

Post-Surgical Idiopathic Brachial Neuritis Following Clavicle Fracture Repair with Regional Anesthesia

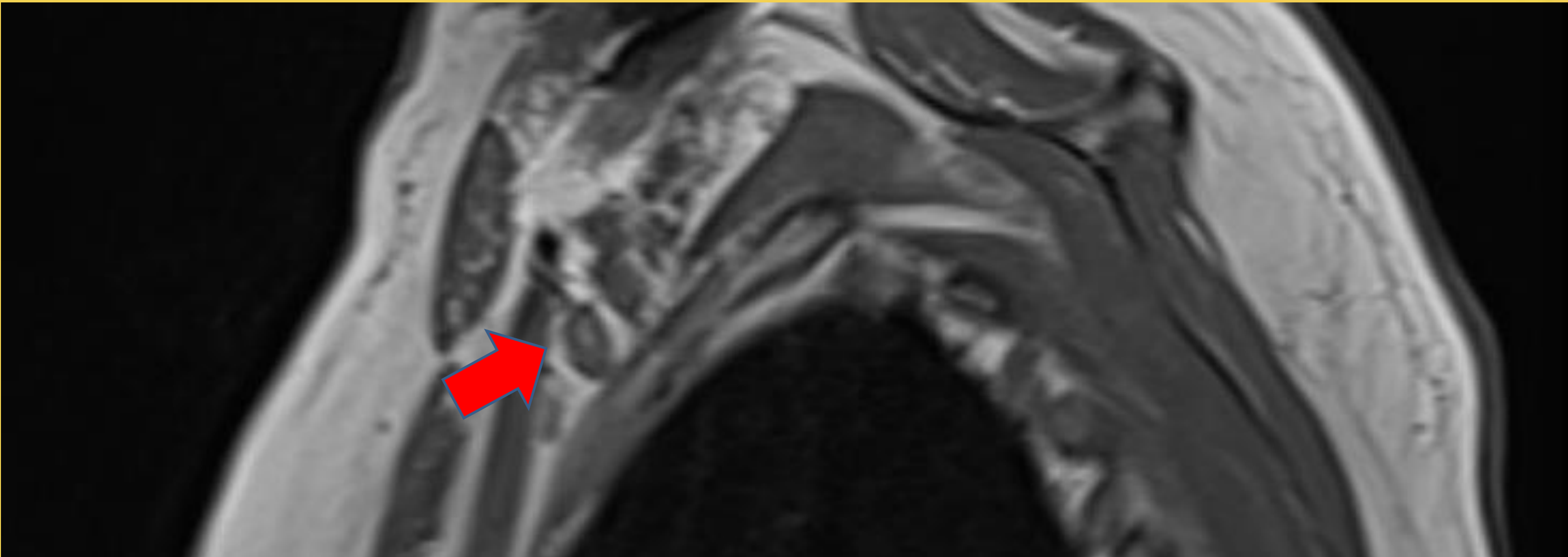
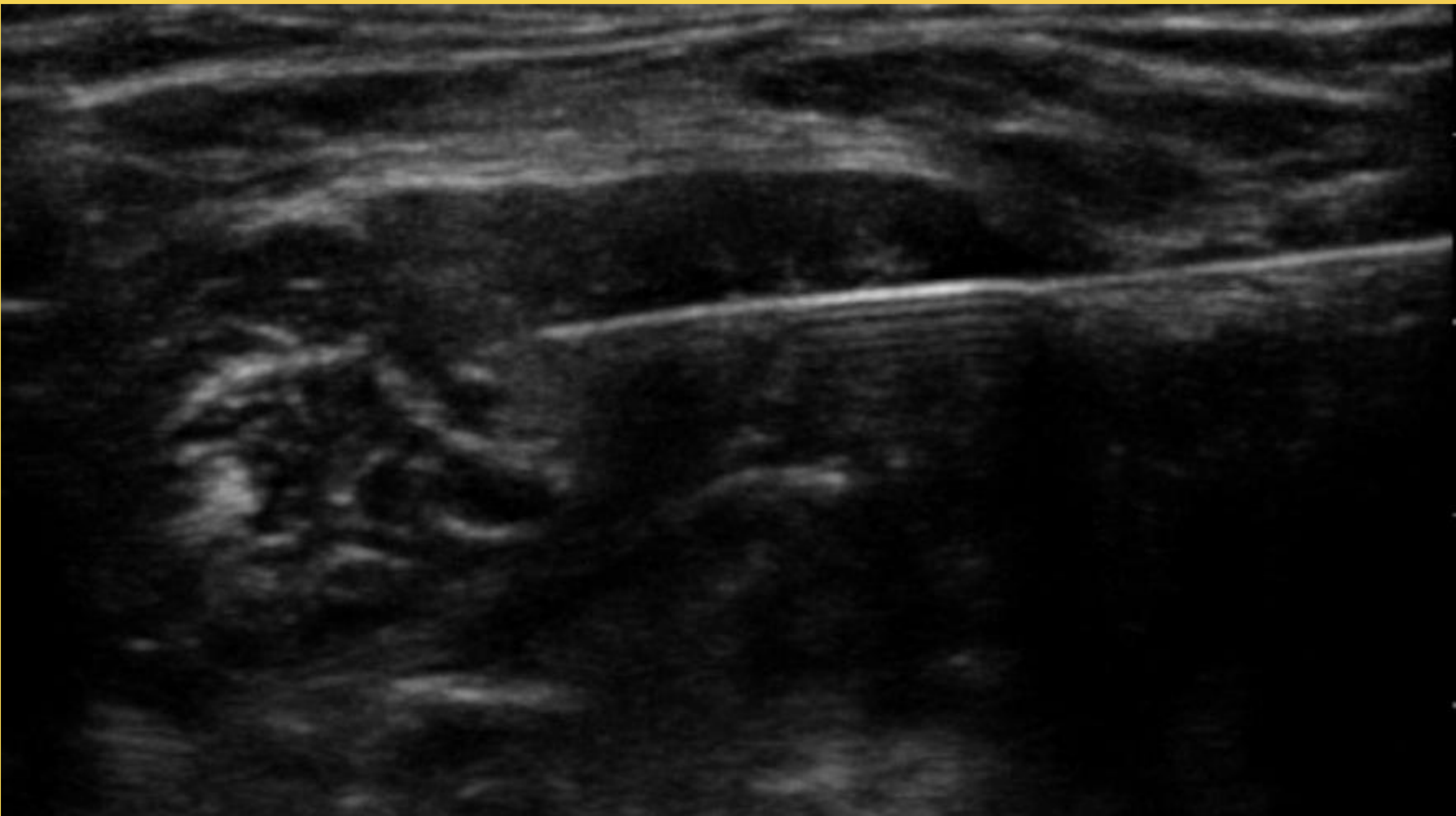
Michael Gillespie, MD
Department of Anesthesiology, West Virginia University

Introduction

- Idiopathic brachial neuritis (AKA Parsonage – Turner Syndrome) is a rare neurological disorder
- Incidence: 1 – 3 per 100,000
- Etiology: Unclear; theorized to be auto-immune mediated
- Most cases have an identifiable inciting event such as surgery, viral illness, or trauma
- Presentation: Sudden onset of severe pain in the effected upper extremity; followed by progressive sensory loss and motor weakness

Case Presentation

- 72 year old female presenting for ORIF of her left clavicle after failing non-operative management
- PMH: HTN, HLD, Fibromyalgia, GERD, Skin Cancer
- Normal neurological examination of left upper extremity
- Received ultrasound guided single injection interscalene brachial plexus and superficial cervical plexus nerve blocks pre-operatively with 0.5% Ropivacaine
- Intra-op course was uncomplicated; pain well controlled in PACU and discharged home the same day
- Returned to ER less than 24 hours later with severe pain in left shoulder radiating left arm, as well as altered sensation and motor weakness of the entire left arm
- Admitted to the hospital for pain control; motor weakness of LUE progressed to flaccid paralysis. Continued to have severe shooting pain radiating down LUE.
- MRI did not reveal any compressive hematoma but did show mild edema and thickening of the brachial plexus cords distal to the left clavicle
- Remained admitted for pain control and underwent EMG 4 weeks later
- EMG was consistent with pan-brachial plexopathy which was primarily demyelinating in nature, with lack of fibrillation potentials and positive sharp waves\
- After several weeks patient began to regain some sensation to light touch, although flaccid paralysis persisted
- She continued to experience severe pain with any passive range of motion of the left arm
- Patient was eventually discharged to an inpatient rehab facility for ongoing therapy



Discussion

- Idiopathic brachial neuritis is difficult to diagnose correctly in a post-surgical patient.
- The present case emphasizes this point as initially it was assumed the patient had a nerve injury as a result of pre-operative blocks, surgical positioning, or post-surgical complications.
- The onset is typically sudden and severe, usually occurring within 24 hours of an inciting event (if present) but may be delayed up to 7 days.
- The condition may affect all or part of the brachial plexus, and is usually unilateral. Rare cases of bilateral idiopathic brachial neuritis have been reported.
- The most commonly involved nerves include the superior trunk of the brachial plexus, the axillary nerve, suprascapular nerve, and the long thoracic nerve.
- The diagnosis of idiopathic brachial neuritis is primarily made via electrodiagnostic studies, which cannot be obtained until approximately 4 weeks from the onset of symptoms.
- Typical EMG findings may include denervation (positive sharp waves and fibrillation potentials) or demyelination (positive sharp waves and absent fibrillation potentials).
- MRI is primarily helpful in ruling out other conditions, but may show evidence of neurogenic edema in acute and subacute phases of the disease
- Misdiagnoses in patients with idiopathic brachial neuritis may put patients at risk of additional unnecessary testing and procedures as the symptoms may closely mimic conditions such as cervical spondylosis.
- Prognosis is favorable in most cases of idiopathic brachial neuritis. Most patients make a full recovery within 3 years from the onset of symptoms
- Treatment is primarily supportive. Initial treatment focuses on pain control. Physical therapy is often delayed until the painful phase of the condition subsides due to its severe and debilitating nature.
- No specific treatment or medication has been shown to improve long term outcomes; although some studies suggest corticosteroids may decrease the amount of time to start of paresis recovery.
- Although idiopathic brachial neuritis is uncommon, it may have devastating effects on the quality of life for affected patients. Therefor it is vital that physicians are aware of this diagnosis especially in the fields of general and regional anesthesia where patients may be at an increased risk of nerve injuries.

EMG Summary Table												
			SA				MUAP				Recruitment	
Muscle	Nerve	Roots	IA	Fib	Fasc	Other	#	Amp	Dur.	Config	Rate	Effort
L. Biceps brachii	Musculocutaneous	C5-C6	Ni	1+	0	None	Ni	Ni	Ni	Ni	Ni	Max
L. Triceps brachii	Radial	C6-C8	Ni	1+	0	None	Ni	Ni	Ni	Ni	Ni	Max
L. Extensor digitorum communis	Radial	C7-C8	Ni	0	0	None	Ni	Ni	Ni	Ni	Ni	Max
L. First dorsal interosseous	Ulnar	C8-T1	Ni	1+	1+	None	Ni	Ni	Ni	Ni	Ni	Max
L. Deltoid	Axillary	C5-C6	Ni	0	0	None	Ni	Ni	Ni	Ni	Ni	Max



References:

- Gonzalez-Alegre P, Recover A, Kelkar P. Idiopathic brachial neuritis. *Iowa Orthop J.* 2002;22:81-85.
- Sumner AJ. Idiopathic brachial neuritis. *Neurosurgery.* 2009;65(4 Suppl):A150-A152. doi:10.1227/01.NEU.0000345355.59438.D1
- Feinberg JH, Radecki J. Parsonage-turner syndrome. *HSS J.* 2010;6(2):199-205. doi:10.1007/s11420-010-9176-x
- Tjoumakaris, Fotios P. MD; Anakwenze, Oke A. MD; Kancherla, Vamsi MD; Pulos, Nicholas MD. Neuralgic Amyotrophy (Parsonage-Turner Syndrome). Journal of the American Academy of Orthopaedic Surgeons 20(7):p 443-449, July 2012. | DOI: 10.5435/JAAOS-20-07-443
- Malamut RI, Marques W, England JD, Sumner AJ. Postsurgical idiopathic brachial neuritis. *Muscle & Nerve.* 1994;17(3):320-324. doi:https://doi.org/10.1002/mus.880170310