

Dr Ivan Popoff

www.orthosports.com.au

29-31 Dora Street, Hurstville
160 Belmore Road, Randwick



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Dr Ivan Popoff
Knee, Elbow & Shoulder Surgery

Treatment of Gleno-Humeral Osteoarthritis in the Young Patient



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Osteoarthritis

- Primary - age, overuse, chronic overload
 - > 60yr, posterior
- Secondary- Post Traumatic, Post inflammatory, Infection, Iatrogenic, AVN, Dysplasia



Osteoarthritis

- » Loss of articular cartilage resulting in secondary changes in the underlying bone and surrounding soft tissue
- » initially mechanical as advances becomes increasingly enzymatic / inflammatory with significant synovitis



Osteoarthritis

- » Pain
- » gradual loss of movement
- » equal loss of active and passive movement
- » muscle weakness
- » Diagnose on X ray
- » diagnosed on X-ray

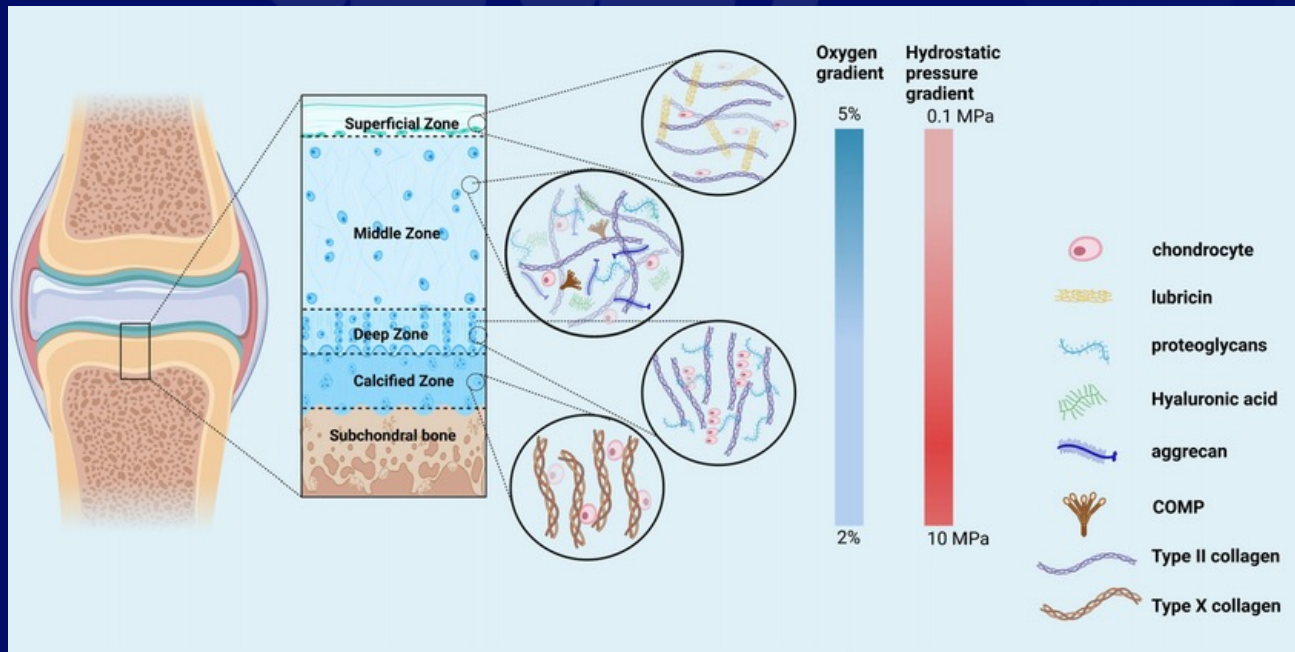


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Articular Cartilage

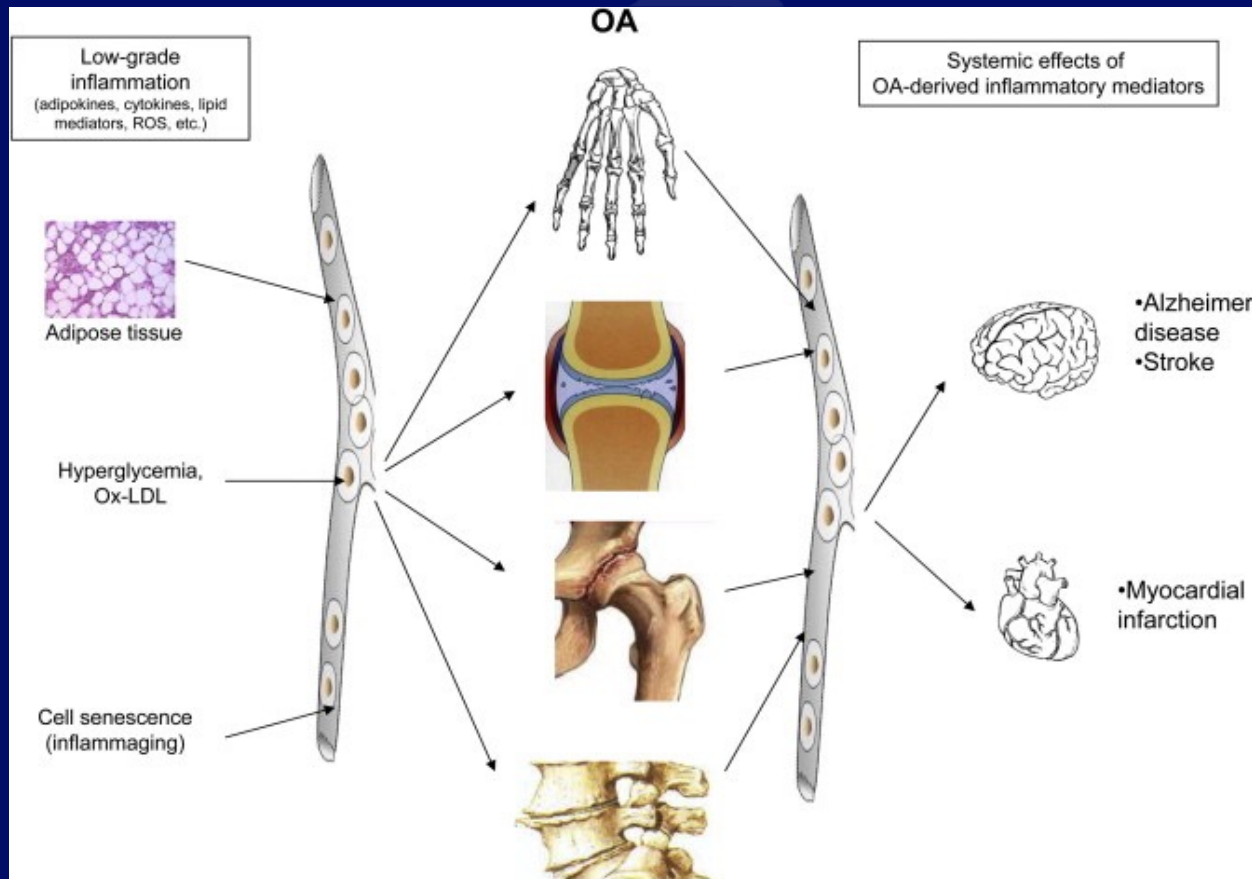


Aetiology of OA

- » Mechanical disruption of collagen matrix, loss of glycosaminoglycans
- » Activation of chondrocytes - prostaglandins, cytokines, chemokine, MMP, activation of macrophages neutrophils, N_2O_2 , ROS etc
- » Cartilage debris activate synoviocytes
- » Increasing load activates subchondral osteocytes
- » Enzymatic / Inflammatory degeneration



Osteoarthritis



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Treatment

Non Operative - Simple Analgesia

- NSAIDS

- Activity modification

- Physiotherapy

- G-H injections

Operative

- Arthroscopy

- Arthroplasty

- Arthrodesis



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Physiotherapy

- » Improving ROM (decrease joint compression forces)
- » Strengthening - theraband
- » Scapulo-thorasic rehabilitation
- » Local modalities - muscle pain



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Physiotherapy

- » Rainey & Peterson 2025 JOR- 11 patients with G-H OA considering Sx. After treatment 2-20/12 2 progressed to Sx, 9 sign improvement PROMs, ROM, Strength
- » Guo et al Orthopaedics 2016 - 129 patients Physio, corticosteroid inj, hyluronate inj, NSAIDS - sign improvements 3/12 persisting at 3 years



Physiotherapy

- » Hoveidaei et al J AAOS 2024 - 2,710,463
- » Patients Tx with Physio and Corticosteroid 2x more likely to have TSA at 2 and 5 years cf Patients who had no physio (physio and no corticosteroid 2.1x)



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Corticosteroid Injection

- » Reduce joint inflammation
- Variable duration 1- 4/12
- » Complications - Infection 1/5000-10000
 - Steroid flare
 - Facial redness
 - Stimulant
 - Blood glucose
- Should be combined with physiotherapy



Corticosteroid and Articular Cartilage

Raynauld et al , Arthritis Rheum 2003

Double blind controlled randomised study, knee OA, 68 patients, 34 saline injection , 34 corticosteroid injections every 3/12 for 2 years

No difference in joint space loss

Corticosteroid group significant improvements in pain and ROM



Hyaluronic Acid

- » Restore Viscosity of Joint Fluid
- » gets broken down in degenerate joints
- » ? mechanism of action -? anti inflammatory
-?chondroprotective
- Zhang et al JSES 2018 meta analysis G-H OA
no difference between Tx and Control groups
- AAOA Evidence Based Practice Guidelines
“Strong Evidence supports that there is no benefit
to the use of hyaluronic acid in the treatment of

 G-H OA

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Platelet Rich Plasma

- » Content depends on protocol
- » leukocyte rich or poor
- » alpha granules contain - PDGF, TGF-B, ILGF, BFGF, VEGF
- » In Vitro - chondrogenesis and stem cell activation, decrease inflammatory mediators, decrease enzyme expression



PRP

» 288 mod to mod OA Randomised clinical trial
Leucocyte poor PRP cf N Saline - no
difference at 2 or 12 months

Bennell et al JAMA 2021

- Kany et al - 28 patients improved constant and pain scores at 44 months , 4 arthroplasty
- Benza et al - meta - analysis 18 controlled trials evidence of improvement at 1, 3, 6, 12 months cf Placebo (effect proportional to platelet concentration



Stem Cells

- » Adipose or Bone Marrow Derived
- » Limited studies
- » no standardisation of preparation
- » Not regenerative
- » May have an anti-inflammatory effect



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AAOS

» “In the absence of reliable evidence..stem cells or PRP, cannot be recommended in the treatment of glenohumeral osteoarthritis.”



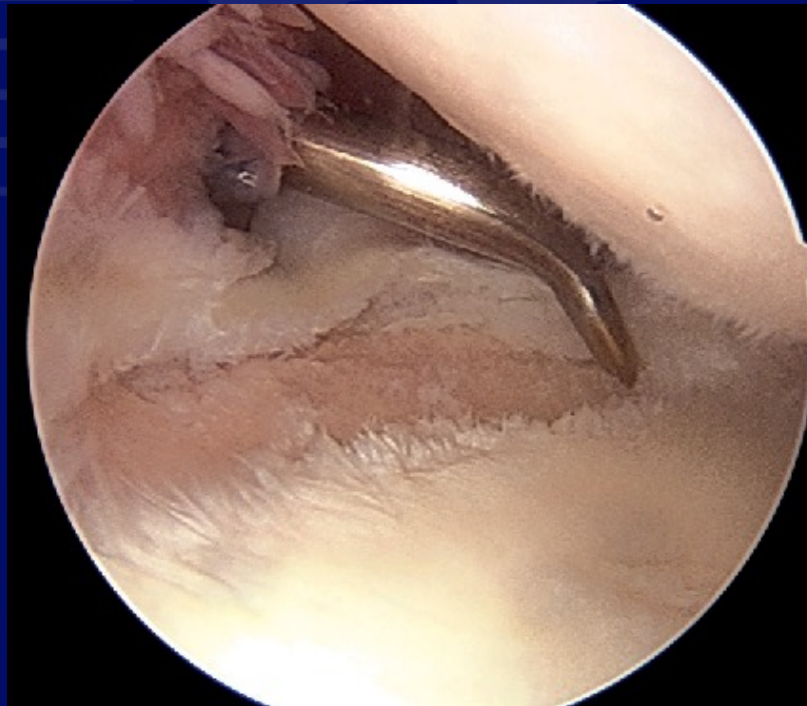
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Arthroscopy

- » SAD , Biceps tenodesis / tenotomy capsular release, e/o distal clavicle, R/o osteophytes labral repair/ interpositional arthroplasty



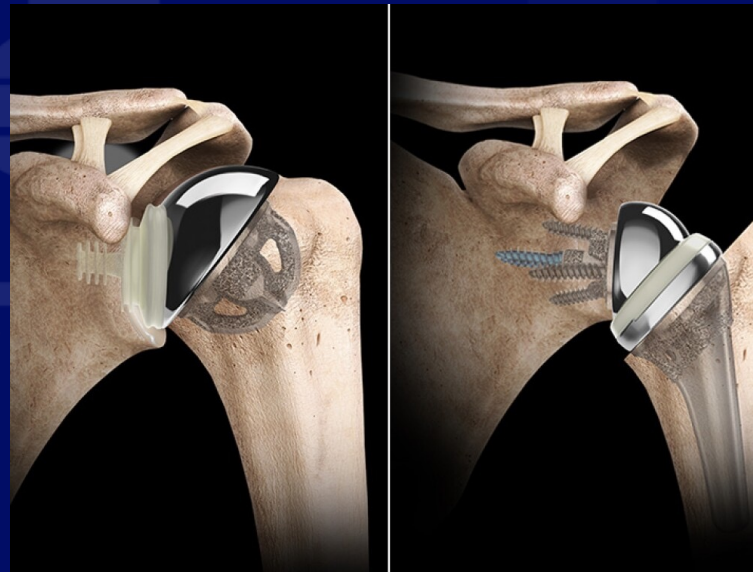
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Arthroplasty

- » Hemiarthroplasty
- » Anatomic Total Shoulder
- » Reverse Total Shoulder



Hemi- Arthroplasty

- » Pyro carbon - same modulus of elasticity as bone, self lubricating, phospholipid film, very smooth, low rate of glenoid wear, glenoid remoulding, avoids polyethylene
- » Fragile, seating in period- painful,
- » needs intact rotator cuff



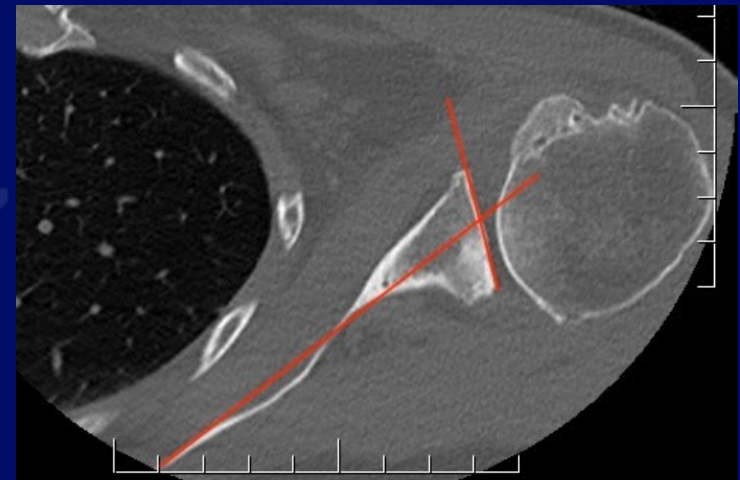
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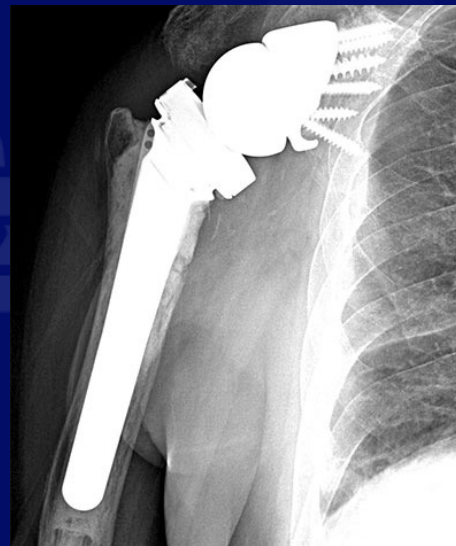
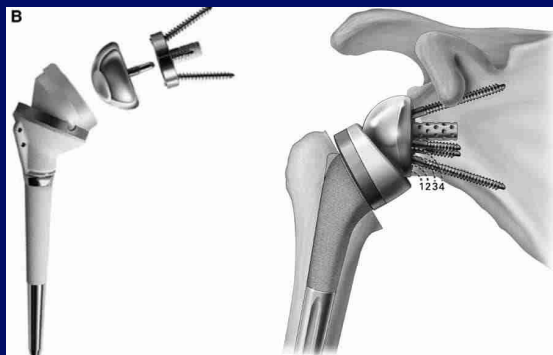
Anatomic Total shoulder Arthroplasty

- » Deals with the glenoid
- » higher rates of polyethylene wear younger patients - osteolysis
- » needs intact rotator cuff, glenoid perpendicular to long axis of scapula



Reverse Total Shoulder Replacement

- » Doesn't need intact cuff, correct for glenoid retroversion, custom prosthesis
- » Function generally inferior to Hemi and Anatomic
- » Revision options



Arthroplasty

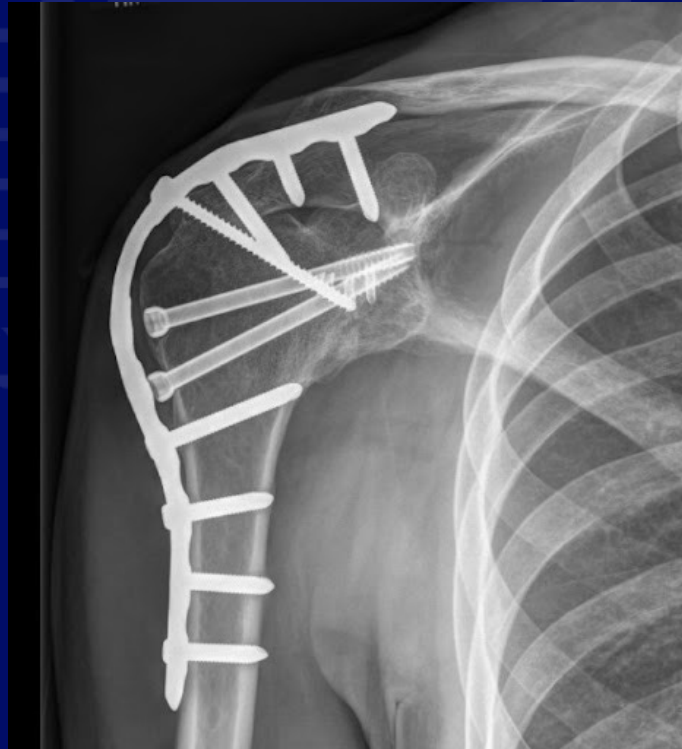
» Hemi , Anatomic, Reverse survival rates
patients < 60 yrs, Australian joint registry
similar 93% at 5 years and 90% 10 years
reasons revision, # (30 % Hemi), infection,
instability

Ease of Revision very important



Arthrodesis

» High Rate Scapulo- Thoracic Dysfunction/ Pain



Thank You



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