

## Questions for Your Shoulder Surgeon

### General

**1. Have we exhausted all other options?**

Total shoulder arthroplasty (TSA) reliably addresses pain and dysfunction, but compromises glenoid bone stock.

Capsular interposition, meniscal allograft, and more recently, GraftJacket (Wright Medical Technology Inc, Arlington, TN, USA), a human dermal collagen allograft, have been proposed for interposition arthroplasty in young patients with glenohumeral osteoarthritis.

Three different types of biological resurfacings combined with humeral hemiarthroplasty have an unacceptable early failure rate.

**2. How many TSAs have you performed?**

**3. What is the average age of the patient?**

**4. Do I have sufficient bone mass and soft tissue density for a TSA or do special techniques or components need to be considered?**

For instance, anterior/posterior augmented polyethylene components, custom CAD-CAM designed.

The main cause of instability after unconstrained shoulder prosthesis is soft tissue deficiency (8/2017).

### Pre-Operative

**1. What should I do about morphine consumption pre-op?**

A preoperative history of opioid use before shoulder arthroplasty was associated with significantly higher perioperative opioid consumption. It was not associated with increased hospital length of stay, perioperative complications, or 90-day readmission rates.

Patients with a history of preoperative opioid use can achieve significant improvements in patient-reported outcome measurements and patient satisfaction after anatomic TSA for primary glenohumeral joint arthritis. They have a significantly lower preoperative baseline and achieve significantly lower final outcome scores after TSA (4/2016).

**2. Should I modify my activities, diet, medications and/or supplements?**

## Technique – General

**1. What will be done to reduce my risk of infection?**

Positive deep tissue cultures develop in a high percentage of patients undergoing primary shoulder arthroplasty despite antibiotic prophylaxis.

**2. Will I be given tranexamic acid (TXA) to reduce blood loss?**

Perioperative among patients undergoing primary shoulder arthroplasty can decrease perioperative blood loss, change in Hgb and Hct, and postoperative drain output. (10/2016)

**3. Will the surgery be a Reverse Total Shoulder Arthroplasty (RTSA), a Total Shoulder Arthroplasty (TSA), or a Hemiarthroplasty?**

RTSA patients had significantly higher complication rates compared with TSA patients (6/2016). Despite traditional sport restrictions, patients undergoing RTSA can return to sports at rates higher than those undergoing a hemiarthroplasty with fewer postoperative complaints.

For those undergoing a hemiarthroplasty, there are three types: capsular interposition, meniscal allograft, and a human dermal collagen allograft called GraftJacket (Wright Medical Technology Inc, Arlington, TN, USA). Three different types of biological resurfacings combined with humeral hemiarthroplasty have an unacceptable early failure rate in young patients (34-57years) (12/2015).

Patients with glenohumeral osteoarthritis (GHOA) who were converted intraoperatively to RSA because of improper seating of the glenoid trial or persistent posterior subluxation had outcomes comparable to those of a similar group of patients in whom TSA was performed.

## Technique – Humeral

**1. How is the humeral component fixed in the humerus?**

Is cement used or are implants used to foster bone ingrowth?

**2. What type of implant will be used – stemless or stemmed?**

**3. Will a short-stem press on the humeral component be used? If so, what kind?**

A collarless humeral stem with an oval geometry and curved stem (Ascend or Ascend Flex; Wright Medical, Memphis, TN, USA) or a humeral stem with a metaphyseal collar, rectangular geometry, and straight stem (Apex; Arthrex, Inc., Naples, FL, USA)?

At short-term follow-up, there is no difference in functional outcome or revision between the two different humeral stem designs. Both implants showed consistently good functional and radiologic results without a significant difference and achieved an anatomic reconstruction of the humeral head geometry in the coronal plane. Impaction grafting the inside of the humerus (using bone harvested from the humeral head that has been removed) until a tight press fit of the implant is achieved. Stemless humeral components benefit from less morbidity, better reproduction of the humeral anatomy, ease of revision, and fewer stem-related complications. Encouraging results are available up to 9 years after surgery from the designer's series.

An alternative option is uncemented press-fit humeral stems which were developed with the goal of decreasing operative time, preserving bone stock, and easing revision.

**4. What is the new metaphyseal anchored system?**

This system features a different anchor geometry that potentially leads to better bony integration and less loosening.

## Technique – Glenoid

**1. Will a ream-and-run method be used?**

Instead of implanting a glenoid prosthesis, the arthritic glenoid socket is reshaped with a reamer so that a smooth concavity results. A reamed socket (glenoid) can heal over with a smooth fibrocartilaginous surface.

**2. If implants will be used, will you use an inlay or onlay glenoid implant?**

The inlay glenoid implant exhibited biomechanical characteristics favoring stability and decreased loosening compared with the onlay glenoid implant in this cadaveric model.

**3. If implants will be used, will you use pegged or keeled implants?**

There is no difference in clinical or radiographic outcomes between pegged and keeled components at intermediate-term follow-up.

With a pegged component, the geometry of the fit is more precisely controlled by the fact that concentric reaming takes place around the same axis as is used to fix the component. Centrally pegged implants produced the lowest simulated resorbing potential, whereas peripheral implants had the greatest percentages of implant–bone contact area

Radiolucencies and incomplete component seating occur more frequently in association with keeled components compared with pegged components. Surgeon experience may be an important variable in the achievement of a good technical outcome.

**4. Will you be using cement or cementless glenoid components?**

Cementless glenoid components in conventional total shoulder arthroplasty had a significantly higher revision rate than cemented glenoid components. The loosening rates between cemented and cementless glenoid components were similar

## Materials

**1. If the TSA is stemless, will the Arthrex Eclipse component be used?**

The functional and radiographic outcomes of Eclipse total shoulder replacements are excellent. We were able to accurately reproduce the native anatomy in the majority of cases with no implant loosening at 2-6 years follow-up.

**2. If the TSA is stemless, will the glenoid component be ultrahigh-molecular-weight polyethylene (UHMWPE)?**

## Post-Operative

### 1. Can the surgery be done on an outpatient basis?

Outpatient total shoulder arthroplasty in an ambulatory surgery center is a safe alternative to inpatient total shoulder arthroplasty in a hospital study (Neer Award 2016).

### 2. Will a nerve block be used for pain control?

- Liposomal bupivacaine versus interscalene
- An increase in early postoperative pain on the day of surgery was found with LB, whereas the INB group required more narcotics at the end of the day
- Local injection of liposomal bupivacaine combined with intravenous dexamethasone reduces postoperative pain and hospital stay after shoulder arthroplasty

### 3. Will a multimodal analgesia be used to decrease opioid consumption after shoulder arthroplasty?

- Multimodal analgesia decreases opioid consumption after shoulder arthroplasty

### 4. How long should I expect to be out of the office, but work from home?

### 5. How long is the typical PT regimen?

### 6. With the best results, will I need to modify my exercise regime?

### 7. Will my new shoulder provide full range of motion to swim freestyle?

### 8. What should I expect for follow-up visits or procedures?

In-person visits to assess healing, direct rehabilitation, and manage soft tissue or infectious issues until two years post-op, with planned, periodic patient contact by mail and radiographic evaluation of patients with poor or worsening outcomes thereafter, unless patient concerns arise or a newer implant design warrants closer clinical assessment. (6/2017)

Routine in-person surveillance of all patients on a scheduled basis may not be necessary and would increase patient and other health care costs.

TSA failure after 2 years is uncommon and triggers surgical intervention in approximately 1% of patients per year.

#### **Notes:**

Although there is concern with periprosthetic L; radiolucency and glenoid loosening in the young patient (< 65 years) undergoing TSA, overall low revision rates and high implant survivorship are reported in the current literature.

A preoperative history of opioid use before shoulder arthroplasty was associated with significantly higher perioperative opioid consumption and visual analog scale scores.

## Defining Success

### **1. What range of motion should I expect?**

Of 234 patients, 207 (88.5%) were satisfied with their procedure (7/2016).

Mean shoulder motions after TSA or RTSA were not significantly different from the contralateral asymptomatic side. In addition, no significant differences were detected in shoulder motion or frequency between TSA and RTSA.

### **2. Can I expect an improvement in activity levels?**

After shoulder arthroplasty, patients generally have significant improvements in their quality of life and small improvements in activity level. One study shows that most patients do not have to decrease their activity levels to diminish symptoms to an acceptable range.