

# The Challenge of Shoulder Problems in Young Adults

Young, active adults with shoulder problems may not want a shoulder replacement as the solution to their pain and loss of motion. And, at the same time, they may not be a good candidate for such a procedure. The surgeon's challenge is to find other ways to treat this problem called glenohumeral arthrosis.

The glenohumeral joint is what the lay person would call the shoulder joint. Arthrosis means damage has occurred to the joint surface. The first step in managing glenohumeral arthrosis requires a careful examination of the chondral (cartilage) surface and first layer of bone (the subchondral area).

Small, local lesions or defects of the cartilage are treated differently from large diffuse lesions. In this article, surgeons from the Center for Shoulder, Elbow, and Sports Medicine at Columbia University Medical Center in New York City review alternate treatment approaches for glenohumeral arthrosis. The term "alternate" refers to some other way to solve the problem without a shoulder replacement.

It may be possible to manage glenohumeral arthrosis without using surgery at all. The goal is to decrease pain and increase motion. Work and activity levels must be adjusted to protect the joint from further microtrauma. A Physical Therapist will guide patients through necessary lifestyle changes to accomplish this. At the same time, the therapist will prescribe an exercise program to improve strength, motion, and function.

Medications such as Tylenol, ibuprofen, and other nonsteroidal antiinflammatory drugs may be added to assist these nonoperative measures. Early reports support the use of hyaluronic acid injected into the joint. This treatment is used successfully for knee osteoarthritis and is being tried for patients with shoulder osteoarthritis.

When an adequate trial of conservative care fails to help, then surgery may be considered. There isn't one "best" treatment that works for everyone. The surgeon re-evaluates the patient in order to identify the best treatment approach.

Two major factors affect this decision-making process. The first is patient-based. The surgeon takes into consideration all individual patient factors such as age, activity level, patient goals, and job requirements. The second is disease-based factors. The surgeon takes into account the cause of the problem, the size of the chondral (cartilage) defects, and how deep the lesion goes.

For any size chondral lesion, the first line of surgical treatment is an arthroscopic examination and debridement. Debridement refers to surgically cleaning out the area of any debris and pieces of cartilage or other fragments in the joint space. The surgeon smoothes any rough spots and removes bone spurs.

At the time of the arthroscopic exam, the surgeon looks to see what caused the arthrosis in the first place. There could be a rotator cuff tear, hole in the cartilage, or some abnormality of the surrounding soft tissue structures.

Chronic overhead motion with repetitive stress and load can put shear forces on the already compromised joint causing further damage and degeneration. If the player is to go back to active sports participation, the cause of the problem must be addressed because these repetitive motions are a necessary part of play. The player needs to be able to resume full action without return of painful symptoms and loss of function.

There are restorative procedures that can be done to help the joint cartilage heal and recover. Smaller lesions

can be treated with abrasion, microfracture, and drilling techniques. Larger holes and defects may respond better to grafting procedures. Grafting uses cartilage and subchondral bone (first layer of bone under the cartilage) from the patient or from a donor to fill in the hole and stimulate bone and chondral growth around the defect.

The decision about which restorative approach to use is very complex. All of the treatments mentioned for restorative care of the shoulder cartilage are being used and studied primarily in the knee. Their use for the shoulder is just beginning.

A different management approach already in use for a case of shoulder arthrosis that is not quite ready for replacement is called resurfacing. The damaged head of the humerus (upper arm bone) is shaved down and covered with a metal cap. This is similar to putting a cap on a tooth. Results of resurfacing in young, active patients have been very favorable so far. Loosening of the metal cap is the number one problem to develop.

For patients with large defects, another new idea is the focal humeral resurfacing implant. The device looks like a large screw with a smooth head. It is screwed into the head of the humerus and provides a smooth surface to slide and glide in the joint.

Resurfacing of the shoulder joint can be done without a metal cap or implant. Surgeons are experimenting with various soft tissues to use as a covering. This technique is referred to as biologic interposition. The Achilles tendon from behind the heel is the most popular graft tissue for this treatment but others are being tried.

The use of knee cartilage (called the meniscus) to cover chondral defects in the shoulder has moved from cadaver studies to live humans. The meniscus has the right shape (round) and is flexible enough to conform to the joint surface. Concerns about complications and lack of durability have delayed routine use of this procedure.

And finally, there is a movement in the scientific world to find a way to engineer chondral (cartilage) tissue. This technique is called regenerative tissue or biologic resurfacing. Some experts really see this as the future of medicine for worn out parts and places anywhere in the body, including the joint cartilage.

As you can see from this report, there are many treatment options for shoulder chondral lesions that are being developed and studied. Not all are currently available or available routinely. In time, researchers will sort out which patients are good candidates for each procedure. If and when restoration of the joint surface just isn't possible, then a partial or complete joint replacement can be considered.

Reference: Karen J. Boselli, MD. Treatment of Glenohumeral Arthrosis. In *The American Journal of Sports Medicine*. December 2010. Vol. 38. No. 12. Pp. 2558-2572.