Penn Medicine

CLINICAL BRIEFING™

PENN SHOULDER AND ELBOW SERVICE

Surgical Management of Severe Glenohumeral Chondrolysis in Younger Patients

Surgeons at the Penn Shoulder and Elbow Service are repairing advanced chondrolysis of the shoulder in patients younger than 40 years of age by combining a regenerative tissue matrix with an unstemmed, resurfacing humeral prosthesis. The combined therapy effectively addresses the progressive and destructive effects associated with chondrolysis, including damage to the articular cartilage of the humeral and glenoid bearing surfaces.

The etiology of chondrolysis in the shoulders of young patients is thought to include postsurgical chondral apoptosis, postoperative trauma, avascular necrosis, focal defects and idiopathic autoimmune resorption. Treatment centers upon long-term resolution of pain and the return of normal or near-normal range of movement in the affected joint. In older patients, traditional total shoulder arthroplasty is the treatment of choice. However, with concerns over glenoid component wear in younger patients, traditional arthroplasty is not ideal for younger patients.

Orthopaedic surgeons at Penn have the advantages of a dedicated research facility and access to the latest developments in orthopaedic devices and technologies. Thus, their approach to severe chondrolysis has evolved to include two sympathetic components: an unstemmed humeral resurfacing component and a recombinant tissue matrix placed at the glenoid cavity. Resurfacing of the humeral head is initially performed through a standard deltopectoral incision (Figure 1). With a trial humeral component in place, the glenoid surface is prepared and a tissue matrix is grafted onto the damaged glenoid surface. The matrix is composed of 1 mm to 2 mm thick dermis processed to remove cellular components. Interposed between the glenoid and the resurfaced humeral head, the matrix restores protection to the exposed bone to further alleviate glenoid-sided pain and restore function to the joint.

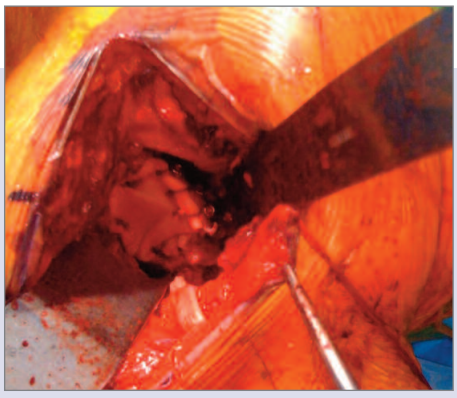

Figure 1. Initial resurfacing of the humeral head via standard deltopectoral incision.

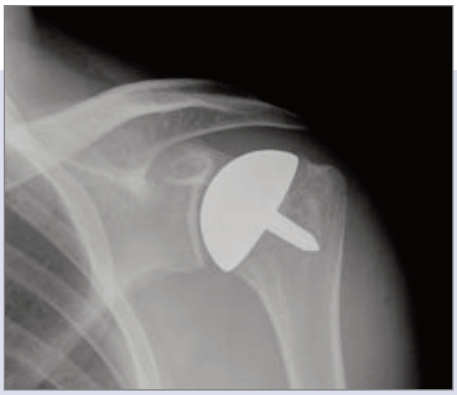

Figure 2. Unstemmed humeral resurfacing component with recombinant tissue matrix in a 22-year-old patient.

Case Study

AF, a 22-year-old NCAA Division I female gymnast, was referred to Penn Sports Medicine a year after developing postsurgical chondrolysis in her right shoulder. She had initially sustained a glenoid labrum tear treated arthroscopically. Her postoperative course was marked by diminished glenohumeral motion and severe pain. During this time, she experienced significant pain at rest, for which conservative treatment with nonsteroidal agents and narcotic pain medications were ineffective. A magnetic resonance imaging scan of the shoulder found significant chondrolysis of right humeral head and glenoid articular surfaces. Arthroscopic evaluation confirmed diffuse chondrolysis. After considering further nonoperative therapy and total shoulder replacement, the patient chose to have humeral surface replacement arthroplasty using a graft jacket regenerative tissue matrix and unstemmed prosthesis (Figure 2). Postoperatively, she has had near complete resolution of her pain, restoration of her motion and has returned to non-weight bearing activities in competitive NCAA Division I gymnastics.

Our Team of Faculty

The Penn Shoulder and Elbow Service is comprised of a team of orthopaedic surgeons, rehabilitation and family practice physicians, nurses and physical therapists dedicated to patient care. To enhance the mobility, independence, and quality of life of orthopaedic patients, Penn Shoulder and Elbow Service physicians create and utilize the latest advances in shoulder and elbow diagnosis, treatment and rehabilitation.

Penn Shoulder and Elbow Service

David L. Glaser, MD

Chief, Shoulder and Elbow Service

Director, Shoulder and Elbow Fellowship Program

Assistant Professor of Orthopaedic Surgery

A graduate of Cornell University Medical College, Dr. Glaser completed his residency and fellowship training at the Hospital of the University of Pennsylvania. Dr. Glaser's specialties encompass the treatment of shoulder and elbow disorders, including complex revision surgeries, fracture repairs, sports injuries and shoulder replacement surgery.

Performing Surgery for Severe Glenohumeral Chondrolysis at Penn

G. Russell Huffman, MD, MPH

Assistant Professor of Orthopaedic Surgery

Dr. Huffman attended Duke University School of Medicine and completed his internship and residency at the University of California at San Francisco. He subsequently completed a shoulder and elbow fellowship at the University of Southern California, and pursued further subspecialty training in elbow surgery at the Mayo Clinic. Dr. Huffman specializes in the arthroscopic treatment of athletic shoulder and elbow disorders, as well as joint replacement and fracture repair surgery of the shoulder and elbow.

Locations

Patient appointments are available at:

Penn Orthopaedic Institute
Penn Presbyterian Medical Center
1 Cupp Pavilion
38th and Market Streets
Philadelphia, PA 19104

Penn Orthopaedic Institute
Penn Medicine at Radnor
250 King of Prussia Road
Radnor, PA 19087

Penn Sports Medicine Center
235 S. 33rd Street, First Floor
Weightman Hall
Philadelphia, PA 19104

To refer a patient and/or consult with a doctor call 800.789.PENN (7366) or visit pennmedicine.org/referral.