

ADVANCED INJECTIONS WITH ULTRASOUND

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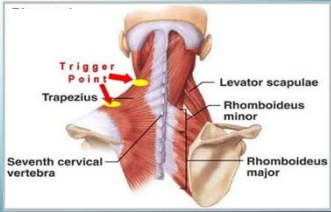
BACKGROUND

- Ultrasound guidance for injections in pain management is an increasingly popular modality
- Benefits: (Chokrovi review 2016, 32 RCTs)
 - Reduced adverse effects (vessel puncture, pneumothorax, extravasation)
 - Improves accuracy of needle/ligament placement into target structures
 - diagnostic blocks
 - Improved patient satisfaction
- Limitations:
 - Training is varied
 - Difficult technique: needle tip vs shaft
 - Weekend courses insufficient
 - 1-2 year interventional fellowships
 - Board certification



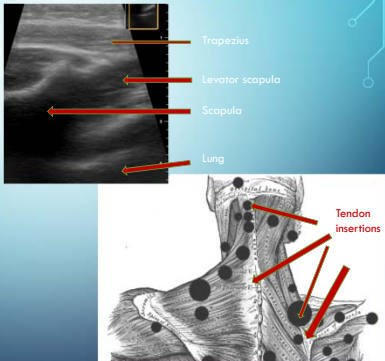
BACKGROUND

- Indications:
 - Myofascial pain in deep muscle trigger points (NOT tender points of FM)
 - Most common areas shown here
 - The term "trigger point" was coined in 1942 by Dr Janet Travell to describe the following:
 - Tight painful nodule or band in the muscle,
 - Twitch response with palpation
 - Radiates pain distally

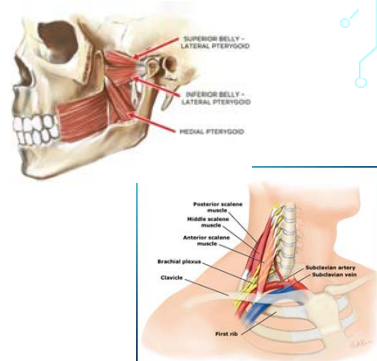


BACKGROUND

- Indications:
 - Tendonitis, Tendinosis, Tendon tear →
 - Whiplash spasm →
 - Rotator cuff injury/tears
- Target Chemodenevation
 - Dystonia: cervical, oromandibular
 - Torticollis
 - Thoracic outlet
- CRPS – stellate ganglion blocks
- Nerve blocks
 - Occipital neuralgia
 - Brachial plexus blocks, LOA



The top image is an ultrasound showing the trapezius, levator scapula, scapula, and lung. The bottom image is an anatomical diagram of the neck and shoulder, highlighting tendon insertions with red arrows.

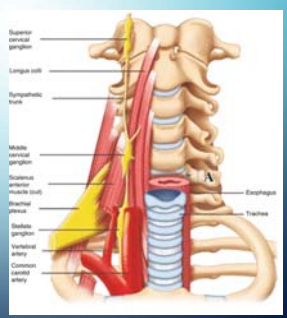


The top diagram shows the skull with the superior, inferior, and medial pterygoid muscles. The bottom diagram shows the neck and upper chest, highlighting the posterior, middle, and anterior scalene muscles, the brachial plexus, and the subclavian artery and vein.

- Target Chemodenevation
 - Dystonia: cervical, oromandibular
 - Torticollis
 - Thoracic outlet

BACKGROUND

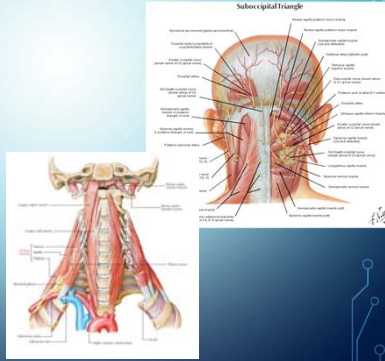
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The diagram shows the thoracic outlet region with labels for the superior and lung apical foramina, sympathetic trunk, middle cervical ganglion, subclavian anterior muscle (bell), brachial plexus, stellate ganglion, vertebral artery, common carotid artery, and Encephalic foramen.

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- Indications:
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 - Occipital neuralgia
 - Intraoral plexus blocks, LOA



The top diagram, titled 'Suboccipital Triangle', shows the occipital nerves (C1-C2) and the deep neck muscles (trapezius, semispinalis, and splenius) in a posterior view. The bottom diagram shows a lateral view of the cervical spine and neck muscles, highlighting the suboccipital region.

BASICS

- Probes:
 - 2.5-5mHz
 - 7.5-10mHz * Butterfly
 - 10-22mHz
- Needles
 - Hypodermic
 - EMG
 - Spinal (quincke, whittacre, sprotte, tuohy)



The images show three types of probes: a standard probe, a 7.5 MHz linear probe, and a butterfly probe. Below these are several different styles of needles, including hypodermic, EMG, and spinal needles.

BASICS

- Injectate:
 - Local anesthetics – Na⁺ ch blockade
 - Mepivacaine
 - Lidocaine
 - Bupivacaine
 - Botulinum toxin for chemodeneration
 - Regenerative therapies: PRP, prolotherapy, stem cells, A2M, etc



The images show several vials of injectable medications, including local anesthetics (Mepivacaine, Lidocaine, Bupivacaine), Botulinum toxin, and regenerative therapies (PRP, A2M).

LIVE DEMONSTRATION - TRAPEZIUS



LIVE DEMONSTRATION - ELEVATOR SCAPULA



LIVE DEMONSTRATION - RHOMBOID



LIVE DEMONSTRATION – SEMISPINALIS CAPITUS



LIVE DEMONSTRATION – GREATER OCCIPITAL NERVE



LIVE DEMONSTRATION – LATERAL AND MEDIAL PTERYGOID, TEMPORALIS, MASSETER

LIVE DEMONSTRATION – ANTERIOR AND MIDDLE SCALENE AND BRACHIAL PLEXUS

LIVE DEMONSTRATION – LONGUS COLLI AND STELLATE GANGLION

ACKNOWLEDGEMENTS

- Karen mortgenschern
- Kasia podraza
- Chelsea Hesterman
- Andrew Charles
- Joshua Kamins
