The Surgical Approaches for Shoulder Arthroplasty

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Summary

Although the delto-pectoral approach is the most common approach used to insert a shoulder prosthesis, some surgeons still prefer to use superior approaches. Details of the different techniques are given to provide the best exposure possible.

Introduction

Although many possible surgical approaches to the shoulder are available, our experience has shown that surgeons tend to select the one with which they are most familiar (according to their 'school') rather than the one best suited to the lesion being treated [1–3, 5, 7, 10–13]. However, in our series the delto-pectoral approach was used in 95% of the cases with the superior approaches (transacromio-clavicular Patte and transacromial Debeyre) used in only 5% (Fig. 1). There was one posterior approach.

The Delto-pectoral Approach

This was by far the most commonly used approach and was employed in virtually all the fracture cases (the technique in fracture surgery is detailed elsewhere.) Having been intubated under general anaesthesia the patient is installed in the semi-sitting or beach-chair position with the shoulder outside the table (Fig. 2).

Fig. 1. The delto-pectoral approach (A) and the superior approaches: trans-acromio-clavicular (B) and trans-acromial (C)

Fig. 2. Beach-chair position with the shoulder outside the table
Superficial Layers

An elongated straight or 'S' incision is made starting from the coracoid and running lateral to the deltopectoral groove and this is then extended out from the axillary fold to avoid any scar retraction. The delto-pectoral groove can then be opened and the deltoid muscle and cephalic vein retracted laterally (Fig. 3). The conjoint tendon is retracted medially taking care to the musculo-cutaneous nerve [8]. The deltoid should never be detached from the clavicle [6, 9, 17, 18] The clavipectoral fascia is then incised along the lateral border of the conjoint tendon and the acromioclavicular ligament can be partially divided. This step can be made easier by placing a Homan retractor over the coracoid or over the acromio-clavicular ligament.

Subscapularis identification and release

Defining and releasing the borders of the subscapularis is an important step (Fig. 4):

- Onto the medial wall of the bicipital groove whose tendon can be located at the lower part of the incision by dividing the pectoralis major tendon for 1–2 cm.
- The upper border is easily defined beneath the fold of the subcoracoid bursa and can be followed under the coracoid.
- The lower border is marked by the anterior circumflex vessels. The axillary nerve is routinely located [4, 18].

Fig. 3. Incision of the clavipectoral fascia after retracting the deltoid and the cephalic vein laterally

Fig. 4. Defining the three borders of the sub-scapularis: superior (tip of the coracoid), lateral (bicipital groove) and inferior (anterior axillary vessels)

At this stage it is important to test external rotation, and where this is limited, try to assess how much of it is due to adhesions of subscapularis or loss of elasticity, capsular contraction and osteophytes. If there is clearly a subscapularis contraction, a lengthening should be performed by making a complete release of the subscapularis.

Division of subscapularis is carried out at the same time as the capsule (except in the previous case) following a vertical line 1.5 cm medial to the bicipital groove and descending for three-fourths of its height. The division should stop just before the circumflex vessels where the cut turns horizontally and medially following the direction of the fibres.

The upper border and deep and superficial surfaces of the tendon must be fully released (especially beneath the coracoid) and then external rotation retested. The remaining fibres of subscapularis can then be progressively divided keeping in close contact to the humerus to avoid damage to the circumflex nerve. This results in a gradual increase in external rotation.