

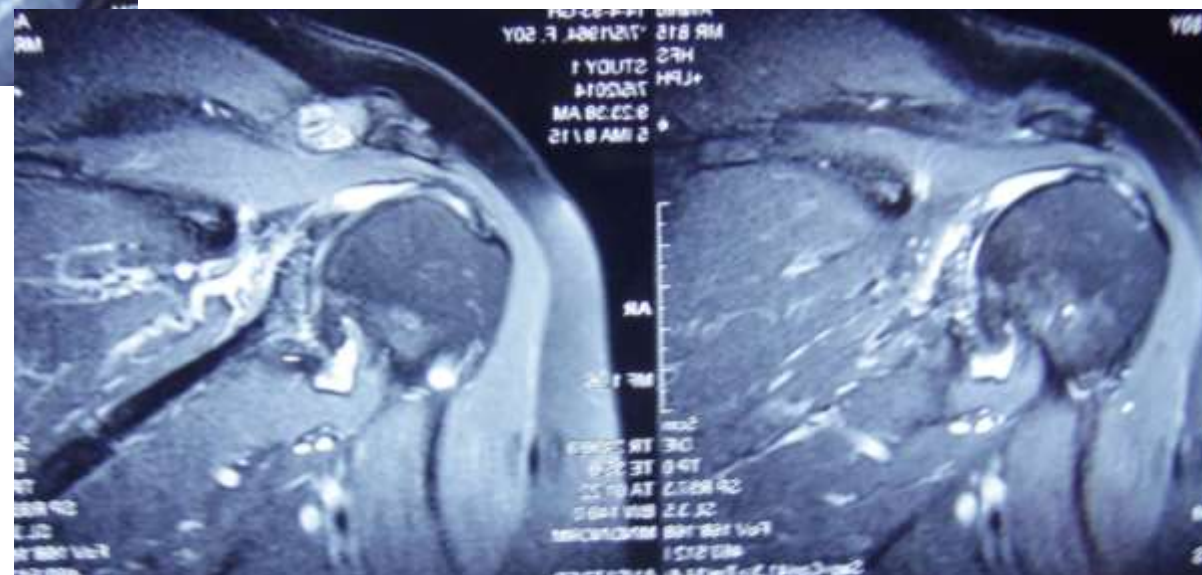
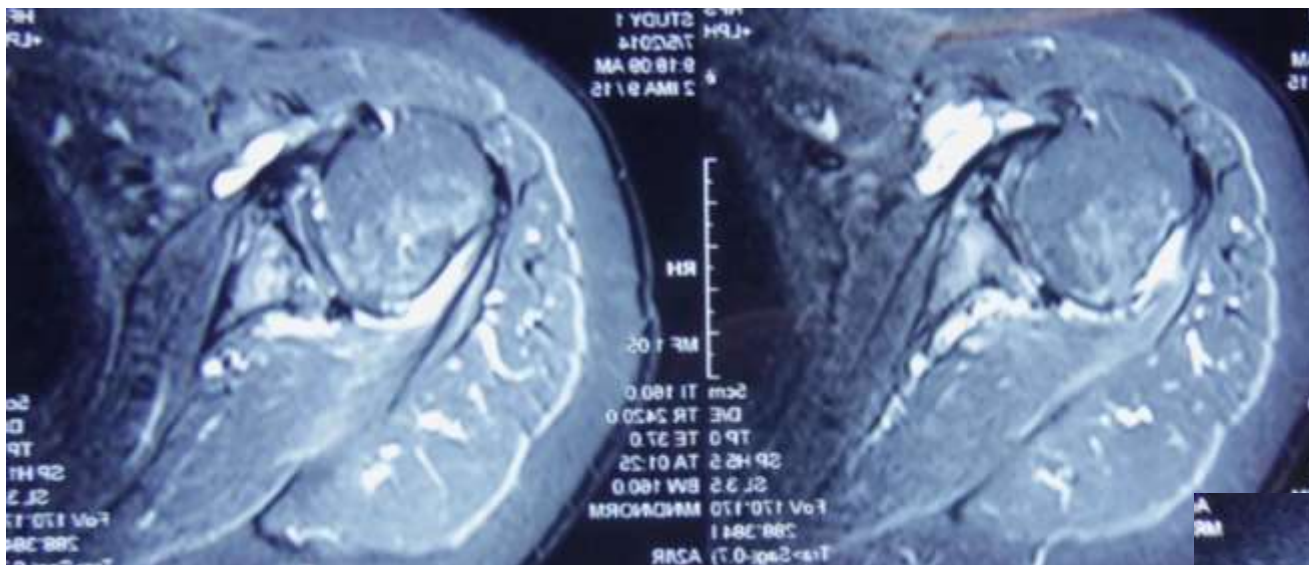
Shoulder Arthroplasty in young patients

M.N. Naderi, MD

Fellowship in shoulder surgery



50 y. female with shoulder pain > one year



Treatment options

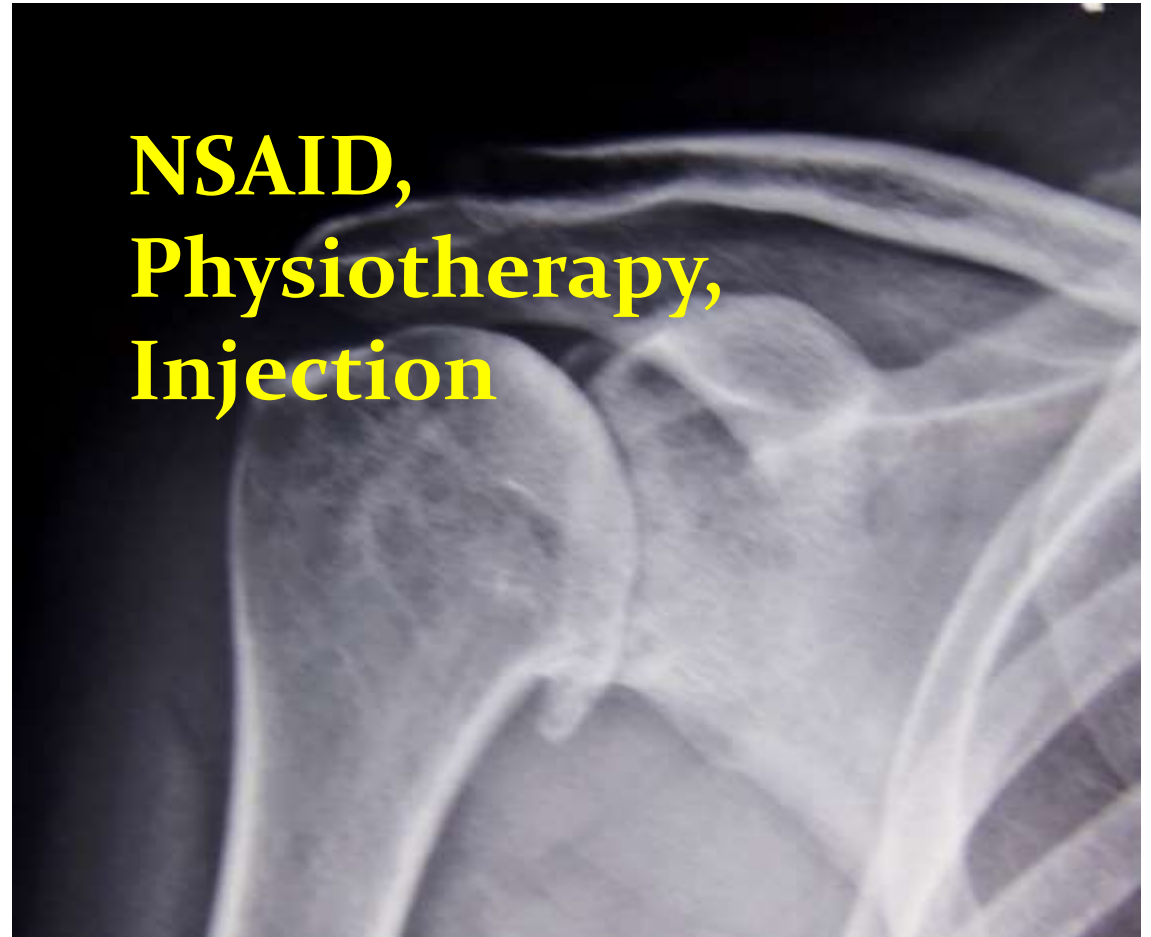
- Conservative treatment
- Arthroscopic surgery
- Arthroplasty



Treatment options

- Conservative treatment
- Arthroscopic surgery
- Arthroplasty

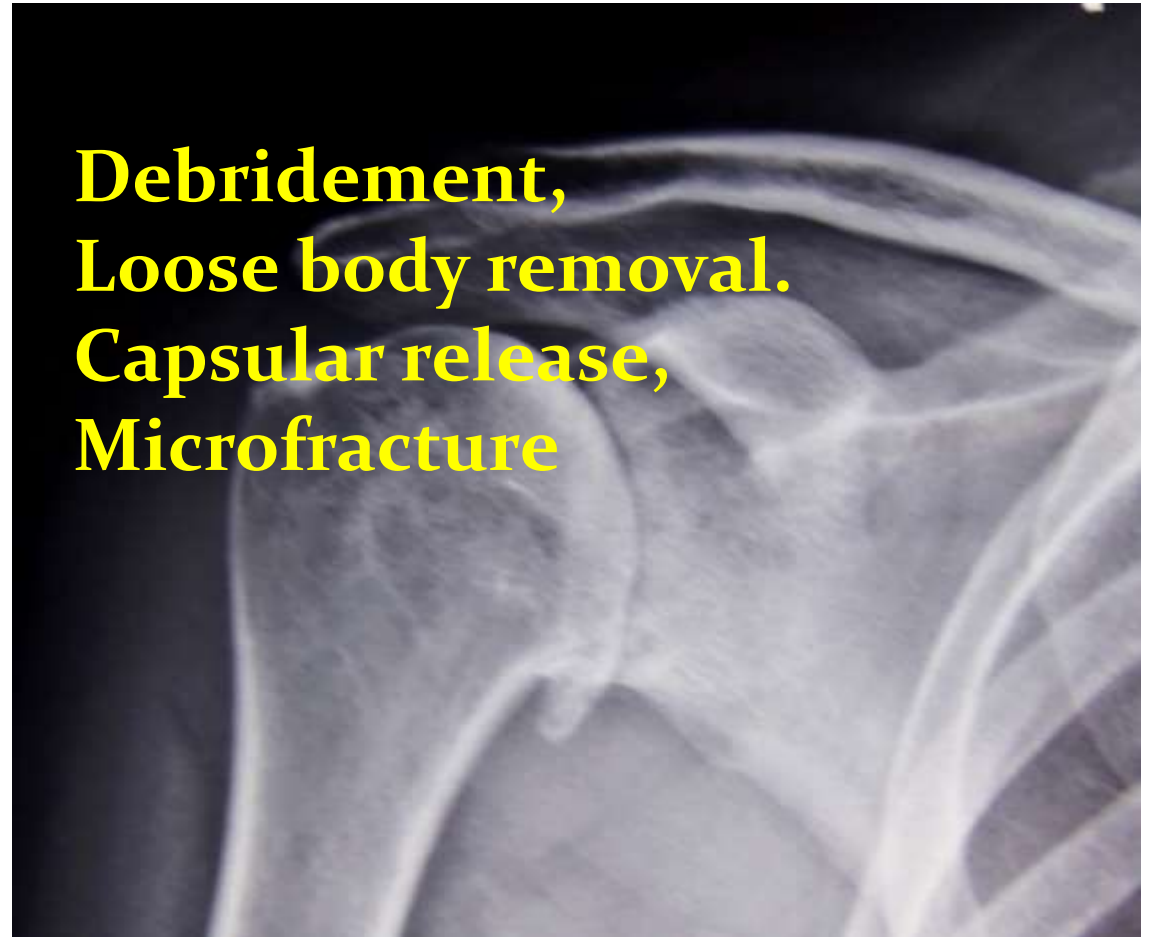
**NSAID,
Physiotherapy,
Injection**



Treatment options

- Conservative treatment
- Arthroscopic surgery
- Arthroplasty

**Debridement,
Loose body removal.
Capsular release,
Microfracture**



Treatment options

- Conservative treatment
- Arthroscopic surgery
- Arthroplasty



Shoulder arthroplasty in patients 59 years of age and younger,

Dillon et al, J shoulder & Elbow Surg 2013

- **2981 primary arthroplasty in 2 group**
- **2× revision in patients < 59 y.**
- **Risk of revision in HHR & Reverse > TSA**

Comparison of Patients Undergoing Primary Shoulder Arthroplasty Before and After the Age of Fifty, Saltzman et al, JBJS 2010

- **Worse outcome of shoulder arthroplasty in young ?**
 - Only 21% had primary DJD, whereas 66% of older
 - more complex pathological conditions,
 - capsulorrhaphy arthropathy , RA, and posttraumatic arthritis
 - higher expectation
 - M > F

Pathoanatomy in younger patients may complicate the surgery, rehabilitation, and outcome of shoulder arthroplasty

Severe proximal humeral fractures

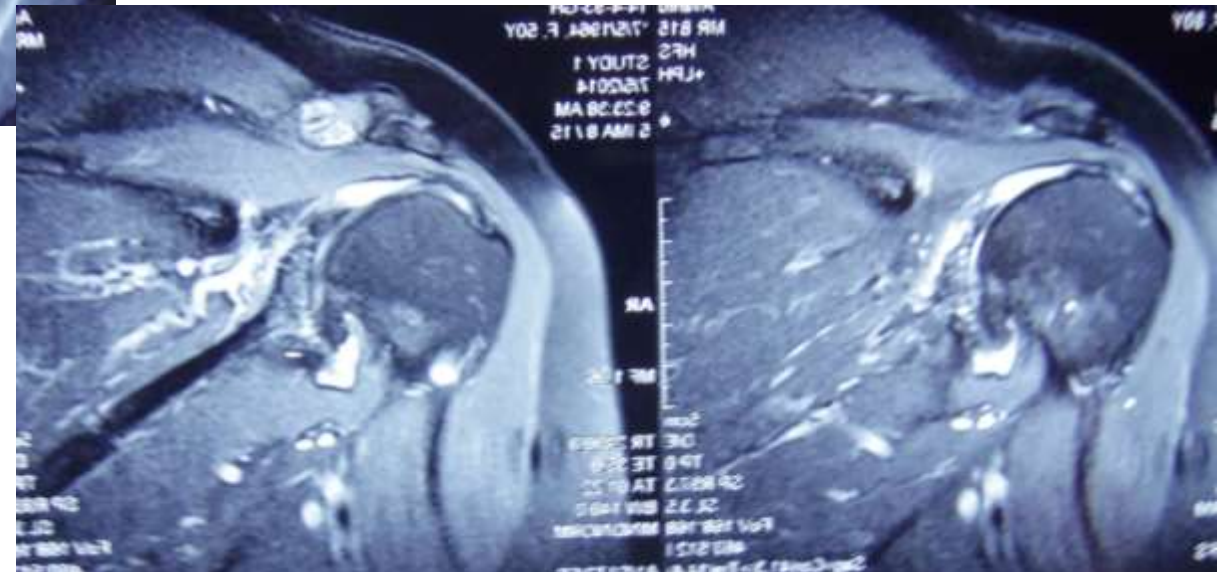
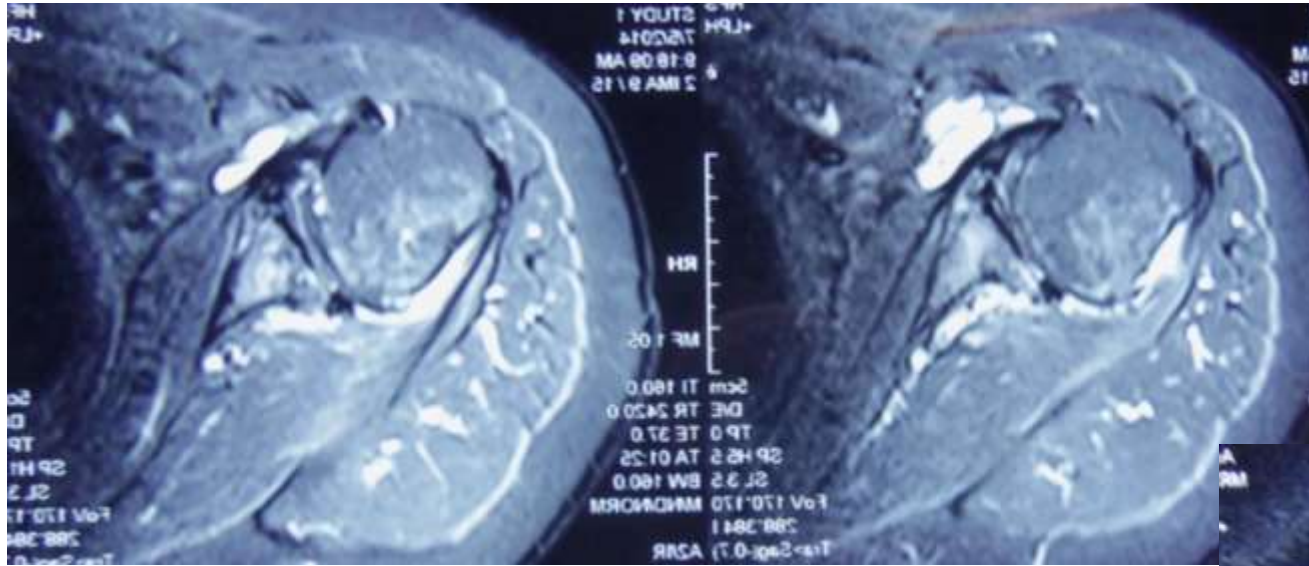
Displaced 4-part fx & 4-part fx-dx
(AVN, fixation fail, posttraumatic arthritis, & stiffness)
ORIF → poor outcome



If ORIF is not possible , then Arthroplasty



What we do in our patient?



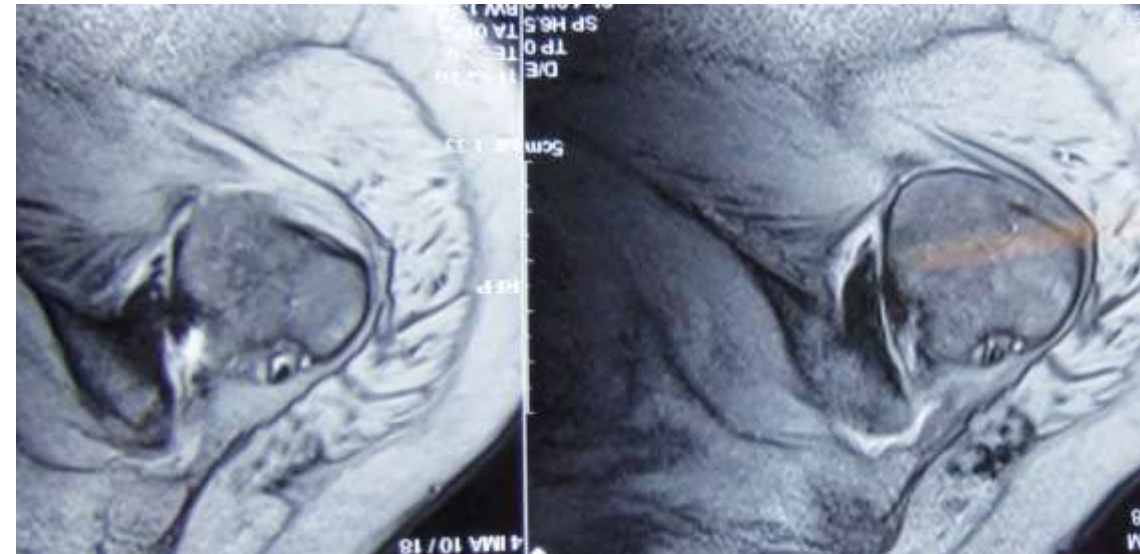
Osteoarthritis

- Joint space narrowing, cysts, osteophytes
- Posterior glenoid erosion
- Flattening of humeral head

What we want to treat?

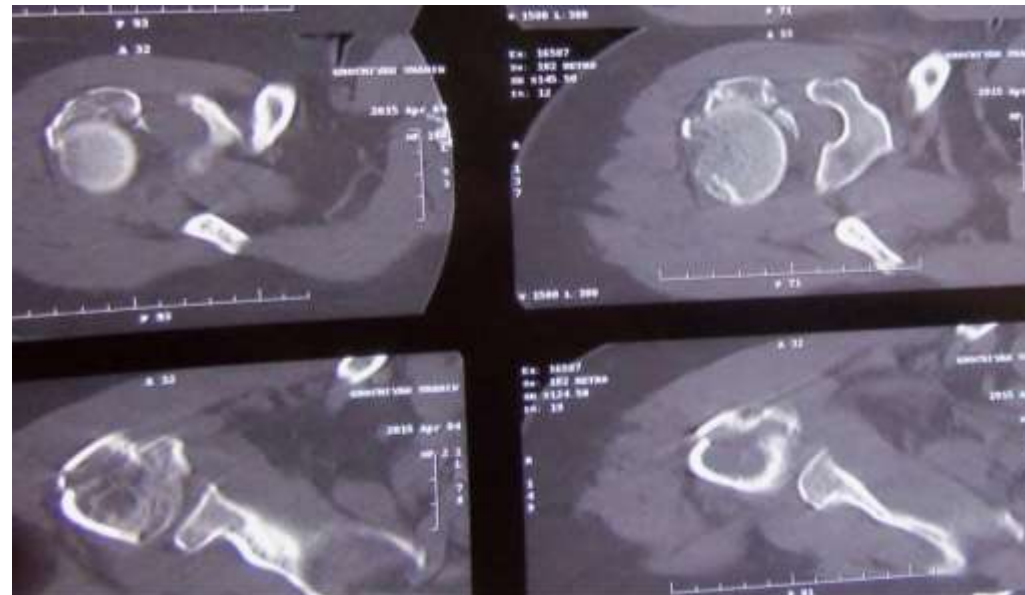
- Pain,
- Motion,
- Function

Durability of treatment? -



Pre-operative assessment

- Physical exam →
 - ROM, muscle force, expectations ?
- X-ray
- MRI, CT

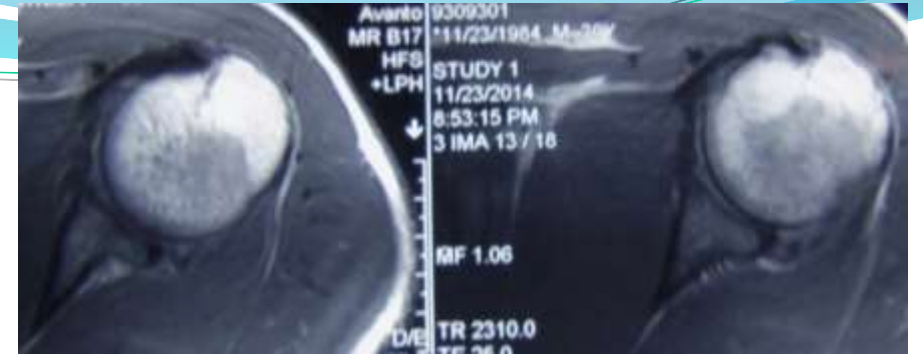


Role of arthroscopy in treatment

- House cleaning → pain relief
- Capsular release → increase ROM
- Microfracture → chondral regeneration
- Core decompression → for AVN



Delay shoulder arthroplasty



The Comprehensive Arthroscopic Management (CAM) Procedure for Young Patients with Glenohumeral Osteoarthritis, Millett et al. Elite Techniques in Shoulder Arthroscopy 2016

Summary of Outcomes After Arthroscopic Management of Glenohumeral Osteoarthritis

| Authors | Year | Shoulders, n | Age, yr | Technique | Revisions and Complications | Change in Status |
|------------------------------------|------|-----------------|--------------|--|---|---|
| Millett et al. ⁶ | 2013 | 30 | Mean, 52 | Debridement with or without capsular releases, humeral osteoplasty, axillary neurolysis, and acromioplasty | Arthroplasty (n = 6) at mean of 1.9 yr | ASES score, 25 SF-12 PCS score, 6.6 FE, 54.7° ER, 48.8° ER at 90°, 48.1° IR, 37° |
| Van Thiel et al. ⁹ | 2010 | 81 | Mean, 47 | Debridement with or without capsular releases, humeral osteoplasty, and acromioplasty | Arthroplasty (n = 1) at mean of 10.1 yr | ASES score, 20.9 SST score, 2.9 VAS score, 2.1 |
| De Beer et al. ⁴ | 2010 | 31 | Median, 57.5 | Debridement, glenoid resurfacing, and tenotomy | Axillary paresis (n = 1) Material failure (n = 2) Synovitis (n = 1) Contusion from MUA (n = 1) | Median Constant-Murley score, 24.5 |
| Kerr and McCarty ⁵ | 2008 | 20 | Mean, 38 | Debridement with or without tenotomy and microfracture | NR | ASES score, [*] 75.3 SANE score, [*] 63% |
| Richards and Burkhart ⁸ | 2007 | 8 | Mean, 55 | Debridement with or without capsular releases | NR | FE, 21.4° IR, 31.1° ER, 16.7° |
| Cameron et al. ³ | 2002 | 70 | Mean, 50 | Debridement with or without capsular releases | NR | Functional score (0-60), 14.7 FE, 38° |
| Weinstein et al. ¹⁰ | 2000 | 25 | Mean, 46 | Debridement | None | Pain improved |

**Joint space preserved,
Smaller lesion better
Minimal osteophyte formation**

ASES, American Shoulder and Elbow Surgeons; ER, external rotation; FE, forward elevation; IR, internal rotation; MUA, manipulation under anesthesia; NR, not reported; SANE, Single Assessment Numeric Evaluation; SF-12 PCS, Short Form 12 Physical Component Summary; SST, Simple Shoulder Test; VAS, visual analog scale.

When the patient want a more definite treatment?

- **Arthroplasty**
 - **Hemiarthroplasty , Total , Resurfacing**

Hemi

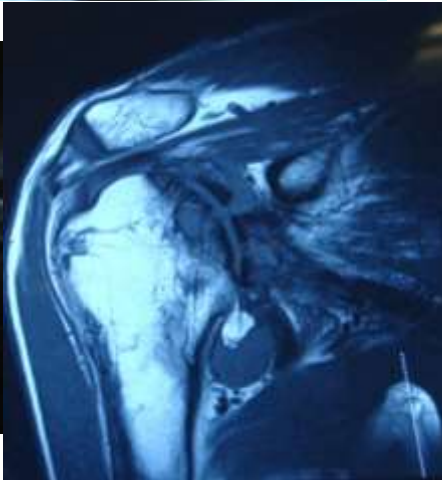
VS

Total Shoulder

- Easy procedure
- Less instability
- × Less pain relief
- × Glenoid erosion
- × Higher revision rate

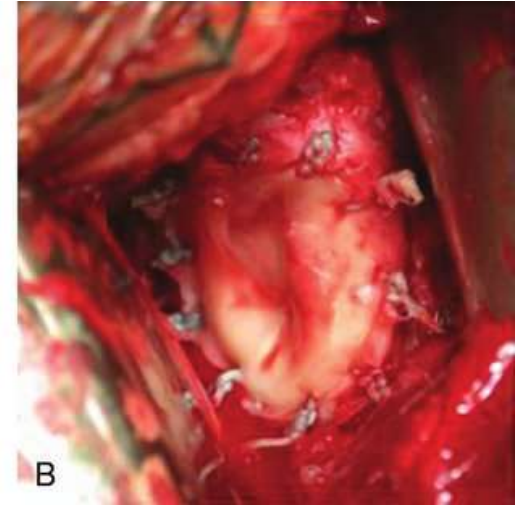
- More pain relief
- Better active motion
- × Longer OR time
- × Polyethylene wear
- × Glenoid loosening





When the patient want a more definte treatment?

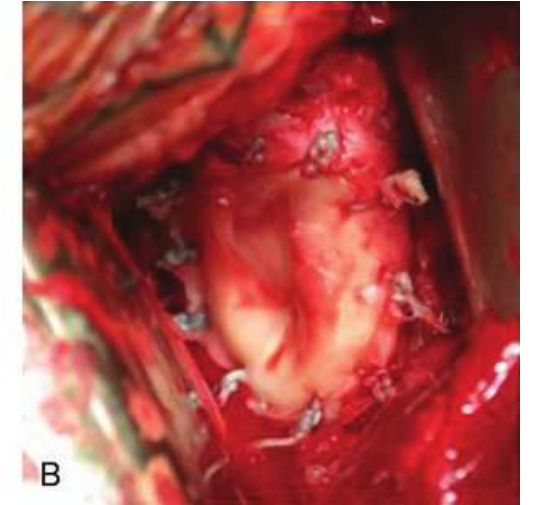
- **Arthroplasty**
 - **Hemiarthroplasty , Total , Resurfacing**



- Arthroscopic debridement and biological resurfacing of the glenoid in glenohumeral arthritis, De Beer et al, Knee Surgery, Sports Traumatology, Arthroscopy, December 2010,
- Arthroscopic glenoid resurfacing with meniscal allograft: a minimally invasive alternative for treating glenohumeral arthritis. *Pennington WT, Bartz BA ,Arthroscopy. 2005 Dec; 21(12):1517-20*

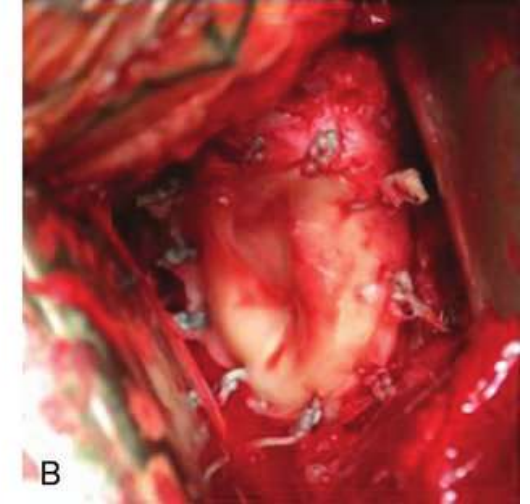
When the patient want a more definte treatment?

- **Arthroplasty**
 - **Hemiarthroplasty , Total , Resurfacing**
 - **Hemi with biologic resurfacing**



When the patient want a more definte treatment?

- **Arthroplasty**
 - **Hemiarthroplasty , Total , Resurfacing**
 - **Hemi with biologic resurfacing**



Humeral hemiarthroplasty with biologic resurfacing of the glenoid for glenohumeral arthritis. Two to fifteen-year outcomes. *Krishnan et al, J Bone Joint Surg Am. 2007 Apr; 89(4):727-34.* ■

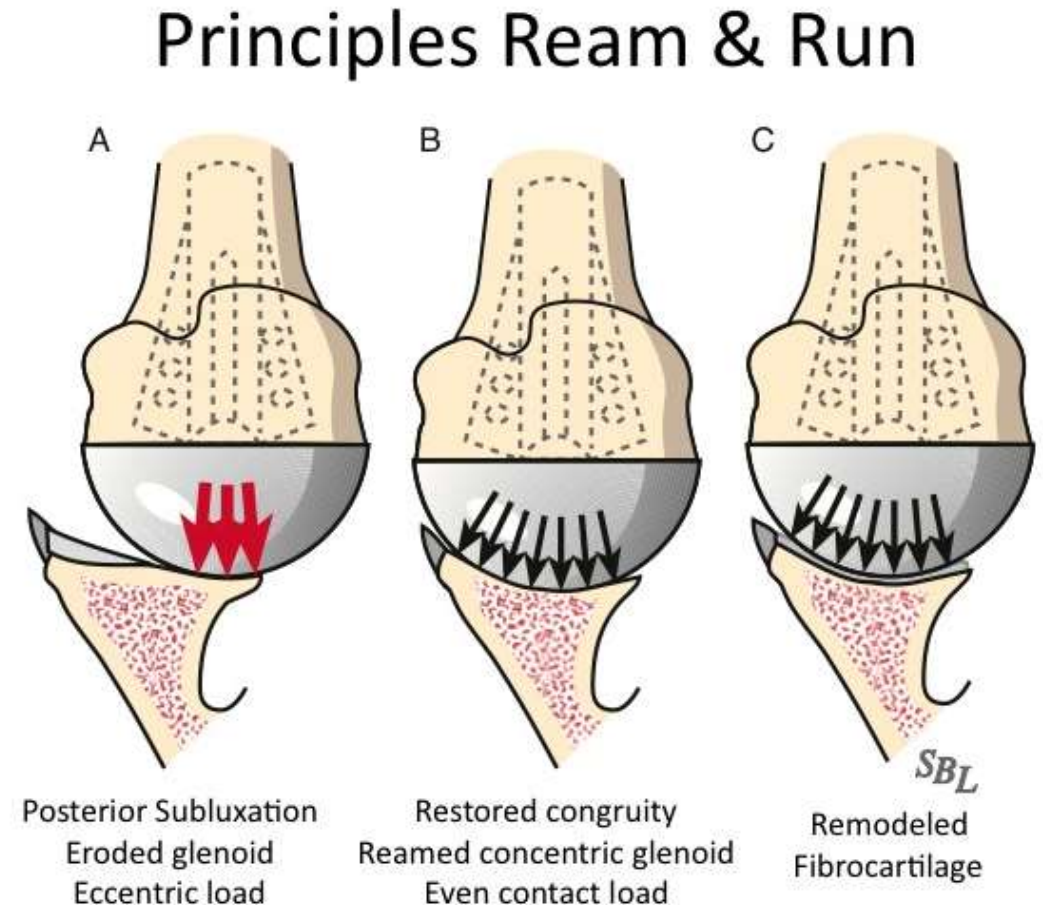
Soft-tissue resurfacing of the glenoid in the treatment of glenohumeral arthritis in active patients less than fifty years old. *Elhassan et al, J Bone Joint Surg Am. 2009 Feb; 91(2):419-24.* ■

The high failure rate of biologic resurfacing of the glenoid in young patients with glenohumeral arthritis. *Strauss et al, J Shoulder Elbow Surg. 2014 Mar; 23(3):409-19.* ■

When the patient want a more definte treatment?

- Arthroplasty
 - Hemiarthroplasty , Total , Resurfacing
 - Hemi with biologic resurfacing
 - Hemi with “ream & run”

Shoulder hemiarthroplasty with concentric glenoid reaming in patients 55 years old or less. [Saltzman et al, J Shoulder Elbow Surg. 2011 Jun; 20\(4\):609-15](#)



Quality of anatomical reconstruction correlates with functional outcome

- retroversion
- restoration humeral length
- head size
- Healing of the tuberosities

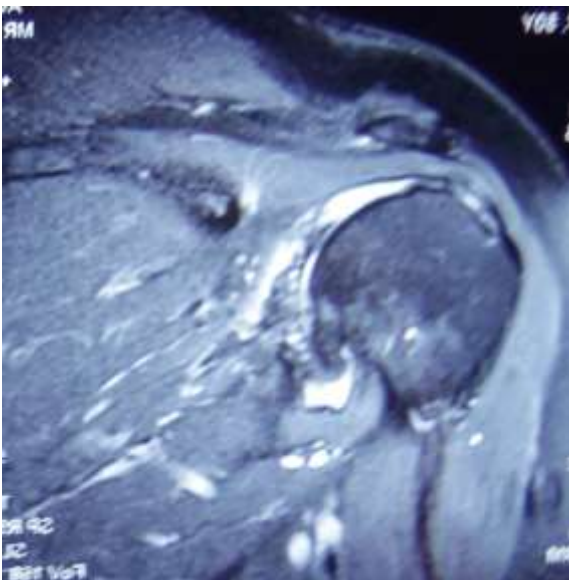
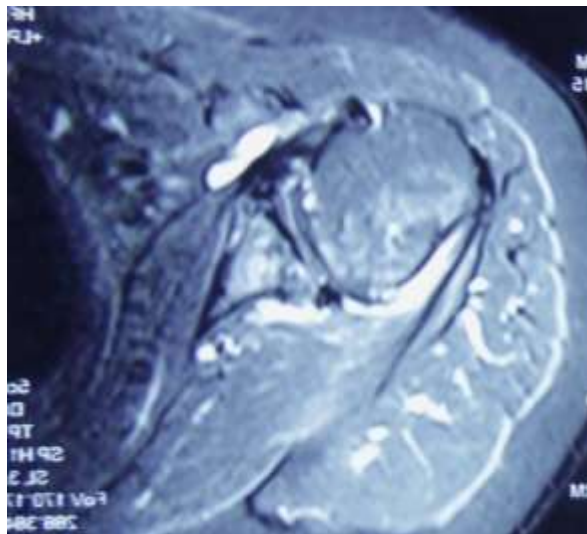
Shoulder Arthroplasty (99) Boileau P, Walch G:
Shoulder arthroplasty for proximal humeral Fx: problems and solutions



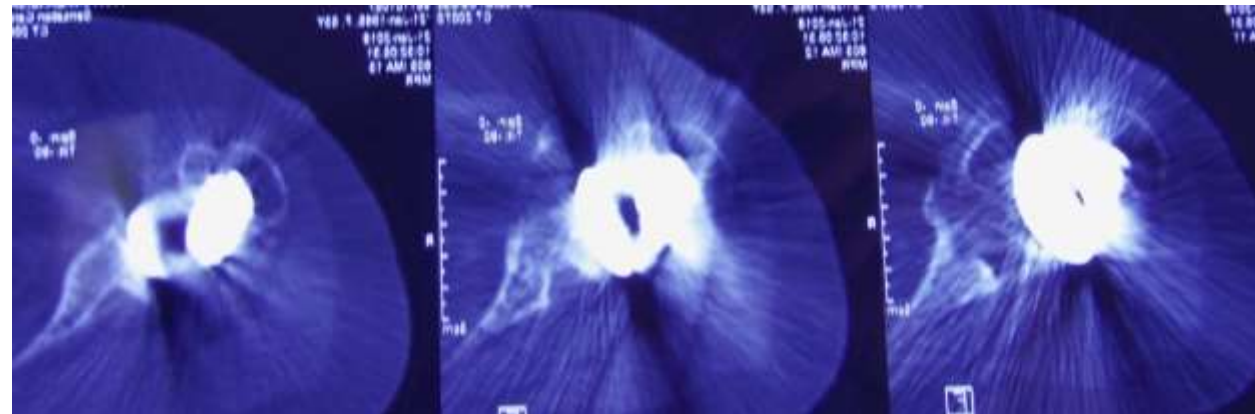
Complications of shoulder arthroplasty

- **Instability 1.2%**
- **Rotator Cuff Tear 2%**
- **Infection 0.5%**
- **Heterotopic Ossification 10 -45%**
- **Stiffness (most common)**
- **axillary nerve injury**
- **Periprosthetic Fracture**

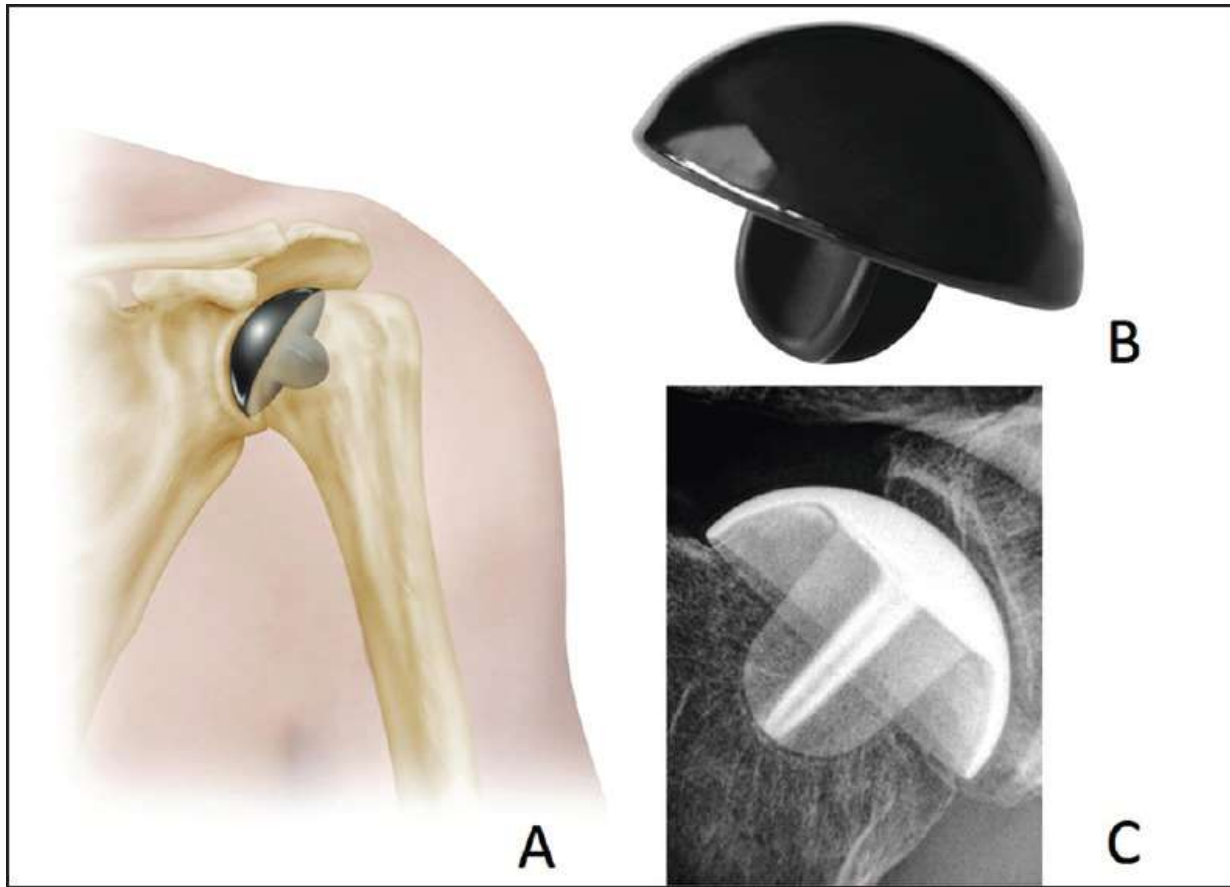
50 y. female with shoulder pain > one year



50 y. female with shoulder pain > one year



Newer designs



Pyrolytic carbon resurfacing hemiarthroplasty



Ceramic humeral replacement

Summary

- GH arthritis in young patients is a challenge
- Arthroscopic debridement → first line of surgery
 - Arthroplasty

- ❖ Attention to indication
- ❖ Correct patient selection
- ❖ Consider meticulous technique



Thanks for your attention