Your Guide To:

Total Shoulder Replacement
Reverse Total Shoulder Replacement

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Shoulder Replacement Surgery

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Introduction

Since you have progressed to the point of serious consideration for Total Shoulder Arthroplasty(TSA) or Reverse Total Shoulder Arthoplasty(RTSA), there is a great deal of information that is important for you to understand. Prior to you making the final decision and ultimately having the procedure, you need to understand everything about the procedure and have realistic expectations about the results. It's important to understand why you are having problems with your shoulder and when to make the decision to go with surgery as a treatment option. You should know exactly what is done at surgery. I also want you to clearly understand what is expected of you prior to, during and after the hospitalization. These expectations, along

with the possible surgical complications, will allow you to decide when to proceed with the operation. I'll summarize all of this information for you in this handout. Certainly, if you have any questions please feel free to contact me or my staff at Steward Orthopedics and Sports Medicine Center. You can also contact me through my website(timkavanaughmd.com) with questions. I firmly believe the best patient is a well-informed patient.

Rationale and Indication

Replacement surgery for disorders of the shoulder joint have been performed for over 40 years. There has been a rapid evolution of prosthesis design and surgical technique. The vast majority of shoulder replacements are done for arthritic conditions of the joint. There are many different causes of arthritis but all of them cause a deterioration of the joint. The shoulder is a ball and socket type joint that moves on a very smooth surface called articular cartilage. The articular cartilage is worn away by the arthritic process to the point that the shoulder becomes painful and stiff. The process is usually gradual and may require months or even years for it to progress from a mild to a severe state. As it becomes more severe, there will be more pain and limitations of function. There are many types of arthritis that can cause this deterioration of the shoulder. The most common forms of arthritis are Osteoarthritis (or "wear and tear arthritis"), Rheumatoid arthritis, Psoriasis, Post-Traumatic arthritis, (usually related to a previous fracture), Avascular Necrosis (related to a loss of blood supply to a key area of the joint), and arthritis secondary to a congenital or developmental problems. Advanced rotator cuff pathology(large tears, multiple repair surgeries) can cause a condition in the shoulder called Rotator Cuff Arthropathy. This is increasingly becoming a more common cause necessitating shoulder replacement.

A second category of causes requiring TSA/RTSA is a failed shoulder arthroplasty, which includes a previous shoulder replacement that now has failed either through loosening or wear of the components.

In early stages of shoulder arthritis, the pain and loss of function may be improved by conservative treatment such as oral, non-steroidal, anti-inflammatory agents (NSAIDS) and exercises/physical therapy. Steroid injections are also a valuable option in the early to middle stages of shoulder arthritis. Chiropractic treatment also has its place early on, especially if there is a neck pain component that is contributing to the overall picture.

As the arthritic process increases in severity, patients may have increasing pain and a decrease in function that will no longer be successfully managed by conservative means. Many patients will also notice increasing weakness and inability to perform activities of daily living with the affected arm. At this point it's time to seriously consider a replacement surgery. The decision to perform surgery is based entirely on a patients' complaints. It is a very rare case when the surgery is done on an emergent basis. There are some cases where the arthritic process is so severe that it is actually wears or erodes bone. Once this occurs, the operation should be done sooner rather than later because progressive loss of bone can compromise the final result. A bad fracture of the proximal humerus can also necessitate the need for emergent replacement.

The decision between a Total Shoulder Replacement vs. Reverse Total Shoulder Replacement really has to do with the integrity of the rotator cuff tendons at the time of surgery. Most patients have some type of significant rotator cuff tear that led to the shoulder arthritis and symptoms therefore fall into the Reverse category. TSR patients have a slower recovery necessitating a month in the sling postop due to the fact that the subscapularis tendon needs to heal back to the bone prior to motion occurring. Reverse TSR patients are allowed to start coming out of the sling after the first office visit at 7-10 days post op. At this point in time, a large majority(almost 75%) of the shoulder replacements that are done in the country are Reverses.

Surgery

As mentioned above, the shoulder is a ball and socket joint where the ball(proximal humerus) articulates with the socket(glenoid/scapula). The surfaces of each end of the bones are covered by articular cartilage. The shoulder is naturally the most mobile joint in the body with an incredible range of motion. In a normal shoulder, the majority of the stability in the joint is provided by the muscles of the rotator cuff and the joint capsule.

Shoulder replacement involves resurfacing the top of the humerus and replacing it with a titanium stem that has either a ball on top(TSA) or cup(RTSA). The glenoid has a titanium baseplate inserted into it that has either a plastic cup(TSA) or metal ball(RTSA) attached to it. The best way to think about this is that just the surfaces are replaced, not large portions of the bone. I often tell people it is like changing the worn out treads on a tire while saving the bulk of the tire.

In both TSA and RTSA the components have the type of fixation where the bone grows into the implant. This occurs on both the glenoid and humeral sides of the joint. This whole process takes up to about 12 weeks to occur. Occasionally I do have to use bone cement to hold the implants in place.

For most patients the surgery takes about an hour of actual surgery time. I use an incision on the anterior aspect of the shoulder that is usually about 5-6 inches in length. As with anything in life, one size does not fit all, some incisions are a little bit longer and some a little bit shorter. After the implants are in place, tissue layers are closed with absorbable sutures and the skin incision is usually closed with the Zip Line incisional closure device. This is a series of small zip ties attached to the skin via skin tape. After 2 weeks, the Zip Line is easily removed simply by peeling it from the skin. This can be done by the patient, in our office by a medical assistant or by a willing physical therapist. The dressing covering the incision is called a Mepilex. You can shower with this dressing in place starting the day after surgery.

Expectations

Shoulder replacement is very successful in terms of its main two goals: pain relief and return of function. Approximately 95% of patients have complete pain relief. The other 5% may have some mild and intermittent discomfort. On average, patients can elevate their arm to 140 degrees. 90% of shoulder replacements are in place and functioning at 10 years and 85% at 15 years post op. It can take anywhere from 3 to 6 months for the shoulder to heal. It can take up to a year for patients to regain full strength.

Activity wise afterwards, patients will never be able to perform strenuous upper activities with a shoulder replacement such as pushups and pull ups, rock climbing and crossfit training, but through the post op rehabilitation program I will lay out for you, the shoulder will advance over time to a level of activity that most people will be completely happy with.

Recent studies of patients who have had joint replacement surgery have revealed that our patients who participated in sports and work activities before surgery have a strong predilection to returning to those activities after successful shoulder replacement. The most common sports that shoulder arthroplasty patients enjoy including golf, swimming, tennis, but may also include many other choices including fitness activities, rowing, skiing, basketball, and softball. As

expected, the return to these sports is slightly less for reverse shoulder arthroplasty patients vs. anatomic shoulder arthroplasty patients. This may reflect the constraints of the prosthesis, lack of a complete rotator cuff, or, quite possibly reflect the typically older age and more sedentary lifestyle of patients who are indicated for reverse shoulder arthroplasty. In addition, if the patient had a preoperative expectation of return to recreational and sports activities as part of their normal way of life, their final results demonstrated better overall outcomes

Complications

The results of shoulder replacement surgery are really pretty incredible. However, we only recommend the surgery to patients experiencing profound limitations in quality of life. The reason is that there are some potentially significant complications. These include but are not limited to infection, bleeding, damage to nerve or blood vessel, blood clots, dislocation, fracture and the risk of a general or spinal anesthesia.

The chance of infection in a shoulder replacement is 1 out of 100 or 1%. Although very low, infection occurs and can be a very difficult problem. It is often necessary to have other surgeries to remove the infection and in some cases, to remove the prosthesis for a temporary period of time or permanently.

Obviously, the best way to avoid an infection is to prevent it in the first place. The surgical team uses a special exhaust system in the operating room often called “spacesuits”. These significantly decrease the possibility of air contamination of the surgical site from anyone closely involved with the surgery. In addition, all patients receive prophylactic antibiotics prior to surgery and for 24 hours after the procedure.

Blood clot formation or deep venous thrombosis (DVT) as a concern after shoulder replacement is very low and I usually only use prophylactic oral blood thinning medication in patients with a previous history of blood clots or a medical condition that predisposes to blood clots.

The best result, of course, is that you do not form a blood clot. It’s important to know that if you do form a clot, being placed on high doses of blood thinners for up to six months can adequately treat it. The signs of a blood clot in the arm are increased swelling, redness and pain, not around the

surgical wound but more distal in the arm or forearm. Please be aware of these symptoms and call the office immediately if they develop.

The other complications that may occur are rare. These are potentially associated with any major surgery and anesthesia. They include but are not limited to: death, heart attack, heart failure, stroke, pneumonia, fluid in the lungs, nausea, vomiting, diarrhea, constipation, urinary tract infection, urinary retention, pressure ulcers or bedsores and wound complications such as drainage, poor healing or stitch abscesses.

Preparation of Surgery

Once you have made your decision to go ahead with shoulder replacement, you should speak with my Surgery Coordinator and she will schedule the surgery. Your surgical procedure will be scheduled depending on your pre-operative clearances, my schedule, and your insurance companies' requirements for prior authorization. Your surgery will be scheduled to take place at either Mountain Vista Medical Center or Tempe St. Luke's Hospital .

I will order a CT scan of the operative shoulder with a special protocol. I use this to plan the surgery on a computer. 3D printed guides are then printed from the planning software and we use these guides specifically made for your shoulder in the operating room in order to accurately position the components according to the computer generated plan. This scan needs to get done soon after it is ordered so the guides will be ready to go on your surgery date.

You will be required to see your primary care physician for a pre-operative history and physical examination prior to this procedure. My Surgery Coordinator will be arranging these appointments pre-operatively*. This needs to be completed within 30 days of your surgery. I rely on the judgment of your primary care physician for any specific recommendations for you around surgery time. Some patients may also require a cardiac clearance if there is a history of heart attack or heart surgery. These cardiac clearances are valid for 6 months of your surgical date. Our office can answer any questions about preparation for the surgery and the pre-operative sequence of events.

*If you are a VA patient you will be responsible for scheduling your own history and physical appointment as the VA will not let us schedule with them. You will also be responsible for getting the history and physical information to our office before your pre-op appointment. In some cases this may require you to hand carry the information to our office.

Day of Surgery

You will be seen in the office for a pre-operative appointment prior to your admission for surgery. At pre-admission, if not already performed, there will be a number of routine blood and x-ray tests. On the day of surgery you will be asked to show up at the hospital approximately 2 hours prior to the start of the procedures. **It is critically important that you arrive on time.** You will meet the anesthesiologist at this time. He or she will place a regional nerve block in your arm that will help with postoperative pain control. General anesthesia along with the block is the routine pattern we use for these procedures. Ultimately, your anesthesia provider will decide what is best for you.

Surgery is never like making a burger at McDonalds where the exact cooking time for each sandwich is determined and followed. Some cases are longer than others, some are shorter than others. My staff and I plan each surgical day in a certain order for a reason. You are asked to show up at the hospital at a certain time to check in.

Sometimes you may wait longer than the two hours for your surgery. We try to plan it so that doesn't happen, but occasionally cases need more of my time than I originally had planned, so they get it. I will use the same judgment on your case as I do all my other patients to get the best possible result I can get for you.

Please keep this concept in mind if you are waiting longer on your surgical day for your case to start than we had planned. Everyone should bring a book or magazine to read for this time just in case you have to wait longer. Rest assured that I am working away to the best of my abilities in the operating room while you are waiting. Thank you in advance for your understanding in this matter.

As mentioned above, a standard shoulder replacement takes about 60 minutes of Operating Room time for me, while a re-do surgery can take anywhere from 2-5 hours. While you are in the OR,

your family and friends can wait in the designated waiting room and I'll contact them as soon as surgery is complete to update them on your condition. You should plan on being in the recovery room for about 90 minutes after the procedure. Once you meet recovery room criteria, you will be discharged home. Most patients are comfortable enough to go home after this procedure. If for some reason you need to be admitted for a medical reason postoperatively, it will likely just be for an overnight stay. You will be able to be discharged home the following morning.

You will be in a sling with a pillow underneath the arm on the operative side. This is to stay on full time for the first week except to take a shower. You may come out of the sling once a day starting on the first day after surgery to shower. Once the shower is done, place the arm back in the sling.

All Total Shoulder Replacement patients should have someone (family or friend) to help them at home for the first few days post-operatively. These arrangements must be made prior to surgery.

I recommend upon discharge that my patients go home and not a rehab Facility.

Home

As long as there is minimal drainage from your wound, you will be discharged with a long, waterproof bandage over your incision called a Mepilex. This should stay in place for 7 days. You may shower normally as this bandage is waterproof. After a week, it should be gently peeled off. The Zip Line is under it and will stay on for a full 2 weeks. If the wound is dry, you may shower normally and get the Zip Line wet. No baths, hot tubs or swimming pools until 6 weeks post-op. Please call my office if you see that the Mepilex is saturated. This rarely happens but it will need to be changed.

When you are discharged, you will have a prescription of narcotic pain medication. Early on, you will likely need to take pain meds routinely especially after the block wears off. After about the first week, you should start to taper down the medication and only take as needed. After 6 weeks of narcotic use, nearly all patients develop some degree of dependency making it harder and harder to stop taking them. As a result, my staff will assist you in aggressively tapering off of prescriptive pain medication after 6 to 8 weeks of treatment.

Patients on pain medication contracts prior to knee replacement should coordinate with their provider to assist with pain management after surgery.

<u>If you are needing a refill on your medication you will need to call the office and put in a request for a refill. I will refill meds on the same day that I receive them during the week. Pain medicine will not be refilled after hours, on Friday's or on the weekends. Please plan ahead so you do not run out.</u>

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Follow-up

Since you have had a shoulder replacement, it's important to monitor the healing process in the first 3 to 6 months following the surgical procedure. The usual follow-up schedule involves a return to my office for examination in the 7-10 day range post op. At that visit we will examine the wound and go over the home exercises that I want you to start. The next visit is about the 3 week mark. As long as everything is going well at that point I will write you a prescription for outpatient Physical Therapy. At six weeks and six months post op, the visits will include a post op xray. If problems arise, you should call for an appointment sooner than scheduled follow-up. Additionally, questions regarding the appearance of your wound can often be managed over the phone with the aid of smart phone photos sent directly to my staff for my review. This can alleviate the need for an office visit in many cases. Please call 602-553-3113 with postoperative questions or reach out through the website.

Problems or Questions

If you have any questions or concerns about scheduling or the pre-operative sequence of events, please contact my Surgery Coordinator at 602-553-3113. We will take care of any schedule or insurance issues as swiftly as possible. My medical assistants can also help you after your discharge from the hospital with questions about your recovery. If I am not in the office at the time of your call, my office staff will make sure that I receive the message as soon as I return.

I want to make sure that you completely understand the disease process of arthritis and the decision to undergo Shoulder Replacement. Please ask questions and I will be happy to answer them. Additionally, I rely on my physician assistant to help me manage my patients and you will typically meet them the day of surgery or during your time in the hospital. You will also occasionally have follow up visits with them for routine postoperative office follow-ups.

My office is committed to making this stressful period in your life as pleasant as possible. If there is anything that my staff or I can do to help make this experience better for you or your family, please do not hesitate to contact us.

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