

# Dr Ivan Popoff

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# Reverse Total Shoulder Replacement



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# Reverse Total Shoulder Replacement

19,929 in Australia 2018  
Increase of 25% c.f. 2017



# Expansion of Indications

- Rotator cuff arthropathy
- Osteoarthritis (43% 2008 – 73% 2017)
- Fracture
- Rheumatoid / inflammatory arthritis
- Avascular necrosis
- Instability
- Tumor



# Rotator Cuff Arthropathy

- Large cuff tear results in loss of rotator cuff- deltoid force couple proximal migration of humeral head.
- Combination of mechanical and biochemical degeneration

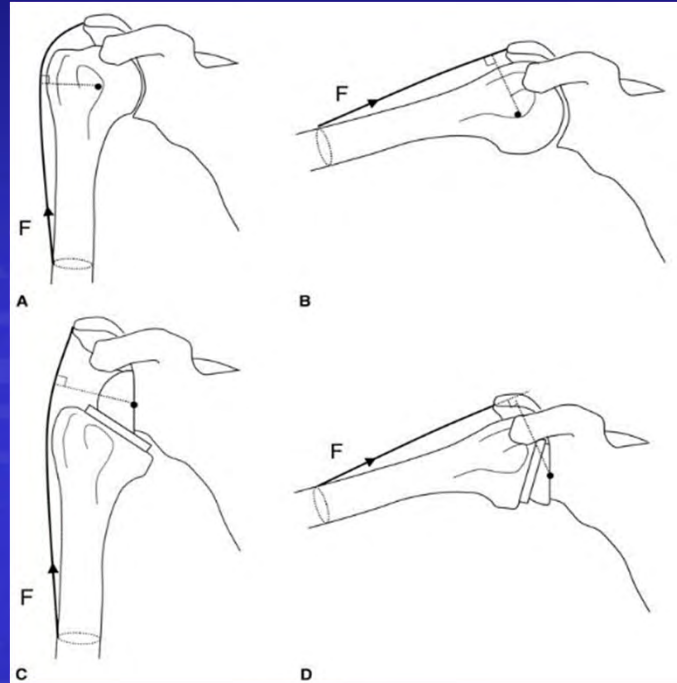


# Insoluble Problem

- Non op mx – physio, cortico-steroid, analgesia
- TSA failed
- Hemi arthroplasty –incomplete pain relief ,no Functional improvement
- Early attempts at humeral head constraint fail



# RTSA Design- Grammont



Medialised Center of rotation

Distraction of Humerus

Deltoid contraction = rotation



# RTSA Design - Grammont

Medialised COR – impingement ,  
decreased ROM, notching  
(eccentric glenisphere, inf orientaion)

Humeral distraction – loss of  
posterior deltoid as potential  
external rotator

(latissimus dorsi transfer)



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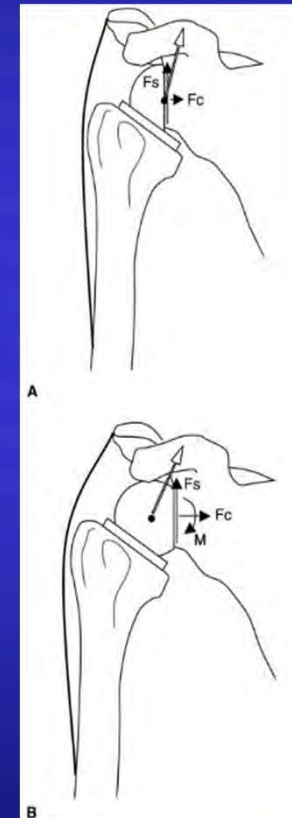
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# RTSA Design- Lateralised COR

Decreased  
impingement  
Increased ROM  
Increased forces at  
glenoid interface

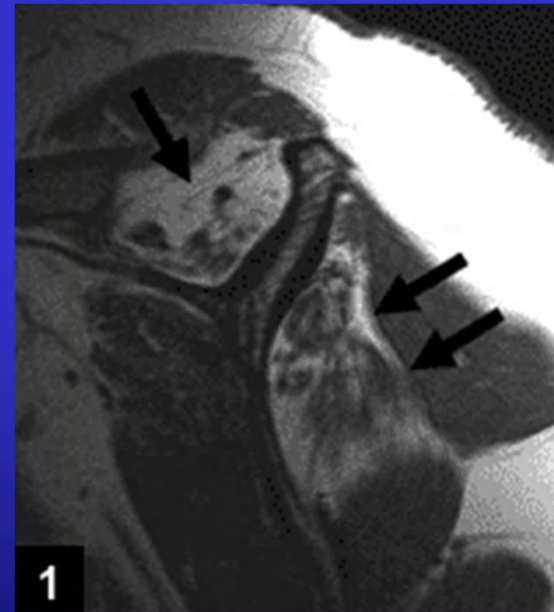


# RTSA for cuff arthropathy

- Significant pain relief
- Functional ROM
- Shoulders not normal
- Change in shoulder contour
- Markedly improved shoulder scores (drop off 8 -10years)
- Patient satisfaction 90-95%

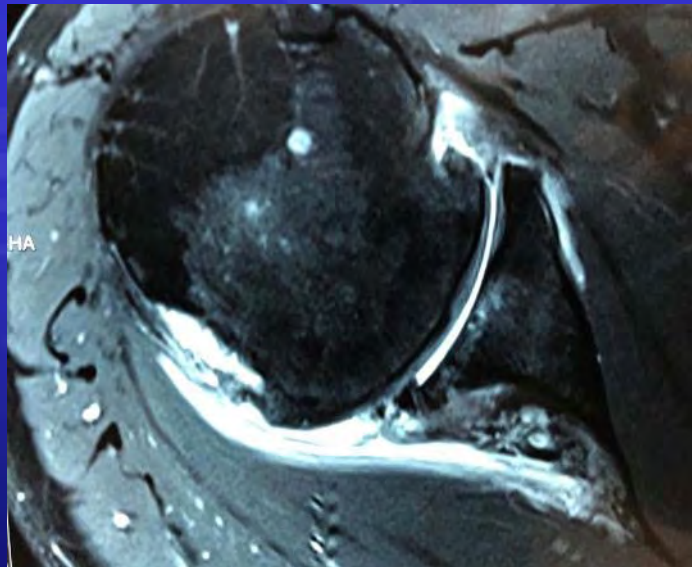
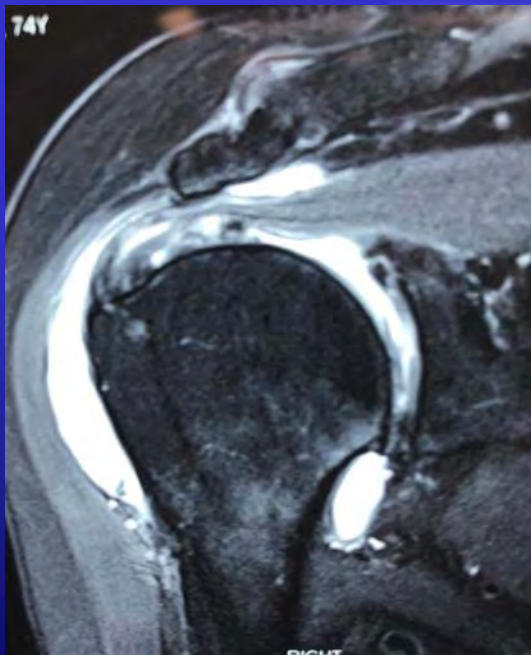


# Irreparable Cuff Tears



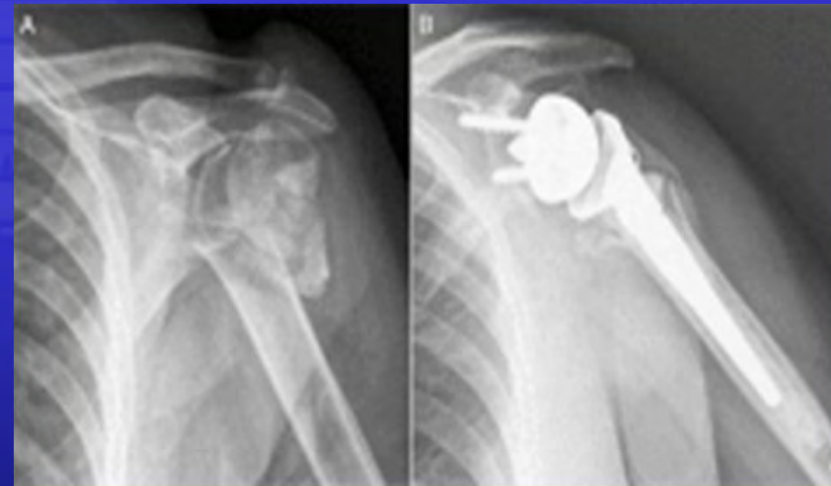
# RTSA for OA

- Cuff tear/ degenerate cuff
- Glenoid version
- Age



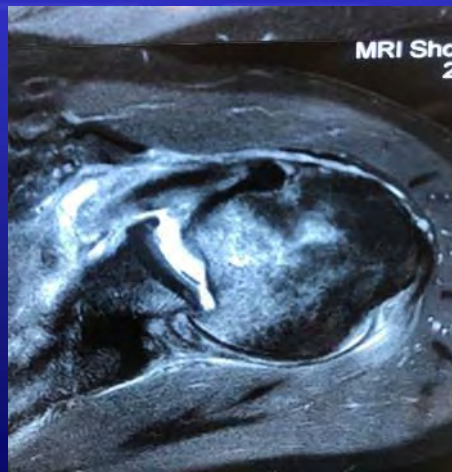
# RTSA for 4 Part Fracture

- Hemi arthroplasty – problems tuberosity non-union or reabsorption

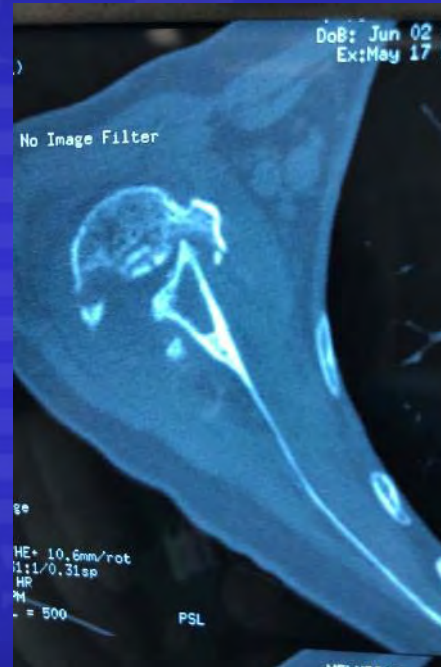


# RTSA

- AVN – easier to balance the shoulder
- Inflammatory arthropathy – poor cuff
- Instability – TSA
  - Missed locked dislocations



# RTSA Significant Bone Loss

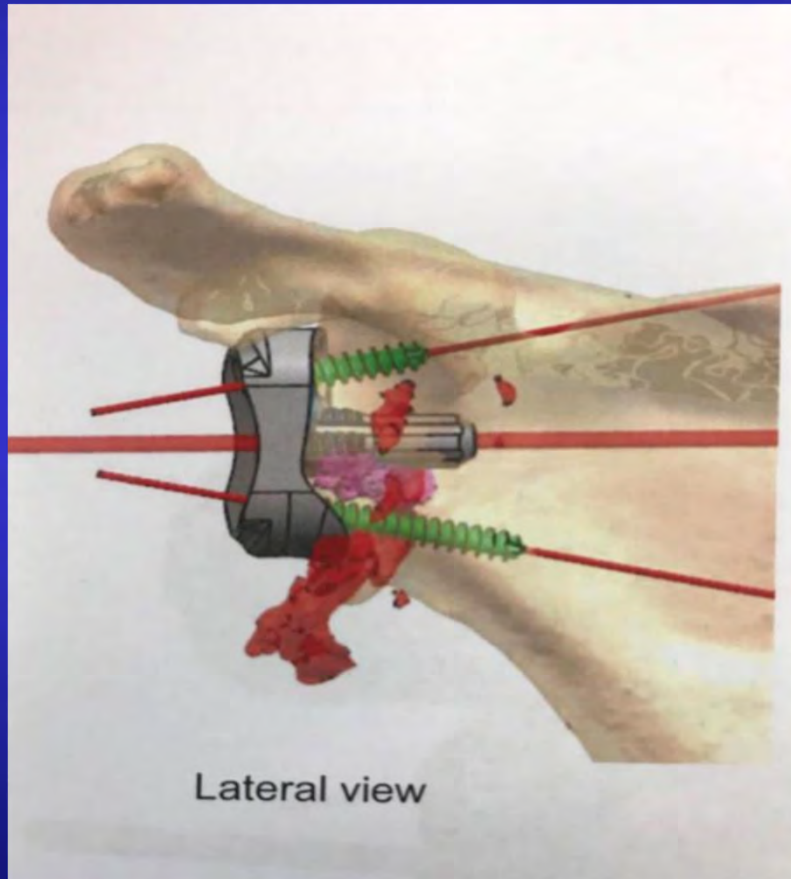


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# RTSA Custom Prosthesis



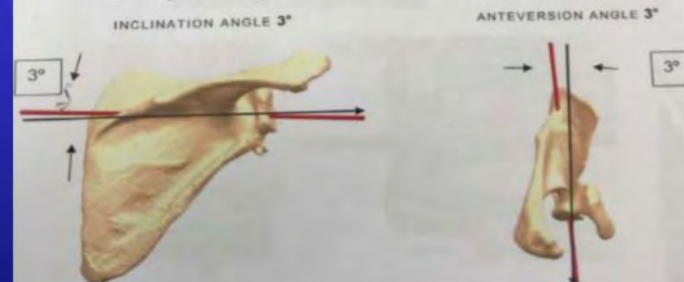
### 3. DESIGN SPECIFICATIONS

Augmented glenoid for **Reverse** Shoulder configuration with the following characteristics:

- Metal Back Small-R taper connection
- Peg average length 19 mm
- $\overline{\text{Ti}}$  structure on surfaces in contact with bone  
(Warning:  $\overline{\text{Ti}}$  surface is abrasive; it is not recommended in areas that could be in contact with soft tissues)



- K-wire positioning



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# RTSA Structural Glenoid Bone Graft



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# Revision TSA

- Rotator cuff failure in TSA most common cause for revision
- Modular prosthesis



# Post Op Rehabilitation

- Depends on Subscapularis
- If repaired 6/52 in sling then active assisted ROM, anterior deltoid retraining, theraband resisted IR at 3/12
- If no subscap 4/52 in sling then Active assisted ROM, anterior deltoid retraining, theraband.



# Complications

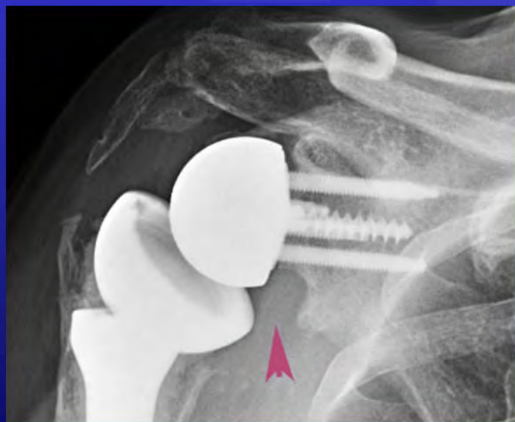
Instability

Infection – increased rate Rh Art (P. Acnes)

Notching- inferior impingement

Acromial stress fracture

loosening



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# Failure

Revisions tend to be early – instability

Infection

Drop off in shoulder scores year 8

10 year survival 91 - 95%



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# RTSA Conclusion

- Powerful, predictable tool to treat difficult and complex shoulder problems



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**Thank You**



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