

Barral Institute Case Study

Neural Manipulation – Elbow Pain, Weakness & Paresthesia

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Abstract: A case study of a 30-year-old male pitcher suffering with left elbow symptoms including weakness and paraesthesias. His symptoms resolved with treatment of cervical spine, brachial plexus, shoulder complex, ulnar nerve, radial nerve with neural manipulation techniques. Releasing key areas of entrapment allowed full return to pitching and ADL's without symptoms.

Key words: pitching, ulnar nerve, brachial plexus, neural manipulation, cervical spinal mechanics, clavipectoral fascia and shoulder complex, PNF, prolonged holds for stability.

Diagnosis: Left elbow pain in 30-year-old male

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History: This case is a 30-year-old left hand dominant baseball pitcher. His past medical history includes L shoulder rotator cuff repair in 2005, R inguinal hernia with mesh repair 2006, L ulnar nerve debridement 2013, R shoulder impingement with labral tear 2012. Medications include ibuprofen prn. His symptoms began during pitching practice 7 months ago. When throwing for 30-45 min each practice and would have pain 3-4/10 after that lasted for several hours and then it would calm down to a 1-2/10. He had intermittent numbness and tingling and pain in L forearm and hand along ulnar distribution that was aggravated with gripping, lifting, pulling up his socks, carrying grocery bags, and if he leaned on his elbow. His X-ray was negative, his nerve conduction test was positive along ulnar nerve distribution at elbow to hand.

Objective Assessment: revealed 6'2" 30 y.o. male approx. 215 pounds with B protracted shoulder complex L>R, mild FHP, IR UE posture on L. General Listening: L shoulder complex and UE, Local listening: L brachial plexus, UE listening to L medial elbow, Manual Thermal: Projection over L medial elbow and forearm.

Pre Treatment pain in sitting 2/10. His showed no significant shoulder ROM deficits with exception of shoulder ER was 75°. Elbow PROM extension was -20°. Cervical AROM flexion = 50° Ext=48° R Rotation=66° L=54°. Standing Functional UE NTT: R=80° and L=60°. Standing Thoracic/Lumbar Rotation R=10% L=25%. Extension Slump Dural tension test R=-60° L=-60° Flexion Slump Dural tension test R=-10° L=-10°. Hip PROM IR R=26° L=35°. Strength testing of core diagonal R=2+/5 L=3+/5. Opposition thumb to 5th R=5/5 L=4/5 5th digit flexion R=5/5 L=3+/5. Palpation revealed restrictions in L calvipectoral fascia, L biceps aponerosis, wrist flexor mass, medial forearm, wrist and hand. Light touch was intact on L UE.

Procedure/Treatment: Patient was seen for an initial evaluation and 3 treatment sessions that lasted 90 minutes and 60 minutes respectively. His visits were 2 weeks apart for a total of 4 visits. Treatment techniques for release of L brachial plexus nerve buds at C7-T1 linked with brachial plexus at supraclavicular region. Induction into ease on L C3-7 facet and discs and scalene release. Also technique for ease at his L retroclavicular fascia. Given HEP of PNF prolonged holds for scapular stability at wall, supine shoulder abduction with LE hip IR/ER for chest opening stretches 6-10x with movement with breath, L wrist flexor dynamic stretches with emphasis on nerve glides and not holding more than 5 sec and not "over stretching" but just going into edge of barrier.

Reassessment post first session: General Listening: L neck/shoulder complex, Local listening: L brachial plexus, UE listening to L brachial plexus, Manual Thermal: Projection over L medial elbow and forearm and L brachial plexus.

Post Treatment pain in sitting 1/10. Shoulder ER was 90°. Elbow PROM extension was -10° Cervical AROM flexion = 68° Ext=83°

R Rotation=70°L=65°. Standing Functional UE NTT: R=80° and L=60°. Standing Thoracic/Lumbar Rotation R=60% L=60%. Extension Slump Dural tension test

R=-45° L=-45° Hip PROM IR R=38° L=40°. Strength testing of core diagonal R=4+/5 L=4/5. Opposition thumb to 5th L=5/5, 5th digit flexion L=4+/5. Improved tissue mobility in L calvipectoral fascia, L biceps aponeurosis, wrist flexor mass, medial forearm, wrist and hand.

Second visit: Patient reported arm feeling better but still getting twinges of pain with gripping and pulling, hadn't thrown since last visit either. Reports compliance with HEP. Pre Treatment assessment: General Listening: L shoulder complex, Local listening: L brachial plexus, UE listening to L brachial plexus, Manual Thermal: Projection over L medial elbow. Elbow PROM extension was -10°. Cervical AROM Ext=68°. Standing Functional UE NTT: R=150° and L=160°. Standing Thoracic/Lumbar Rotation R=40% L=40%. Extension Slump Dural tension test R=-45° L=-45°, Strength testing of core diagonal R=2+/5 L=5/5. Opposition thumb to 5th 5/5. Treatment included brachial plexus at supraclavicular region and infracalvicular region with induction, release with induction to clavipec fascia, distal biceps, medial elbow and flexor muscle mass, olecranon tracking joint mobilization medial to lateral shear with flex/ext AROM assisting, release to ulnar ligament at elbow and then ulnar nerve double induction from upper arm to just distal to elbow jt, osseous induction at olecranon and A/C jt.

Post Treatment pain 0/10. Elbow PROM extension was -5° Cervical AROM Ext=82° Standing Functional UE NTT: R=180° and L=180°. Standing Thoracic/Lumbar Rotation R=70% L=70%. Extension Slump Dural tension test R=-25° L=-25° Strength testing of core diagonal R=2+/5 L=5/5. Opposition thumb to 5th 5/5.

Third visit: Patient reported arm continues to feel better with no noticeable twinges in left elbow. Has thrown 50% speed and distance for 30 pitches and felt ok. No N&T anymore unless he leans on it for a long time on a hard surface. Did a stretch over a Bosu and felt a twinge in his ribcage and sore since. General Listening: L anterior chest/shoulder complex, Local listening: L Vagus and phrenic nerves, Manual Thermal: Projection over L chest.

Pre treatment assessment Elbow PROM extension was -5° Cervical AROM Ext=76° Standing Functional UE NTT: R=170° and L=90°. Standing Thoracic/Lumbar Rotation R=60% L=40%. Strength testing of core diagonal R=3+/5 L=4/5

Treatment included release of VSOTN, SCM fascia, vagus nerve with double induction from trigone to esophageal region. Left lung pleura relationship with brachial plexus on left, phrenic connected with diaphragm anteriorly, clavipectoral facial release with shoulder IR/ER PNF neuro re-ed after for motor control. Added prolonged holds for cervical stability and wall press for functional diagonal for core stability.

Post Treatment assessment Elbow PROM extension was full. Cervical AROM Ext=90° Standing Functional UE NTT: R=180° and L=180°, Standing Thoracic/Lumbar Rotation R=80% L=80%. Extension Slump Dural tension test R=-25° L=-25° Strength testing of core diagonal R=5/5 L=5/5

Fourth visit: Patient reports no pain or twinges at all and has been able to consistently throw more than 50 pitches without symptoms now. Only time he notices anything if he leans on hard surface for long period. Pre Treatment assessment: General Listening: L UE, Local listening: L medial elbow, Manual Thermal: Projection over L medial elbow and forearm. Elbow PROM extension was -5° Standing Functional UE NTT: R=160° and L=130°. Standing Thoracic/Lumbar Rotation R=70% L=60%. Treatment included osseous at olecranon, induction into ease at flexor muscle mass insertion, olecranon tracking joint mobilization medial to lateral shear with flex/ext AROM assisting, ulnar nerve double induction from upper arm to just distal to elbow jt and at Guyon's canal. Double induction along radial nerve and axillary nerve at posterior shoulder, clavipectoral facial release with shoulder IR/ER PNF neuro re-ed after for motor control. Reviewed HEP.

Post Treatment: Elbow PROM extension full. Standing Functional UE NTT: R=180° and L=180°. Standing Thoracic/Lumbar Rotation R=90% L=90%. Opposition thumb to 5th 5/5.

Follow up phone call 4 months later: Patient indicated he can pitching without any signs or symptoms now.

Results: Patient reported feeling 100% improvement in his symptoms and able to fully return to pitching. He demonstrated improvements in cervical, shoulder, elbow, and trunk ROM, shoulder, hand and core strength, UE and LE neural tension after his 4 sessions. He was able to return to full use of arm and hand for ADL's, pitching, and work. His numbness and tingling fully resolved.

Conclusion & Discussion: Findings indicate possible neural tension involvement of ulnar nerve with throwing due to faulty mechanics of cervical spine and improper olecranon tracking. These faulty mechanics and tight clavipectoral fascia may have been affecting brachial plexus nerve roots, shoulder complex and creating abnormal tension in left ulnar nerve. Releasing tension at major compression points of entrapment appear to have helped resolve his signs and symptoms. Further assessment of areas of neural tension causing areas of localized neuritis and parasethias needs to be further studied. The idea of treating just at the area of pain may cause true areas of restrictions and tension to be missed. These areas would not be found without the guide of general and local listening.

Treating Therapist: Veronika Campbell, PT, MPT, CSCS, NSC

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