TWIN CITIES ORTHOPEDICS

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Reverse Total Shoulder Replacement

WHY MIGHT I NEED A REVERSE TOTAL SHOULDER ARTHROPLASTY?

A reverse total shoulder arthroplasty (RSA) is a special type of shoulder replacement that can be used to treat several degenerative shoulder conditions, including:

- Rotator cuff arthropathy (shoulder arthritis due to chronic rotator cuff disease)
- Large, irreparable rotator cuff tears
- Glenohumeral (shoulder joint) osteoarthritis in patients over 65 years of age
- Glenohumeral osteoarthritis in patients with significant glenoid (socket) bone loss, poor bone quality, concomitant rotator cuff tears, or certain comorbidities such as rheumatoid arthritis
- Severe proximal humerus (ball aspect of the shoulder joint) fractures

WHAT DOES A RSA LOOK LIKE?

A RSA “reverses” the shoulder anatomy by putting the round “ball” on the “socket” side and the “socket” on the “ball” side. On the humeral side (ball side), a metal stem is placed inside the bone. Attached to the stem is a durable plastic liner which functions as the new “socket”. In most patients, a short stem on the humeral side (Figure 1) can be used; however, if poor bone quality is of concern, a longer stem (Figure 2) may be used. On the glenoid side (socket side), there is a metal baseplate held in place with screws, as well as a half ball, known as a “glenosphere”.

Figure 1: RSA with a short humeral stem.

Figure 2: RSA with a long humeral stem.

HOW DOES A RSA WORK?

The shoulder is a “ball” and “socket” joint. The ball is the head of the humerus and the socket is the glenoid (on the scapula/shoulder blade). In a normal shoulder, the rotator cuff stabilizes the ball on the socket and works in conjunction with the deltoid and surrounding muscles to move the shoulder. When a person has rotator cuff deficiency, the ball loses its ability to be stabilized and will tend to translate upward (Figure 3). This can cause the top of the socket (glenoid) and acromion (bone above the ball) to erode. This is known as rotator cuff arthropathy, which can make moving the arm very painful and difficult. In cases where the rotator cuff tear cannot be repaired, or there is associated arthritis, a RSA is a very successful treatment option. Additionally, without a functioning rotator cuff, an anatomic TSA is not a good option as this results in similar dysfunction as previously described and can result in the need for early revision (“redo”) surgery.

Figure 3: Shoulder with rotator cuff deficiency showing superior migration of the humeral head with erosion into the acromion and superior erosion of the socket.

A RSA “reverses” the shoulder anatomy by putting the round “ball” on the “socket” side and the “socket” on the “ball” side. By changing the anatomy of the shoulder, the joint becomes stabilized, and the deltoid muscle can function like the rotator cuff. This allows the patient to lift their arm through a full range of motion. Furthermore, by replacing the arthritic parts of the shoulder with the RSA implants, this helps to resolve the arthritic pain.

Additionally, older patients, patients with poor bone quality, or patients who have certain comorbidities may benefit from a RSA as it allows for better implant stability on the socket side and will still function well if the rotator cuff becomes torn or nonfunctional in the years following surgery. Lastly, a RSA is often used in severe proximal humerus fractures as this can compensate for the bony attachments of the rotator cuff being affected with these fractures.

HOW COMMON IS A RSA?

A RSA is the most common shoulder replacement performed in the United States and worldwide. In fact, recent data has shown that 70% of all shoulder replacements performed are RSAs.[1] This percentage continues to increase due to improvements in implant design, patient outcomes, and expanding indications for RSA.

DO I NEED ANY SPECIAL TESTS BEFORE MY RSA?

In addition to normal preoperative labs, Dr. Schuette will obtain a CT scan of your shoulder. This allows him to virtually plan and perform your surgery ahead of time. This is done by using a special computer program. By doing this, Dr. Schuette is able to better understand each patient's individual anatomy, plan for the appropriate implant sizes, and in some cases, order patient specific instrumentation and guides (Figure 4). Additionally, in certain cases a 3D printed custom implant (Figure 5) may be ordered. This has been a great tool in Dr. Schuette's practice and allows him to personalize each patient's shoulder replacement.

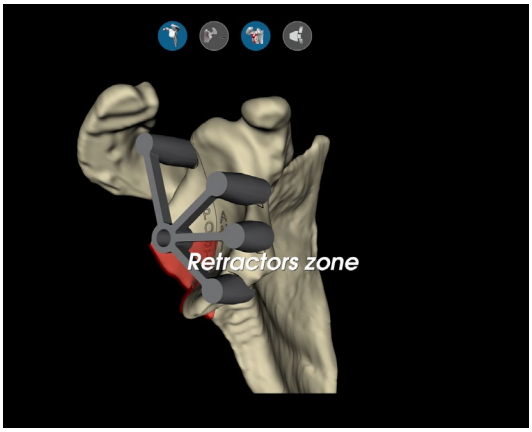

Figure 4: A virtual plan demonstrating the creating of a patient specific guide.

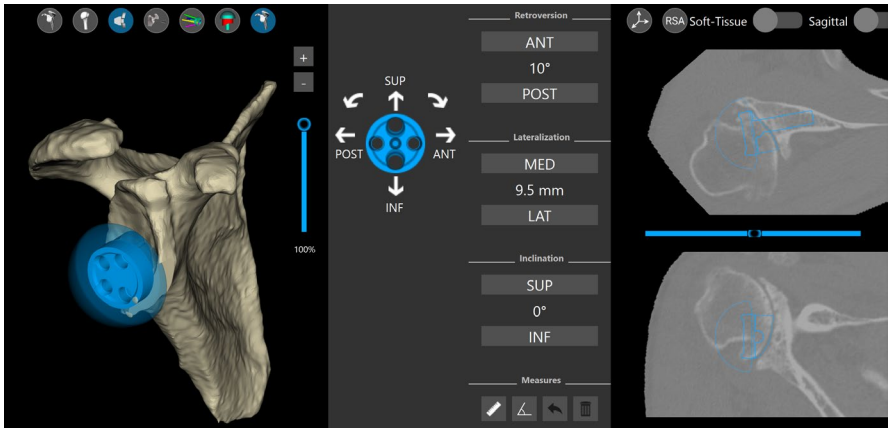

Figure 5: A virtual plan for a custom, 3D printed patient specific RSA implant

HOW LONG WILL MY RSA LAST?

The survivorship, or likelihood that you will still have your original RSA implant at 10 years, has been reported to be 91-93%.[2-3] Additionally, the majority of patients will have an implant that lasts beyond 15-20 years.

WHAT PERCENTAGE OF PATIENTS ARE SATISFIED AFTER RSA?

According to our internal data, as well as published data, about 90% of patients are satisfied or very satisfied following RSA.

WHAT ARE THE MOST COMMON COMPLICATIONS AFTER RSA?

The most common complications following RSA include instability (dislocation), scapular stress fractures, and a deep shoulder infection known as a periprosthetic joint infection (PJI). However, these all occur at very low rates.

Instability, or dislocation, after RSA has been reported to occur in 2% of patients. Patients at risk include those undergoing revision shoulder replacement, males, those with rotator cuff deficiency, and patients who have no subscapularis tendon repair during their procedure.[4] Because of this, it is our strong preference to repair the subscapularis tendon when possible, and to appropriately adjust implant positioning in those who are at risk of instability. If instability does become an issue, many patients are able to be successfully managed with a revision surgery that involves exchanging modular parts of the implants.

Scapular stress fractures may occur due to the increased tension on the deltoid that occurs following a RSA. This has been reported to occur in about 4% of patients.[5] Clear risk factors have been identified and, it is our strong belief that we have been able to decrease our patients' risk by appropriately adjusting implant positioning for each patient. If a scapular stress fracture occurs, it tends to occur in the first year following surgery. Most patients improve following a period of rest and immobilization but, in some cases, surgical repair of the fracture may be recommended.

PJI occurs in about 1% of patients following RSA.[6] [8] While rare, if a PJI does occur following anatomic TSA, revision surgery may be needed to remove and then reimplant a new shoulder replacement. Because of this, we take several preoperative, intraoperative, and postoperative measures to minimize our patients risk of PJI.

FREQUENTLY ASKED POSTOPERATIVE QUESTIONS

How long will I stay in the hospital or surgery center after a RSA?

Most patients will stay in the hospital or care suite for 1 night. If needed, a hospital stay more than 1 night may be appropriate. Occasionally, patients may go home the same day of surgery.

What type of anesthesia is used for a RSA?

An interscalene brachial plexus nerve block along with general anesthesia is typically used for shoulder replacement surgery. You can discuss options for anesthesia with your anesthesiologist prior to surgery. A nerve block numbs the shoulder and arm during and after surgery. Depending on the type of block, this may last between 12 hours and 3 days.

How is surgical pain managed?

Pain after a surgical procedure is unavoidable, but appropriate pain medication and ice therapy is implemented to manage pain. Additionally, your interscalene brachial plexus nerve block will help with immediate post operative pain. Most patients successfully manage pain with narcotics, Tylenol, anti-inflammatory medication, and ice. It is our goal to wean patients off narcotic medication within 1-2 weeks.

How long do I need to wear a sling?

The sling is meant to protect, not strictly "immobilize" the arm. The sling should be used intermittently for approximately 6 weeks after surgery; it is especially important to sleep in the sling and use it when out in a public place the first 6 weeks after surgery. Unless instructed otherwise, the sling should be removed at least 3 times a day in order to bend and straighten the elbow as well as perform passive shoulders motion exercises. Performing gentle hand exercises such as lightly squeezing a ball helps minimize swelling that can occur in the hand and fingers.

What are common problems experienced immediately after surgery?

Most people have some difficulty sleeping after shoulder surgery. In most cases, though, patients have also experienced sleep disturbances from their shoulder prior to surgery. Sleeping in a recliner or propped up on pillows can help. Over time, most people are able to sleep on the side that was operated on and will find that their overall sleep is significantly improved compared to prior to surgery.

Is physical therapy necessary after my shoulder replacement?

During the first week following surgery, physical therapy (PT) will not be needed. However, you will be instructed on gentle passive shoulder range of motion exercises that may be performed during the first few weeks. At your first postoperative visit you will be provided with a PT order. While most patients elect to do formal outpatient PT, an at home physician directed rehab program may be appropriate. However, we believe seeing a physical therapist is important so the progression of activity is done in a safe manner, leading to the best possible result.

When can I start strengthening after my shoulder replacement?

While you will be able to progress your active motion and progressively return to daily activities at 6 weeks, we refrain from any strengthening until 3 months. At 3 months, light strengthening will be allowed with progressive strengthening at 4.5 months.

In most RSA's, it is our goal to successfully repair the subscapularis tendon (rotator cuff tendon in the front of the shoulder) at the end of the procedure. Repair of the subscapularis has been shown to increase shoulder stability, motion, and strength following rTSA.[4] As a guideline, one can assume that the strength of the repair is only 30% of normal at 6 weeks postop, 50% of normal at 3 months postop, and improves to 80% of normal at 6 months postop.[7] Because of this, we take a slow and gradual approach to strengthening in order to maximize our patients outcomes.

When can I go back to my regular daily and physical activity?

The answer to this question varies for every individual depending on the activity. Cardiovascular exercise is important and encouraged after surgery; walking or riding a stationary bike without putting pressure on the operated arm are good activities to begin after surgery. Most patients are able to independently perform all activities of daily living at 2-3 months following surgery.

When can I go back to work?

If work is more sedentary, such as computer-based work, returning a few days or weeks after surgery may be reasonable. For more physically demanding jobs it is important to discuss job requirements with Dr. Schuette to fully understand how the surgery may impact returning to work. Returning to a physically demanding job may take 4-6 months.

When can I return to activities such as golf, racket sports, jogging, and swimming?

In general, you will be allowed to chip and putt 3 months after surgery and return to full golf activities at 6 months. A similar progressive return to racket sports is recommended. Light jogging is allowed around 2-3 months after surgery. Swimming is allowed once full active shoulder range of motion has been achieved and light strengthening has begun; this is typically 3 months after surgery.

What is the typical rehab protocol following rTSA?

Please see Dr. Schuette's "Universal Shoulder Protocol" on his website: TCOmn.com/Hayden-Schuette

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