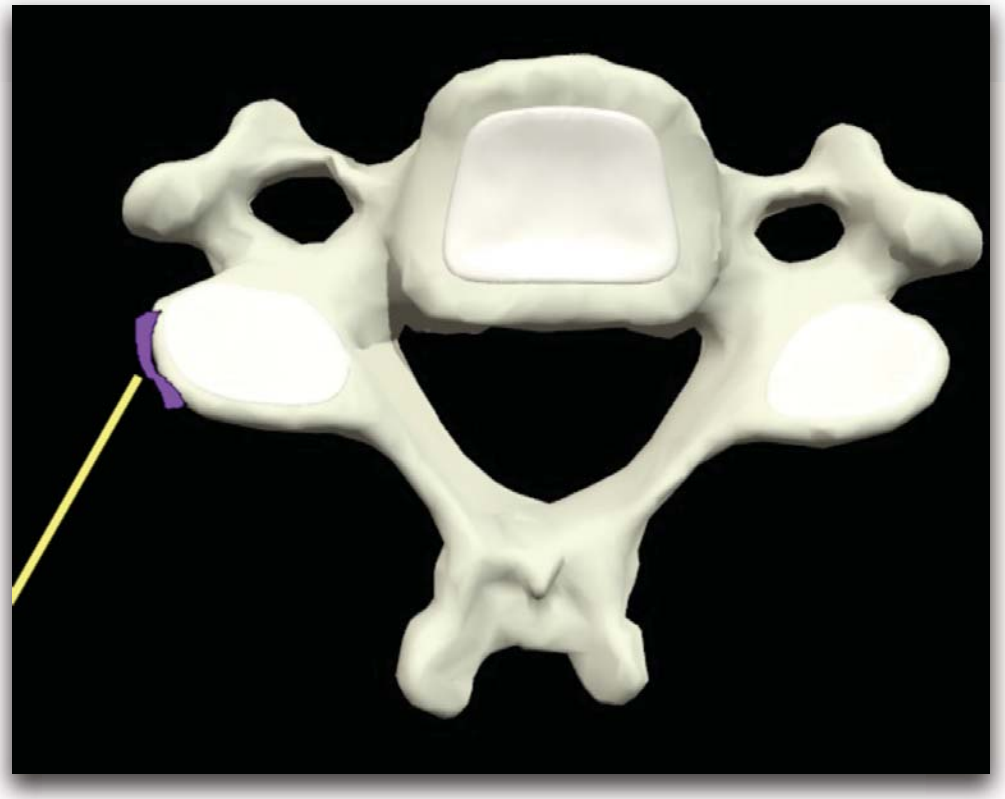


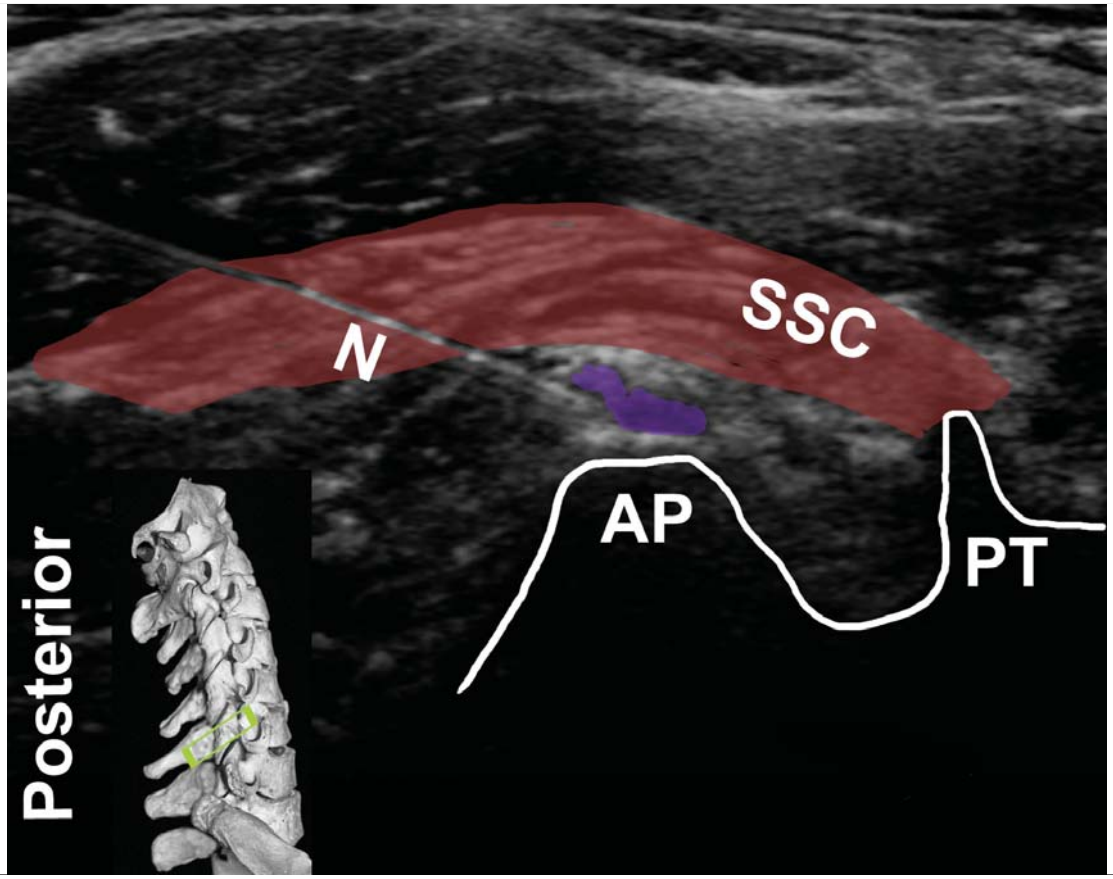


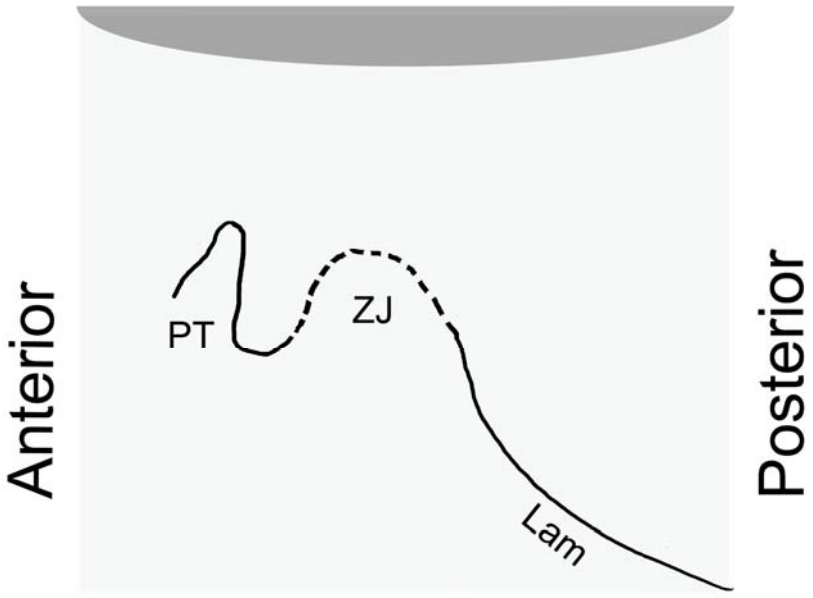
Anteroposterior view of a cervical vertebra demonstrating the target coverage area for a medial branch block



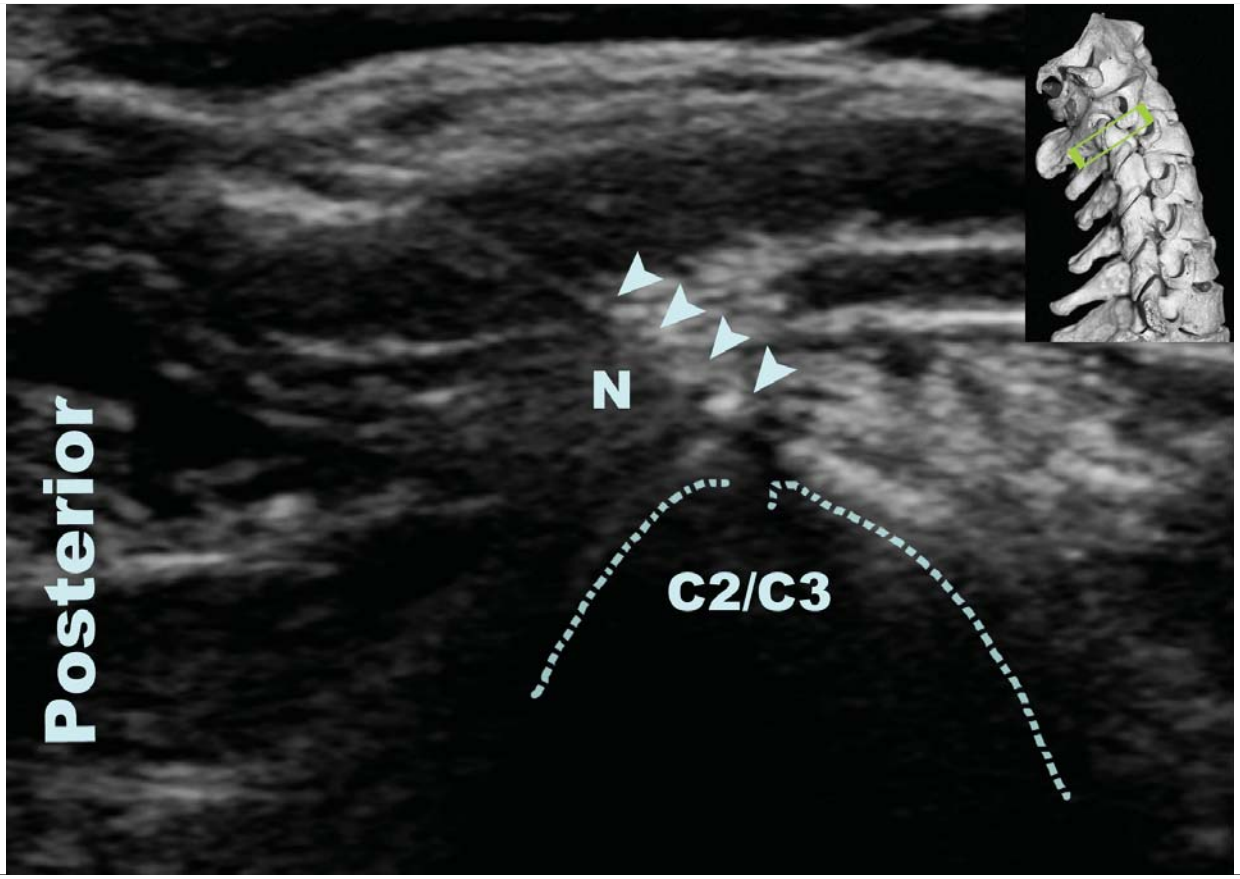
Explanatory diagram demonstrating the target point on the bony contour for a cervical medial branch block in the transverse view



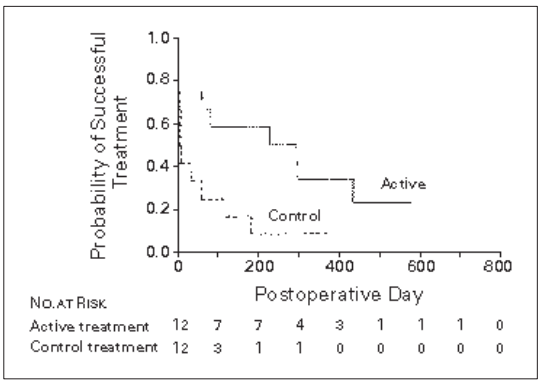




Explanatory diagram illustrating the bony contour of a zygapophyseal joint in a transverse sonographic scan



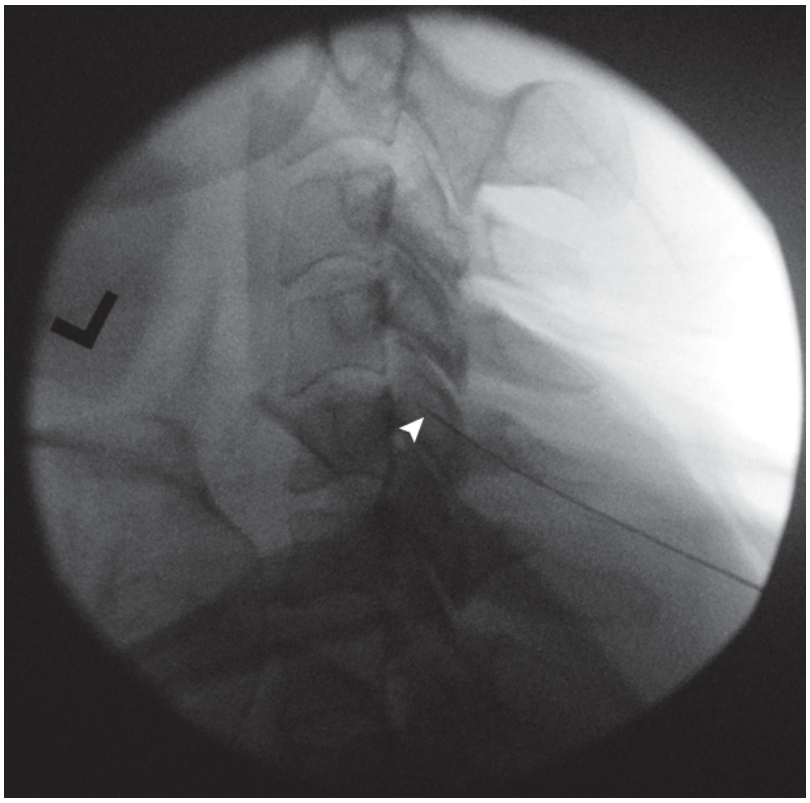
Percutaneous radiofrequency neurotomy

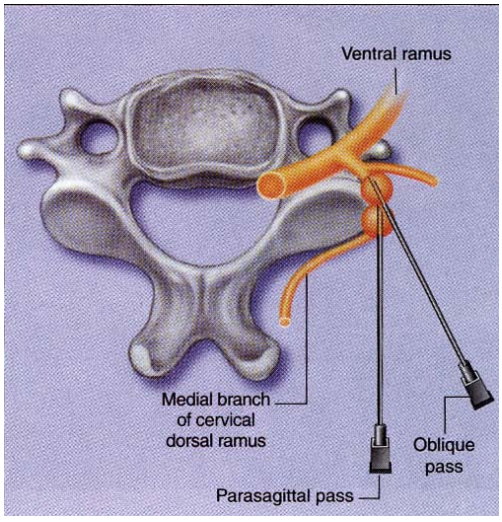


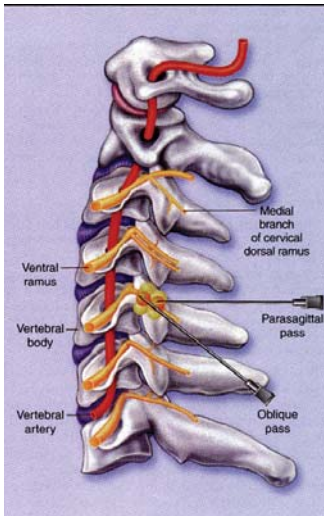
Randomized, double-blind, controlled trial in 24 patients with chronic pain following flexion-extension injury

All patients had reported relief with local anesthetic blocks

Lord SB, Barnsley L, Wallis BJ, McDonald GJ, Bogduk N. Percutaneous radiofrequency neurotomy for chronic cervical zygoapophyseal joint pain. N Engl J Med 335:1721-6, 1996.







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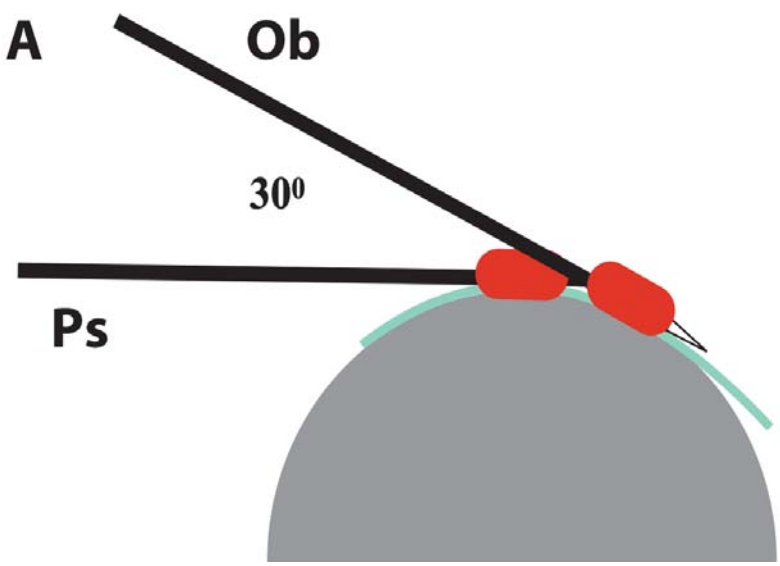
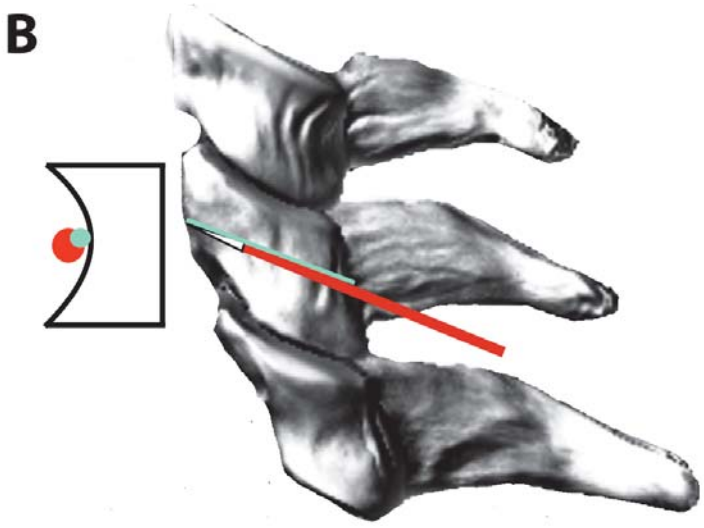
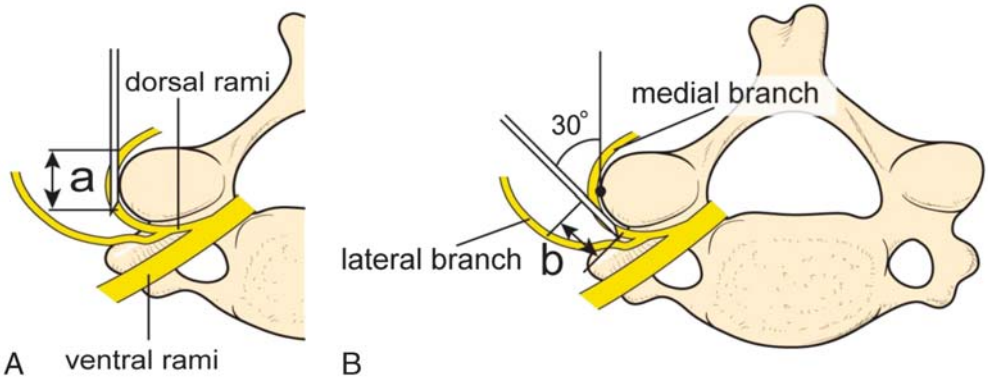




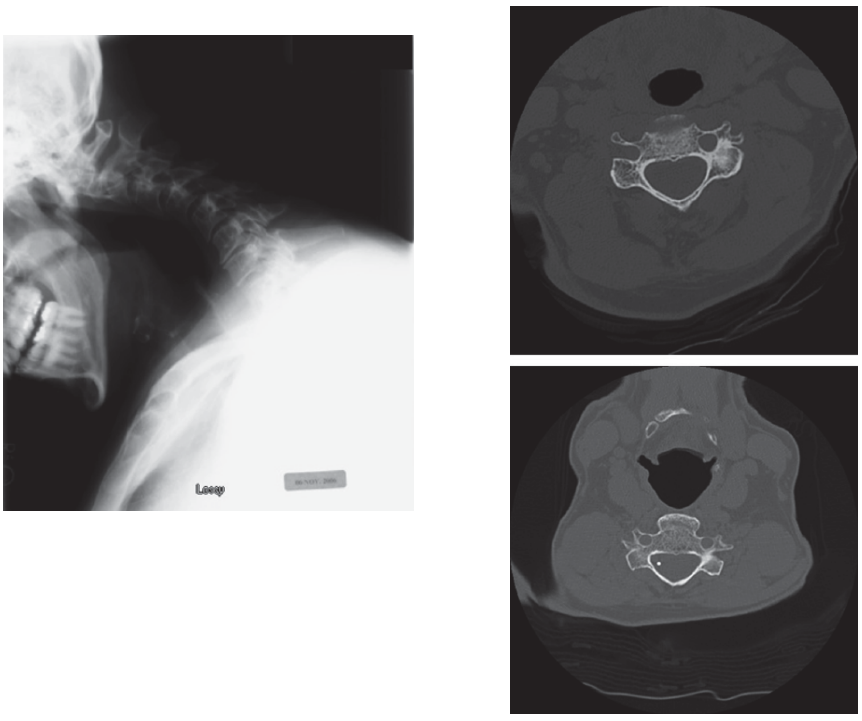
Parasagittal VS Oblique



Kweong et al Regional Anesthesia and Pain Medicine 2014

TABLE 3. Contact Lengths of a Straight or a Curved Needle With the Cervical Medial Branches

	Straight Needle			Curved Needle		
	Parasagittal,* mm			Parasagittal,* mm		
	Right	Left	Total†	Right	Left	Total
C4	5.5 ± 2.4	6.2 ± 2.5	5.9 ± 2.4	6.2 ± 2.1	5.1 ± 1.3	5.7 ± 1.7
C5	5.6 ± 2.2	5.8 ± 1.8	5.7 ± 2.0	5.5 ± 2.1	5.5 ± 1.4	5.5 ± 1.7
C6	4.3 ± 1.4	4.7 ± 1.9	4.5 ± 1.6	3.7 ± 1.5	3.9 ± 1.2	3.8 ± 1.4
C7	3.2 ± 1.5	3.6 ± 1.2	3.4 ± 1.4			
	30-Degree,‡ mm					
C4	3.0 ± 1.1	2.8 ± 0.9	2.9 ± 1.0			
C5	3.1 ± 1.1	2.8 ± 0.7	2.9 ± 0.9			
C6	2.3 ± 0.8	2.4 ± 0.8	2.3 ± 0.8			



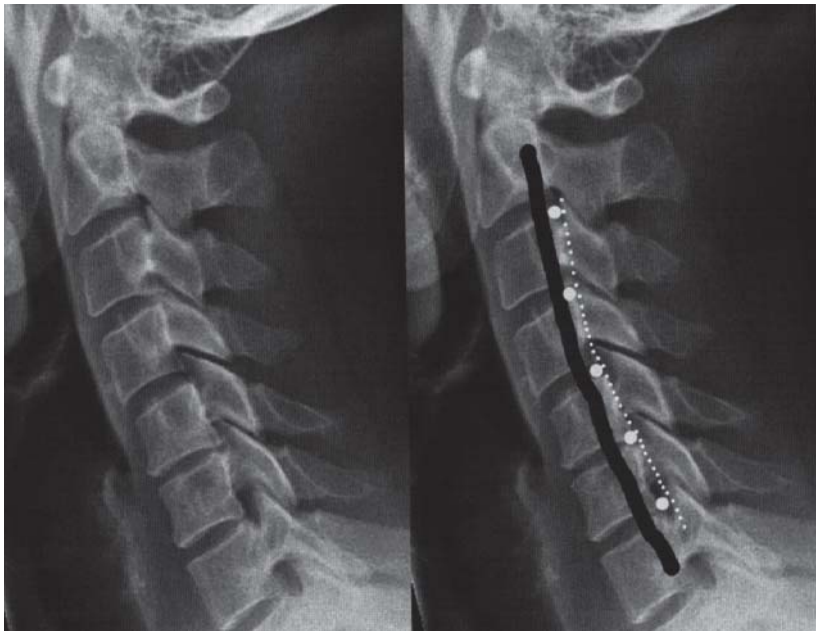
Dropped head syndrome after bilateral cervical MB neurotomy

Ahmed, Mostafa M., Wendell B. Lake, and Daniel K. Resnick. "Progressive severe kyphosis as a complication of multilevel cervical percutaneous facet neurotomy: a case report." *The Spine Journal* 12.10 (2012): e5-e8.

	Cervical Encounters (3,370)	Lumbar Encounters (3,162)
Total Number of Levels	20,544	15,645
Local Bleeding	66.9% (2,255)	72.7%* (2,298)
Oozing	28.9% (974)	10.2%* (324)
Intra-Vascular	20.0% (673)	4.0%* (125)
Local Hematoma	2.3% (77)	0.1%* (3)
Profuse Bleeding	0.7% (24)	0.4% (12)
Bruising	0.2% (8)	0.3% (9)
Nerve Root Irritation	0.15% (5)	0.1% (3)
Nerve Damage	0	0
Spinal Cord Irritation	0	0
Epidural Hematoma	0	0
Infection	0	0
Vasovagal Reaction	0	0.03% (1)

Manchikanti L,et al **Complications of fluoroscopically directed facet joint nerve blocks: A prospective evaluation of 7,500 episodes with 43,000 nerve blocks.** *Pain Physician.* 2012;15:E143-E150.

Anterior Safety Boundary



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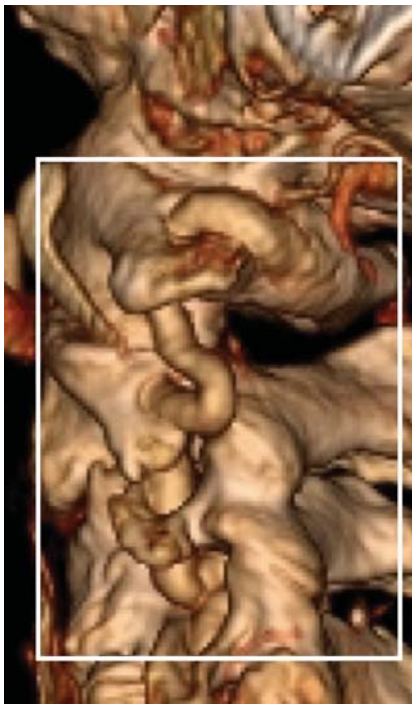
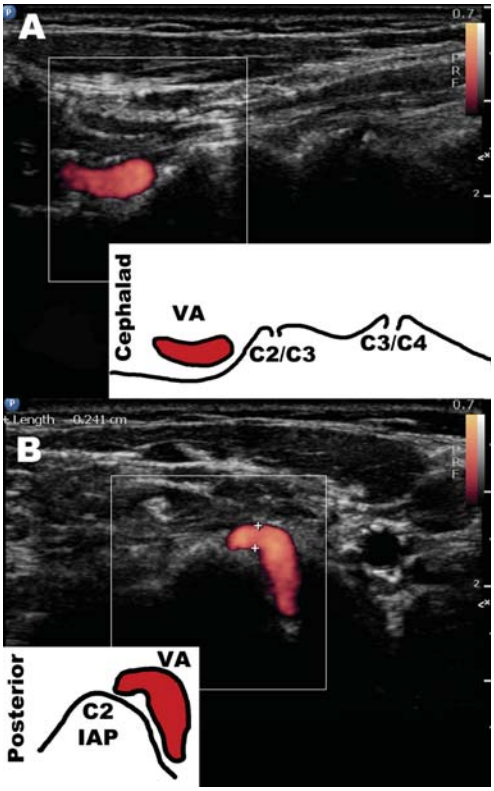
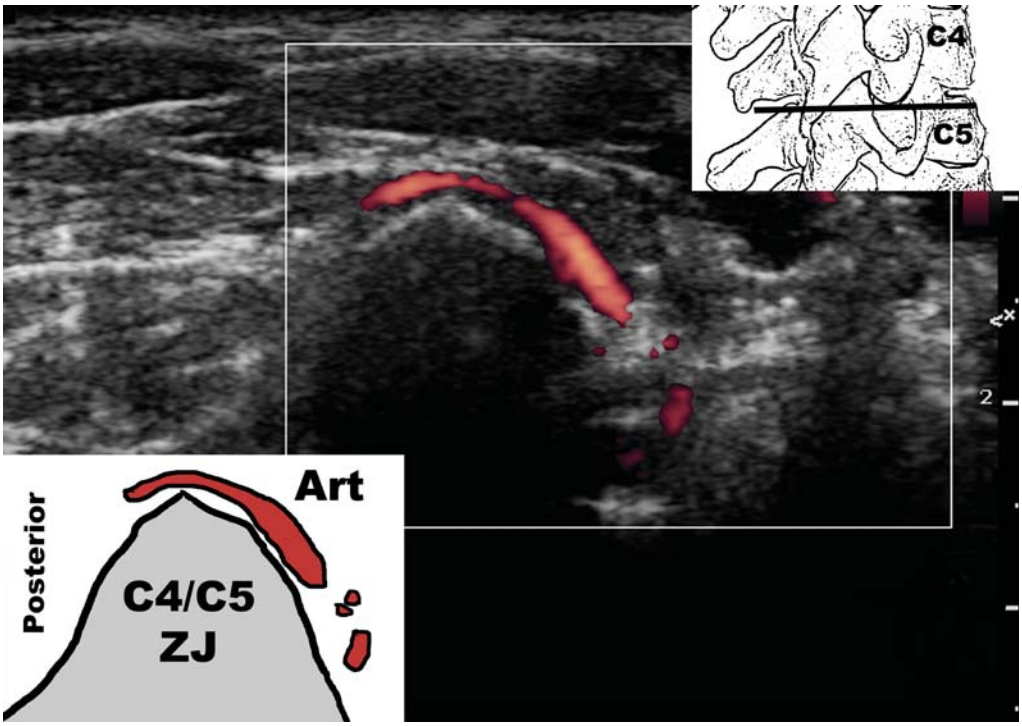
Vertebral Artery Variations



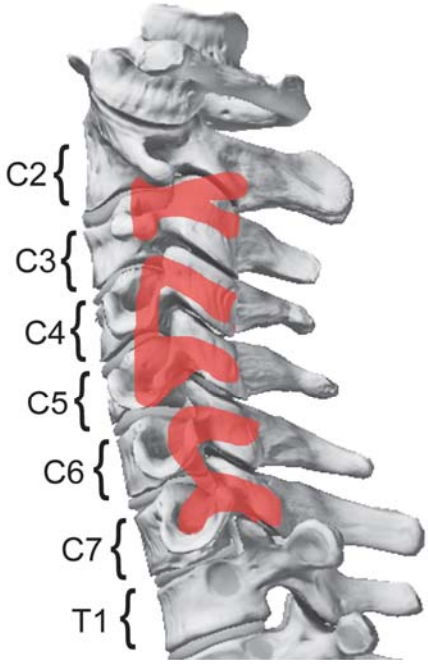
Elgueta et al, Regional Anesthesia Pain Medicine 2018



Elgueta et al, Regional Anesthesia Pain Medicine, in press 2018



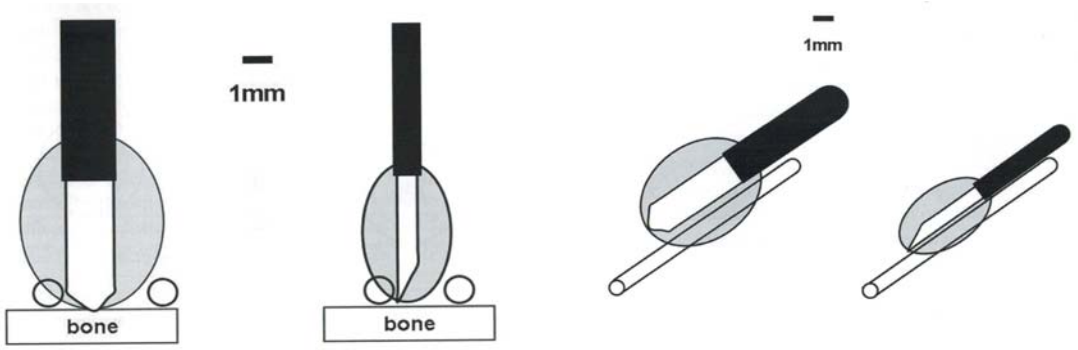
Distribution of small arteries



Finlayson et al, Reg Anesth Pain Med 2016;41:130-134

Ultrasound-Guided Cervical Medial Branch Radiofrequency Neurotomy:
Can Multitined Deployment Cannulae Be the Solution?
Finlayson RJ et al, Regional Anesthesia and Pain Medicine Vol 42, Number 1, January-February 2017

The Effect of Approach Angle



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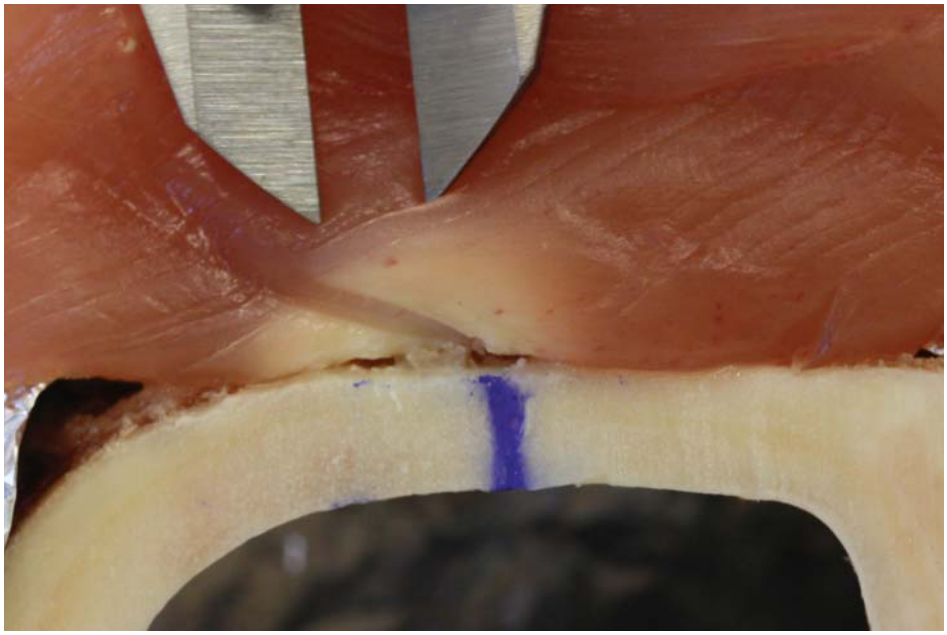
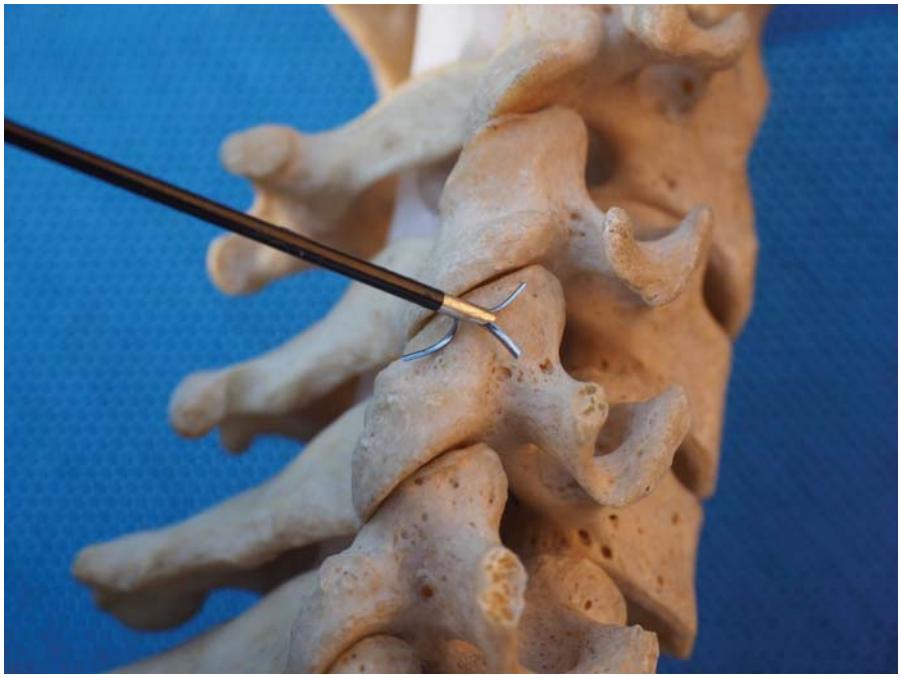
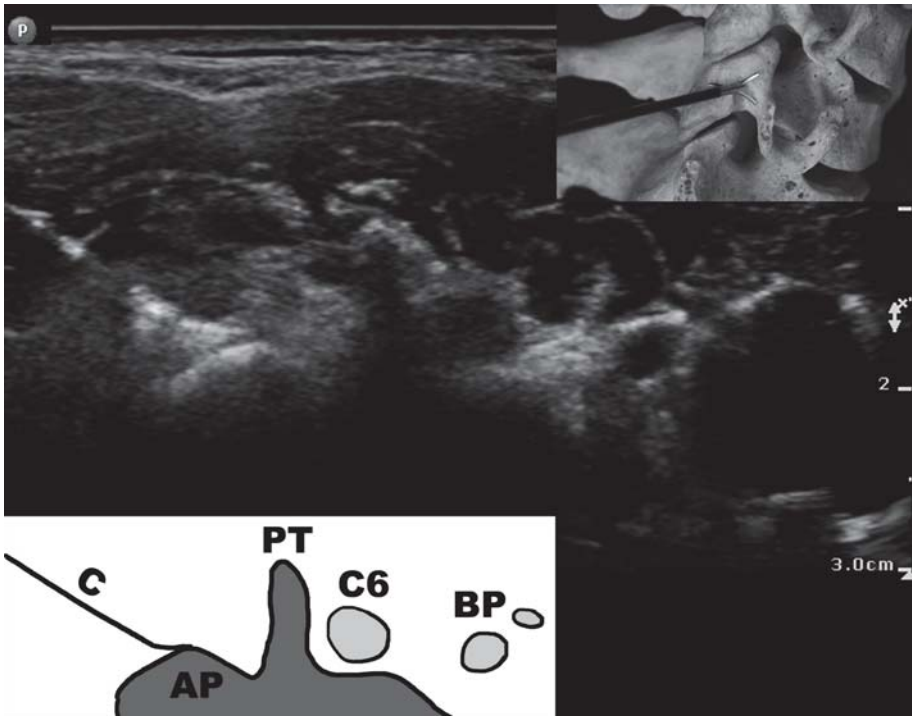


Deployment cannula-25 degree approach angle



Trident 45 degrees oblique



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Summary

- Cervical facets are a common source of neck pain and headaches
- Cervical medial branch blocks are used to diagnose and treat this condition
- Radiofrequency ablation can provide longer term relief in selected patients
- Ultrasound imaging can be used as a primary modality or combined with fluoroscopy to increase safety