

# Uncovering the Chondrolysis Mystery: 7 Insights to Know Featured

Written by [Laura Miller](#) | November 02, 2011



A recent surge in young, active patients developing chondrolysis after arthroscopic surgery has orthopedic surgeons and healthcare providers across the country concerned. Currently, a single impetus for the postoperative development of chondrolysis hasn't been isolated and in some cases patients are still experiencing pain after undergoing a total joint replacement. Surgeons and researchers across the country are working to answer the unknowns surrounding chondrolysis and developing a treatment algorithm to benefit patients.

In November, an article discussing a systematic review of the global literature available on joint chondrolysis appeared in the *Journal of Bone & Joint Surgery*. It will be co-authored by leaders in chondrolysis research, including Anthony A. Romeo, M.D., head of shoulder and elbow surgery at Rush University Medical Center in Chicago. "When putting this article together, we tried to uphold the highest scientific standards and unbiased evaluation of the literature in an effort to better understand this condition so we could provide a foundation for better approaches to the treatment for chondrolysis," says Dr. Romeo.

Here, the authors of this article discuss how orthopedic surgeons can potentially decrease the risk of chondrolysis for their patients as well as meet treatment challenges after chondrolysis occurs. They also discuss the implications of chondrolysis on the medical field and where research is headed in the future.

## Clinical practice

**1. Why chondrolysis occurs.** Patient who are most at risk for developing chondrolysis are those who present with a joint injury, says Dr. Romeo. In the hip joint, the injury is often a trauma resulting in hip fracture or in association with various developmental conditions of the growth plate. In the shoulder, the condition appears to be associated with surgical management, specifically arthroscopic treatment. "We think that chondrolysis, or acute loss of the cartilage, occurs when there is some type of insult to the joint," says Dr. Romeo. "It could happen from some type of trauma, such as fracture around the joint, or some type of chemical event that occurs in the joint."

Researchers at Rush University Medical Center have identified thermal probes and the use of local anesthetic pain pumps among the potential causal factors for chondrolysis. Chondrolysis usually occurs within the first year after surgery and patients developing chondrolysis often experience abnormal levels of pain in their joint. At present, researchers have not identified which patients might be most at risk for developing chondrolysis preoperatively. However, there are steps surgeons can take perioperatively to minimize the risk of patients developing chondrolysis or reduce damage to the joint among patients who present with chondrolysis.

"If the cartilage is exposed to an insult or in someone who already has cartilage damage or has dislocated the shoulder, that individual is likely to be at a higher risk of developing chondrolysis," says Daniel J. Solomon, M.D., of Marin Orthopedics and Sports Medicine in Novato, Calif. "The entire process of surgery has a cumulative effect."

**2. Minimizing the risk.** The multitude of arthroscopic joint surgeries performed annually do not result in chondrolysis, which means there are certain aspects of the procedure and patient environments that may make them more or less susceptible to the condition. Current research focuses on identifying the chemicals and conditions associated with cartilage injury, which should be avoided to minimize the potential risks.

"Given the fact that we do not conclusively know the etiology of this condition, but have come to recognize various associated factors that seem to occur in combination with arthroscopic shoulder surgery, there are steps we can take to potentially minimize the chance of the condition occurring," says co-author, Brian J. Cole, M.D., head of the Cartilage Restoration Center at Rush University Medical Center. "In my opinion, whenever we recommend surgery, there are some things out of our control and while even though those things may not be causally related, the fact that we can minimize the risk factors our patients are potentially exposed to is a responsible way to handle surgery."

To minimize the risk of chondrolysis, Dr. Cole says surgeons can:

- Avoid over-tightening the shoulder
- Anatomically repair the shoulder as accurately as possible
- Eliminate the use of prolonged exposure to heat
- Avoid fluids that are extremes in temperature
- Minimize the chance of infection
- Position implants appropriately
- Avoid the use of high quantities of local anesthetics for long periods of time

"None of the chemicals that may be associated with chondrolysis are necessary for surgery," says Dr. Romeo, so surgeons can avoid using them and still produce good outcomes with arthroscopic procedures.

"There have been some surgeons that say this problem doesn't occur during open surgery, therefore we should stop arthroscopic forms of surgery," says Dr. Romeo. "That would be a really strange idea for the management of these patients because we have done so many good things for patients with arthroscopic surgery."

**3. Avoiding misdiagnosis.** Recent data suggests one of the factors in the increased reporting of chondrolysis could be misdiagnosis. "We really tried to emphasize the awareness of the overlap in diagnoses, especially with osteoarthritis, in our article," says Dr. Solomon. "If you have someone at risk for osteoarthritis, they can still get chondrolysis, but the treatment options are sometimes more effective for patients with arthritis. We want to make sure that if you are treating a cartilage problem, you are treating the right cartilage problem."

For example, cartilage transplant is more effective with osteoarthritis patients than chondrolysis patients. "With chondrolysis, the entire joint is affected, so local cartilage restoration doesn't work so well," says Dr. Romeo. "It's a more severe problem and involves more complex procedures, often times resulting in actual joint replacement."

There are a few key differences for surgeons to keep in mind when diagnosing patients with chondrolysis, arthritis or another pathologic condition of articular cartilage. Chondrolysis usually occurs within the first year of surgery and has a more rapid onset than symptoms associated with arthritis. Surgeons should take a detailed patient history before making a diagnosis and look for these distinguishing factors.

"A proper diagnosis will allow us to better render an appropriate treatment for our patients," says Dr. Cole. "For example, some of our earliest cartilage transplant procedures on the shoulder were performed on chondrolysis patients. Since the magnitude of the problem was so big, the results might be less favorable than with other treatment options. Accurately identifying chondrolysis will help our patients make informed decisions as far as proper treatment."

**4. Optimizing patient care.** In the early days of chondrolysis treatment, surgeons pushed the envelope with non-replacement procedures, such as cartilage transplant, to help their patients. However, these types of procedures were often met with disappointing outcomes and many patients underwent joint replacements when all other options were exhausted. Now that surgeons' understanding of chondrolysis is better and the diagnosis can be differentiated from arthritis, surgeons can work with their patients on appropriate expectations for chondrolysis treatment.

"Knowing the diagnosis can help us better determine the appropriate treatment and manage the patients' expectations," says Dr. Cole. He takes a staged approach with chondrolysis patients beginning with the lowest risk treatment that will have the least physical impact on patients while still offering a significant potential improvement in their symptoms. Patients are offered physical therapy and injections to manage pain, and if that doesn't work, arthroscopic debridement is an option before trying a cartilage transplant and then joint replacement.

Catching chondrolysis early and treating patients as quickly as possible could also benefit the patient. "Now that we recognize the timeline more definitively with respect to symptom onset and loss of function, surgeons who have performed an arthroscopic procedure whose patients present to them in the postoperative period with atypical

complaints can order an X-ray earlier," says Dr. Cole. "The first thing we assume when patients present with pain postoperatively isn't an articular cartilage problem because the arthroscopic procedure is a soft tissue operation, but knowing how chondrolysis patients might present leads us to treatment earlier before the disease progresses to the end stages."

## Impact on patient care

**5. Increased awareness of chondrolysis.** While chondrolysis has been identified as a problem since the 1930s, the big news over the past few years has been the significant increase in patients presenting with chondrolysis in the glenohumeral joint. "The influx in chondrolysis cases in the shoulder is most likely related to the increased sophistication and management of shoulder conditions," says Dr. Romeo. "Research suggests that the introduction of multiple factors which may be associated with the development of chondrolysis include the use of thermal energy and high concentrations of local anesthetics within the shoulder joint."

The increase in patients presenting with chondrolysis, coupled with the intraoperative factors associated with the condition, has made it a target of medicolegal suits. "Chondrolysis is a condition that most people would agree doesn't occur from the patient organically," says Dr. Romeo. "It seems to occur after a surgical procedure, so people want to attach blame to the surgeon or something that happened after the procedure that led to the condition."

However, the increased awareness has also led to more research into chondrolysis and a better understanding of how to manage the condition. "Advanced research, including our review article, will help physicians who evaluate these patients to differentiate between osteoarthritis and chondrolysis so a better treatment can be recommended," says Dr. Cole. "These studies are also helping surgeons understand preventative measures. As long as there is surgery, there will be risk of complications, but we would like to have enough knowledge based on prior events to improve the care we deliver to our patients."

**6. Medicolegal woes.** When the term Postarthroscopic Glenohumeral Chondrolysis (PAGCL) was coined to describe patients with chondrolysis in the shoulder joint, law firms began focusing on these patients to seek compensation for their sustained injury. Some of these lawsuits have centered on the role of local anesthetics delivered through pain pumps in the development of chondrolysis. While there is evidence that the pain pumps could be a factor in the development of chondrolysis, their role in the onset of the condition isn't clear because there are almost always multiple other associated factors that are simultaneously present. "I don't think we definitively know why one person will get it and why another person will not," says Dr. Solomon.

Orthopedic surgeons are also being called on to offer expert witness opinions in chondrolysis lawsuits which takes time away from their orthopedic practices. This can be problematic, and some surgeons may decide the risk of chondrolysis and condition-related lawsuits is too great to perform arthroscopic procedures. "The implications of national litigation are having a domino effect on surgeons," says co-author Maryam Navaie, Dr.P.H., President and Chief Executive Officer of Advanced Health Solutions, based in La Jolla, Calif. "From the physician's perspective, every time they are going in and performing arthroscopy, they have to be concerned about the possibility of chondrolysis."

Since an isolated cause of chondrolysis in each case is still unknown, the anxiety surrounding patients who develop chondrolysis is still relatively high.

**7. Chondrolysis research.** The authors of the upcoming article in *JBJS* hope to raise awareness of chondrolysis so other surgeons can use the information as a springboard for future studies on the potential causes and optimal treatment of chondrolysis. The research should first focus on identifying and separating the potential causes for chondrolysis so surgeons can isolate the specific characteristics of the condition and then develop a treatment plan as according to the different etiologies present.

"It would be interesting to look at why some people develop chondrolysis and why some people don't," says Dr.

Solomon. "If you do the same thing to 100 people, you won't get the same results with all of them. We have to figure out why some people are at higher risk than others." It is possible there may be genetic factors predisposing patients to develop chondrolysis and the dosage of different chemicals could also play a role in its development.

An additional field of research will be in cartilage restoration working on a biologic solution for chondrolysis treatment. "There will be continued work in the area of cartilage restoration in an effort to avoid prosthetic joint replacement solutions and we will continue to work toward biologic restoration of the cartilage," says Dr. Romeo

Another aspect of the research must focus on gathering large scale data across chondrolysis and patients examining the various factors to drill into and decipher retrospective cohort or case-control studies. "Large scale data that allow us to tease out the various etiologies are far better than analyzing a bunch of case reports," says Dr. Navaie.

"Another area of important but neglected research would be from a preventative stance rather than intervention. We should look at whether there are things patients may be systematically doing, such as repetitive motions that damage cartilage, which exacerbate the risk for chondrolysis. Most of our current literature focuses on what is occurring at the surgical level but there may be other factors that are putting patients at risk."

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