

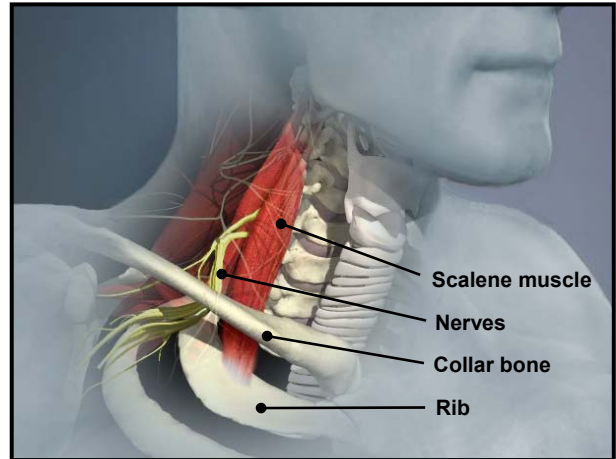
# SEATTLE SPINE & SPORTS MEDICINE

## THORACIC OUTLET SYNDROME (TOS)

TOS results when nerves in the thoracic outlet—located between the upper ribs and shoulder—get irritated by the surrounding muscles or ribs.

### WHAT ARE THE SYMPTOMS?

- Numbness, tingling, burning, and weakness in the arm and hand.
- Pain in the neck, upper back, shoulder, or arm.
- Possible temperature changes and swelling in the hand due to irritated blood vessels.
- Symptoms may be worsened by working with arms out in front, lifting the arm over the head (such as brushing hair), and repetitive activities (such as typing or computer use).



### HOW IS TOS DIAGNOSED?

- The first part of the diagnosis is a good patient history and careful physical examination.
- **MRIs and x-rays usually do not show TOS.**
- To help confirm TOS diagnosis, an anesthetic block of the scalene or other pinched muscles may be performed with EMG guidance, which measures electrical activity in muscles. If this procedure temporarily relieves symptoms, it is highly suggestive of TOS.
- Other causes of arm and hand numbness can be ruled out with an EMG-nerve conduction study.
- Non-invasive ultrasound vascular studies and surgical consultation may also be performed.

### CAN TOS BE ASSOCIATED WITH OTHER DIAGNOSES?

- Yes, it is not unusual to see other problems such as carpal tunnel syndrome, neck and upper back injuries, and shoulder injuries.
- Problems can develop anywhere the irritated nerves go through a tight area.

### WHAT TREATMENT IS AVAILABLE?

- Manual manipulation of the neck, upper back, or rib cage help correct posture.
- Deep massage, stretching, and exercises treat the injured muscles.
- Muscle injections including IMS (intramuscular stimulation) relax the injured muscles.
- If you don't respond to these treatments, TOS surgery to release the muscles or MYOBLOC (botulinum toxin type B) injections into the tight muscles may provide benefit.

### WHAT ABOUT MYOBLOC INJECTION THERAPY?

- MYOBLOC injections may provide relief by relaxing tight muscles that affect or impinge on the nerves.
- Patients may experience relief for up to 12-16 weeks.
- Each patient's response is unique and it may take a few injections to receive maximum benefit.
- If your insurance plan covers this procedure, you may need to get pre-authorization. Our staff can help you with this process.

### WHAT ARE MY CHANCES OF RECOVERY?

- Many patients obtain relief with these treatments and return to most or all normal activities.
- Injection therapy with MYOBLOC or surgery may be helpful for more severe cases of TOS.