

## **Barral Institute Case Study**

### **Neural Manipulation – Elbow Pain**

**By: VC, PT**

**Patient Age / Gender**

30 yr old male

**Abstract:** A case study of a 30 year old male pitcher suffering with left elbow symptoms including weakness and paraesthesia. 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

**Date:** 2/11/2017

**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 yo 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 5<sup>th</sup> R=5/5 L=4/5 5<sup>th</sup> digit flexion R=5/5 L=3+/5. Palpation revealed restrictions in L clavipectoral fascia, L biceps aponeurosis, 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 5<sup>th</sup> L=5/5, 5<sup>th</sup> digit flexion L=4+/5. Improved tissue mobility in L calvipectoral fascia, L bicepsaponeriosis, 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 5<sup>th</sup> 5/5. Treatment included brachial plexus at supraclavicular region and infracalvicular region with induction, release with induction to clavipectoral 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 5<sup>th</sup> 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 5<sup>th</sup> 5/5.

Follow up phone call 4 months later: Patient indicated he can pitch 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 parasthesias 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.

**References:**

- Barral Institute Neural Manipulation Course Workbooks from NM1-NM4, 2006-2016
- Barral & Croibier. *Manual Therapy for the Cranial Nerves*. Palm Beach Gardens FL: Barral Productions; 2013
- Barral & Croibier. *Manual Therapy for the Peripheral Nerves*. Palm Beach Gardens FL: Barral Productions; 2013
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## **Barral Institute Case Study**

### **Neural Manipulation – Facial Numbness**

**By: LO, PT**

**Patient Age / Gender**

45 yr old female

**ABSTRACT:** Patient is a 45 y.o. female referred to PT for treatment of facial numbness and tingling which is much improved with treatment techniques of neural manipulation.

**KEY WORDS:** Numbness, neural manipulation, pain

**Date:** 02/12/2018

**HISTORY:** Patient reports that she began to have some pain into her face as well as into her arms on July 3, 2017 without injury. She progressed to having constant numbness in the face. She was seen by a PT and was treated with postural correction, work station ergonomic assessment, new computer glasses, and some Neural Manipulation of ulnar nerves which resolved most of the arm symptoms. She was referred to this treating therapist due to the pain and numbness which was chiefly in the face, around the eyes, and into both the maxilla and mandible. Surgical history includes Lt. knee ACL repair 1991 and L4/L5 microdiscectomy will still infrequent sciatic/leg pain. Patient has been seen by a neurologist, orthopedist and has had a brain scan and x rays.

#### **OBJECTIVE ASSESSMENT:**

**Posture:** Patient stands with a pronounced forward head/rounded shoulder posture with anterior angulation of C6 on C7 and C7 on T1. Increased tone is evident in ant. Neck muscles and the Lt. clavicle is elevated at SC jt. and also at ACjt. Scapulae are elevated and abducted. Patient breathes without use of diaphragm and utilizes accessory muscles to breathe.

**Jaw ROM:** Jaw mobility is decreased on left with opening to 25 mm and decreased lateral deviation to Lt. at 5mm; Rt. 7 mm. Lt. side of the mandible moves into the external auditory meatus on jaw closing with a deviation left on opening.

**Sub Cranial ROM:** 0 degrees in forward nod, 5 degrees in side bend Rt. and 0 degrees in side bend Lt.

**Active Cervical ROM:** Forward bending is 3 fingers from chest, Backward bending is 2/3 range Rotation Rt. is 55 degrees and Lt is 45 degrees Right side bending is 20 degrees and Lt is 10 degrees. Seated thoracic rotation is stiff and limited to 10 degrees Rt. and Lt. Active trunk motion into forward bending is limited by dural restriction at 30 degrees.

**Neuro:** DTR's are 1+ bilat at Biceps with tension in brachial plexus at Scalenes.

Sensation: facial numbness, burning and tingling V2, V3 and into mandible and maxilla  
STRENGTH: Weakness noted in deep neck flexors at 3/5; Scapular stabilizers: Rt. 3+/5 lower trap on Rt. and tightness in Lt. shoulder does not allow her to even get into position for testing on Lt. Rhomboids: Rt: 5-/5 Lt. 4+/5; Mid traps, 4/5 Rt. and 4-/5 Lt. Scapular dyskinesia due to overuse of upper traps/lev. Scap. in function.

Listening at Vertex: Trigeminal Ganglion

Chief problems:

1. Lt.-sided facial numbness V2 and V3 distribution which is constant.
2. Popping in jaw and stiffness Lt>Rt.

Pain: 2/10 at best to 7/10 at worst 3/10. Neck and thoracic spine stiffness and pain. Pain was 4/10 at best to 7/10 at worst.

Functional Outcome Measure: Custom care Connection for Cx/T was 78%. Patient's chief complaint was inability to sit and read for pleasure.

TREATMENT: Patient was seen for eight 60 minute visits from her initial evaluation on 11/16/2017 until her re-evaluation on 02/12/18. Prior to treatment on each session, the patient received a General Listening assessment with the same done at the end of the session to ensure a change had been made. Next, a supine listening at the vertex as done at each session prior to treatment of a neural/cranial structure with a second listening done after treatment to determine if a change had occurred and also direct next intervention. As appropriate, listening at the RCPM, sacrum, and UE's, LE's guided treatment. Patient received neural manipulation to the Trigeminal ganglion and branches into V1, 2, and 3 distribution as well as into Vagus, Facial branches and Phrenic nerves. Falx Cerebri and Tentorium were released as well as Dura at RCPM and along the dural restrictions into sacrum and coccyx. Neural manipulation treatment of occipital nerves, cervical plexuses and brachial plexuses Lt>Rt was added as treatment progressed. All treatment was guided by general listening followed by listening at the Vertex and listening at the RCPM and eventually listening at sacrum with checking of the witnesses (Frontal bone for osseous restrictions, saggital suture line for membranous restrictions, and Coronal suture line for sutural restrictions.) Patient also received exercises for neural gliding and dural mobilization as well as exercises for mobility and stability.

Reassessment: Patient was re-evaluated on 02/12/18 and had much improvement in her facial numbness with treatment. She still has production of symptoms at times but she is now able to adjust her position and decrease her symptoms due to her training in PT. For example, she was skiing and she realized she was getting the facial numbness and she adjusted her posture and the symptoms disappeared. She has much more awareness of her neural restrictions and how her postures can affect her neural symptoms. Pain is 0/10 and never gets above a 2/10 in neck/jaw. Jaw opening does not cause pain and movement of mandible stays midline. Thoracic spine rotation increased to 30 degrees Rt. and Lt. Facial numbness is not present

constantly and she can go 2-3 days sometimes without production of symptoms in her face. Subcranial nod increased to 5 degrees and Lt. side bend to 5 degrees. Active cervical ROM increased in Forward bend to 2 fingers short of chest, backward bend: 2/3 range; rot Rt. 55 degrees and Lt. 50 degrees ; Rt and Lt. side bend 20 degrees. Strength was also improved in deep neck flexors to 3+/5 and shoulder improved to allow her to get into position to begin to use her lower trap in function with 3+/5 strength. Patient will continue in PT to address her ongoing strength and stiffness issues in neck and back with the goal of 0 facial numbness in 3 months. The dural restriction in the lumbar spine from the microdiscectomy will be the focus of future treatment as this dural restriction limits her spinal mobility and has provoked facial pain with functional activities involving LE's. She has core weakness which will be addressed along with the ongoing scapular weakness as the mobility of her neural tissues improve and allow new range in which she can strengthen associated musculature for stability. Functional Outcome Care Connection increased to 86%. Patient is thrilled that she can now sit and read a book for 4 hours without production of facial numbness which was her chief goal. She reports she feels much better overall and has returned to exercise and skiing.

**Conclusion and Recommendations:** This patient presented with significant neurological symptoms manifesting as facial numbness in V2 and V3 which were significantly impacting her daily life as a Physician. She had complete medical work ups from Orthopedics and Neurology without help with her symptoms. Her initial PT referral was to a therapist that had some beginning level courses in Neural Manipulation (NM1 and 2) and she was helped some with Neural Manipulation techniques. The therapist was aware of the Barral program and made the appropriate referral to another PT with more extensive training to address remaining issues. The patient is quite pleased with her progress thus far and will be seen for follow up as needed in the future to work with remaining postural/visceral and neural tensions as found with Listening techniques.

#### References:

- Barral Institute Neural Manipulation Course Workbooks from NM1-4, 2002-2016
- Barral & Croibier. Manual therapy for Cranial Nerves. Palm Beach Gardens Fl: Barral Productions; 2013
- Barral & Croibier. Manual Therapy for the Peripheral Nerves. Palm Beach Gardens Fl: Barral productions: 2013
- Barral & Croibier. Trauma an Osteopathic Approach. Seattle WA: Eastland Press Inc.; 1999