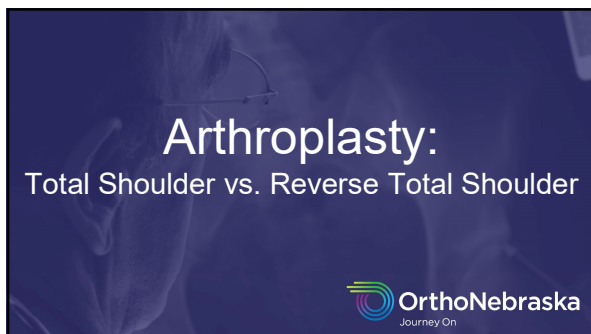
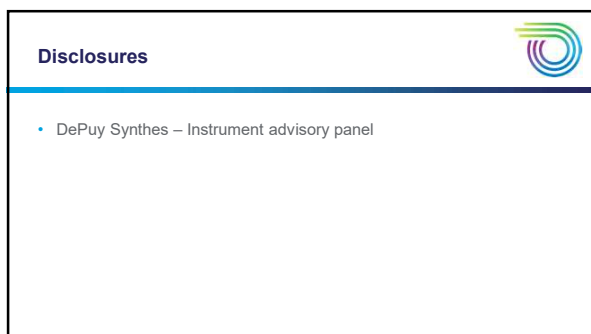
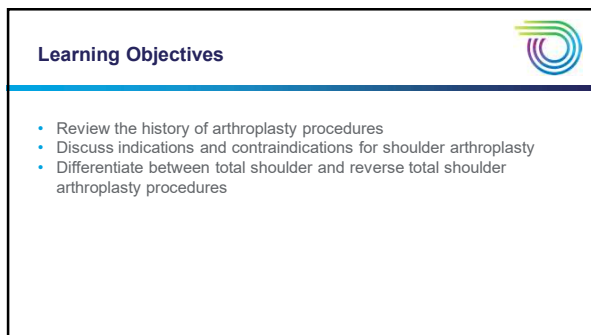




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2



3

Total Shoulder Arthroplasty



1753 The Shoulder Prosthesis. The shoulder joint is replaced by a metal ball and socket. The joint is held in place by a metal ring. The joint is made of brass and is very strong. The joint is made of brass and is very strong.

4

TSA vs RTSA

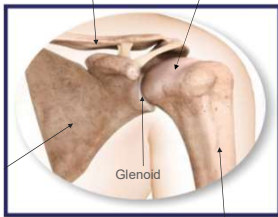
- Anatomy
- History
- Types of Arthritis
- Physical Findings
- Non-Operative Treatment
- Surgical Options
- Rehabilitation

5

Shoulder

Anatomy of the Shoulder

- Ball-and-socket joint
- Humeral head at the end of the humerus
- Glenoid holds the humeral head
- Most complex joint in the body, with 360° rotation



Clavicle Humeral head
Scapula Glenoid
Humerus

6

Shoulder Anatomy

- Rotator Cuff
 - Subscapularis
 - Infraspinatus
 - Supraspinatus
 - Teres minor

7

Rotator Cuff

8

9

History of TSA

- 1893 first prosthesis inserted by French Surgeon Pean for TB Arthritis
- Platinum and rubber
- Removed two years later

10

History of TSA

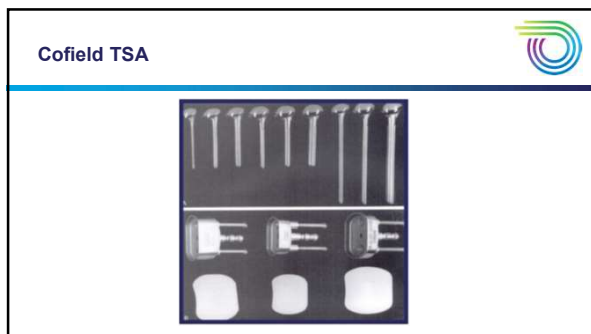
- 1953 Neer Vitallium Prosthesis for Proximal Humerus Fracture
- 1971 and 1974 Neer reported results in RA and OA
 - First Glenoid Component
- Several Component Types

11

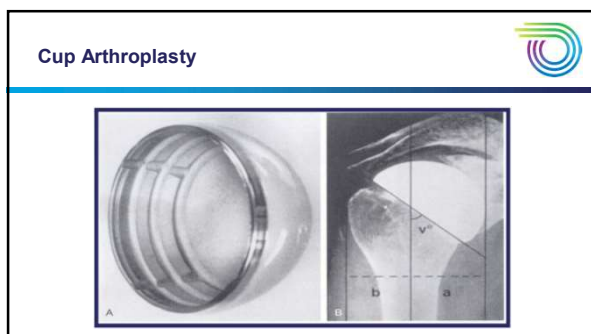
History of TSA

- Boileau and Walch late 80's Anatomic study of Proximal Humerus
- Diameter of Humeral Head, Inclination , and Retroversion all Variable
- Third Generation Prosthesis—Anatomic adaptable

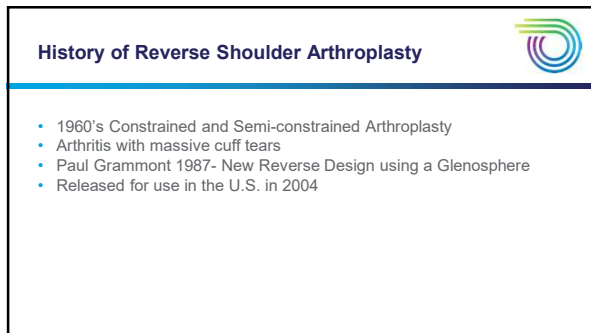
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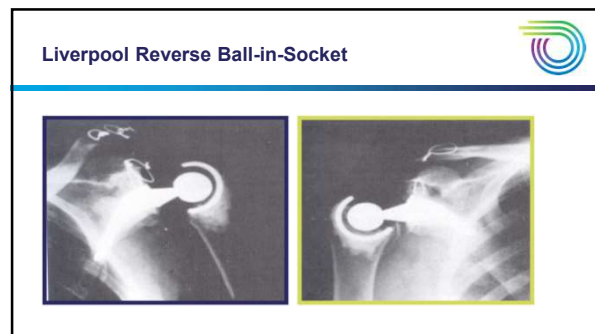
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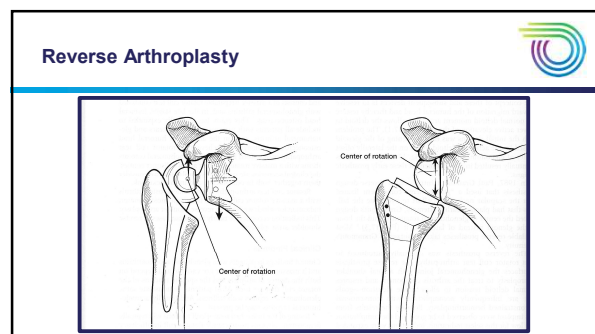
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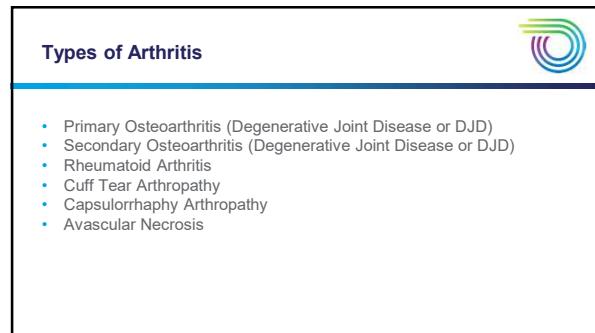
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17



18

Symptoms

- Pain at night
- Pain away from body
- Loss of motion
- Popping and grating
- Loss of strength

19

Physical Findings

- Mild to moderate muscle wasting
- Crepitus on joint ROM
- Limited ROM
- Muscle weakness due to pain

20

Treatment Options

- Medications
- Physical therapy
- Activity modification
- Surgery

21

Non-operative Treatment



- Gentle Range of Motion (ROM)
- RC isometrics
- Scapular strength
- NSAIDs/Analgesics
- Limit over-head activity

22

When to Proceed with Surgery?



- Pain unresponsive to non operative treatment
- Severe limitation of motion
- Progressive glenoid bone loss

23

Surgical Options



- Synovectomy
- Resection Arthroplasty
- Interposition Arthroplasty
- Arthrodesis
- Hemiarthroplasty
- Total Shoulder Arthroplasty
- Reverse TSA

24

Indications for TSA



- ✓ Osteoarthritis --- Cuff intact, Good Glenoid Bone stock
- ✓ Inflammatory Arthritis---- Variable Cuff and Bone quality
- ✓ Post Traumatic Arthritis----- Tuberosity and Cuff OK
- ✓ Post Instability Surgery Arthritis----- ? Subscapularis
- ✓ Avascular Necrosis----- ? Hemi in Young Patient

25

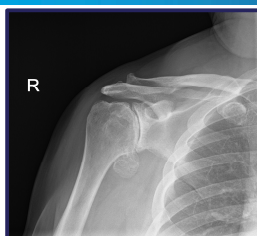
Primary DJD



- Glenoid worn posteriorly
 - Posterior subluxation
- Humerus worn centrally
- Subchondral cysts
- Osteophytes and loose bodies
- Anterior capsule tightness
- RC Tears uncommon

26

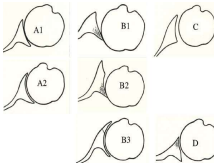
Osteoarthritis



27

Walch Classification

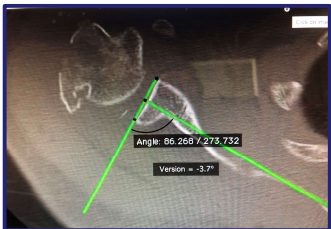
- A1 Mild Central Erosion
- A2 Major Central Erosion
- B1 Narrow Posterior Joint Space/Subluxation
- B2 Biconcave
- B3 Advanced Posterior Erosion, Subluxation, No Paleoglenoid
- C Hypoplastic with Retroversion >25 degrees
- D Eccentric Anterior Glenoid Erosion



Berth, MJ, Kiese K E, Yabuta M, Gaud M O, Chami J, Wain G. A modification to the Walch classification of the glenoid in primary glenohumeral osteoarthritis using three-dimensional imaging. J Shoulder Elbow Surg. 2019;28(10):1851-1856.

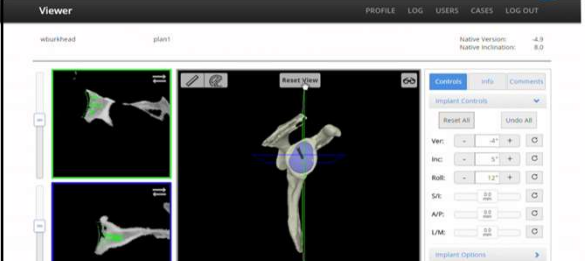
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Glenoid Version



29

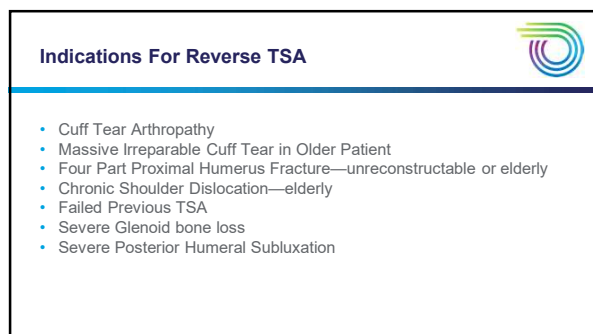
Computerized Planning



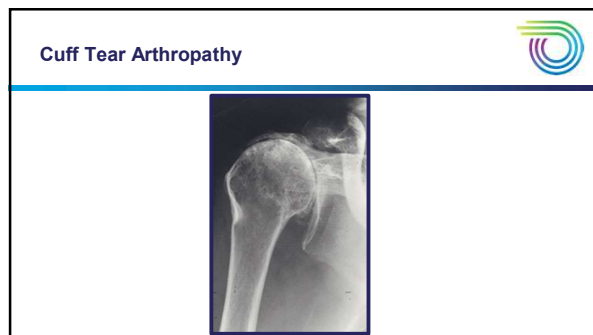
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33

Cuff Tear Arthropathy



- Milwaukee shoulder
 - Basic calcium phosphate crystals cause chemical induced tissue damage
- Massive rotator cuff tear
- Glenohumeral instability
- Loss of articular cartilage
- Humeral head collapse and bone loss

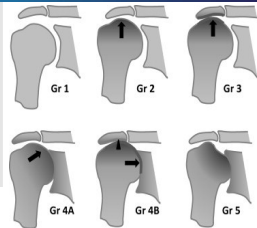
34

Cuff Tear Arthropathy



Table III Hamada classification

Grade	Description
1	Acromiohumeral interval >6 mm
2	Acromiohumeral interval ≤5 mm
3	Grade 2 plus acetabularization
4	Grade 3 plus glenohumeral joint space narrowing
5	Humeral head collapse



A Radiographic Classification of Massive Rotator Cuff Tear Arthropathy
Kobayashi T, Hara T, Yamaoka T, Yoshizawa K, Yamazaki T, Takahiro M, Matsuoka M, Matsuoka M
Clin Orthop Relat Res. 2011 Sep; 469(9):2452-2460.

35

Rotator Cuff

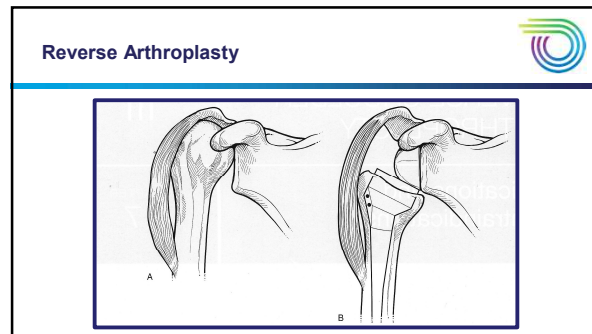


A1

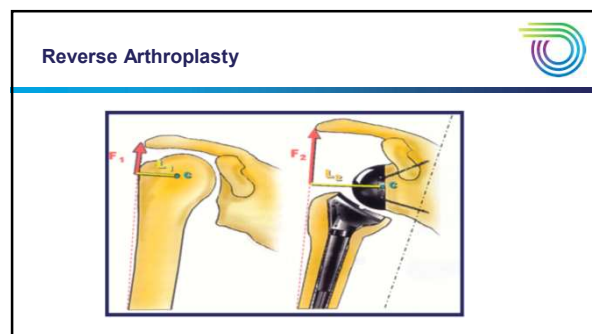
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Slide 36

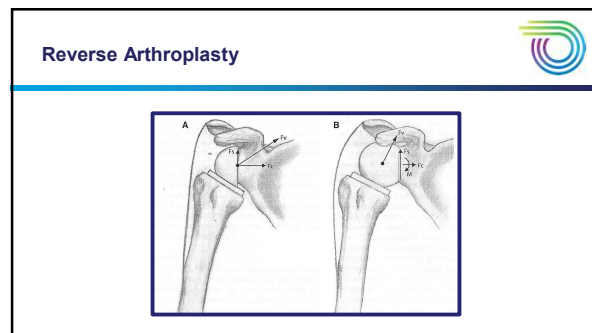
A1 Same as slide #7. Do we want to keep this slide?
Author, 3/29/2021



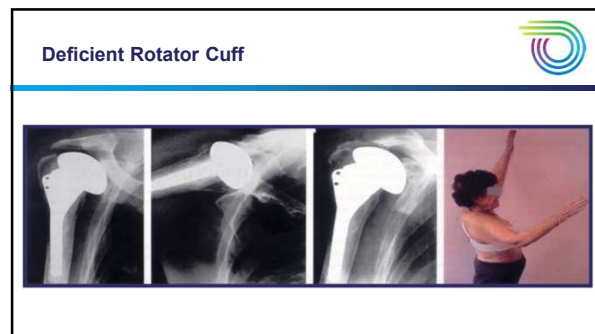
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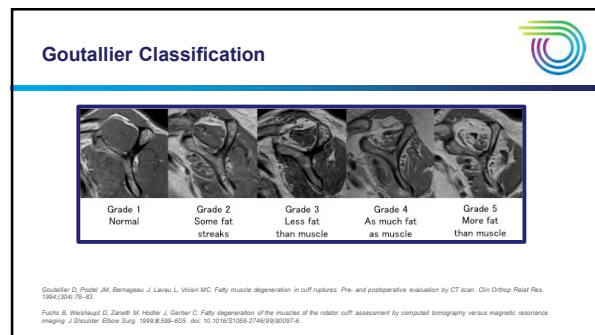
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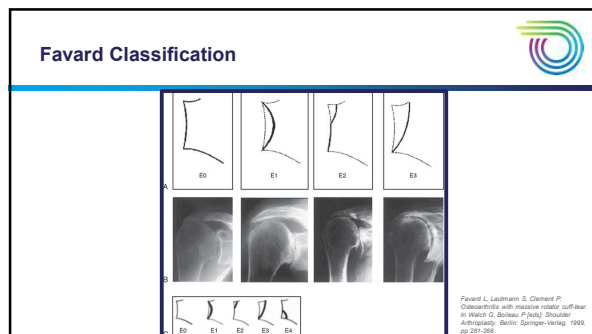
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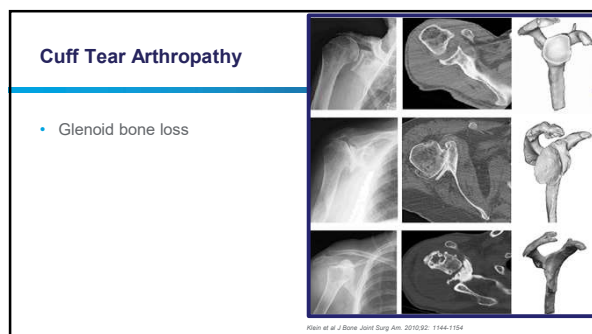
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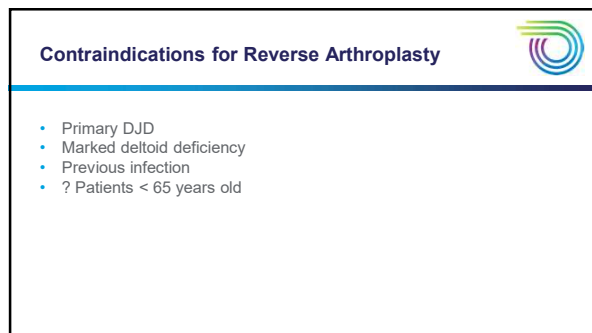
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45

Complications

- Glenoid loosening-lucent lines
- Humeral loosening (2-5%)
- Glenohumeral instability (0-35%)
- Rotator cuff tears (~2%)
- Periprosthetic fracture
- Infection (~1%)
- Nerve injuries

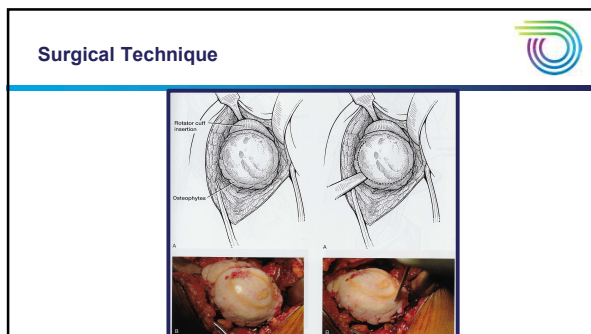
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Surgical Technique

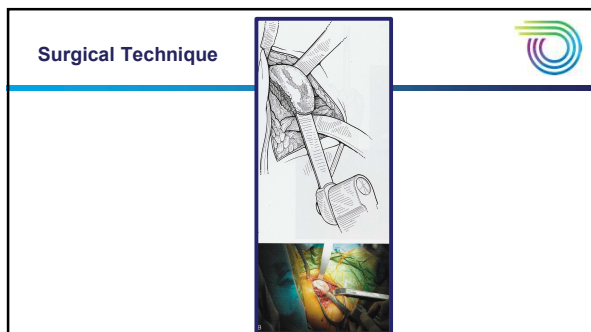
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Surgical Technique

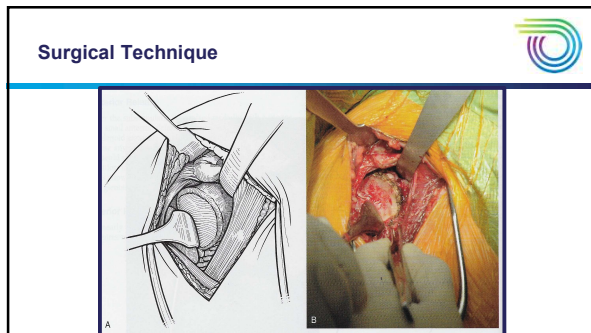
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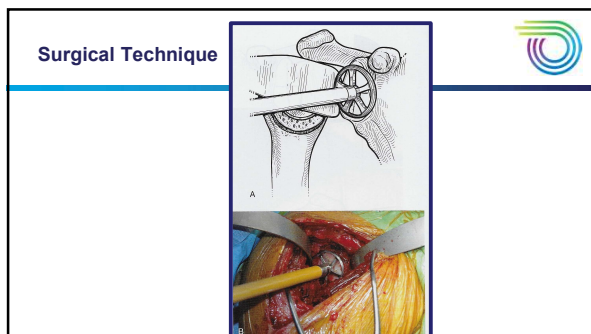
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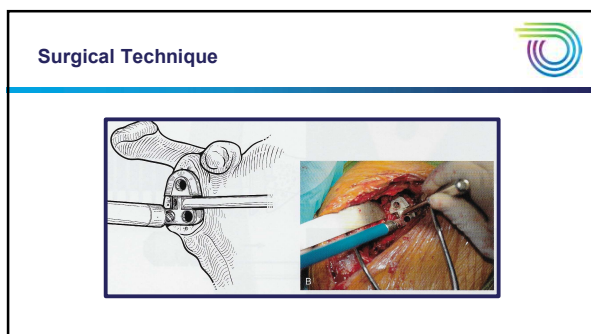
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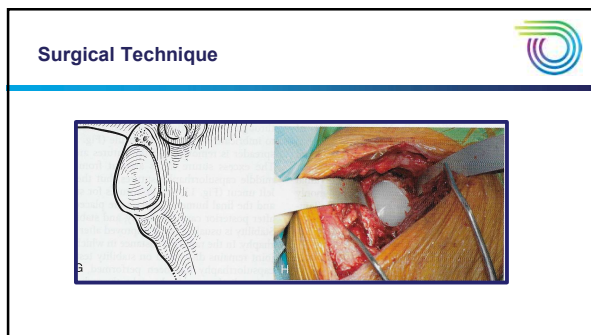
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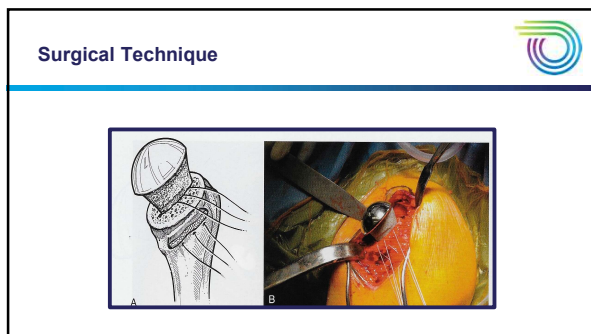
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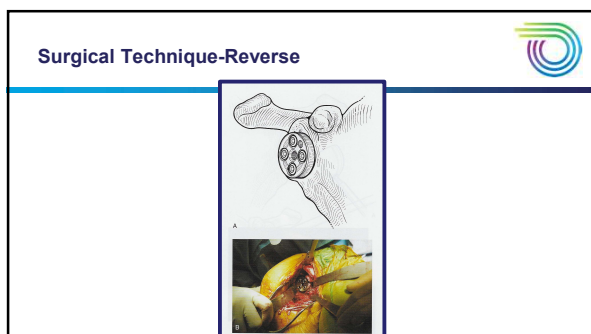
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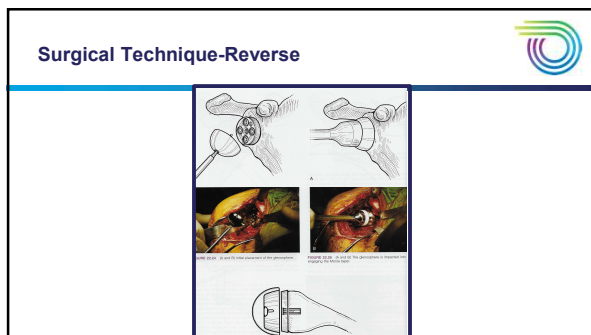
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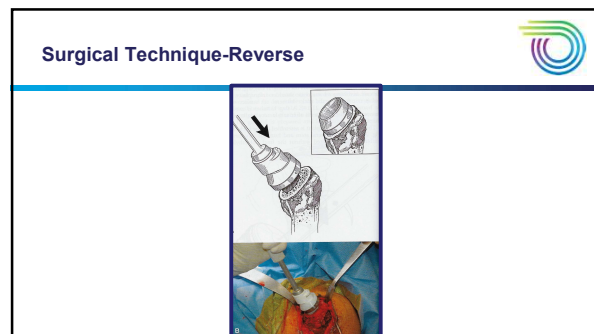
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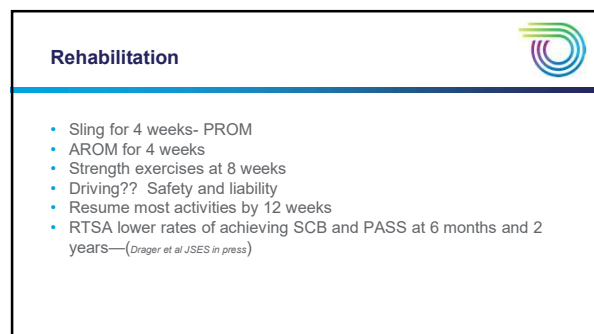
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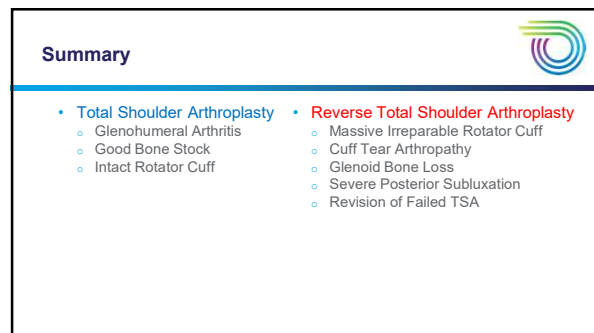
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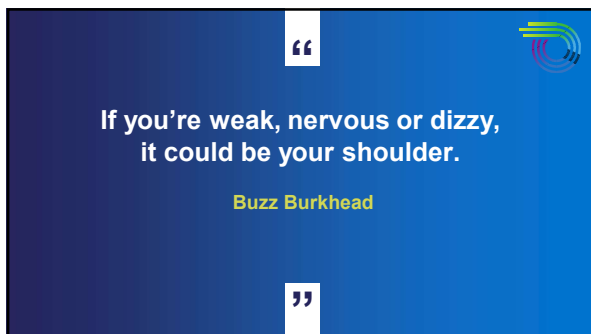
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