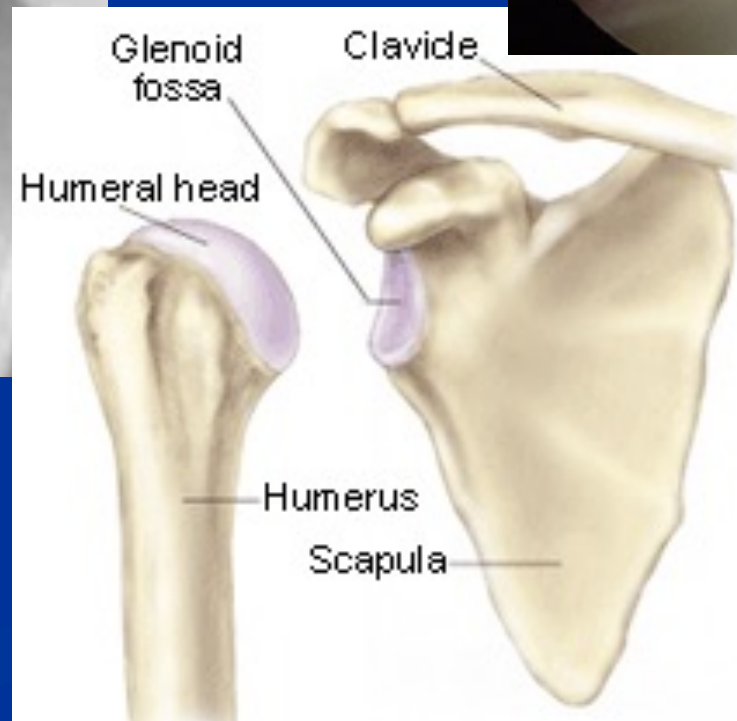
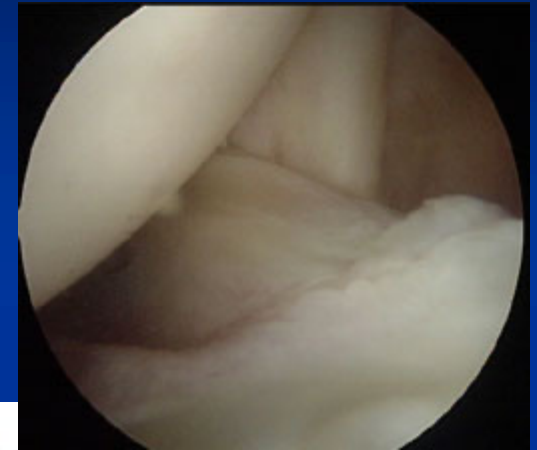


Reverse Shoulder Replacement

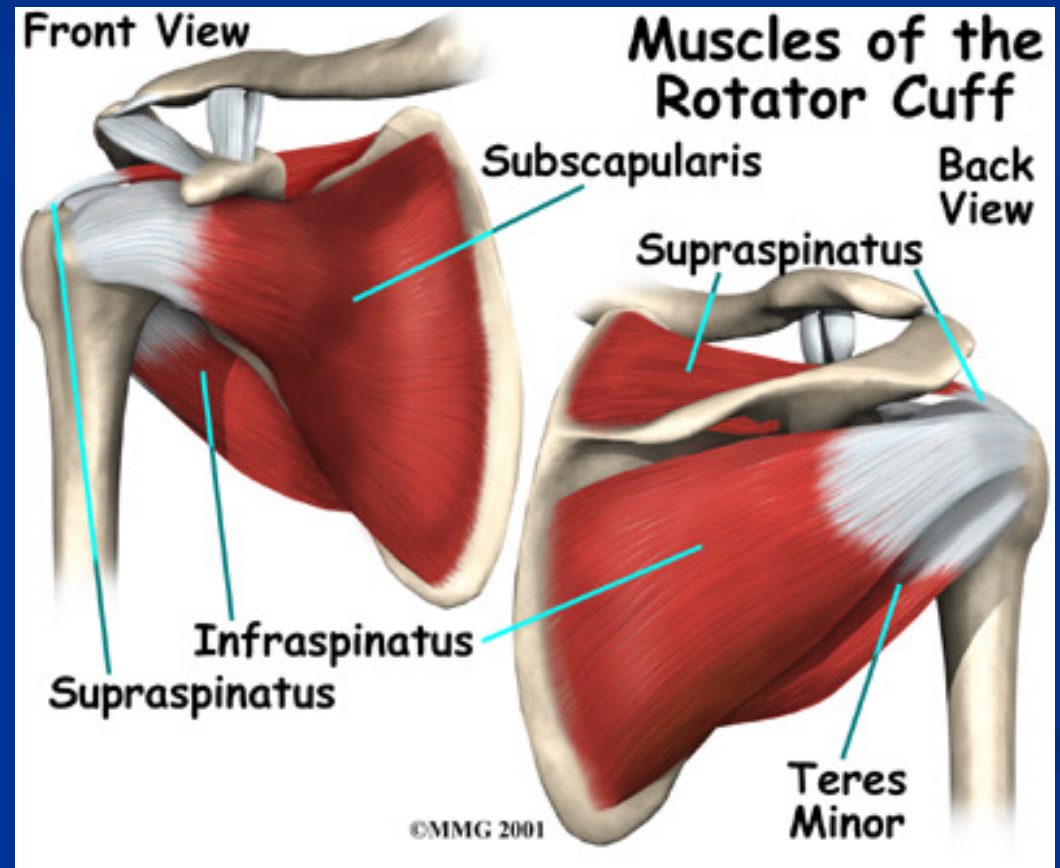


Normal Joint Anatomy



Anatomy – Rotator Cuff

- 4 Muscles
 - 1 in front
 - 1 on top
 - 2 behind



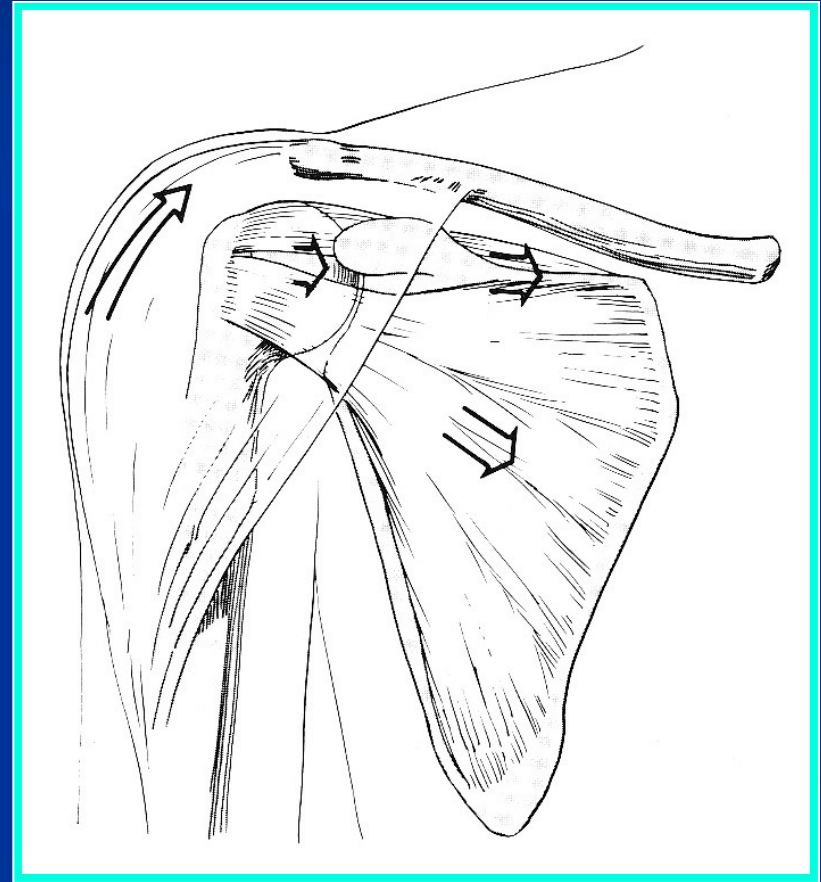
Muscle Action of the Shoulder

■ Deltoid

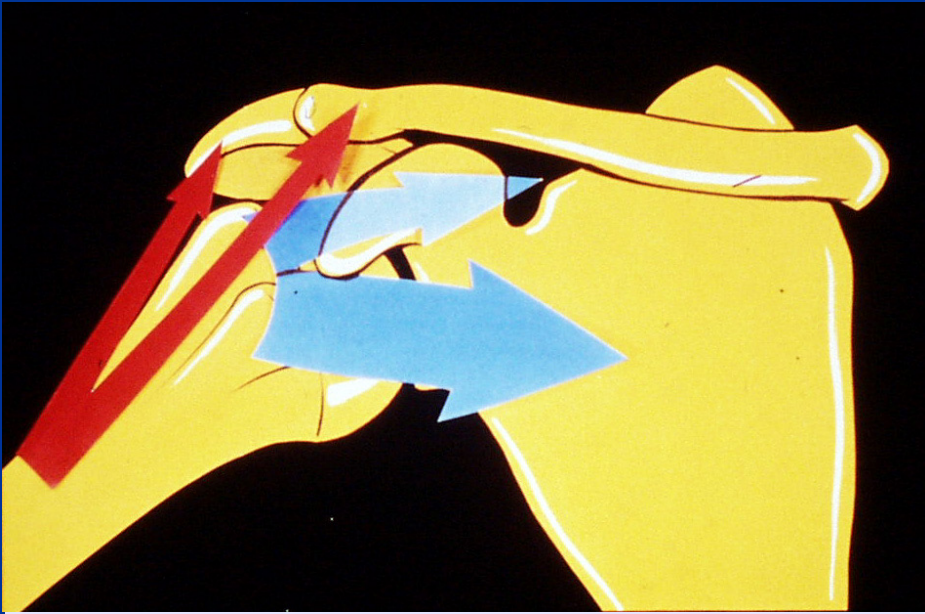
- Wants to pull arm up
- Requires stable joint

■ Rotator Cuff

- Pulls Humeral Head into Glenoid
- Establishes stability of the joint to allow deltoid to elevate the arm

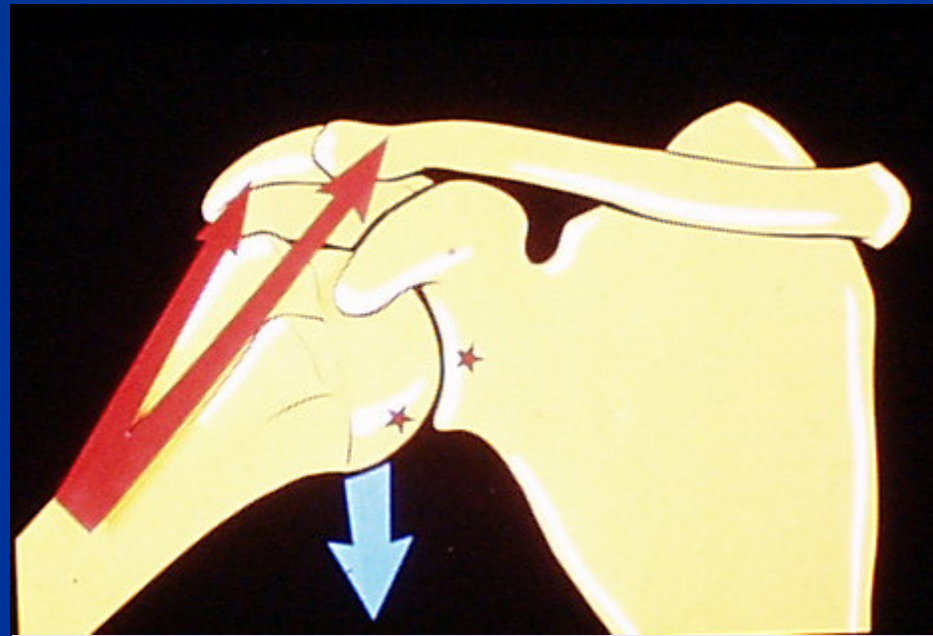


Normal Shoulder



- Rotator Cuff Stabilizes Joint
- Smooth Motion

Shoulder without Rotator Cuff



- Unstable Joint
- Upward migration of humeral head prevents normal motion

Development of Arthritis

- Instability
- Breakdown of cartilage
- Loss of smooth surfaces
- Loss of joint space
- Bone erosion
- Bone Spurs

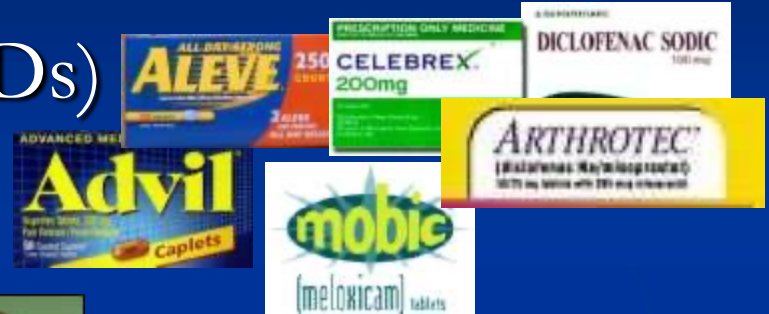


Symptoms

- Pain
 - Progress over time
 - Worse with activity
 - Interferes with sleep
- Instability
- Loss of Motion
- Atrophy (wasting) of muscles
- Swelling
- Crepitus (clicking, popping or crunching sound)
- Tenderness to touch

Treatment – non-operative

- Anti-Inflammatories (NSAIDs)



- Cortisone Injection

- Physical Therapy

- Activity Modification



When to consider surgery

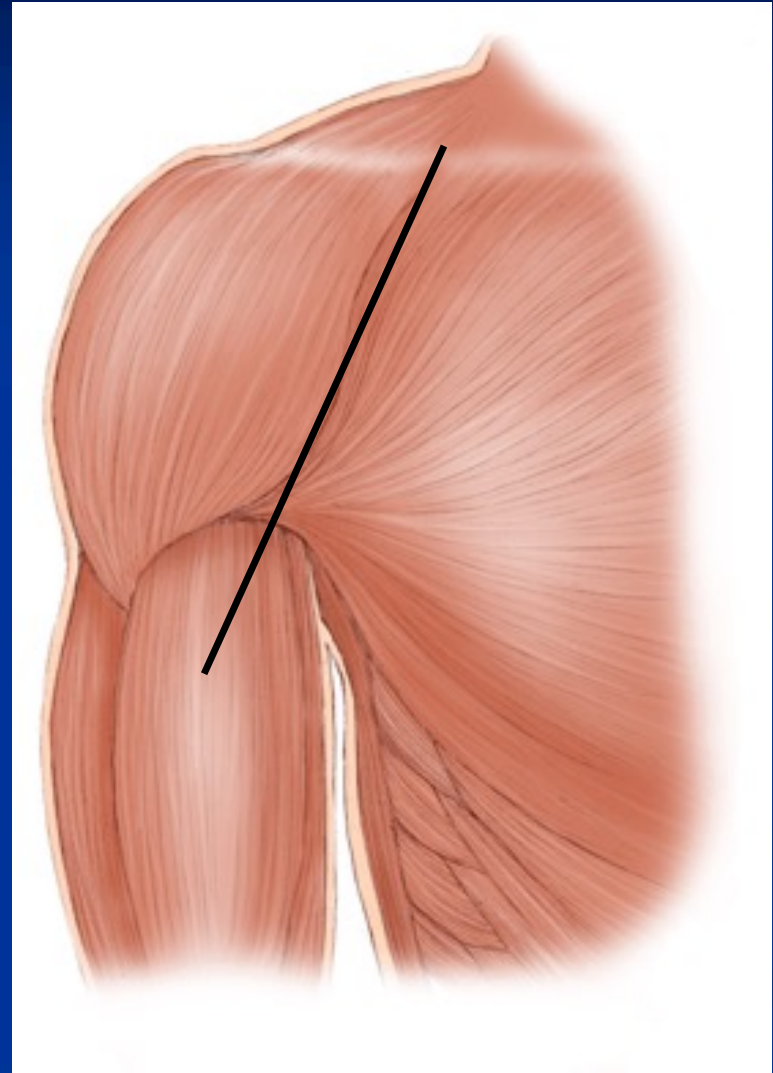
■ Quality of Life Decision

- Interferes with activities
- Loss of independence
 - Grooming
 - Bathing
 - Dressing
- Interferes with sleep
- Interferes with work

Operation

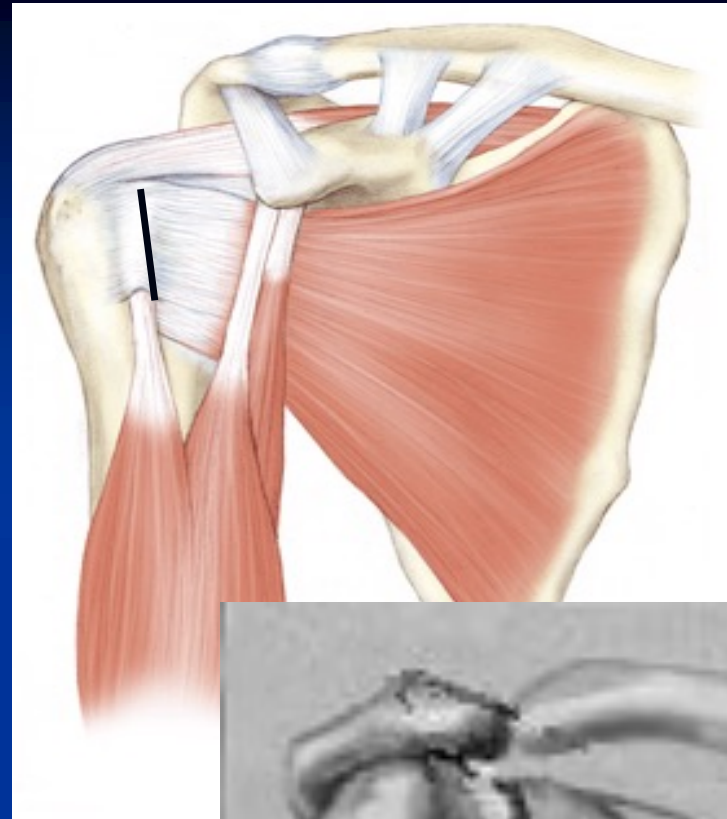
■ Incision

- from collar bone down the arm



Operation

- Release subscapularis tendon
 - Rotator cuff tendon
 - Allows visibility of joint
 - **MUST BE REPAIRED AND PROTECTED**



Operation

- Remove arthritis from humeral head
 - Replace with metal stem and plastic socket



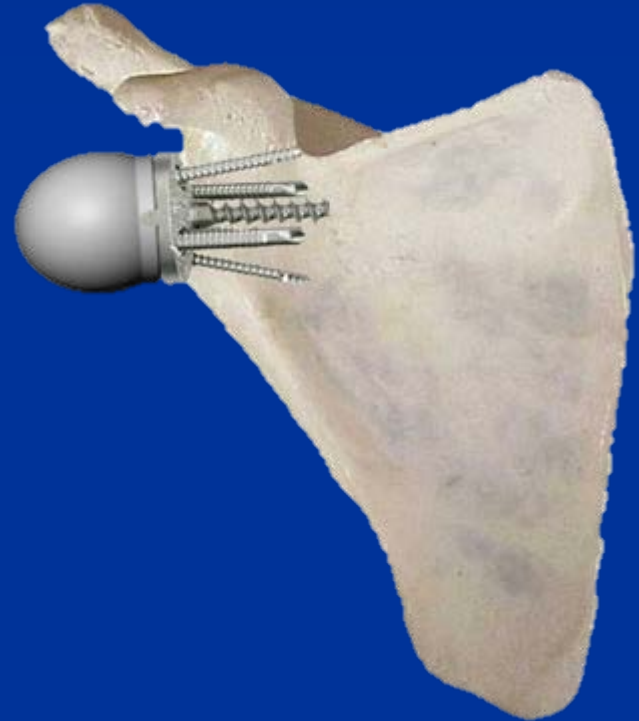
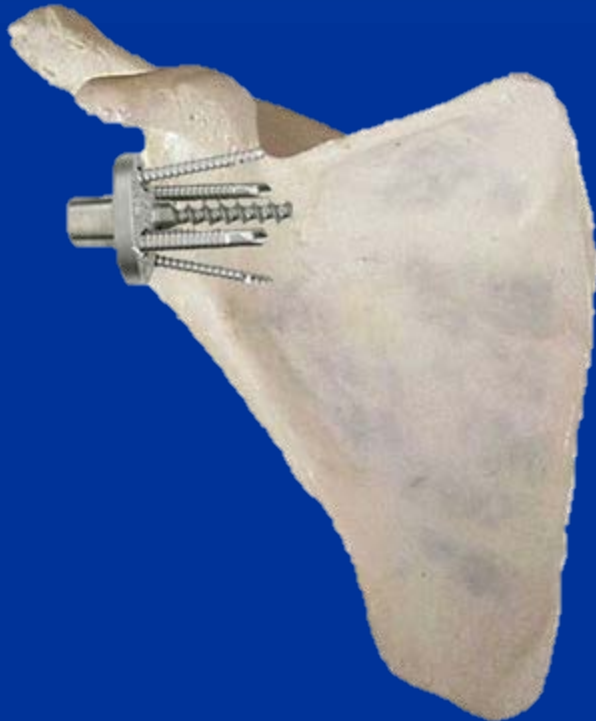
Operation

- Remove arthritis from glenoid



Operation

- Replace with metal glenosphere

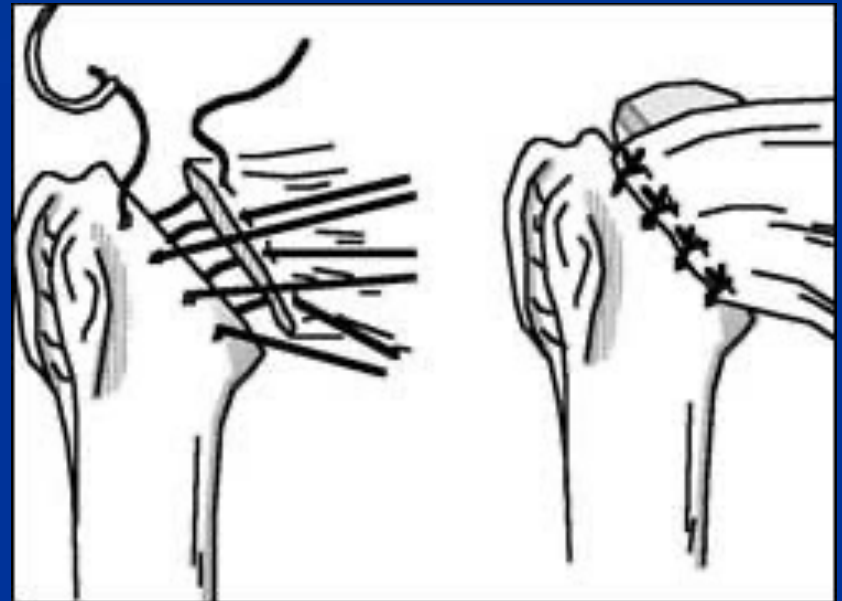


Operation



Operation

- Subscapularis Tendon Repaired
 - Takes 3 months to heal
 - Must be protected
 - Shoulder Immobilizer for 6 weeks



Post-operative Rehabilitation

■ Phase 1 (0-6 weeks)

- Shoulder Immobilizer
- Pendulum exercises only
- Pool therapy



Post-operative Rehabilitation

- Phase 2 (6-12 weeks)
 - Stretching
 - Sling when out of house
 - Begin to use arm
 - Golf put, no swing
 - No lifting



Post-operative Rehabilitation

- Phase 3 (3 months+)
 - Strengthening
 - Activities as tolerated at 6 months

Appointments

- Pre-operative Visit
- Post-operative Visit (1 week)
- 1st Follow-up (6 weeks)
- 2nd Follow-up (12 weeks)
- 3rd Follow-up (6 months)
- 4th Follow-up (1 year)
- Annual Visits

What to expect

- Pain Relief
- Improvement in function
 - Increased range of motion
 - Increased ability to perform activities
 - Improved quality of life
- Return of Independence

THE REVERSE SHOULDER PROSTHESIS FOR GLENOHUMERAL ARTHRITIS ASSOCIATED WITH SEVERE ROTATOR CUFF DEFICIENCY

A MINIMUM TWO-YEAR FOLLOW-UP STUDY OF SIXTY PATIENTS

BY MARK FRANKLE, MD, STEVEN SIEGAL, MD, DEREK PUPELLO, BS,
ARIF SALEEM, MD, MARK MIGHELL, MD, AND MATTHEW VASEY, BS

Investigation performed at the Florida Orthopaedic Institute, Tampa, Florida



■ 60 Patients followed for 33 months

■ Average age 71

■ Increased Range of Motion

- Forward flexion from 55.0° to 105.1°
- Abduction from 41.4° to 101.8°
- External Rotation from 12.0° to 41.1°

■ 95% satisfaction rating

- 68% good to excellent result
- 27% satisfied were satisfied
- 5% dissatisfied (mechanical failures)

■ ASES Scores:

- Pain from 18.2 to 38.7
- Function from 16.1 to 29.4
- Total from 34.3 to 68.2

Reverse Shoulder Arthroplasty for the Treatment of Rotator Cuff Deficiency

By Derek Cuff, MD, Derek Pupello, MBA, Nazeem Virani, MD, Jonathan Levy, MD, and Mark Frankle, MD

Investigation performed at the Florida Orthopaedic Institute, Tampa, Florida



- 94 Patients followed for 27.5 months
 - Average age 72
 - Increased Range of Motion
 - Flexion from 63.5° to 118.0°
 - Abduction from 61.0° to 109.5°
 - External Rotation from 13.4° to 28.2°
 - SST Score from 1.8 to 6.8
 - 94% satisfaction rating
 - 82% good to excellent results
 - 12% satisfactory results
 - 6% dissatisfied results
- ASES Scores:
 - Pain from 15 to 41.6
 - Function from 15 to 36
 - Total from 30 to 77.6



The treatment of deep shoulder infection and glenohumeral instability with debridement, reverse shoulder arthroplasty and post-operative antibiotics

D. J. Cuff,
N. A. Virani, J. Levy,
M. A. Frankle,
A. Derasari,
B. Hines,
D. R. Pupello,
M. Cancio,
M. Mighell

*From the Florida
Orthopaedic Institute
Research Foundation,
Tampa, Florida*

- 21 Patients followed for 43 months
 - Average age 67
 - Increased Range of Motion
 - Forward flexion from 43.1° to 79.5°
 - Abduction from 36.1° to 75.7°
 - External Rotation from 10.2° to 25.4°
 - SST Score from 1.3 to 4.0
 - 87% satisfaction rating
 - 64% good to excellent results
 - 23% satisfactory results
 - 13% dissatisfied
- ASES Scores:
 - Pain from 18.3 to 32.4
 - Function from 13.6 to 24.6
 - Total from 31.9 to 57.0

The Use of the Reverse Shoulder Prosthesis for the Treatment of Failed Hemiarthroplasty for Proximal Humeral Fracture

By Jonathan Levy, MD, Mark Frankle, MD, Mark Mighell, MD, and Derek Pupello, BS

Investigation performed at the Florida Orthopaedic Institute, Temple Terrace, Florida



■ 29 Patients followed for 35 months

■ Average age 69

■ Increased Range of Motion

- Forward flexion from 38.1° to 72.7°
- Abduction from 34.1° to 70.4°
- External Rotation from 11.2° to 17.6°
- SST Score from 0.9 to 2.6

■ 79% satisfaction rating

- 55% good to excellent result
- 24% satisfied were satisfied
- 21% dissatisfied

■ ASES Scores:

- Pain from 12.2 to 34.4
- Function from 10.1 to 17.7
- Total from 22.3 to 52.1



Use of the reverse shoulder prosthesis for the treatment of failed hemiarthroplasty in patients with glenohumeral arthritis and rotator cuff deficiency

- 18 Patients followed for 44 months
- Average age 72
- Increased Range of Motion
 - Forward flexion from 49.7° to 76.1°
 - Abduction from 42.2° to 77.2°
- 79% satisfaction rating
 - 68% good to excellent results
 - 11% satisfactory results
 - 21% dissatisfied results
- ASES Scores:
 - Total from 29.1 to 61.2
- VAS Scores:
 - VAS Function from 2.7 to 5.5
 - VAS Pain from 7.3 to 2.5

Revision reverse shoulder arthroplasty for glenoid baseplate failure after primary reverse shoulder arthroplasty

Jason O. Holcomb, MD^a, Derek Cuff, MD^b, Steve A. Petersen, MD^c, Derek R. Pupello^a, Mark A. Frankle, MD^{a,*}

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- 14 Patients followed for 33 months
 - Average age 70.6
 - Increased Range of Motion
 - Forward flexion from 75.0° to 118.0°
 - Abduction from 66.0° to 112.0°
 - External Rotation from 9.0° to 22.0°
 - SST Score from 3 to 4.5
 - 100% satisfaction rating after revision
 - 86% good to excellent result
 - 14% satisfied were satisfied
 - 0% dissatisfied
- ASES Scores:
 - Pain from 15 to 37
 - Function from 21 to 32
 - Total from 36 to 70

Is a formal physical therapy program necessary after total shoulder arthroplasty for osteoarthritis?

Philip J. Mulieri, MD, PhD^a, Jason O. Holcomb, MD^b, Page Dunning, BA^c,
Michele Pliner, BA^c, R. Kent Bogle, MD^c, Derek Pupello, BS, MBA^c,
Mark A. Frankle, MD^{a,*}

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SURGERY

- Two groups of patients, Group A and Group B, followed during the course of clinical visits for 12 months

■ Group A (Standard PT Program): ■

- 43 Patients, Avg. Age: 64
- Total ASES: 37.3 to 75.1
- SST from 2.6 to 6.7
- Forward Flexion from 102 to 119
- Abduction from 73 to 108
- Internal Rotation from L1 to L1

Group B (Home-Based PT):

- 38 Patients, Avg. Age: 67
- Total ASES: 31.7 to 83.3
- SST from 2.1 to 7.5
- Forward Flexion from 81 to 154
- Abduction from 83 to 147
- Internal Rotation from L5 to L1

Glenoid morphology in reverse shoulder arthroplasty: Classification and surgical implications

Mark A. Frankle, MD^{a,*}, Atsushi Teramoto, MD^b, Zong-Ping Luo, PhD^b,
Jonathan C. Levy, MD^c, Derek Pupello, MBA^b

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SURGERY

■ 216 Glenoids in 212 Patients

■ Classified in to Normal and Abnormal

- 62.5% were Normal

- 37.5% were Abnormal

- Posterior: 17.6%
- Superior: 9.3%
- Global: 6.5%
- Anterior: 4.2%

■ Abnormal Glenoid Morphology has a significant effect of anatomical and surgical factors which can be adjusted in RSA.

■ Standard Centerline

- Normal: $28.6 \pm 4.1\text{mm}$
- Abnormal: $19.6 \pm 9.1\text{mm}$
- Screw Placement Area reduced by 42%

Revision Arthroplasty with Use of a Reverse Shoulder Prosthesis-Allograft Composite

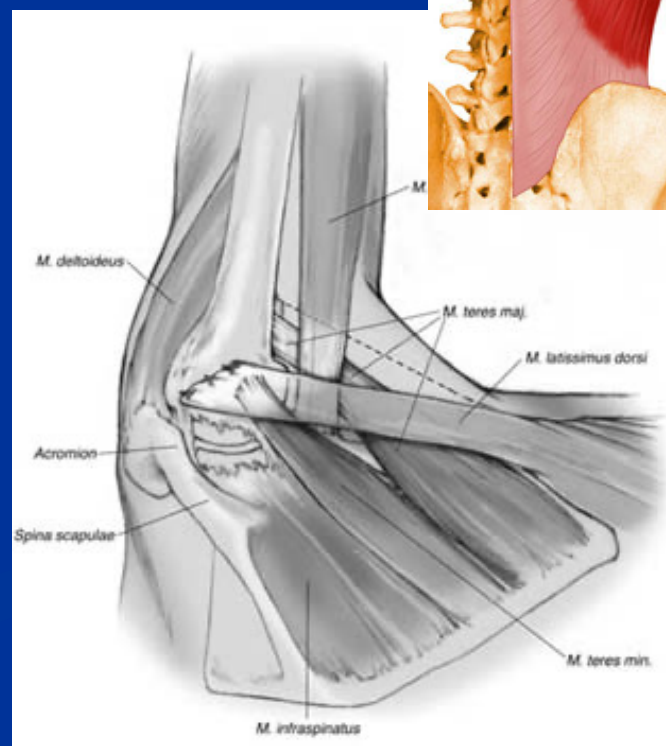
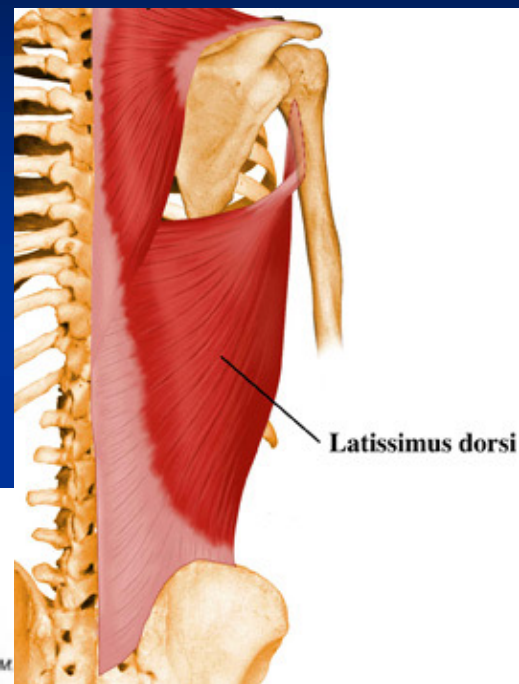
By Ariel Chacon, MD, Nazeem Virani, MD, Robert Shannon, MD, Jonathan C. Levy, MD, Derek Pupello, MBA, and Mark Frankle, MD



- 25 Patients followed for 30.2 months
- Increased Range of Motion
 - Forward flexion from 32.7° to 82.4°
 - Abduction from 40.4° to 81.4°
 - External Rotation from 9.9° to 17.6°
 - SST Score from 1.4 to 4.5
- 96% satisfaction rating
 - 76% good to excellent result
 - 20% satisfied were satisfied
 - 4% dissatisfied
- ASES Scores:
 - Pain from 18.4 to 38.1
 - Function from 13.3 to 31.3
 - Total from 31.7 to 69.4

Latissimus Transfer

- Needed if “Hornblower’s sign” present
- Determined during surgery
- Allows active external rotation
- Ability to reach head



Complications

- Infection
- Wound problems
- Excessive blood loss
- Injury to nerves and blood vessels
- Failure of Subscapularis Repair
- Mechanical Failure of Device
- Fracture
- Weakness
- Stiffness
- Subluxation or dislocation of the prosthesis
- Requirement for additional surgery
- Anesthetic risks

