



HemiCAP® Inlay Arthroplasty in Compensated Cuff Arthropathy

Surgical Technique with Subscapularis Preservation

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Introduction:

Rotator cuff deficiency is a frequently encountered entity in orthopaedic practice. Based on AAOS estimates, more than 600,000 rotator cuff repair procedures are performed in the United States each year. About 4% of patients with a complete cuff tear develop signs and symptoms of rotator cuff arthropathy (RCA) (2). For advanced stages, reverse shoulder arthroplasty has seen a substantial increase in popularity since its introduction and approval by the FDA in 2004 (3). However, revision surgery and complication rates present significant challenges for both patients and surgeons (2-7). Earlier intervention with less invasive joint preservation techniques may provide an attractive alternative, particularly for active patients with functional demands of the upper extremity. Early stage RCA Type 1A (Seebauer Classification) (8) is defined by intact anterior restraints, minimal superior migration, dynamic joint stabilization, and acetabularization of CA arch and femoralization of the humeral head (8). The following outline presents the surgical technique with subscapularis preservation which is beneficial in non-repairable, rotator cuff compromised patients. This deltoid-splitting approach allows for easy and reproducible superior humeral head inlay arthroplasty while addressing secondary humero-acromial pain generators in the same setting.

Surgical Technique:

1. The patient is placed in a modified beach chair position with a stabilizer on the affected side.
2. The incision and anatomic landmarks are outlined (Figure 2).
3. A diagnostic arthroscopy is performed to confirm a non-repairable cuff tear with early disease stage (Type 1A).
4. A 2 to 3 inch incision is made from the posterolateral tip of the acromion towards the coracoid (Figure 2A). The skin is undermined above the deltoid fascia (Figure 2B) in order to reach the AC joint (Figure 2C).



Figure 1:
HemiCAP Partial Inlay Arthroplasty with Screw Fixation and Contoured Articular Component

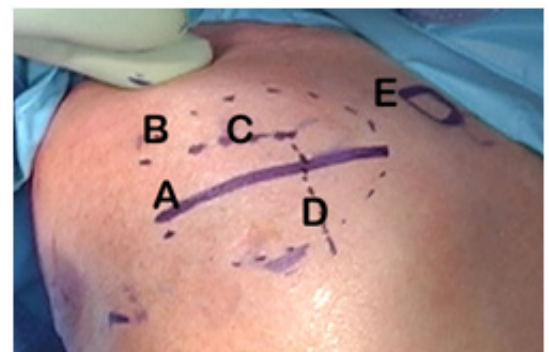


Figure 2:
*A. Incision Towards Coracoid (4)
B. Circular Area Undermining the Skin
C. AC Joint Incision
D. Mini-Deltoid Split in Front of the Acromion
E. Tip of the Coracoid*

Surgical Technique Continued:

5. A needle-tip Bovie is used to incise the AC joint. The AC ligament complex is undermined for later repair and a distal clavicle resection is performed (<1cm).

6. Going through the AC joint, the incision is redirected and a deltoid split is performed 1cm in front of the lateral acromion (Figure 2D).

7. The CA ligament is incised and a retractor is inserted through the anterior deltoid split, lateral to the acromion to avoid injury to the axillary nerve.

8. Soft tissues on the anterior-lateral tip of the acromion are undermined and the distal tip is excised.

9. A small Bankart retractor is inserted separating the acromion and the anterior aspect of the deltoid (above the subscapularis). A full view of the superior aspect of the humeral head is provided.

10. The non-repairable cuff is debrided and osteophytes on the anterior-lateral humeral head are removed.

11. The HemiCAP drill guide is placed lateral and posterior to the bicipital groove covering the defect on the superior humeral head (Figure 3).

12. A guide pin is placed centrally into the defect (Figure 3), a pilot hole is drilled, and the cannulated fixation screw is inserted over the pin at the appropriate height.

13. The native articular surface curvature is measured in all planes (superior, inferior, medial, lateral), the implant bed is prepared with a corresponding reamer, a sizing trial confirms the appropriate fit 0.5mm below the surrounding articular surface, and the final articular component is inserted into the taper head of the screw.

Rehabilitation:

A step-wise rehabilitation regimen is followed allowing for 1-2 weeks of immobilization in an ultra-sling, followed by gentle ROM, active assisted elevation, external rotation exercises at 2 to 3 weeks and finally deltoid strengthening, active ROM, and scapular stabilization exercises starting at week 4.

Conclusion:

Superior humeral head inlay arthroplasty in early stage compensated cuff arthropathy effectively addresses the humero-acromial pathology without interfering with an intact glenohumeral joint. Functional improvement is gained through successful pain management addressing primary and secondary pain generators. Our surgical technique and treatment rationale have been published in the past. (9)



Figure 3:
*HemiCAP Drill Guide
Covering the
Superior Humeral
Head Arthroplasty (11).
Mini Deltoid Split*

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