HABITUAL DISLOCATION OF THE SHOULDER
The Putti-Platt Operation
H. OSMOND-CLARKE, LONDON, ENGLAND

Paper read in opening a Symposium at the Annual Meeting of the
British Orthopaedic Association, October 1947

Habitual dislocation of the shoulder joint was known to Hippocrates and to Paul of
Aegina. The illustration of Broca and Hartmann, taken from Bulletins of the Anatomical
Society of Paris of 1890, illustrates how comprehensive was the knowledge of gleno-labral
detachments and deformation of the humeral head more than sixty years ago (Fig. 1). Little
has since been added to this knowledge, though it has been reviewed in masterly style by
Tavernier (1929) and more recently by Eyre-Brook (1942). Bankart (1923) re-emphasised
the importance of the labial detachment and advocated for the first time an operation
for its reattachment to the bone margin of the glenoid. This operation became the standard

![Figure 1](image_url)

Broca and Hartmann's illustration (1890) of horizontal section through shoulder
showing forward dislocation, detachment of labrum and periosteum of neck of
scapula, and the anterior margin of the glenoid engaged in the posterior defect
of the head of the humerus. G—glenoid; o—neck and body of scapula; p—periosteum;
c—capsule; t—lesser tuberosity; B—bicipital groove; T—greater tuberosity;
b—posterior attachment of labrum.

British practice for the next ten years, until the Nicola procedure seemed to offer a method
of less technical difficulty. During these ten years, however, some surgeons realised that
there is not always a gross lesion of the gleno-labral margin. As Platt says in a personal
communication: "I evolved my present technique after the first few experiences of carrying
out the Bankart procedure as described by him originally. I soon found there was no
single and constant 'Bankartian' lesion capable of being repaired by a standard procedure.
It therefore occurred to me to make sure by stitching the distal end of the divided sub-
scapularis tendon to the cartilaginous remains of the glenoid margin. This provided a primary
barrier to redislocation of the head forwards and inwards under the subscapularis. It then
appeared logical to stitch the proximal divided end of the subscapularis to the anterior
capsule—thus producing an overlap and shortening of the tendon." This was the genesis
of the operation which I have called the Putti-Platt capsulorraphy. The first operation
was performed at Ancoats Hospital, Manchester, by Platt on November 13, 1925.

Some years later I saw Putti performing the same type of operation which had been
his standard practice since 1923, being described by his pupil Valtancoli in 1925 and more
comprehensively by Boicev in 1938. Personal inquiries within the past few months from Scaglletti, another of Putti's pupils, reveal that the operation may well have been performed first by Codivilla, Putti's teacher and predecessor, who like Platt never described it in the literature. Since Putti certainly performed it, and since Platt certainly thought out and performed the procedure independently, it seemed to me justifiable to link their names as an eponymous title for the operation. For the sake of euphony, rather than to indicate precedence, the combination "Putti-Platt" was adopted. A substantially similar but more complex procedure has been described by the Swiss surgeon Matti (1936).

OPERATIVE DETAILS

Four layers are divided to reach the shoulder: the skin, the delto-pectoral muscle layer, the coraco-brachialis layer, and the subscapularis-capsular layer. An anterior approach is used, the skin wound curving inwards along the outer one-third of the clavicle and then extending downwards for about six inches. It is important that the incision should skirt the medial edge of the tip of the coracoid process. The groove between the deltoid and pectoralis major muscle is widely opened (Fig. 2). This is made easier, and less retraction is required, if the clavicular portion of the deltoid muscle is almost completely divided three-eighths of an inch distal to the bone: subsequent resuture is much easier if division is made through the muscle than if the muscle is detached subperiosteally. In opening the delto-pectoral groove the cephalic vein is usually ligated. Several small but troublesome vessels in the subacromial region cross the upper limit of the delto-pectoral groove and are worth while identifying and tying.

The next step is to expose the coracoid process and free the conjoined tendon of the coraco-brachialis and short head of the biceps. To do this adequately it is wise to divide the upper inch of the margin of the pectoralis major tendon, and particularly the attenuated expansion of it which runs upwards under the deltid to reach the capsule of the joint, and which gives the appearance of thickened deep fascia. The interval between the conjoint tendon and the pectoralis minor is opened with care in order to avoid damage to the musculo-cutaneous nerve, its branches, or the main axillary neuro-vascular bundle which is close by (Fig. 3). The tendon is freed on all aspects and divided close to the coracoid process, leaving a sufficient stump to facilitate subsequent repair. I find this to be more simple than the Morestin-Bazy technique of division and repair of the coracoid process. The conjoint tendon is retracted downwards by a stitch, but to avoid damage to its nerve supply it should not be freed too extensively along its medial border, nor pulled on too vigorously.

The next step is to divide the tendon of the subscapularis muscle. Its upper and lower margins are readily identified by rotating the arm outwards. The lower margin is conspicuous because three veins which accompany the anterior humeral circumflex artery run below it (Fig. 4). These vessels are divided between artery forceps and ligated. A blunt spike is passed beneath the tendon from above or below, and the tendon is divided one inch from its insertion. In this step the capsule, which is usually adherent to the deep surface of the tendon near its insertion, is frequently opened (Fig. 5). The subscapularis is retracted medially by three or four stitches inserted through it.

If the capsule has not already been incised, it is deliberately opened. The glenoid margin and the humeral heard are examined for defects. It is common to find a tear of greater or less magnitude in the gleno-labral attachment, a defect in the head of the humerus, and a remarkably voluminous anterior capsule.

Definitive repair—The distal stump of the subscapularis tendon is attached to the most convenient soft tissue structure along the anterior rim of the glenoid cavity. Sometimes this is the labrum itself. In other cases, when the capsule and labrum have been stripped not only from the glenoid margin but also from the front of the neck of the scapula, the suture is made to the deep surface of the stripped capsule and subscapular muscle (Fig. 7).
HABITUAL DISLOCATION OF THE SHOULDER

Fig. 2
Incision below outer third of clavicle and over deltopectoral groove, exposing the interval between the two muscles which is deepened to show the third layer.

Fig. 3
Note the axillary neuro-vascular bundle lying deep to the medial aspect of the coraco-brachials. The lateral cord of the brachial plexus, before continuing as the lateral head of the median nerve, gives off the musculo-cutaneous nerve which is liable to be injured by vigorous traction or free mobilisation.

In these circumstances it is advisable to raw the anterior surface of the neck of the scapula so that the sutured tendo-capsule will adhere to it. A small Mayo cutting needle, stout chromic catgut, a powerful needle-holder, and adequate retraction of the humeral head by the suitable manipulations of an assistant, are all the "special" instruments required. It

vol. 30 b, no. 1, february 1948
The coraco-brachialis has been divided close to the coracoid process and retracted downwards. Note the line of division of the subscapularis.

![Figure 4](image)

**Fig. 4**

The subscapularis has been divided and the proximal part of the muscle retracted inwards (the lower margin of division being identified by three veins, accompanying the anterior humeral circumflex artery, which are ligated). The underlying and adherent capsule is incised in the course of muscle division, or deliberately opened. There is no risk of causing further damage to the anterior margin of the glenoid or the articular cartilage. Four sutures are inserted and tied while the limb is internally rotated (Fig. 8). The medial portion of the capsule is drawn outwards to overlap the tendon.

![Figure 5](image)

**Fig. 5**
Fig. 6
The capsule is retracted inwards and the Bankart lesion exposed. The labrum is torn off the glenoid margin and the capsule stripped from the neck.

Fig. 7
The tissues in front of the neck of the scapula (labrum, periosteum, deep capsule) are stitched to the distal stump of the subscapularis.

of the subscapularis, giving a "double-breast coat" effect. A further overlapping—"an overcoat"—is provided by suturing the muscle belly of the subscapularis to the scarified tendinous cuff which overlies the greater tuberosity, or the bicipital groove (Fig. 9). This causes shortening of the subscapularis which, however, must not be overdone. At the end
The four or five sutures which have been inserted are tied while the limb is held in internal rotation.

The muscle belly of the subscapularis is "double-breasted" over the capsule, and stitched to tissues in the region of the greater tuberosity and bicipital groove. The conjoint tendon of coraco-brachialis and pectoralis minor is reattached to the coracoid. Of the reefing and muscle-shortening operation it should be possible to rotate the arm outwards to the neutral position; if the muscle is still more shortened a stubborn internal rotation contracture may persist for some time. The conjoint tendon is reattached to the coracoid, the deltoïd to the clavicle and pectoralis major, and the wound is closed.
After-treatment—The arm is bandaged to the trunk with the forearm across the chest and the fingers on the opposite shoulder. Two or three six-inch crepe bandages, reinforced by strapping, maintain this degree of internal rotation for three or four weeks. Muscle power is then redeveloped, and movement restored by active graduated exercises under instruction. Two weeks later a more vigorous regime of gymnastics and games is instituted.

COMMENTS

With minor personal modifications this is the operation taught by Harry Platt twenty-one years ago. He tells me that he has never had a recurrence, and Putti claimed 84 per cent. of cures. In the early years of the second world war when it became apparent that the Nicola procedure would not withstand the strains of military life, the Putti-Platt and Bankart procedures were undertaken as a routine. The results of a series operated on by various surgeons in the Royal Air Force have been reviewed by my colleague, J. C. Adams. We do not claim that the Putti-Platt procedure is the only effective operation. There have been successes with many procedures. Nonetheless, on reviewing the literature, it is clear that the operations which achieve the most consistent success are those which produce a block to the exit of the head in front—a block of tight capsule, of fascia, of scar tissue, or of bone. The Putti-Platt procedure offers the further safeguard of shortening the subscapularis muscle which in most cases results in permanent limitation of external rotation movement. Unless these movements can be forced to their full range, and even beyond, dislocation cannot occur. The usual degree of limitation following operation, though apparent on examination, does not interfere with full function. The only valid criticism of the procedure is that several months may elapse before full movement is regained, and that very occasionally manipulation under anaesthesia may be required. This is indeed true. Nevertheless it seems a small price to pay for the cure of one of the most disabling of afflictions.

SUMMARY

1. The history of the genesis of the Putti-Platt operation for habitual dislocation of the shoulder is outlined so far as it is known.
2. The operation is described and briefly commented upon.
3. Since there is both gleno-labral detachment and defect in the humeral head successful treatment depends upon: i) a block to the exit of the humeral head in front; and ii) limitation of external rotation movement.

REFERENCES