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
Prevalence of Cervical Facet Related Pain

Practice guidelines for spinal diagnostic and treatment procedures,

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

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\textsuperscript{1}, Vijay Singh, MD\textsuperscript{1}, Frank J.E. Falco, MD\textsuperscript{1}, Kimberly A. Cash, RT\textsuperscript{1}, and Bert Fellows, MA\textsuperscript{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.
Explanatory diagram demonstrating the target point on the bony contour for a cervical medial branch block in the coronal view.
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

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

<table>
<thead>
<tr>
<th></th>
<th>Straight Needle</th>
<th></th>
<th></th>
<th>Curved Needle</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Parasagittal,* mm</td>
<td>Right</td>
<td>Left</td>
<td>Total†</td>
<td>Right</td>
<td>Left</td>
</tr>
<tr>
<td>C4</td>
<td>5.5 ± 2.4</td>
<td>6.2 ± 2.5</td>
<td>5.9 ± 2.4</td>
<td>6.2 ± 2.1</td>
<td>5.1 ± 1.3</td>
<td>5.7 ± 1.7</td>
</tr>
<tr>
<td>C5</td>
<td>5.6 ± 2.2</td>
<td>5.8 ± 1.8</td>
<td>5.7 ± 2.0</td>
<td>5.5 ± 2.1</td>
<td>5.5 ± 1.4</td>
<td>5.5 ± 1.7</td>
</tr>
<tr>
<td>C6</td>
<td>4.3 ± 1.4</td>
<td>4.7 ± 1.9</td>
<td>4.5 ± 1.6</td>
<td>3.7 ± 1.5</td>
<td>3.9 ± 1.2</td>
<td>3.8 ± 1.4</td>
</tr>
<tr>
<td>C7</td>
<td>3.2 ± 1.5</td>
<td>3.6 ± 1.2</td>
<td>3.4 ± 1.4</td>
<td>3.2 ± 1.5</td>
<td>3.6 ± 1.2</td>
<td>3.4 ± 1.4</td>
</tr>
<tr>
<td>30-Degree,‡ mm</td>
<td></td>
<td>2.9 ± 1.0</td>
<td>2.9 ± 0.9</td>
<td>2.9 ± 1.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dropped head syndrome after bilateral cervical MB neurotomy


<table>
<thead>
<tr>
<th></th>
<th>Cervical Encounters (3,370)</th>
<th>Lumbar Encounters (3,162)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Levels</td>
<td>20,544</td>
<td>15,645</td>
</tr>
<tr>
<td>Local Bleeding</td>
<td>66.9% (2,255)</td>
<td>72.7%* (2,298)</td>
</tr>
<tr>
<td>Oozing</td>
<td>28.9% (974)</td>
<td>10.2%* (324)</td>
</tr>
<tr>
<td>Intra-Vascular</td>
<td>20.0% (673)</td>
<td>4.9%* (125)</td>
</tr>
<tr>
<td>Local Hematoma</td>
<td>2.3% (77)</td>
<td>0.1%* (3)</td>
</tr>
<tr>
<td>Profuse Bleeding</td>
<td>0.7% (24)</td>
<td>0.4% (12)</td>
</tr>
<tr>
<td>Bruising</td>
<td>0.2% (8)</td>
<td>0.3% (9)</td>
</tr>
<tr>
<td>Nerve Root Irritation</td>
<td>0.15% (5)</td>
<td>0.1% (3)</td>
</tr>
<tr>
<td>Nerve Damage</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Spinal Cord Irritation</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Epidural Hematoma</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Infection</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vasovagal Reaction</td>
<td>0</td>
<td>0.03% (1)</td>
</tr>
</tbody>
</table>

Anterior Safety Boundary

Vertebral Artery Variations

Elgueta et al, Regional Anesthesia Pain Medicine 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

Deployment cannula-25 degree approach angle

Trident 45 degrees oblique
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