Ultrasound Guidance for BoNT Injections: Muscle Review Handout

Pre-Course 4
AACPDM 2013
Pectoralis Major/Minor

Pectoralis Major
(Longitudinal View)

Origin: Clavicular head - anterior surface of clavicle
Sternopectoral head - anterior surface of sternum; first 7 costal cartilages,
dorsal end of 6th rib, spongiosa of external oblique

Insertion: Lateral edge of intertubercular sulcus of humerus

Innervation: Medial and lateral pectoral nerves

Action: Flexion, adduction, and medial rotation of the arm
Biceps/Brachialis

Transverse Scan, Out of Plane Injection

Biceps, Transverse Mid Arm Out of Plane Injection
Brachioradialis

Transverse Scan, Out of Plane

Transverse Scan
Flexor Forearm, Proximal

Flexor Carpi Radialis

Origin: Medial epicondyle of humerus
Insertion: Base of metacarpals II and III
Innervation: Median nerve
Action: Flexes and abducted the wrist.

US Image taken with arm in supination

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Flexor Forearm

Transverse Scan, Proximal Forearm

Flexor forearm Transverse
FCR

Transverse Scan, Out of Plane Injection

Out of Plane Injection

FCR TV
Pronator Teres

Transverse Scan, Localization

Localization Pronator Teres
FDS

FDS Transverse Transducer Location

Forearm transverse, AROM

FDS Tv
Typical Approach for FCU/FDP

Longitudinal Scan: FDP

FDP FCU LA OP
Flexor Pollicis Longus

Longitudinal Scan

Longitudinal Scan AROM
Neck Muscles

**Sternocleidomastoid**

*Transverse View*

- **Origin:**
  - Sternal Head: Anterior surface of manubrium
  - Clavicular Head: Medial third of clavicle
- **Insertion:**
  - Sternal Head: Lateral half of superior nuchal line
  - Clavicular Head: Mastoid process
- **Innervation:** Accessory Nerve (CN XI)
- **Action:**
  - Unilateral: Tilt head toward ipsilateral shoulder to tilt face to contralateral side
  - Bilateral action: Draws head forward

**Sternocleidomastoid**

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Scalenes

Origin:
- Anterior: Transverse processes of C3 to C6
- Middle: Transverse processes of C2 to C7
- Posterior: Transverse processes of C4 to C6

Insertion:
- Anterior: Scalene tubercle and upper surface of rib 1
- Middle: Upper surface of rib 1
- Posterior: Upper surface of rib 2

Innervation:
- Anterior: C4 to C7
- Middle: C3 to C7
- Posterior: C5 to C7

Action:
- Anterior and Middle: Elevation of rib 1
- Posterior: Elevation of rib 2

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Salivary Gland

Parotid Gland

Innervation:
- Sensory: Auriculotemporal Nerve (branch of V)
- Secretomotor: Fibers run with auriculotemporal nerve
- Parasympathetic fibers from otic ganglion

Action:
- Secrates watery saliva and amylase
- Aids in food bolus formation and oral digestion

Submandibular Gland

Innervation:
- Sensory: Lingual Nerve
- Secretomotor: Fibers carried in chorda tympani branch of the facial nerve
- Parasympathetic fibers from submandibular ganglion

Action:
- Secrates the majority of baseline saliva in the unstimulated state

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Iliopsoas

Origin:
- Iliacus: Transverse processes, and intervertebral discs of T12 to L5
- Iliacus: Posterior abdominal wall and upper two-thirds of iliac fossa

Insertion: Common tendon on lesser trochanter of femur

Innervation:
- Iliacus: Anterior rami of L1 to L3
- Femoral: Femoral Nerve

Action: Hip flexion, can contribute to lateral thigh rotation

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Iliopsoas, Distal

Transverse, Proximal Thigh/Distal to Inguinal Crease

Transverse Ultrasound Image

Psoas Distal Palpation
Iliopsoas; Distal

Transverse Scan
Adductors

Adductors, Transverse, Out of plane injection, Add Longus
Semimembranosus, Longitudinal Scan

- Injection, In Plane
Semimembranosis, Transverse Scan

Injection, Out of Plane Injection
Medial, Lateral Gastrocnemius
Soleus, Tibialis Post
Gastrocnemius lateral, Soleus Tibialis Posterior Doppler

Doppler US Jpg, 4 y.o.

Soleus, Tibialis Posterior, Transverse Junction of Middle 1/3:Distal 1/3 calf
Soleus/Tibialis Posterior 4 y.o. Child

Transverse Lower-Middle 1/3 of Posterior Calf

Out of Plane Injection, Soleus
FDL Tibialis Post
Tibialis Posterior/Flexor Digitorum Longus (FDL)

Anterior, Longitudinal FDL AROM

Longitudinal Localization AROM

Tibialis Posterior
Tibialis Posterior
Flexor Hallicus Brevis, Flexor Digitorum Brevis