

Report on a Rare But Devastating Problem After Arthroscopic Shoulder Surgery

Imagine you are in your late teens or a young adult in your 20s. You have a simple arthroscopic surgery on your shoulder for an unstable shoulder joint. Three months later, the entire surface of your shoulder joint (called the articular cartilage) is destroyed. The main symptoms of this problem are with rapid loss of motion (and then function) are the main symptoms of this problem.

You have a condition called postarthroscopic glenohumeral chondrolysis or PAGCL. Your shoulder has gone from young to old. You are now an older adult with osteoarthritis. And all you did was have arthroscopic surgery.

In this report, surgeons from the well-known Kerlan-Jobe Orthopaedic Clinic in Los Angeles explore this condition. Causes, signs and symptoms, the authors provide their own thoughts and recommendations for surgeons. Finding ways to prevent the destruction of the shoulder joint is the next step in research for this group.

The first question is: what went wrong? The second question is: why did this happen? And of course, the third question is: how can we prevent this problem in the future? In answer to the "what went wrong" question, studies show that the condition called chondrolysis occurs when the chondrocytes (cartilage cells) suddenly stop working. They are no longer able to make new cartilage cells to replace the healthy state of the joint cartilage.

The main risk factor is the arthroscopic surgery itself. But many people have arthroscopic shoulder surgery without developing this condition afterwards. There must be other factors at play here. In fact, the authors suggest there is likely a multifactorial etiology. Even many risk factors combined together result in postarthroscopic glenohumeral chondrolysis (PAGCL).

A review of studies with reported cases of PAGCL shows a list of potential risk factors. These etiologic factors include: heating the joint during surgery, shoulder instability before surgery, the use of bioabsorbable sutures and other implants, heating the joint to shrink the tissues, and the placement of sutures (anchors and knots) on the joint (articular) surface.

Other possible risk factors being considered and investigated further include family history of early arthritis, patient history of trauma, and exposure of the joint surface to irrigation solutions or high concentrations of local anesthetics. There could also be other factors common to young patients that remains elusive (avoids detection).

X-rays and MRIs clearly show dramatic narrowing of the joint space, erosion or wearing away of the bone surface, and changes on both sides of the joint (humeral head and shoulder socket). MRI signals also show irregular and patchy areas of bone marrow accumulation or swelling).

The authors explore the details of potential mechanical, thermal, and chemical causes. Mechanical causes include direct trauma when the arthroscopic probe or other surgical instruments come in contact with the cartilage surface.

As already mentioned, the use and placement of certain types of sutures may contribute to the development of chondrolysis. Sutures/knots rub against the cartilage causing severe wear and tearing. In some patients, the suture material may set off a foreign body reaction. The body sets up a massive inflammatory response in an effort to get rid of the sutures or anchors.

Thermal causes (heating the joint) to stimulate a healing response may actually have the opposite effect of killing the cartilage. Pumps (chemical cause) placed inside the joint may help control postoperative pain but may also contribute to chondrolysis. A combined set of risk factors (e.g., foreign-body reaction plus thermal or chemical factor) may be at increased risk for joint destruction.

Once the various risk factors and potential causes have been identified, the next step is prevention. When the destruction is going back. And without effective treatment, prevention is absolutely essential. The authors make the following recommendations:

- Surgeons must always be mindful that arthroscopic surgery can injure the joint surface. Care must be taken with probe or surgical instruments. Gouging and scuffing the joint surface must be avoided.
- Bioknotless sutures are available and should be used, especially when the sutures must sit right on top of the joint surface.
- There are also anchors designed to resist pulling out because even a slight pull-out creates suture prominence over the articular cartilage.
- Do not use thermal devices such as radiofrequency energy.
- Avoid bathing the joint with local anesthetics. Infusion of numbing agents to reduce pain can be placed in the joint directly inside the joint.

The authors conclude that postarthroscopic glenohumeral chondrolysis (PAGCL) is a rare complication of shoulder arthroscopy. If it happens, the consequences can be devastating. And since the primary age group affected is young adults, every effort should be made to identify risk factors and avoid anything that might contribute to this condition. Until more is known about the true etiology (causes), it is advised to follow the recommendations made.

Reference: Peter C. Yeh, MD, and F. Daniel Kharrazi, MD. Postarthroscopic Glenohumeral Chondrolysis. In *Journal of Orthopaedic Surgeons*. February 2012. Vol. 20. No. 2. Pp. 102-112.