


World Institute of Pain FIPP CIPS
BOARD OF GOVERNORS

Diagnosis and US guided intervention for **Cervical** and **Upper Torso** Region



Chih-Peng Lin
MD, PhD, FIPP, CIPS
Associate Professor
Department of Anesthesiology
National Taiwan University
President
Taiwan Pain Society



ADVANCED



STANDARD PRACTICE



RISK RISK

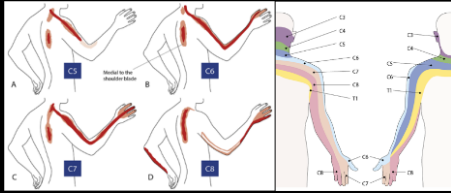
Ultrasound Guidance for Cervical Spine Intervention

Must

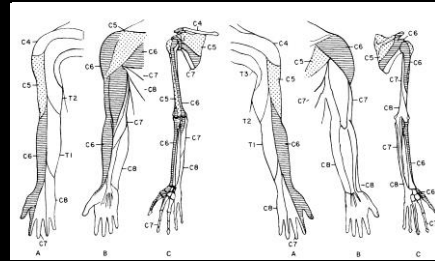
Ultrasound Guidance **ONLY** for C Spine Intervention

Not Enough

Cervical Radicular Pain



Not just Dermatome!



Cervical Radicular Pain

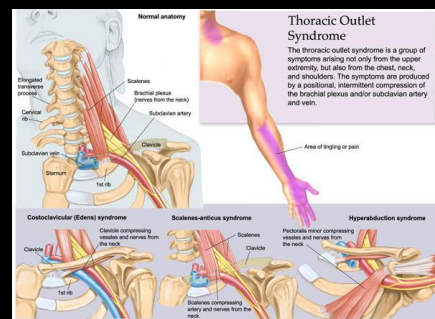
Root	Pain distribution	Weakness	Sensory loss	Reflex loss
C5	Lateral upper arm	Deltoid	Lateral upper arm	Biceps reflex
C6	Lateral forearm Thumb, index finger	Biceps, brachioradialis Wrist extensors	Thumb and index finger	Supinator (+biceps) reflex
C7	Posterior arm, middle finger	Triceps, wrist flexors	Posterior forearm, index and middle finger	Triceps reflex
C8	Medial forearm, small finger	Intrinsic hand muscles, abductors, finger extension	Little finger	Triceps reflex

Classical Neurologic Examination

- Testing sensation, strength, and tendon reflexes
- Specific clinical tests
 - Spurling/neck compression test Sensitivity :40-60%
Specificity : 92-100%
 - Shoulder abduction (relief) test Sensitivity : 43-50%
Specificity : 80-100%
 - Axial manual traction test (Neck distraction) Sensitivity : 40-43%
Specificity : 100%

Common Differential Diagnosis of Cervical Radiculopathy

- Brachial Plexus Injury in Sports Medicine
- Cervical Discogenic Pain Syndrome
- Cervical Facet Syndrome
- Rotator Cuff Injury
- Thoracic outlet syndrome
- Muscular problems mimicking cervical radiculopathy



Epidemiology

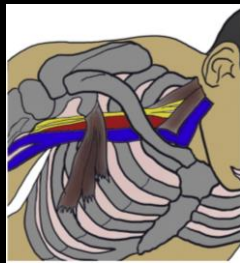
- Incidence 1-2%
- Age – usually 20-50 Y
- Gender- F:M – 3:1
- No racial predilection
- Neurogenic - TOS>95%
- Venous TOS – 4%
- Arterial TOS – 1%

Atypical Pain Presentations

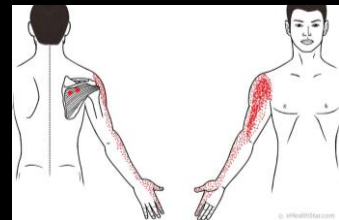


- Non-dermatomal
- Non-myotomal
- Non-sclerotomal
- Non- neurotomal
- **Vascular Component(s)**

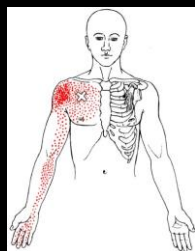
- Scalene
- Costoclavicular
- Pec Minor



Myofascial Pain of Infraspinatus

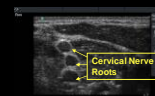


Myofascial Pain of P. minor

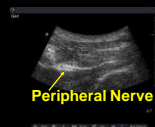


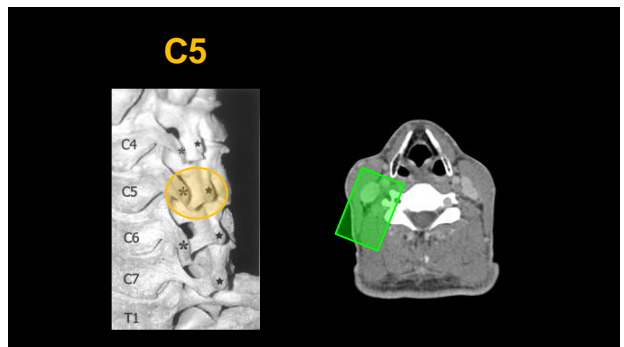
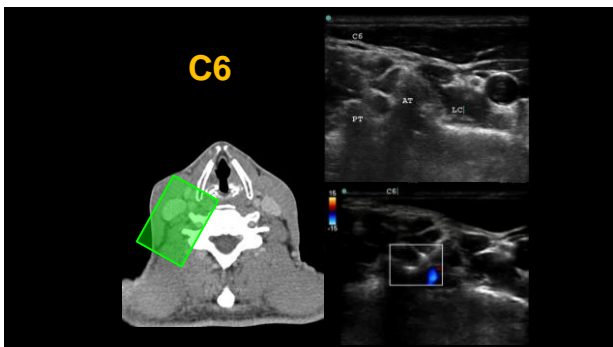
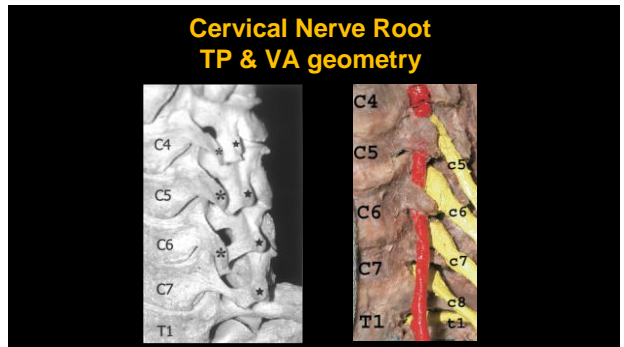
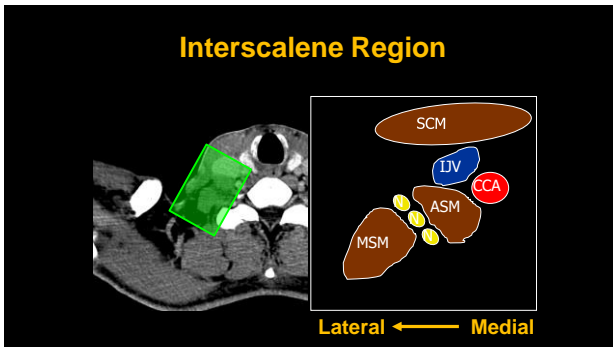
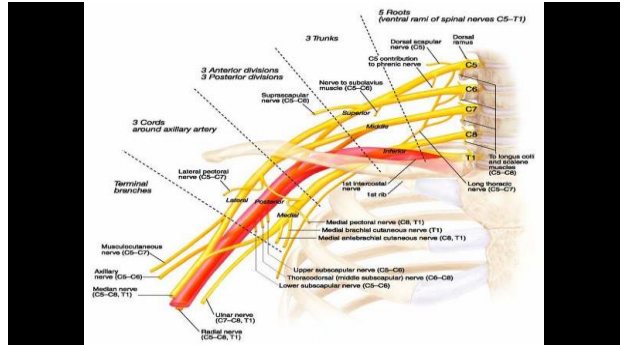
Ultrasound Appearance

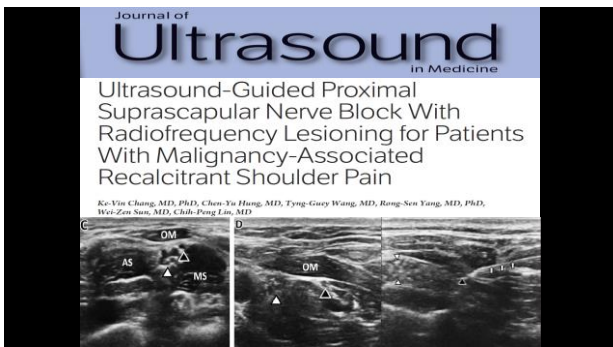
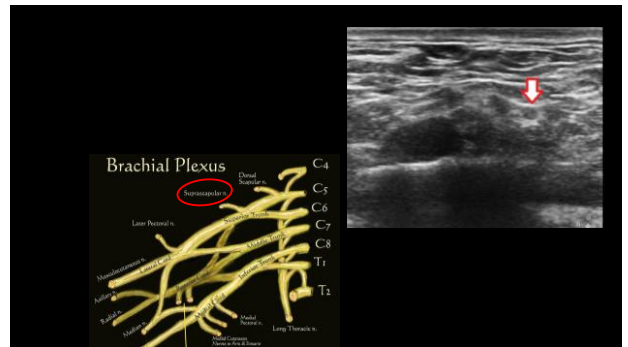
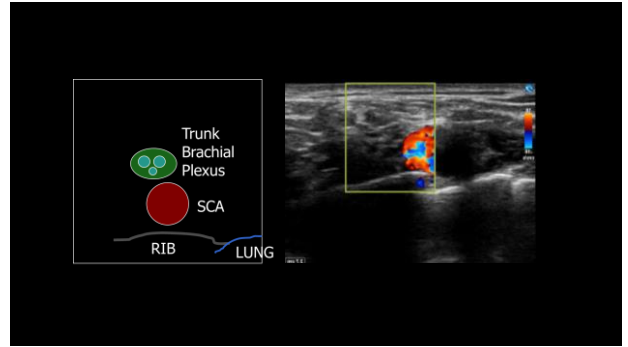
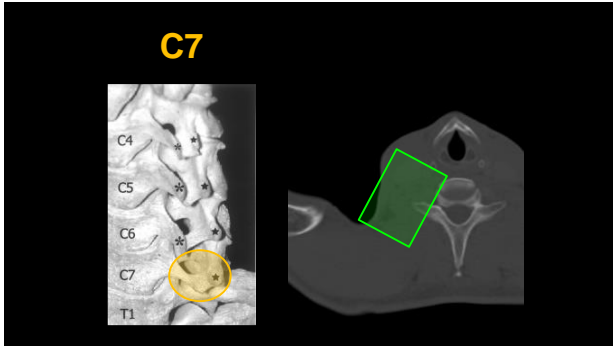
- Cervical Roots
- Monofascicular
 - Dark Hypoechoic

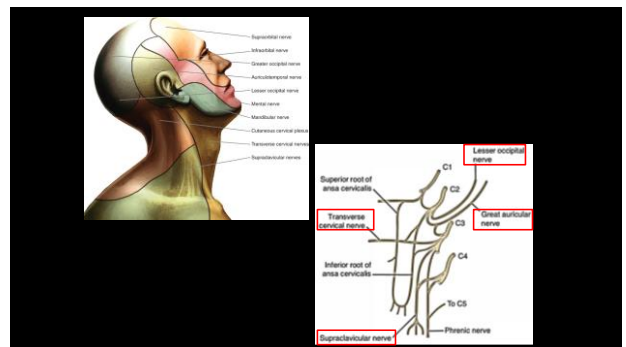
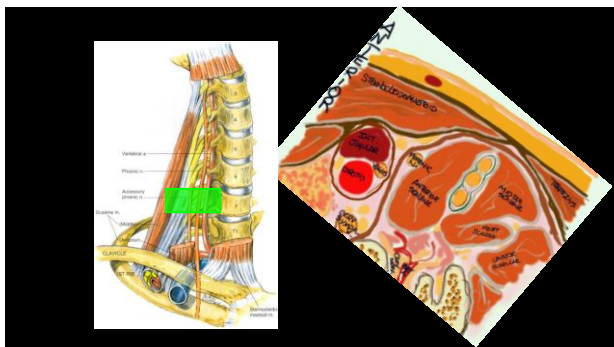
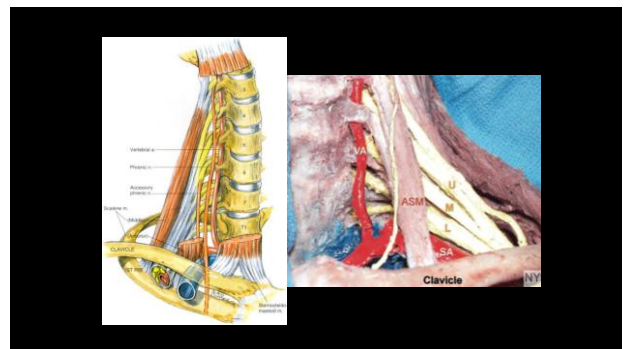
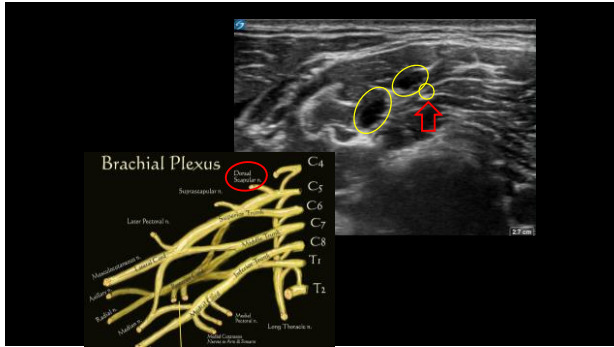


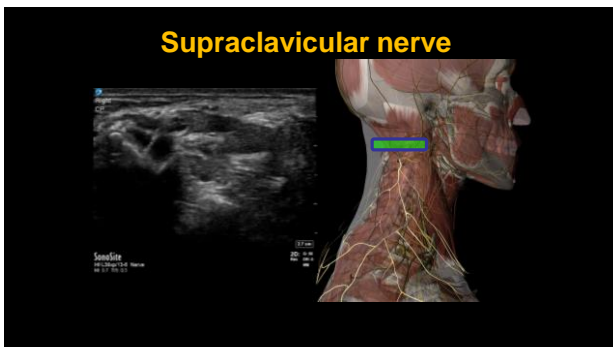
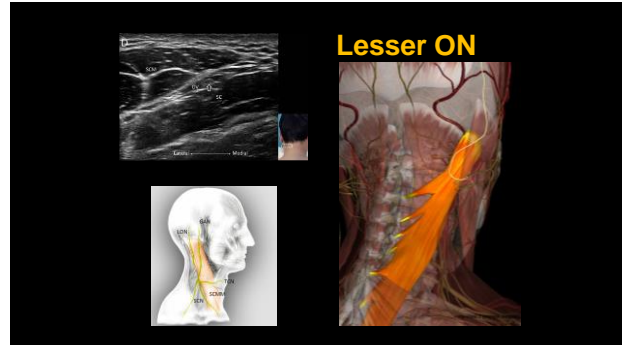
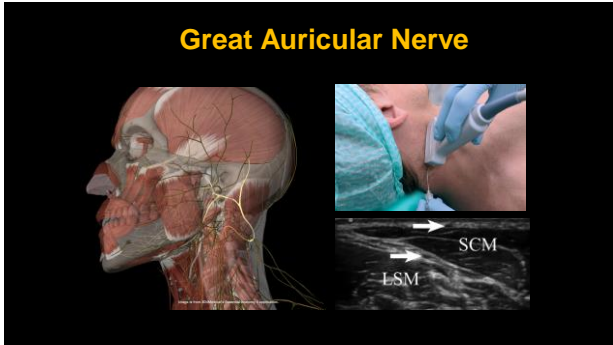
- Peripheral Nerves
- Honeycomb
 - Hyperechoic











Indications for Cervical Sympathetic Chain Stellate Ganglion Block

- **Diagnosis and treatment of autonomic dysfunction**
 - Vascular insufficiency in the head, neck, upper extremities
 - Ventricular arrhythmia due to sympathetic imbalance on left side
 - Hyperhidrosis
- **Painful syndromes**
 - Complex regional syndrome type I (RSD) and II (causalgia)
 - Neuropathic states (herpes zoster, postherpetic neuralgia)
 - Phantom pain

JAMA Psychiatry | Original Investigation

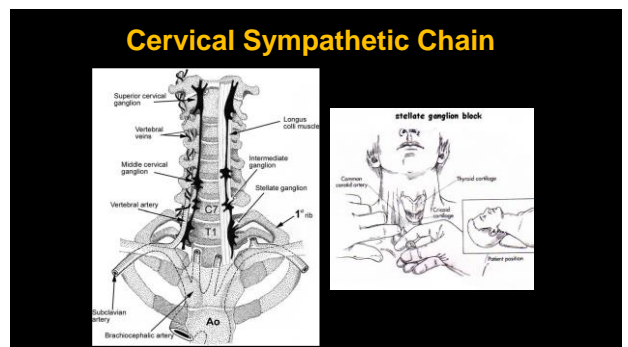
Effect of Stellate Ganglion Block Treatment on Posttraumatic Stress Disorder Symptoms: A Randomized Clinical Trial

Flowchart:

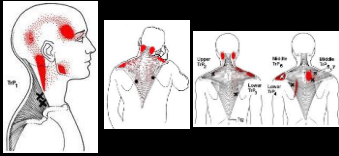
- 284 Posttraumatic stress disorder participants
- 186 Excluded: 43 ineligible, 42 ineligible to contact, 100 ineligible consent
- 100 Screened participants
- 83 Excluded: 1) Not a modification change in CAPS-1 score or immediate follow-up; 2) Not a CAPS-1 score; 3) Not a CAPS-1 score; 4) Not a CAPS-1 score; 5) Not a CAPS-1 score; 6) Not a CAPS-1 score
- 17 Excluded: 1) Not a CAPS-1 score; 2) Not a CAPS-1 score; 3) Not a CAPS-1 score; 4) Not a CAPS-1 score; 5) Not a CAPS-1 score; 6) Not a CAPS-1 score
- 83 Initial CAPS-1 score completed
- 80 Lost to follow-up (96 unable to contact)
- 3 Excluded: 1) Not a CAPS-1 score; 2) Not a CAPS-1 score; 3) Not a CAPS-1 score; 4) Not a CAPS-1 score; 5) Not a CAPS-1 score; 6) Not a CAPS-1 score
- 80 Randomized to SGB and Sham groups: 40 SGB, 40 Sham
- 39 Excluded: 1) Not a CAPS-1 score; 2) Not a CAPS-1 score; 3) Not a CAPS-1 score; 4) Not a CAPS-1 score; 5) Not a CAPS-1 score; 6) Not a CAPS-1 score
- 41 Randomized to SGB and Sham groups: 21 SGB, 20 Sham

Box Plot: CAPS-1 score (mean ± SD) at baseline and follow-up for SGB and Sham groups.

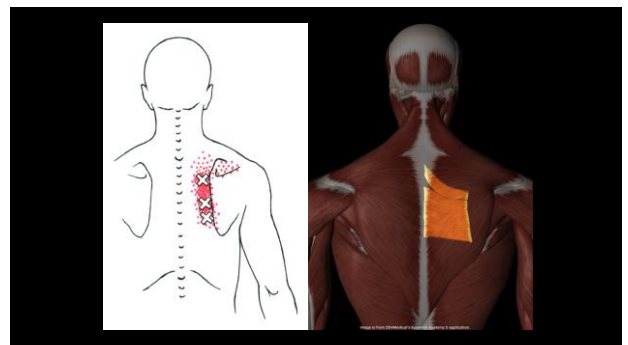
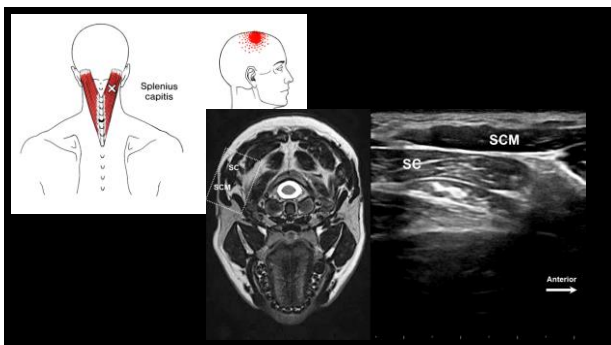
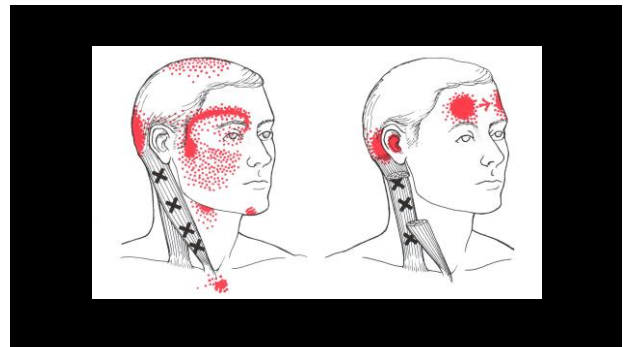
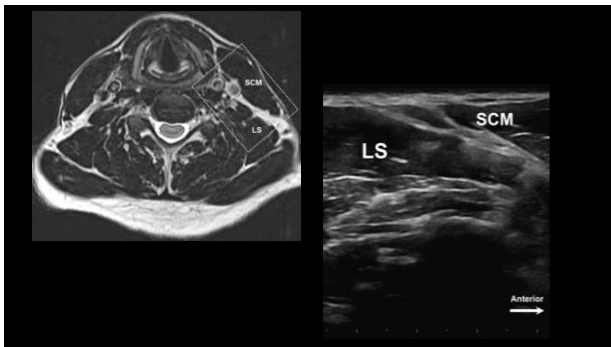
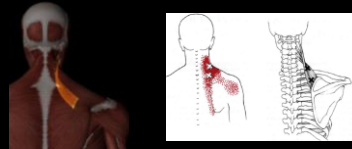
Group	Baseline	Follow-up
SGB	~55	~35
Sham	~55	~45

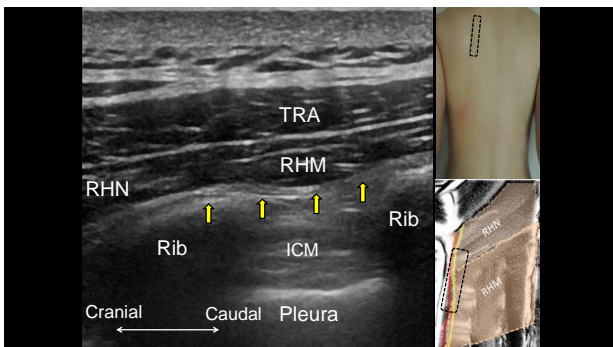
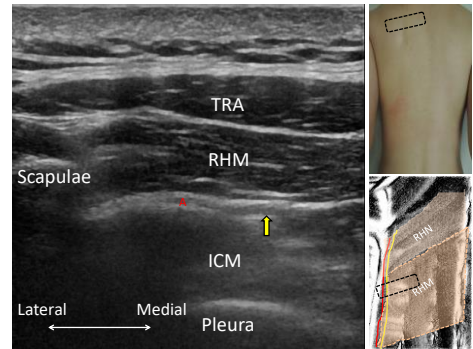
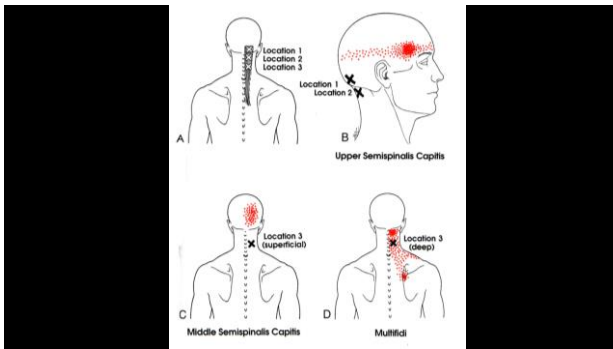
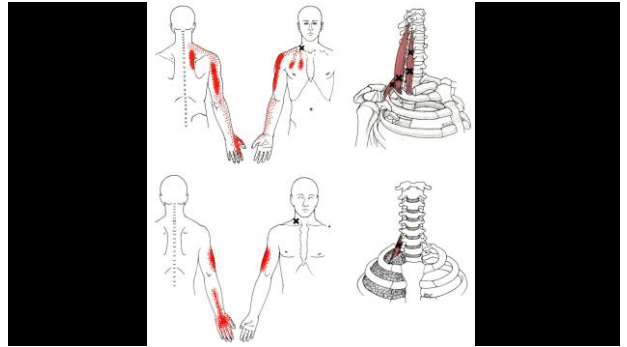
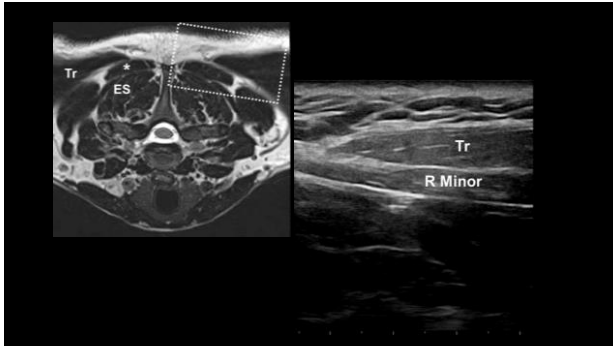


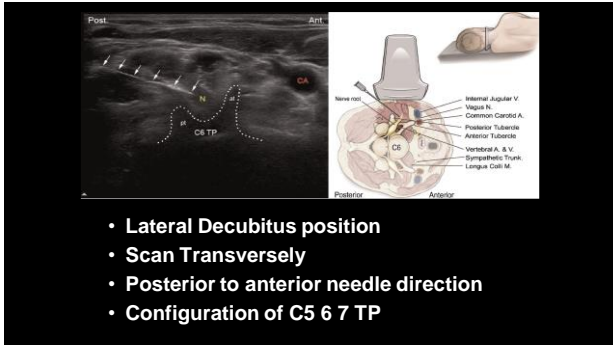
Trapezius



- Levator scapulae
 - O: Transverse processes of C1-C4
 - I: Superior vertebral border of scapula
 - A: Elevation, downward rotation, & adduction of the scapula



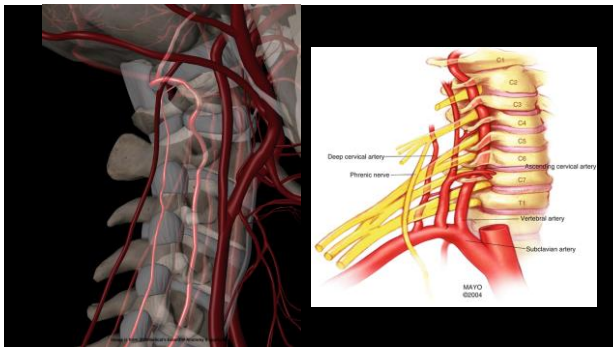




- Lateral Decubitus position
- Scan Transversely
- Posterior to anterior needle direction
- Configuration of C5 6 7 TP

- 20% Deep or Ascending cervical artery within 2mm
- 33% enter posterior foramen
- Beyond bones See nothing
- Medullary arteries?
- Extraforaminal injection with epidural spread
- Blunt Tip needle
- Doppler

Safety



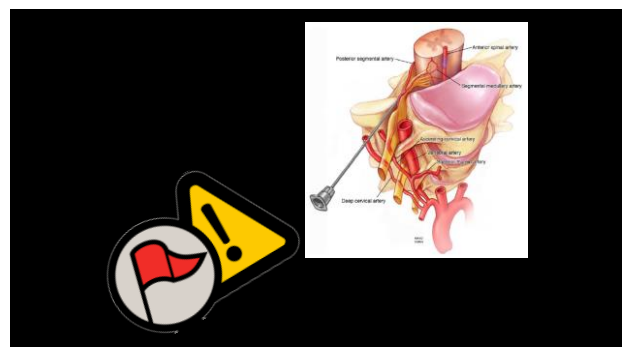
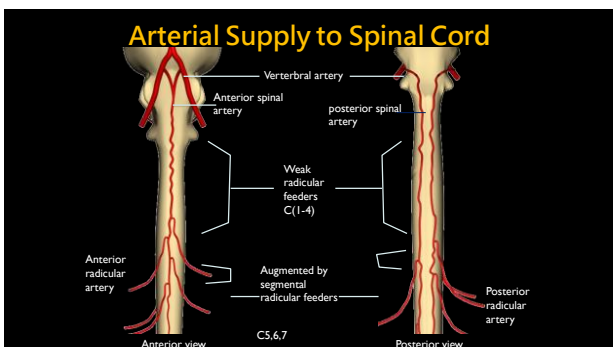
Injury and Liability Associated with Cervical Procedures for Chronic Pain

James P. Rathnel, M.D., Edward Michra, M.D., J.D., Dermot R. Fitzgibbon, M.D., Linda S. Stephens, Ph.D., Karen L. Posner, Ph.D., Karen B. Domino, M.D., M.P.H.

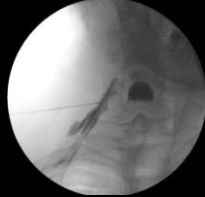
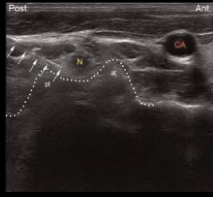
Table 4. Characteristics of spinal cord injury

Characteristics	Value
Severity of injury	
No injury or emotional only*	1 (3)
Temporary injuries†	3 (8)
Permanent disabling injuries	33 (87)
Death	1 (3)
Cause of injury	
Procedure related	36 (85)
Needle trauma	20 (53)
Cord infarction after intraarterial injection	6 (16)
Hematoma caused by cord compression	3 (8)
Dural puncture	2 (5)
High block/total spinal	1 (3)
Other procedure related	3 (8)
Undetermined	1 (3)
Patient condition	1 (3)
Patient expectations not met	1 (3)
Permanent injury manifestations	9 (27)
Quadriplegia/paraparesis	6 (16)
Paraplegia/paraparesis	3 (8)
Other injuries‡	15 (40)

Anesthesiology. 2011 Apr;114(4):918-26.



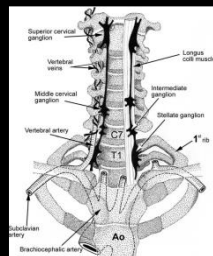
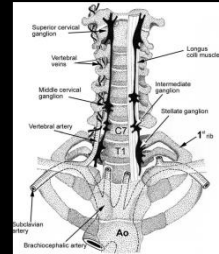
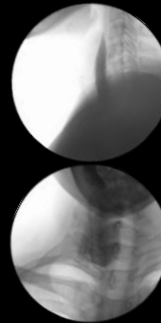
Peri-Radicular Injection



C7



C6




Injected Medication





2023 Jan 13-14
Cadaveric workshop


2023 Jan 15 FIPP/CIPS Exam



**5th WIP Taipei Interventional Pain Workshop
& Third East-Asian FIPP/CIPS Examination**

at NTU International Convention Center &
National Taiwan University College of Medicine
13-15 January 2023

SAVE THE DATE!



2023 Jan 16

Real Dissection



Chih-Peng Lin
MD, PhD, FIPP, CIPS
chihpenglin@ntu.edu.tw