

Diagnosis and Treatment of Snapping Scapula Syndrome

The scapula (shoulder blade) is an amazing anatomical structure. It is suspended over the ribs between the spine and the arm by only two ligaments. There isn't a real joint between the scapula and the trunk. Three layers of muscle and bursae (plural for bursa) support this structure. The bursae are small fluid-filled sacs designed to reduce friction between muscle or tendon and bone. These layers (superficial, intermediate, and deep) form a smooth surface for the scapula to move, glide, and rotate over. Because there is movement but no actual joint, this connection is considered a pseudojoint.

The scapula gives the glenohumeral joint (shoulder) a stable base from which to operate (move). The scapula itself slides, glides, and rotates in a 2:1 ratio with the shoulder. This means that for every two degrees of shoulder motion (flexion or abduction), the scapula moves one degree over the thoracic wall. Scapulothoracic movement requires proper length-tension ratios between the scapular bone and all of the muscles around it. Any change in the glenohumeral-to-scapulothoracic ratio can result in altered or compromised shoulder motion. One particular problem called the snapping scapula syndrome is an example of what can happen when any one of these layers is disrupted for any reason.

The snapping scapula syndrome is characterized by a loud pop or crack when the arm is raised up overhead. The medical term for this sound is crepitus. The sound is made by some soft tissue rubbing between the scapula and the thoracic wall. The tissue caught between these two structures could be a bursa, tendon, or muscle. The person with this problem may or may not experience pain with the movement.

There isn't one reason why someone develops snapping scapula syndrome. Studies show that sometimes there's a change in the shape or curvature of the scapula. After years of movement, the repetitive motion eventually causes a wear pattern that results in the snapping scapula syndrome. When a bursa is involved, the snapping problem could start as an isolated injury or it could be the result of repetitive (abnormal) motions of the scapulothoracic joint.

A less common cause is the development of a benign tumor called an osteochondroma. Bone spurs, scapular or rib fractures, nerve injuries with muscle wasting and weakness, or other types of tumors have also been linked with the snapping syndrome. And any surgery to the upper quadrant (e.g., breast implants or other breast cosmetic procedures, removal of a rib pressing on a nerve) can result in muscular changes that contribute to the development of the scapular snapping syndrome.

No matter what the cause, the effect is a disturbance in the way the scapula moves over the thoracic wall. This altered movement pattern is called scapular dyskinesia or scapular dyskinesia. Diagnosing the problem can be difficult. There's no one single test or imaging study that clearly shows what's going on. Sometimes on visual exam, it's possible to see some postural changes, asymmetry from one side to the other, or an obvious change in the normal scapulohumeral rhythm as the arm is raised up. The examiner also looks at range of motion, strength, and flexibility. If nerve damage is suspected, electrodiagnostic testing can be ordered.

X-rays, CT scans, MRIs, and ultrasound have all been used to diagnose scapular snapping syndrome. X-rays can show scapular angles, skeletal or rib abnormalities, or other bony deformities. Standard CT scans don't offer much help. Three-dimensional CT scans may be more diagnostic but MRIs offer the best look at the soft tissues. When bursitis is part of the problem, ultrasound helps guide the physician inject the area. Otherwise, as an imaging modality, ultrasound isn't used much for the diagnosis of the snapping scapular syndrome.

Once the diagnosis has been made, the physician's attention turns to treatment. Much research and study has been directed at finding conservative (nonoperative) ways to successfully treat this syndrome. Physical Therapists have taken front and center stage on this one. Different theories and different approaches have been tried and tested. Addressing any postural issues is considered the first step. Making sure the head, neck, and shoulders line up and work together in a coordinated way with the rest of the body is part of a rehab approach called the kinetic chain model.

Kinetic chain rehab is very much like the old song that says the neck bone's connected to the shoulder bone and the shoulder bone's connected to the elbow and so on. Each body part moves in relation to all the other body parts from head to toe. Creating a rehab program for scapular dyskinesia takes into account all postural components, not just around the head, neck, shoulder, or scapula. Core training as well as individual muscle strengthening progresses through a stepwise program over a period of 10 to 12 weeks. The patient is guided through the acute phase to recovery and beyond into a maintenance phase. The goal is to restore dynamic scapular control, muscle endurance, and a return to the normal 2:1 glenohumeral-to-scapulothoracic rhythm.

Physical Therapy may be augmented by antiinflammatory medications and/or injections into troublesome bursae. The injections may be a steroid and/or a numbing agent to provide local anesthesia for pain relief. These treatment tools can aid in pain control and indirectly contribute to recovery from the poor motor control that is the center of scapular dyskinesia. Where there is pain, the can be altered movement. Reducing or eliminating that pain, can help muscles resume normal movement patterns. If these measures don't achieve the desired results and especially if there are bone spurs or tumors involved, then surgery might be the next step.

Surgery is not advised in cases where there is not an identified lesion causing this syndrome. Surgery is considered first when the patient gets relief from the pain and snapping after a trial injection of local anesthetic provides pain relief. When surgery is called for, the surgeon may remove a portion of the scapula that is prominent and rubbing against the rib cage. This procedure is called scapular dissection. Other soft tissues might also be dissected such as the inflamed bursa, bone spurs, or fibrous tendons. Any surgery in this area comes with an increased risk of nerve damage, as there are several nerves there that can be very easily cut by accident during the procedure.

Surgery may be done with an open incision. This approach gives the surgeon a better chance to see the various structures affected and identify what's going on. But more and more, arthroscopic surgery has replaced open treatment. Arthroscopy is less invasive, reduces the amount of cutting and disruption to the soft tissues, creates fewer cosmetic problems, and shortens hospital stays. In some cases, the surgeon may choose to use a combination of open and arthroscopic approaches. Studies show that the bursa is easily removed with arthroscopy but any bone removal may be better approached with an open incision.

Surgery is followed by immobilization in a sling for several weeks. This gives time for the soft tissues to recover, especially when the muscles have been cut away from the bone as part of the procedure. Rehab follows the period of immobility in order to restore motion, strength, and function.

The authors of this review article on the topic of snapping scapular syndrome conclude by saying that this problem has been around for a long time. In fact, the first case was reported in 1867 during the post-civil war era. This syndrome probably isn't going to disappear overnight. Early identification of the syndrome may be able to address the motor component quickly and easily through an exercise program. The longer the condition persists, the more disharmony develops with postural and soft tissue factors contributing to an impaired movement pattern of the entire scapular-shoulder complex. Avoiding surgery is possible when there aren't bone spurs or tumors contributing to the problem. Physical Therapists must continue doing their homework and researching for the best, most effective way to treat this problem conservatively.

Meredith A. Lazar, MD, et al. Snapping Scapula Syndrome. In Journal of Bone and Joint Surgery. September 2009. Vol. 91. No. 9. Pp. 2251-2262.