Neck pain: More than a pain in the neck?

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Conflict of Interest- real or potential

Nom du conférencier/modérateur: Mohan Radhakrishna

☑ I have no conflict of interest with the contents of this presentation

Objectives

At the end of this presentation the participant will be able to:

1) Name and distinguish significant causes of cervical pain

2) Distinguish cervical pain from shoulder pain

3) Perform a clinical assessment to differentiate cervical and shoulder pain

Musculoskeletal causes of disability

LBP

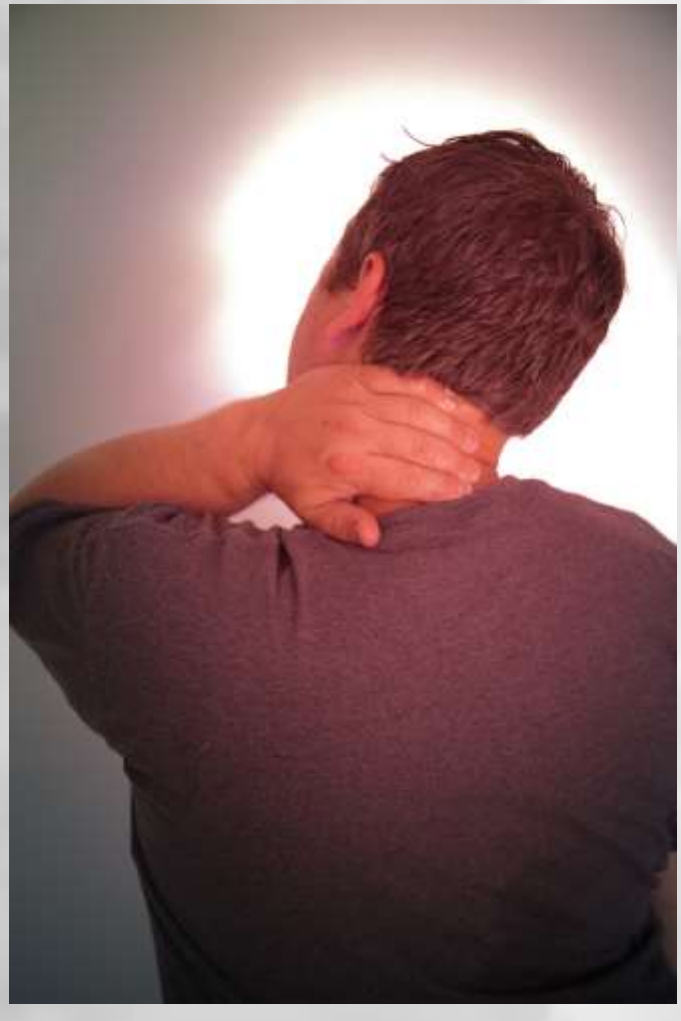
Neck pain

Shoulder pain

Risk Factors for neck pain

- Female
- Obesity
- Sedentary
- Smoking
- Psychosocial difficulties
- Sleep disorders

Case



- Male 32 ans
- Whiplash 3 weeks earlier
- What is the cause of my pain?

Category

- Neurologic
- Mainly cervical
- Mainly shoulder
- Pain syndrome
- Non neuro-MSK eg. Referred pain

Category

- Neurologic
  - Pain accompagnied by neurologic signs or symptoms

Neurologic

- Radicular

- Dermatomal numbness
- Myotomal weakness
- Neuropathic pain

- Myelopathy

- Hand numbness
- Balance problems
- Weakness
- Spasticity
- Loss of bowel and bladder function

Neurologic – more rares causes

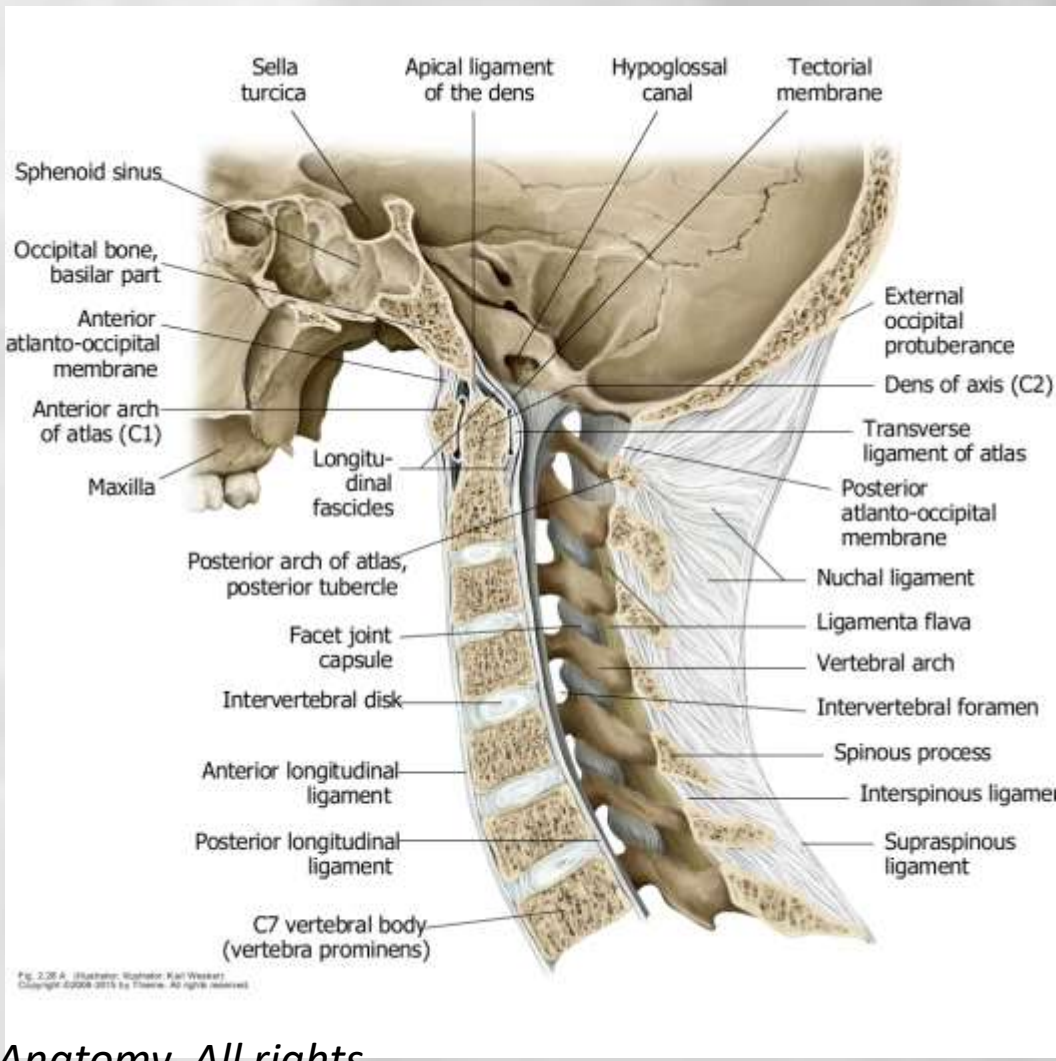
- Brachial plexitis
- Suprascapular neuropathy
- Thoracic outlet syndrome

Category

- Neurologic
- Mainly cervical
- Mainly shoulder
- Pain syndrome
- Non neuro-MSK eg. Referred pain

Possible sources of pain

Articulations:
Atlanto-occipital
Atlanto-axial
Zygapophysial (facet)
Discs
Ligaments
Muscles
Dural mater



Gilroy et al., Atlas of Anatomy. All rights reserved. Â© Thieme 2008," www.thieme.com

But is possible= probable= provable?

Épidemiology of cervical pain

- Reference: Cohen, BMJ, August 2017

10

40

50%

- Recurrent

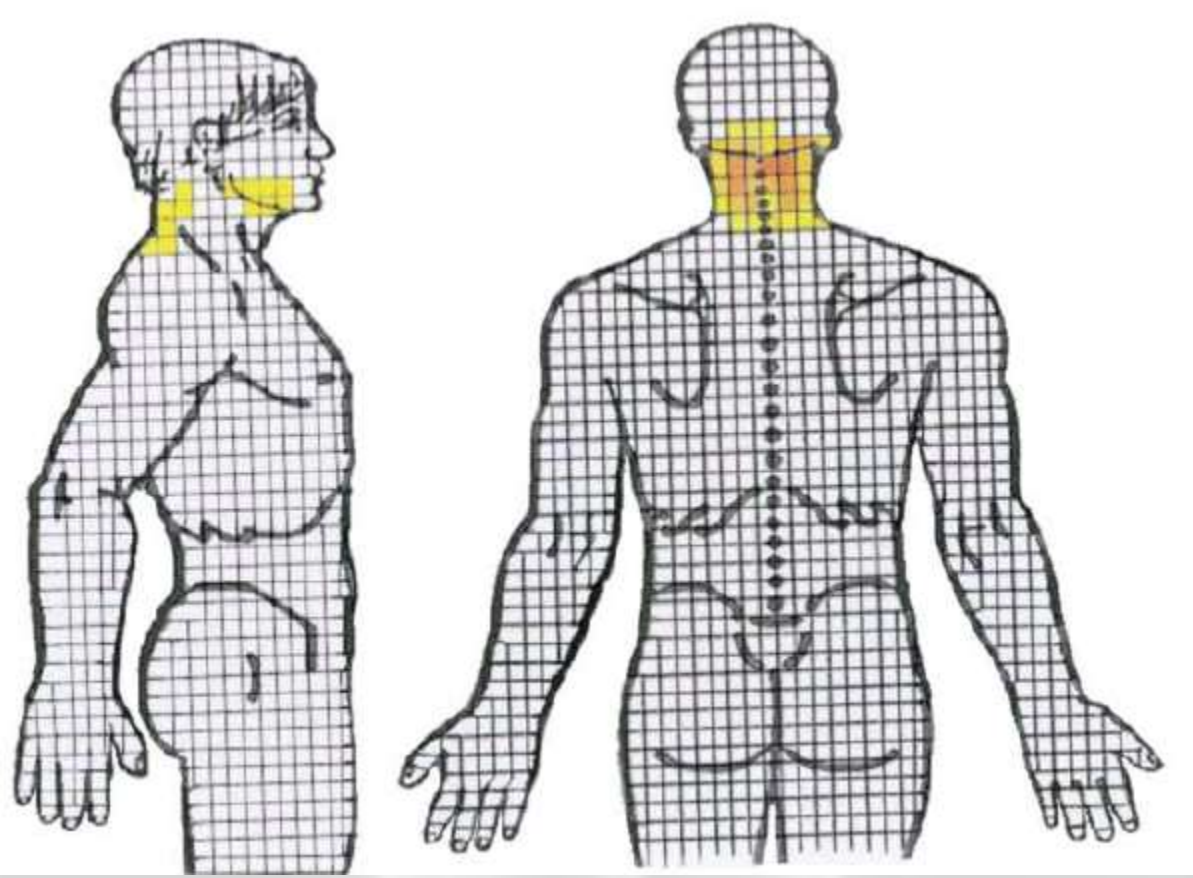
Discogenic pain

- Prospective study with more than 100 discograms

- Slipman et al, Spine J. *2005* Jul-Aug;5(4):381-8.

‘Provocative cervical discography symptom mapping’

Slipman et al, Spine J. *2005* Jul-Aug;5(4):381-8. Provocative cervical discography symptom mapping



C2-C3 pain map

Slipman et al, Spine J. *2005* Jul-Aug;5(4):381-8. Provocative cervical discography symptom mapping

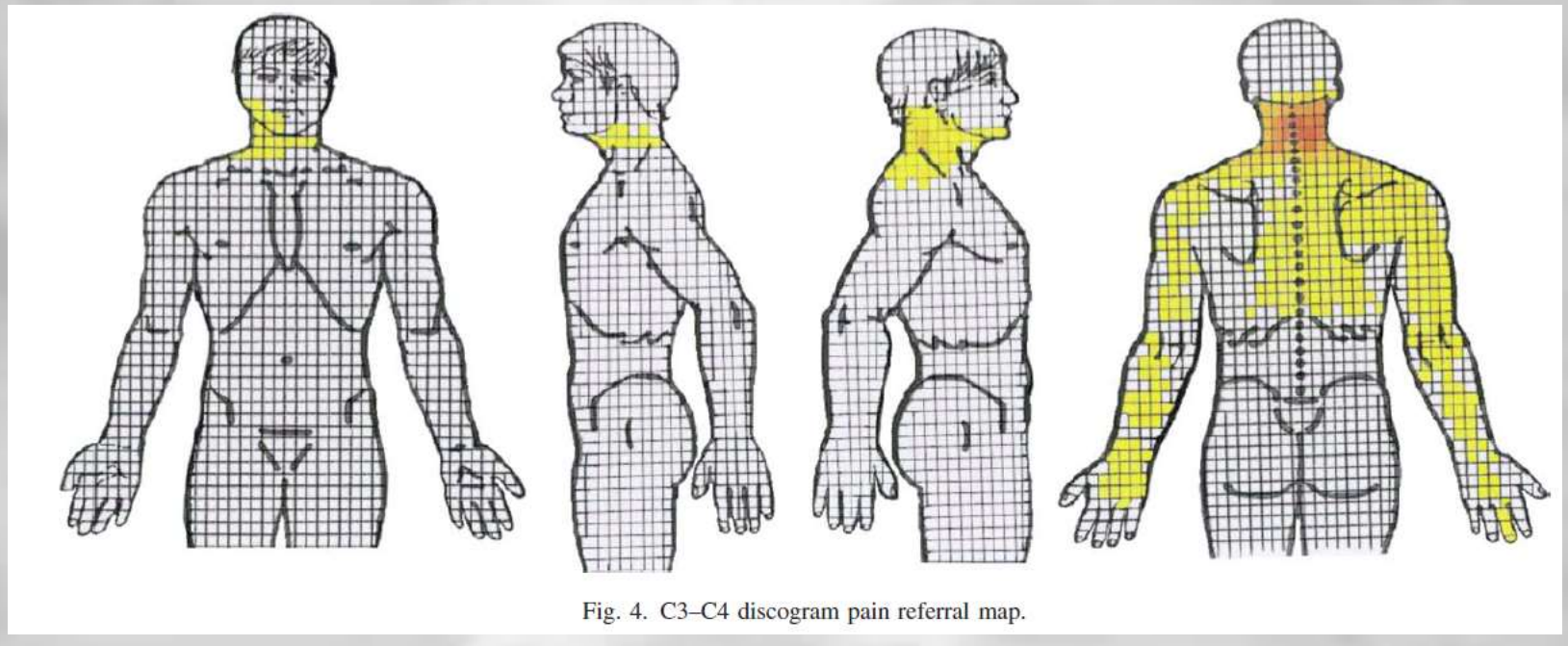


Fig. 4. C3–C4 discogram pain referral map.

C3-C4 pain map

Slipman et al, Spine J. *2005* Jul-Aug;5(4):381-8. Provocative cervical discography symptom mapping

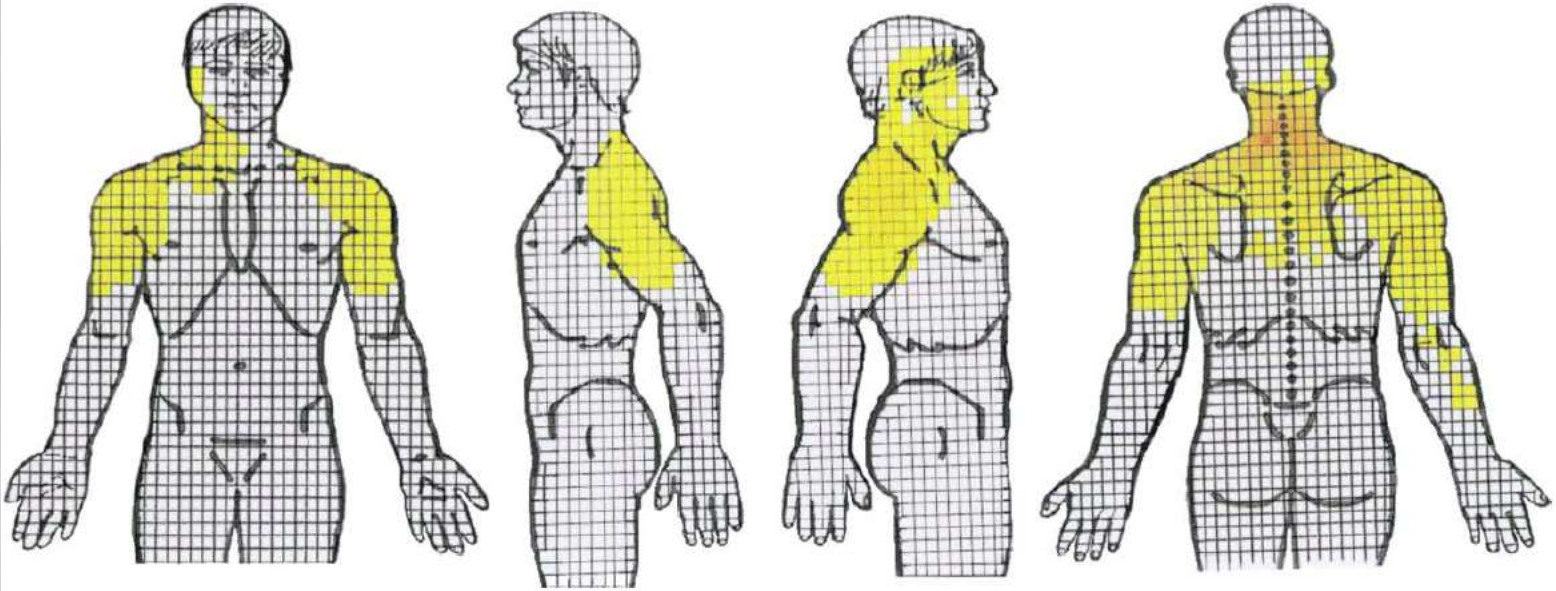


Fig. 5. C4–C5 discogram pain referral map.

C4-C5 pain map

Slipman et al, Spine J. *2005* Jul-Aug;5(4):381-8.
Provocative cervical discography symptom mapping

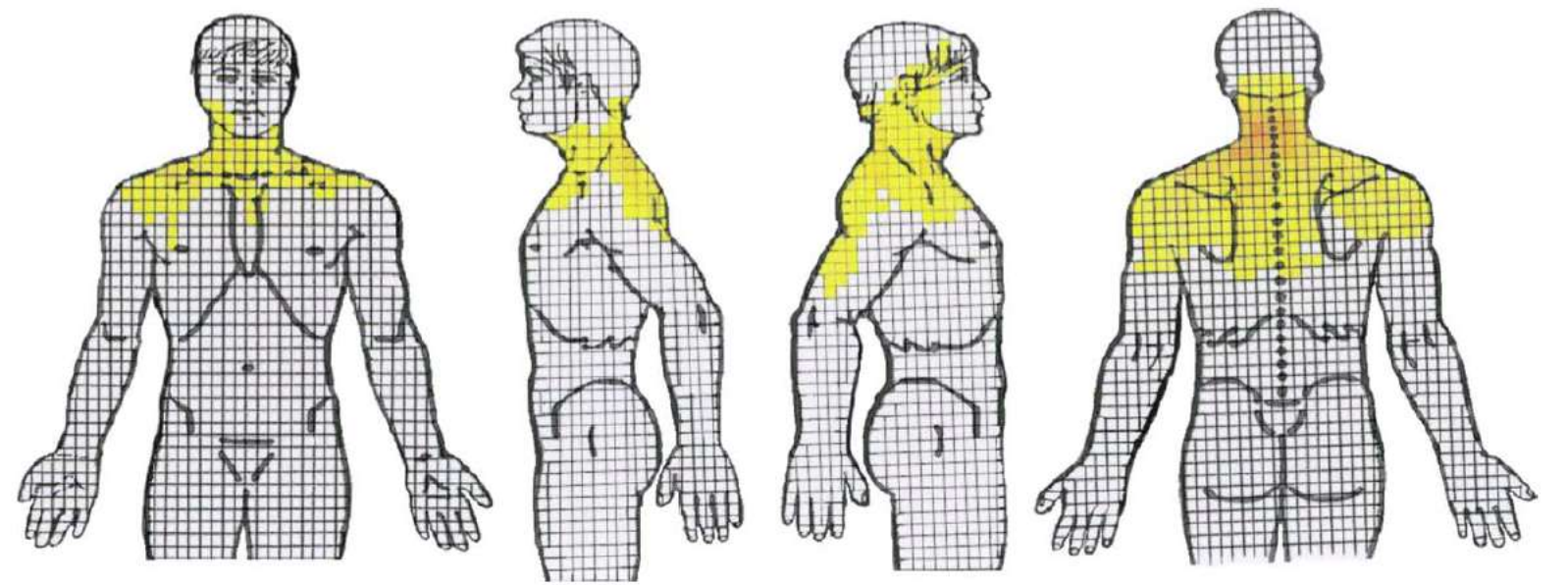


Fig. 6. C5–C6 discogram pain referral map.

C5-C6 pain map

Slipman et al, Spine J. *2005* Jul-Aug;5(4):381-8. Provocative cervical discography symptom mapping

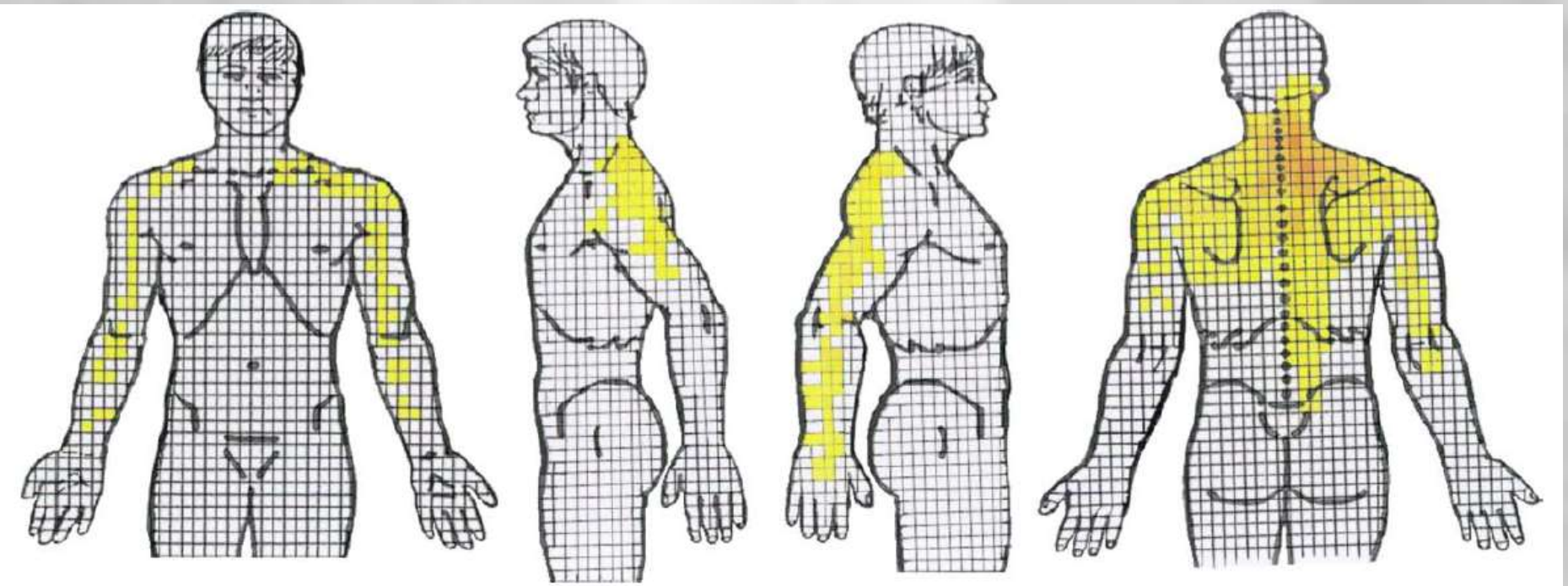
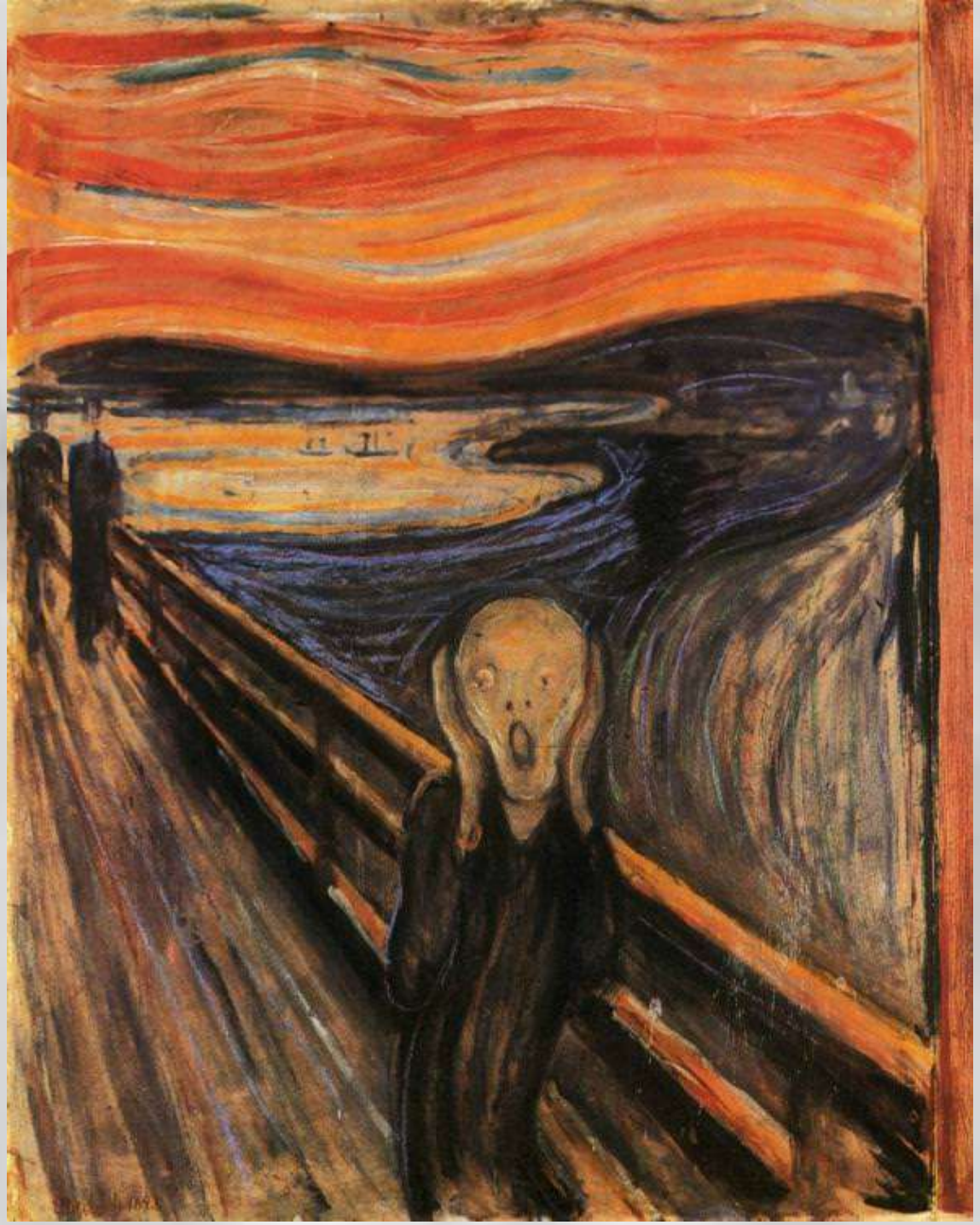


Fig. 7. C6–C7 discogram pain referral map.

C6-C7 pain map



Slipman et al, 2005

- Conflicts with older research which showed that disk pain maps resembled those from facet patterns (Bogduk and Aprill 1993).

- Does show that pain referral from disk pain overlaps and can mimic shoulder pain and radicular pain

Discogenic cervical pain treatments

Myofascial Pain

- Myofascial trigger points (TP)
- Developed in1950s
- Latent TP
- Active TP
- US bubble study

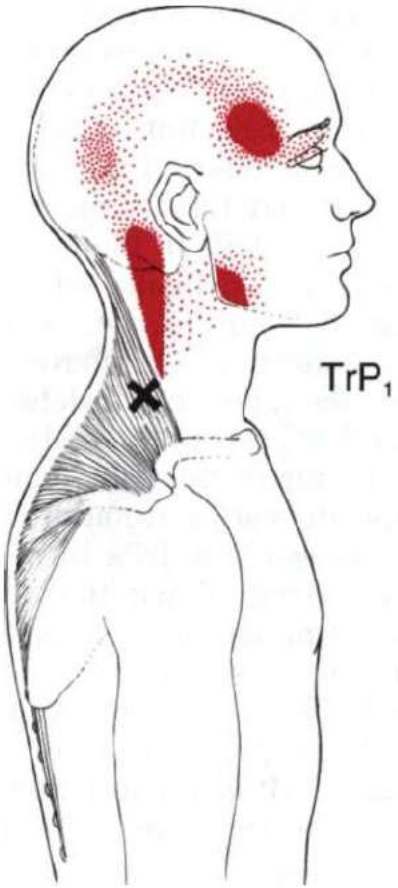


Figure 6.1. Referred pain pattern and location **(X)** of central trigger point 1 in the middle of the most vertical fibers of the upper part of the trapezius muscle. *Solid red* shows the essential referred pain zone while the *stippling* maps the spillover zone.

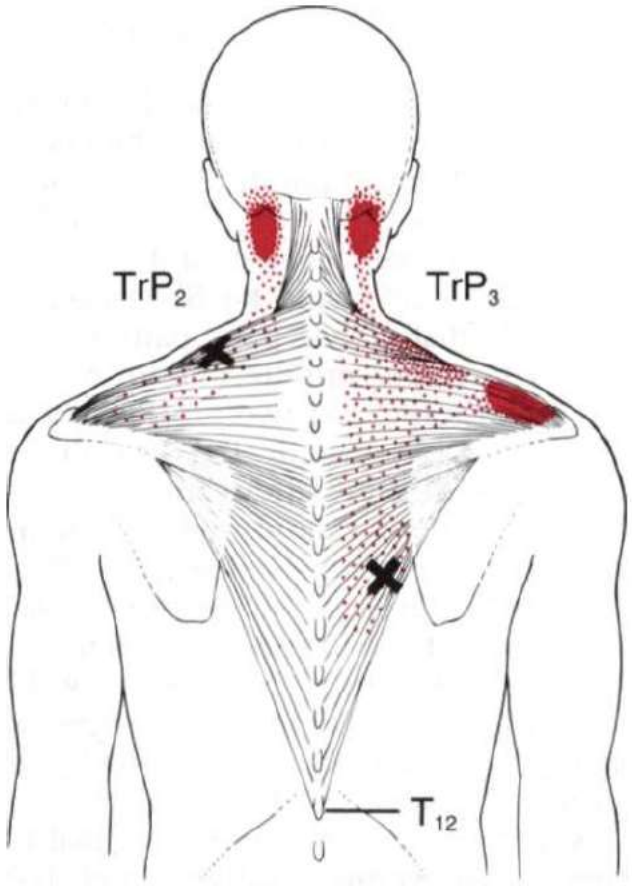


Figure 6.2. Left side of figure shows referred pain pattern and location **(X)** of central trigger point 2 in the middle of the more horizontal fibers of the **upper** part of a left trapezius muscle. Right side of figure shows referred pain pattern and location (X) of central trigger point 3 in a right **lower** trapezius; this is likely to be a key TrP that induces satellite TrPs in the region to which it refers pain in the upper part of the trapezius muscle. (Conventions are as in Fig. 6.1).

Travell & Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual, Janet G. Travell et al, 1999


Daniels
BIO-MEDICAL WASTE /
DÉCHETS BIO-MÉDICAUX

Cervical facet pain

- Epidemiology
  - 50-60% de patients with chronic neck pain (Bogduk; Manchikanti)

Cervical facet presentation

- Neuro normal
- ? Worse with extension, rotation
- ? Palpation: articular pillars
- ? Often unilateral

Facet pain after whiplash

- Post-mortem
- Animal
- Biomechanics
- Studies with medial branch blocks

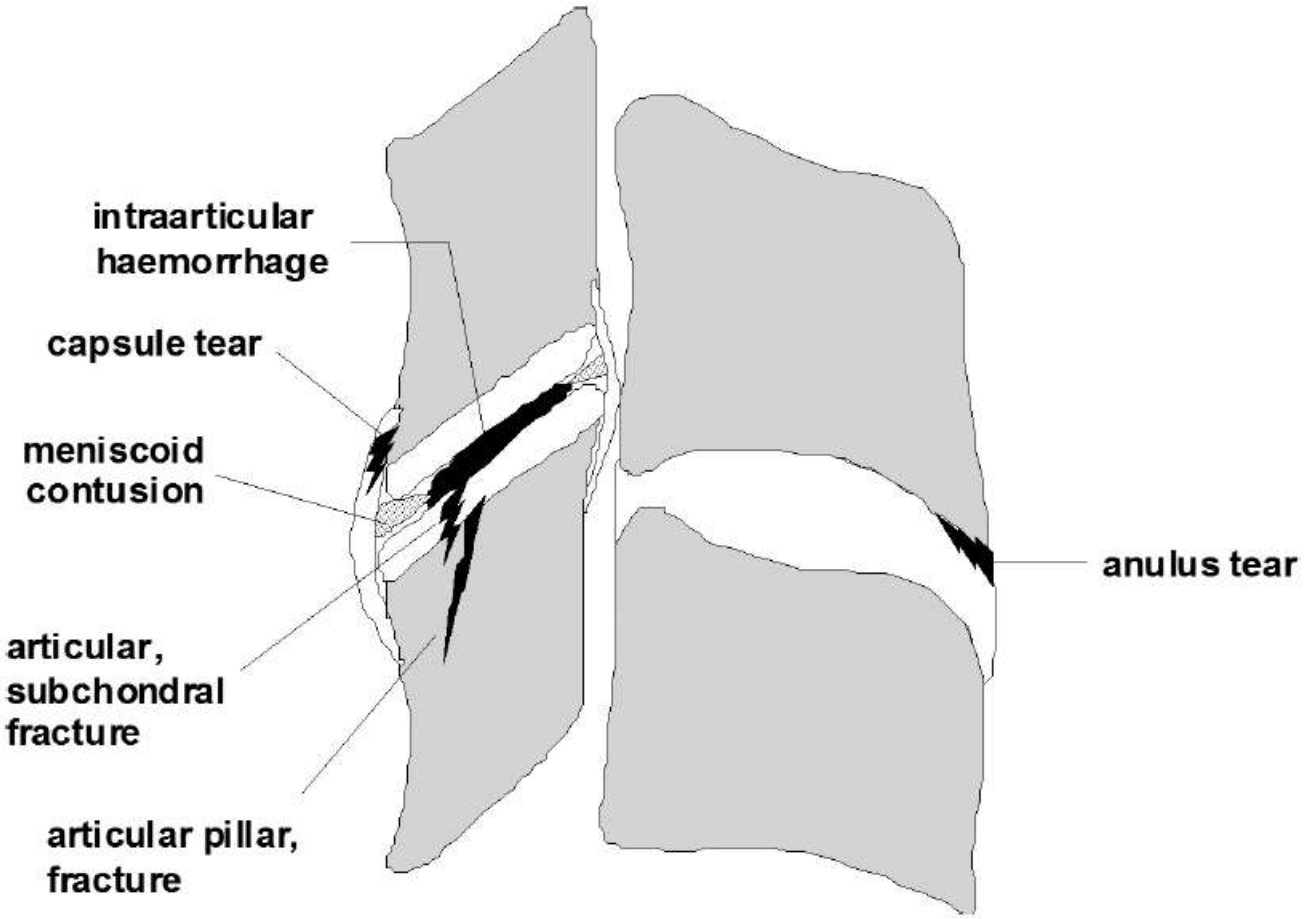


Figure 1. A sketch of the possible lesions of whiplash, as predicted by postmortem studies and biomechanics studies.

Bogduk Spine 2011 Dec 1;36(25 Suppl):S194-9.

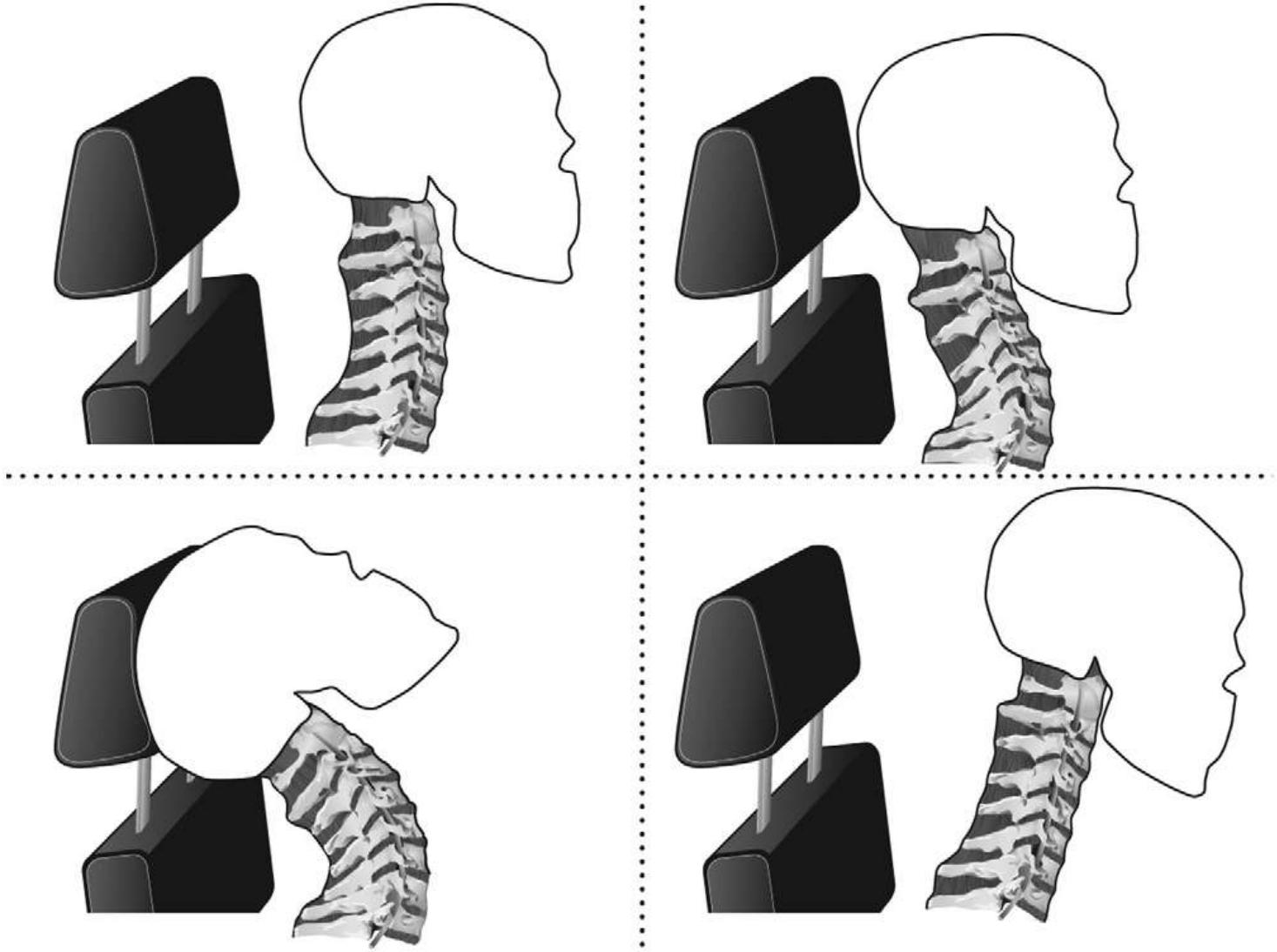


Figure 1 – Phases of head–neck and cervical spine kinematics: initial position (top left), S-curve (top right), extension (bottom left), and rebound (bottom right).

Yoganandan et al, Patient Mechanisms of Injury in Whiplash-Associated Disorders Seminars in Spine Surgery, 2013, VolVolume 25, Issue 1, March 2013, Pages 67-74

Practice Guidelines for Spinal Diagnostic & Treatment Procedures - 2nd Edition

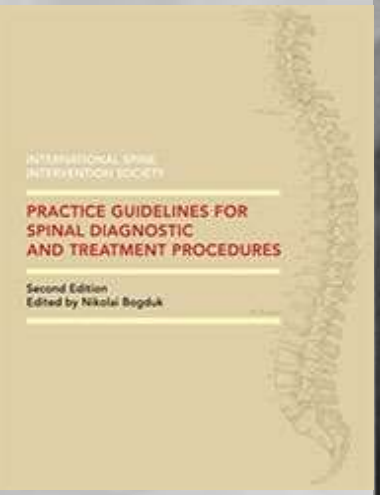


Figure 8. A lateral view of the cervical spine, on which the target points for C3, C4, C5, and C6 medial branch blocks have been marked with white dots.

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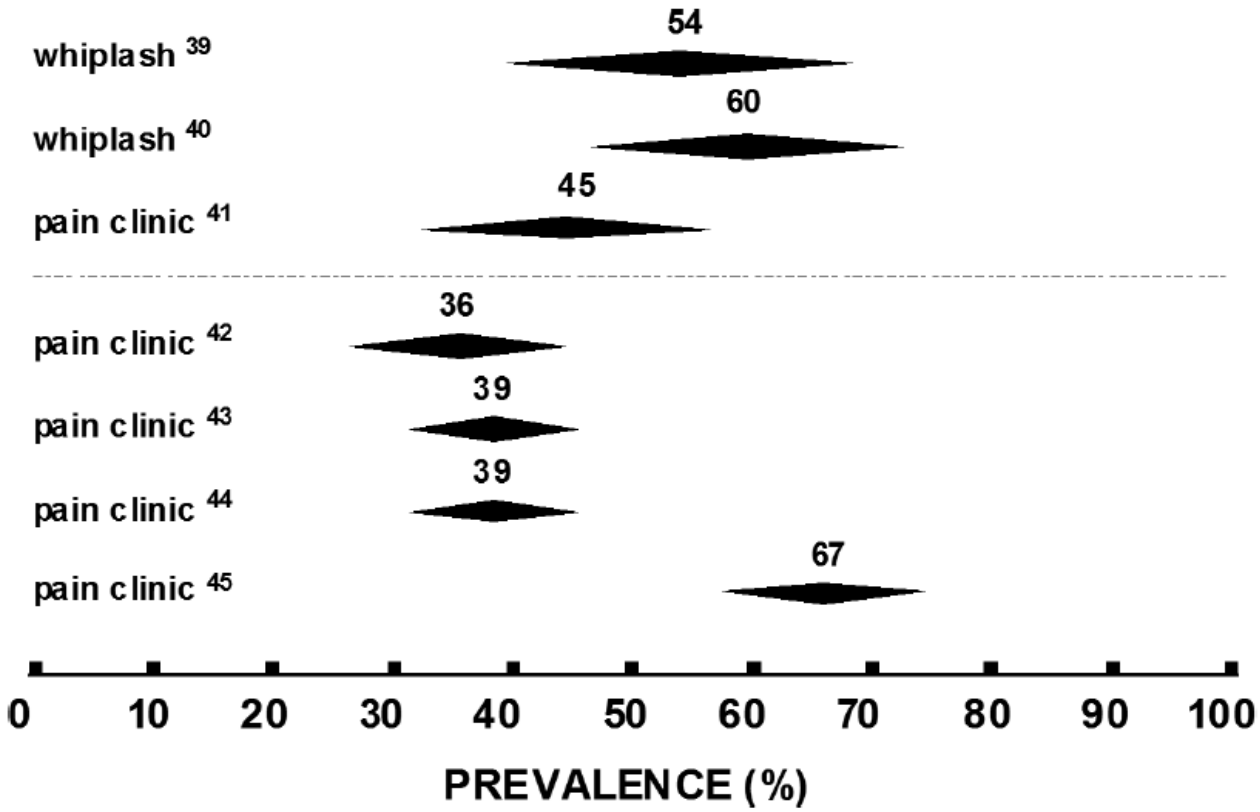


Figure 5. A graphic summary of the prevalence of cervical zygapophysial joint pain in various studies using different samples of patients. The source samples are listed on the left. The diamonds indicate the reported prevalence and its 95% confidence intervals. Studies above the dotted line enrolled patients with whiplash or stipulated the proportion of patients with whiplash or post-traumatic neck pain. Studies below the line did not stipulate the number of patients expressly with whiplash.

Bogduk Spine 2011 Dec 1;36(25 Suppl):S194-9.

Yin and Bogduk 2008

- Private practice study in USA
- Consecutive patients with cervical pain
- Facet joints: 55%
- Disk: 16%
- Atlanto-axial: 9%
- Atlanto-occipital: 1%

Cooper et al

Pain Med 2007 May-Jun;8(4):344-53.

Cervical zygapophysial joint pain maps.

- Neck pain patients who responded to medial branch blocks

Percentage of facet joint pain

C56: 73%

Cooper et al
Pain Med 2007 May-Jun;8(4):344-53.
Cervical zygapophysial joint pain maps.

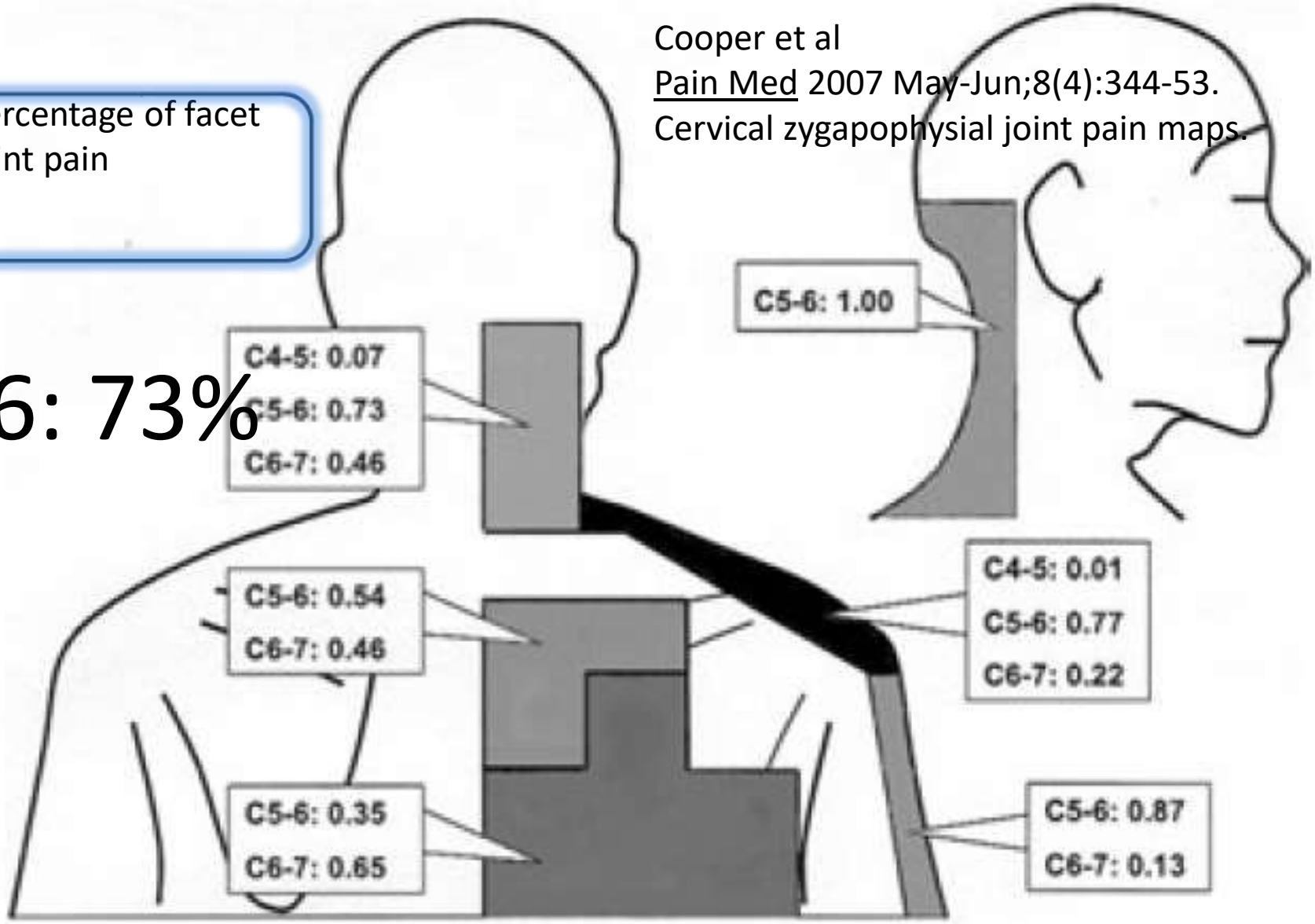


Figure 12 The probability of joints at the segments indicated being the source of pain in the areas depicted.

Cooper et al
Pain Med 2007 May-Jun;8(4):344-53.
Cervical zygapophysial joint pain maps.

C23:

76%

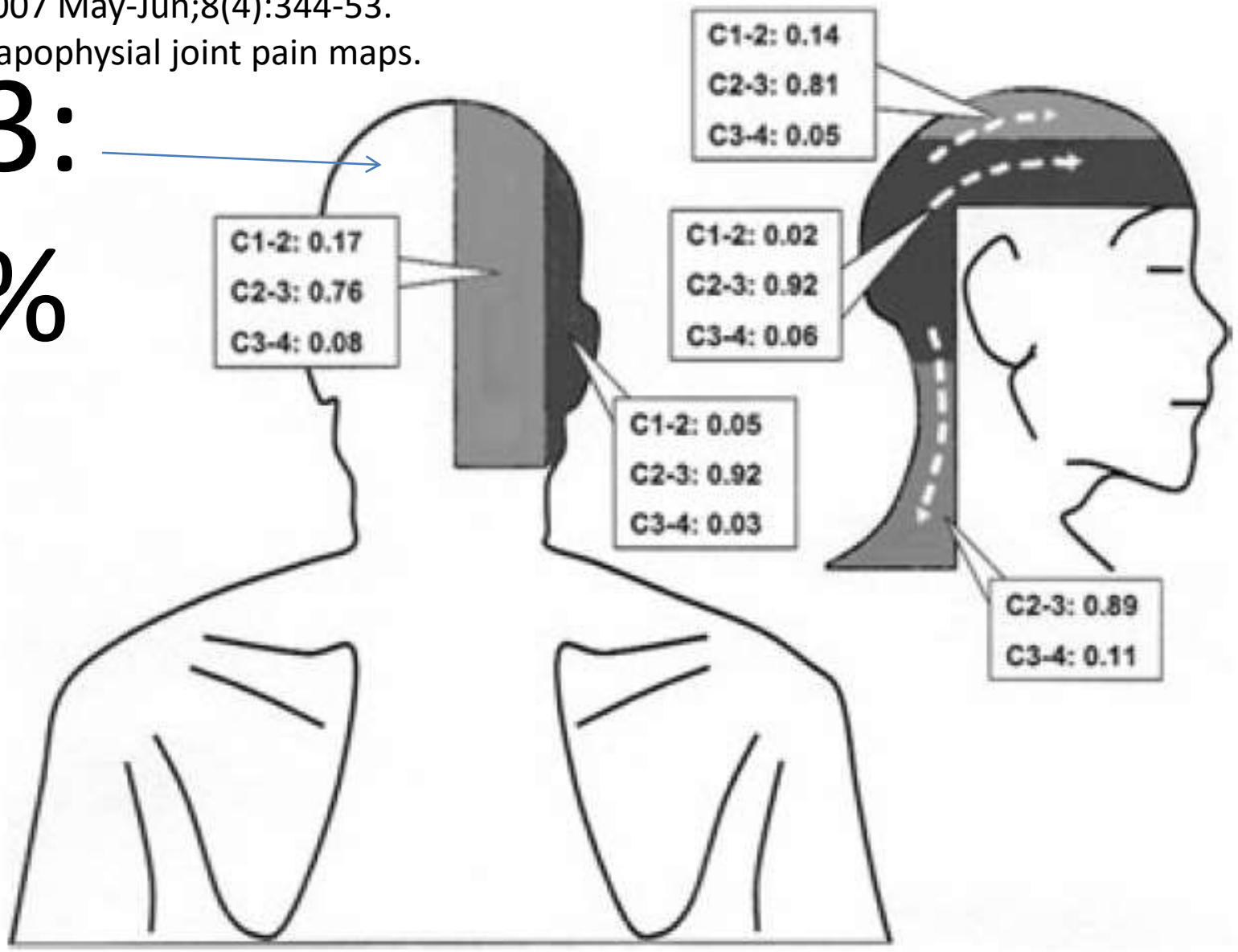


Figure 11 The probability of joints at the segments indicated being the source of pain in the areas depicted

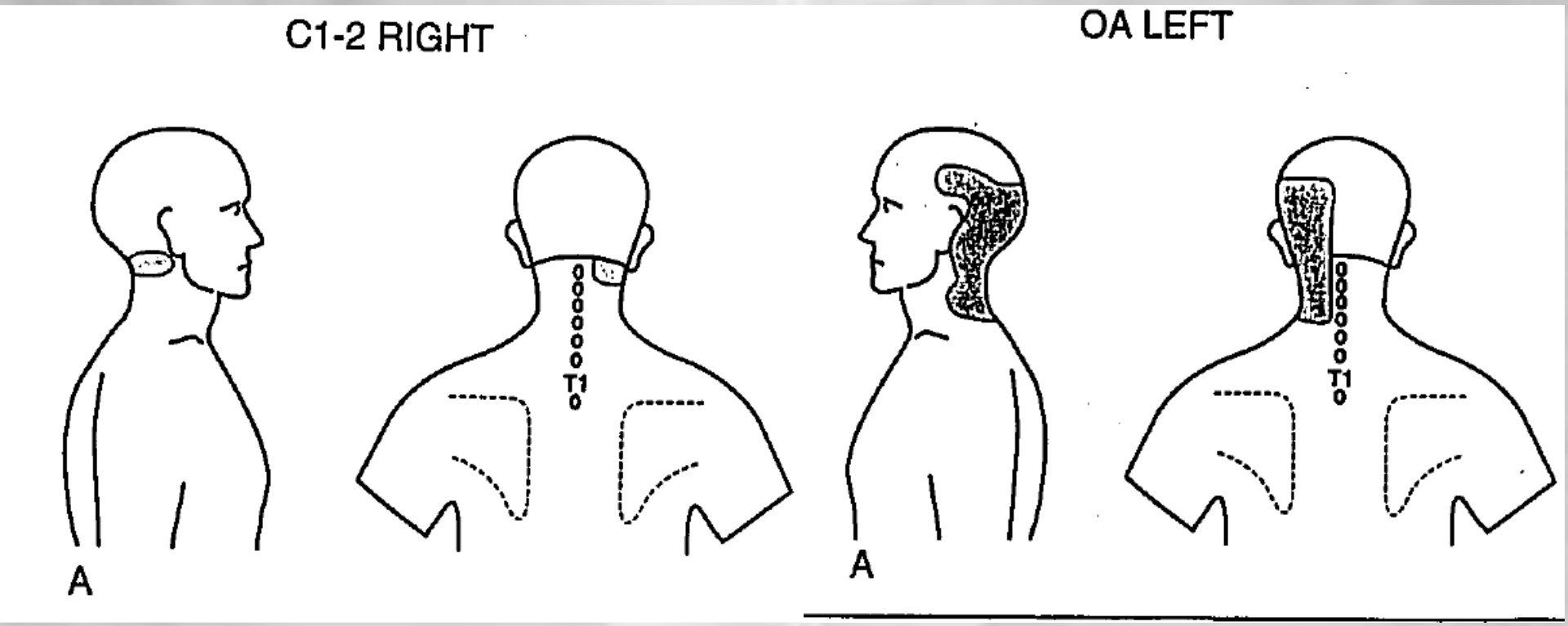
Superior cervical joint pain

- Occiput-C1
- C1-C2

A rarely performed injection

Dreyfuss et al Spine, 1994 May 15;19(10):1125-31.

Atlanto-occipital and lateral atlanto-axial joint pain patterns.



Treatment for cervical facet pain

Same as for discogenic pain plus radiofrequency neurotomy +- facet blocks

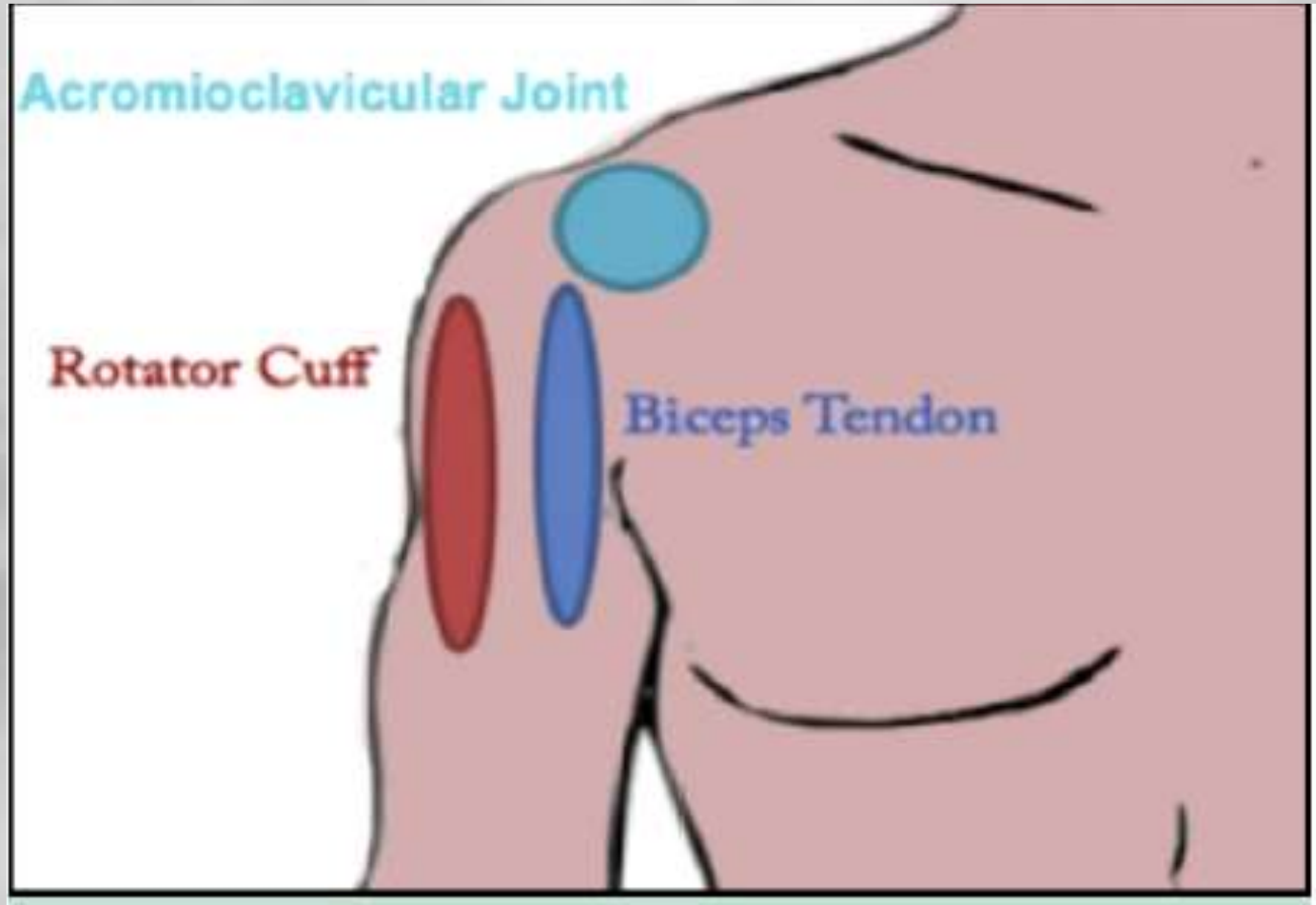


Figure 1 Common location of specific pain generators within the shoulder.[7]

The American Journal of Medicine (2016) 129, 913-918

Shoulder

- Acute trauma: traction, compression
- Repetitive movements with the arms elevated

Differentiel Diagnosis MSK

- Glenohumeral: arthritis, instability, capsulitis
- AC, SC: arthritis, trauma

- Muscle-tendon: rotator cuff, biceps

- Labral tear

History

Shoulder

- Shoulder abduction
- Nighttime
- More focal
- Repetitive movement

- Weakness without pain, think of suprascapular nerve

Neck

- Shoulder abduction
- Inclination of the head to the opposite side of the pain.

Neurologic symptoms

Physical Exam

- Shoulder

- Inspection
- ROM
- Provocative tests
- Palpation

- Neck

- Inspection
- ROM
- Palpation
- Reflexes
- Power, sensation
- Spurling
- ULTT

- Peripheral nerve lesion

(eg. axillary, suprascapular, longue thoracic nerve, cranial nerve XI)

Volleyball epidemic?

Weakness and atrophy more than pain

Injury of the Suprascapular Nerve at the Spinoglenoid Notch: The Natural History of Infraspinatus Atrophy in Volleyball Players

Andrea Ferretti, MD , Angelo De Carli, MD and Michele Fontana, MD

The American Journal of Sports Medicine 26:759-763 (1998)

Radicular pain vs shoulder

Arm-Squeeze Test

Fig. 1 The Arm Squeeze Test

Eur. J Spine 2013

ULTT

- If provocation tests are positive in both regions consider a sub-acromial injection

AAFP 2003

Category

- Neurologic
- Mainly cervical
- Mainly shoulder
- Pain syndrome
- Non neuro-MSK eg. Referred pain

Pain syndrome

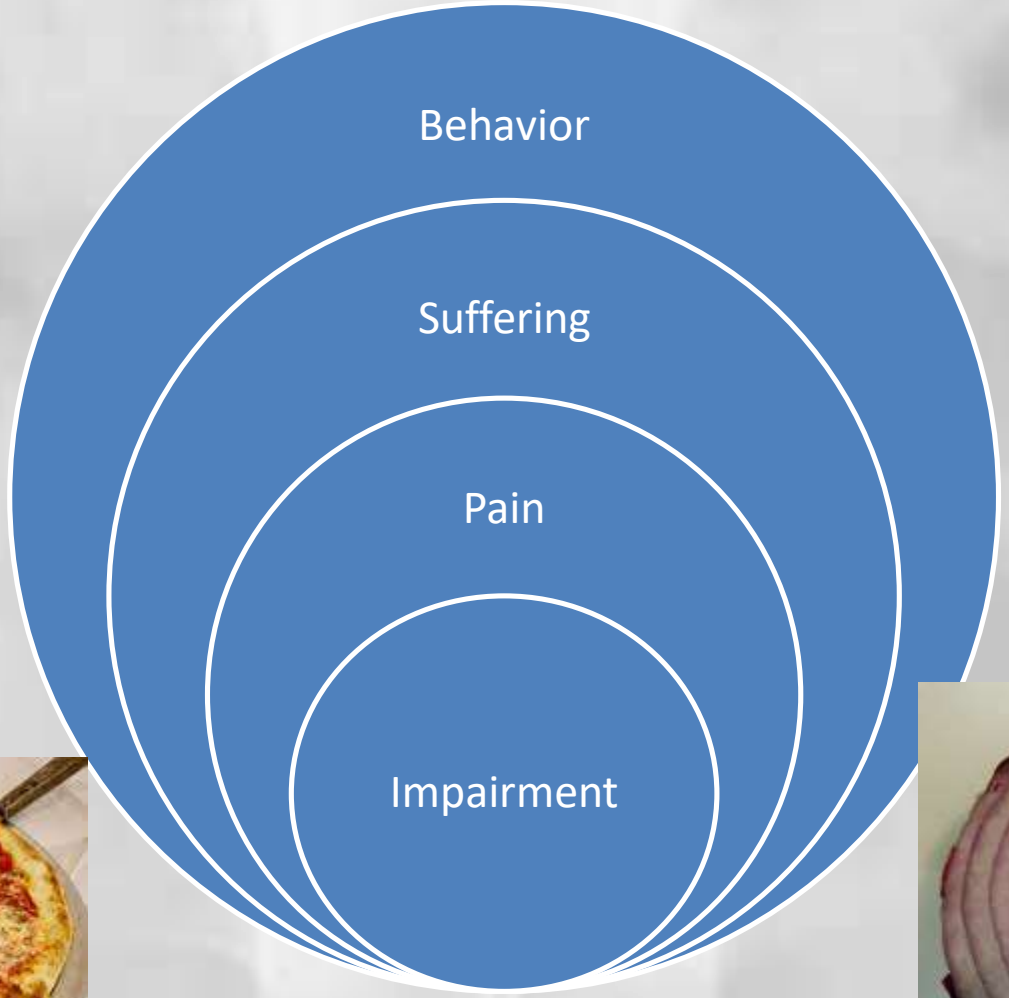
- The neck and the shoulder are not the problem

- It is a component of many problems
- Not good candidates for injections
- Ensure not myopathy or PMR

Case

- 44 yrs old, PAB, diffuse neck, thoracic, peri-scapular pain
- Smoker
- No family MD
- MVA in 2017 but pain for years before
- Poor sleep
- Exam: pain ++

Dig to the centre of the onion



The A-Team

Active program in physio

Occupational therapy

Psychology

Focus on increasing level of
function rather than reducing pain

Radiologic anomalies ≠ Pain

- MRI: Degenerative changes are common with increasing age

Applies to neck and shoulder

Clinical Radiology Dec 2003, Int J. Rheum Diseases 2014

Return to the objectives….

At the end of this presentation the participant will be able to:

1) Name and distinguish significant causes of cervical pain

2) Distinguish cervical pain from shoulder pain

3) Perform a clinical assessment to differentiate cervical and shoulder pain