Popeye Deformity After Arthroscopic Shoulder Surgery

There are many different causes of shoulder pain. Any problem inside or around the joint can create pain. One of the more common sources of shoulder pain occurs when there is some type of pathology of the long head of the biceps tendon (LHBT).

The biceps tendon attaches between the elbow and the shoulder. It helps you lift your arm straight up and bend the elbow. There are two parts: the short- and long-heads of the biceps. Each one attaches in a slightly different place on the arm. Pathology of the long-head of the biceps causing shoulder pain could be a partial tear of the tendon or tenosynovitis (inflammation of the sheath or lining around the tendon).

Another injury of the long head of the biceps causing shoulder pain could be a SLAP lesion. SLAP stands for superior labral tear from anterior to posterior (from front to back). The labrum is a rim of fibrous cartilage around the shoulder socket. The word "superior" tells us the injury is to the cartilage that covers the top part of the shoulder socket.

Treatment for any of these causes of biceps tendon problems may consist of surgery called a tenotomy. During a biceps tenotomy, the long-head of the biceps tendon is released from its attachment to the shoulder. Surgically cutting this portion of the tendon allows it to retract or move away from the shoulder. A tenotomy of this type removes the damaged, inflamed tissue from the joint. This particular tendon has a rich supply of pain nerve fibers so releasing it helps reduce shoulder pain.

Despite all good intentions in treating the shoulder pain by performing a tenotomy, sometimes after tenotomy surgery, the patient develops complications. The most common problems are a cramp-like arm pain, loss of normal elbow strength (flexion or bending), and a change in the shape of the upper arm. This altered appearance of the upper arm is called a Popeye deformity.

A Popeye deformity is usually pretty obvious. There's a dip where the long head of the biceps tendon has been released and retracted from the shoulder. A large bump along the front of the upper arm (making the biceps muscle look extra large) occurs when the muscle belly (not just the tendon) retracts (pulls back).

This deformity is most obvious when the patient flexes the biceps muscle to bend the elbow. Picture the way Popeye (cartoon character) always showed off his bicep muscle after gaining strength from eating spinach. Only in the case of complications after tenotomy a "Popeye muscle" isn't a sign of strength. Instead, there is muscle weakness.

Why do these complications occur after a simple biceps tenotomy for shoulder pain? Who is affected most often? These are the questions explored in this study. Gathering as much information as possible from patients who developed complications after arthroscopic tenotomy of the long head of the biceps tendon may provide a few answers.

This study included 132 patients with this complication. SLAP lesions as the source of biceps tendon pathology accounted for half of the group. Almost half (45 per cent) of all 132 patients who had a tenotomy ended up with the Popeye deformity. Three-fourths of these patients were men.

It turns out that male sex is actually the biggest risk factor and predictor of Popeye deformity as a complication of the biceps tenotomy. Age wasn't a factor and neither was body mass index (BMI) or arm dominance (being right- or left-handed). The problem of a Popeye deformity is mostly one of cosmetic appearance. It can (but does not usually) result in a major loss of shoulder strength or function. Elbow

strength is mildly affected.

The authors conclude that tenotomy of the biceps tendon is not for young, active patients or anyone with concerns about appearance. Age is not a factor in predicting who might experience this type of complication but being male is a strong predictor.

Therefore, men who are involved in work or recreational activities that require strong elbow flexion and forearm supination (turning the palm up towards the ceiling) should be forewarned that strength loss could affect them. This type of information may be of particular interest to carpenters, woodworkers, mechanics, gardeners and others who use their forearms and elbows repetitively to complete daily work tasks.

Reference: Tae Kang Lim, MD, et al. Patient-Related Factors and Complications After Arthroscopic Tenotomy of the Long Head of the Biceps Tendon. In The American Journal of Sports Medicine. April 2011. Vol. 39. No. 4. Pp. 783-789.