Thoracic Outlet Syndrome (TOS)

**WHAT’S NEW?**

1. Optimal Treatment Begins with Making the Right Diagnosis
2. Dedicated Multidisciplinary Management Provides a New Standard of Care
3. Use of Quantifiable Patient-Reported Outcomes Measures (PROMs) Matters

THORACIC OUTLET SYNDROME

NEUROGENIC TOS

ARTERIAL TOS

VENOUS TOS

**Physical Exam for Neurogenic TOS**

- Localized Tenderness on Palpation
- Reproduction of Stereotypical Symptoms

THORACIC OUTLET SYNDROME

NEUROGENIC TOS

**Physical Exam for Neurogenic TOS**

- Upper Limb Tension Test (ULTT)
- Elevated Arm Stress Test (EAST)

**Provocative Maneuvers**
**Caution**

Most Patients Have Neurogenic TOS

Positional (Arm Elevation) Obliteration of the Radial Pulse Does Not Indicate Arterial TOS

Pain, Numbness and Tingling with Positional Exacerbation Almost Always Indicates the Presence of Neurogenic TOS

Vascular Laboratory Studies are Vastly Over-Utilized

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**Physical Therapy**

TOS-Specific Physical Therapy Consisting of Scalene Stretching, Shoulder and Neck Mobilization Ultrasound & Massage as Appropriate 6 to 8 Week Therapeutic Trial
THORACIC OUTLET SYNDROME

Anesthesia & Pain Management
- Ultrasound Guided 1 mL 4% Lidocaine

Interventional Radiology
- Thrombolysis Restores a Patent Vein & Helps Resolve Acute Symptoms - But is Not Definitive Rx Alone, with High Risk of Rethrombosis

Vascular Surgery
- Transaxillary Approach
- Supravacular Approach

Supraclavicular Decompression
- Operative View of Brachial Plexus Neurolysis During Left Supravacular Decompression

Pectoralis Minor Tenotomy
- Vertical Subcoracoid Incision

Subclavian Vein Patch Angioplasty
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Subclavian Vein Bypass

Residual Subclavian Vein Stenosis, Stent, or Occlusion

Patch Angioplasty ~30% of Patients
Bypass Graft ~20% of Patients

Pain vs Functional Disability

Quality-of-Life vs Functional Disability

Does Surgery for NTOS Limit Athletic Performance?

2015 Major League Baseball Postseason Pitchers w NTOS

LHP 4-2, ERA 2.83

RHP 11-6, ERA 2.43

LHP 10-6, ERA 2.82

LHP 15-6, ERA 2.43