ATLAS OF ORTHOPAEDIC SURGERY

Volume 2

Upper extremity

Carroll A. LAURIN Lee H. RILEY Jr.
Raymond ROY-CAMILLE

Co-ordinator : J. P. BÉNAZET

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THREE VOLUMES

Edited by

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FOREWORD

The title of this anthology, "Atlas of Orthopaedic Surgery", only partially conveys its unique character. It is the fruit of an international cooperation, written and edited by surgeons from Europe, the United States and Canada. Orthopaedic knowledge is expanding rapidly, and surgeons are not always cognizant of what is happening in other countries. This transcontinental Atlas bridges that gap in communication. French and English editions, published in three volumes, describe surgical techniques currently in use around the world.

This is first and foremost an Atlas. Hence, the authors do not expand on ***"when"*** *or* ***"why"*** *an operation should be done; rather, they describe* ***"how"*** *the operative procedure is performed. This Atlas, therefore, does not belong exclusively in a library, but also "where the action is", for the benefit of every member of the surgical and nursing teams.*

For ease of reference, there is an abundance of illustrations, drawn by medical artists who used the same graphic style to ensure pleasant, visual continuity.

We hope that these books on ***"how-to-do-it"*** *will assist the reader and will find their rightful place in every orthopaedic surgeon's lounge and on every orthopaedic ward.*

Carroll A. LAURIN
Lee H. RILEY Jr.
Raymond ROY-CAMILLE

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SPINE: RECENT SURGICAL PROCEDURES

1. Surgery of the shoulder

Chapter 1

SURGICAL EXPOSURES

by G. SAILLANT

I. ANTERIOR APPROACHES

1° Delto-pectoral approach

The patient is placed supine or in a half-sitting position with sandbags behind the head and the spine to free the posterior aspects of the shoulder girdle (Fig. 1-1). An incision in the delto-pectoral groove starts 1 to 2 cm below the clavicle at the level of the subclavicular fossa where the coracoid process can be palpated. It extends in a straight line obliquely downwards and laterally or as a long reverse-S incision (Fig. 1-2) and usually measures 5 to 10 cm in length. The delto-pectoral cleft may be difficult to find in a muscular patient, since the deltoid muscle overlaps the pectoralis major from above downwards.

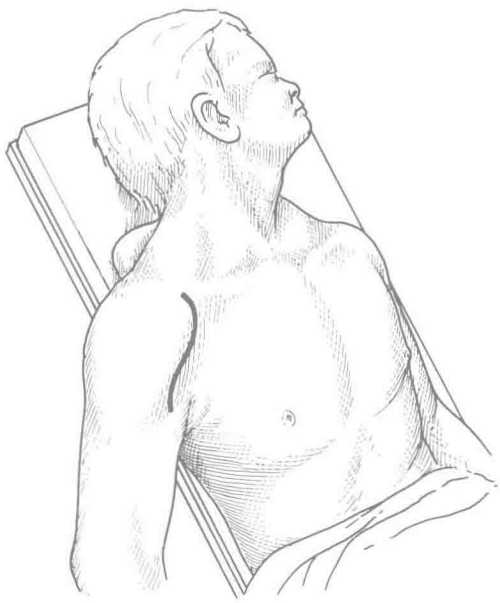

Fig. 1-1. — *Patient supine in the half-sitting position with sandbags under the shoulder.*

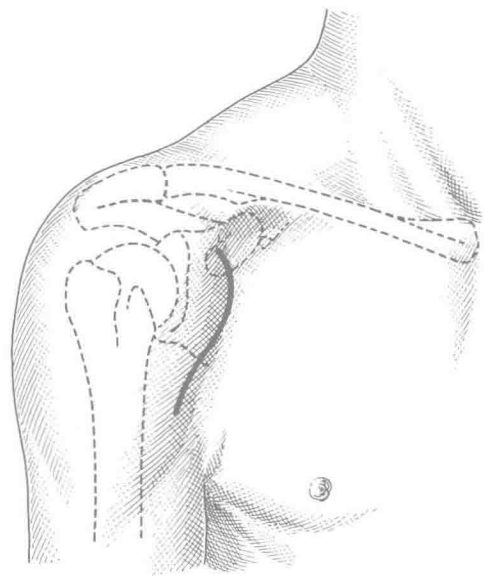

Fig. 1-2. — *Skin incision.*

Anterior approaches

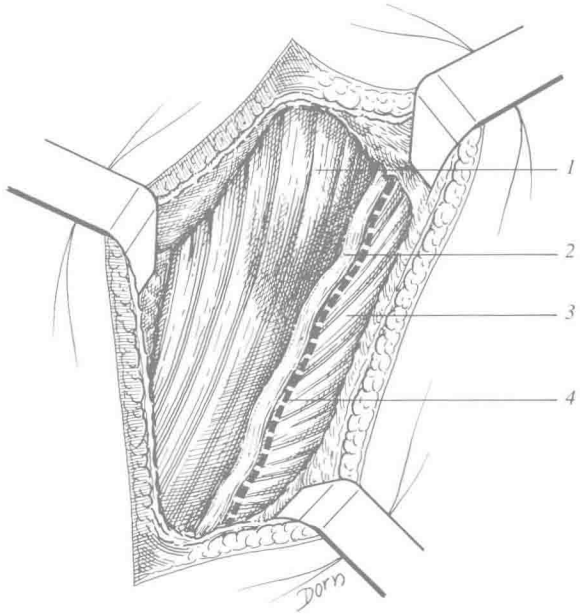

Fig. 1-3. — *Delto-pectoral groove;* the cephalic vein is preserved and retracted laterally with the deltoid muscle.

1. Deltoid muscle; 2. Cephalic vein; 3. Pectoralis major muscle; 4. Line of the section.

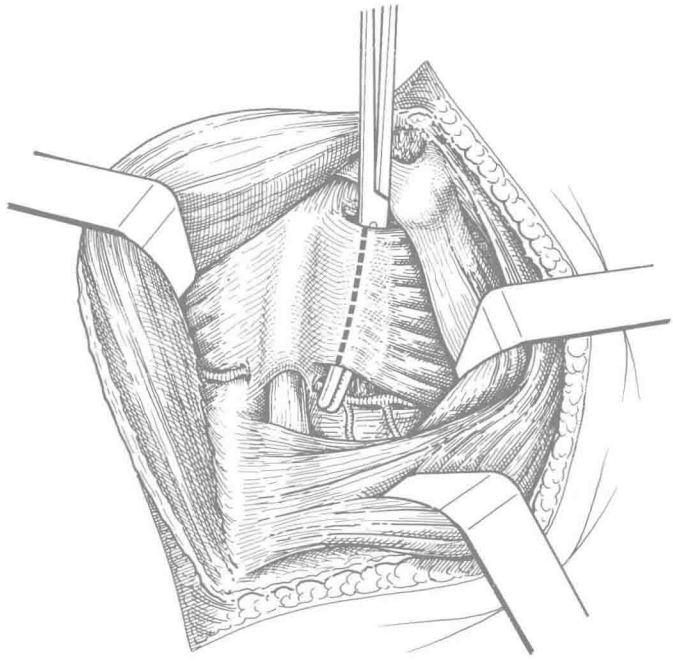

Fig. 1-4. — *Dissection of the plane between the subscapularis tendon and the capsule;* note the plexus of veins at the lower border of the subscapularis.

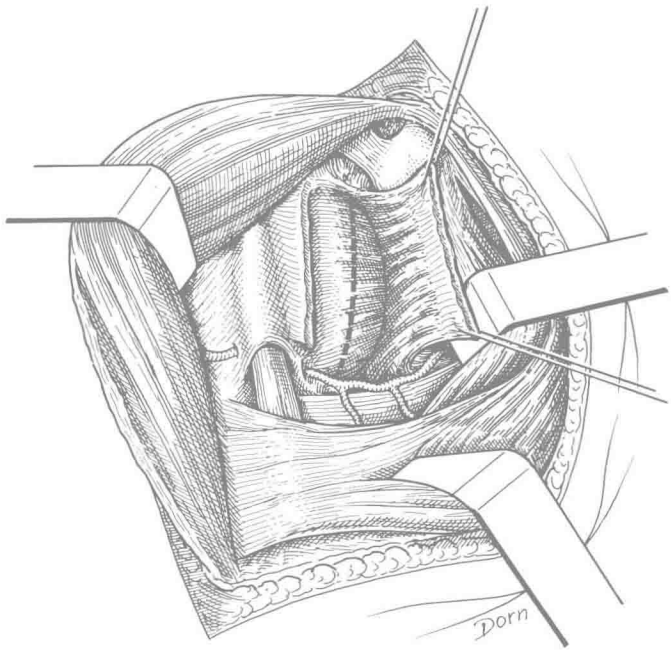

Fig. 1-5. *Division of the subscapularis at the musculo-tendinous junction with prior sutures on the proximal muscle to prevent retraction.*

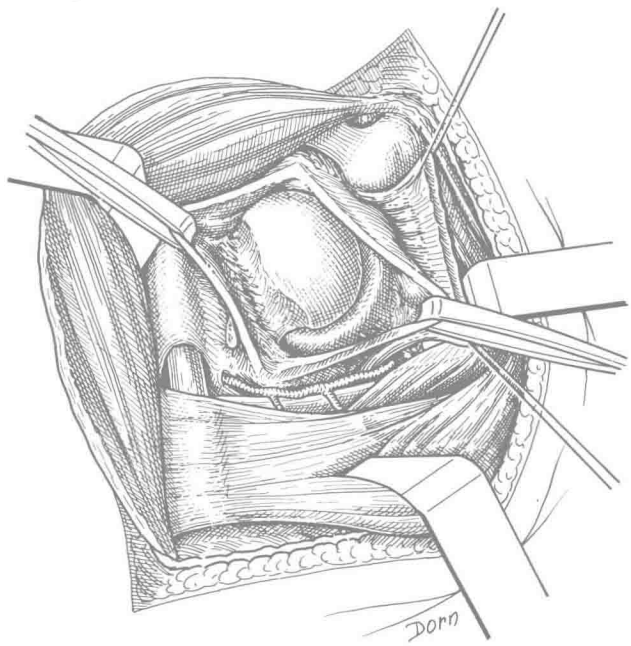

Fig. 1-6. — *Vertical capsulotomy.*

The cephalic vein should be identified and dissected with a knife or fine scissors (Fig. 1-3). The vein can be preserved and retracted with the deltoid but it may obstruct the approach at the upper part of the wound where it runs obliquely upwards and medially; for that reason it may alternately be retracted medially with the pectoralis major. The deltoid is retracted laterally with the vein and the pectoralis major medially; a self-retaining retractor is inserted. The tip of the coracoid process is exposed and an angled retractor, placed above its horizontal part, provides a good view of the insertion of the pectoralis minor medially and the coraco-acromial ligament laterally.

The coraco-brachialis is easily recognized as it arises from the tip of the coracoid process. The deep fascia is incised along the lateral edge of this muscle which is retracted medially. The subscapularis, which tightens on external rotation of the shoulder, is exposed. The plane between the tendon of the subscapularis and the capsule can be identified with a blunt forceps from its upper or lower border, remembering that there is almost always a significant venous plexus at its lower edge (Fig. 1-4). The subscapularis is divided in its tendinous rather than its muscular portion after guide sutures have been inserted into the proximal end to prevent it from retracting medially (Fig. 1-5). If it has not been incised at the same time as the subscapularis, the capsule is opened to expose the joint (Fig. 1-6).

In this approach one must look out for the musculo-cutaneous nerve which runs obliquely downwards and laterally to enter the coraco-brachialis on its medial border. Its point of entry into the muscle may be relatively close to the tip of the coracoid and any dissection of the medial border of the coraco-brachialis must be made with care.

2° Extension of the delto-pectoral approach

a) **Division of the coracoid**

This extension is very common during delto-pectoral approaches to the shoulder. The coracoid is exposed by an angled retractor placed at the medial and posterior part of its horizontal portion. Either the tip or the whole of the horizontal portion can be transsected. If the horizontal part is to be divided the pectoralis minor medially and the coraco-acromial ligament laterally are dissected from it using a diathermy knife (Fig. 1-7). A hole is usually drilled in the axis of the horizontal portion prior to the osteotomy so that a screw can be used to later re-attach the coracoid at the end of the operation. The division is made with an osteotome from medial to lateral and the tip, or the horizontal portion, of the coracoid is turned downwards taking care medially to avoid injury to the musculocutaneous nerve (Fig. 1-8). The upper border of the subscapularis and the whole of its anterior surface are well visualized.

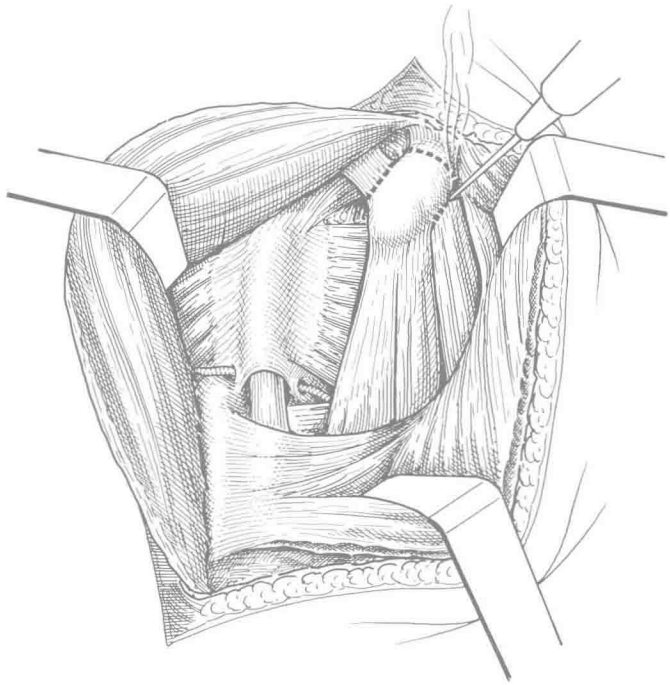

Fig. 1-7. — *Detachment of the coracoid process with division of the coraco-acromial ligament and partial division of the pectoralis minor.*

b) **Lateral extension**

The skin incision can be extended posteriorly and curved laterally along the inferior border of the clavicle and acromion (Fig. 1-9). The deltoid is incised a few millimetres from its origin from the clavicle. This incision can be extended to the acromio-clavicular joint and to the acromion, but difficulties with muscle re-attachment are inevitable.

Anterior approaches

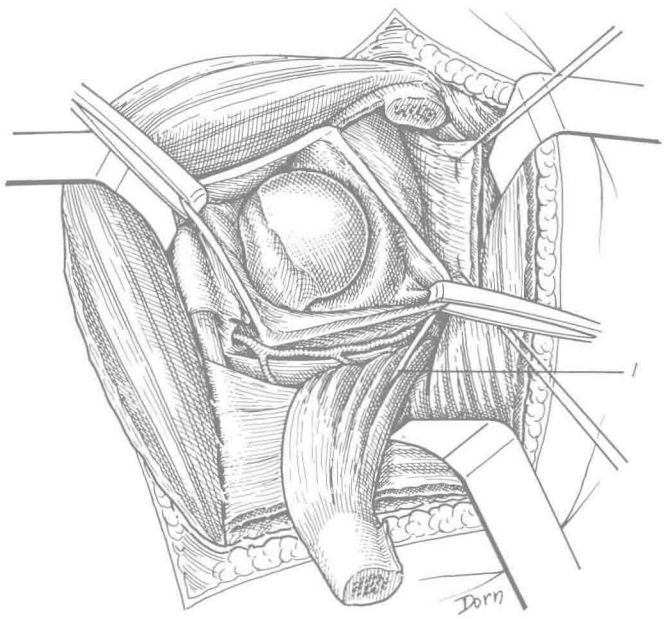

Fig. 1-8. — *The coracoid process is turned downwards and medially;* note the musculo-cutaneous nerve (1) entering the coraco-brachialis.

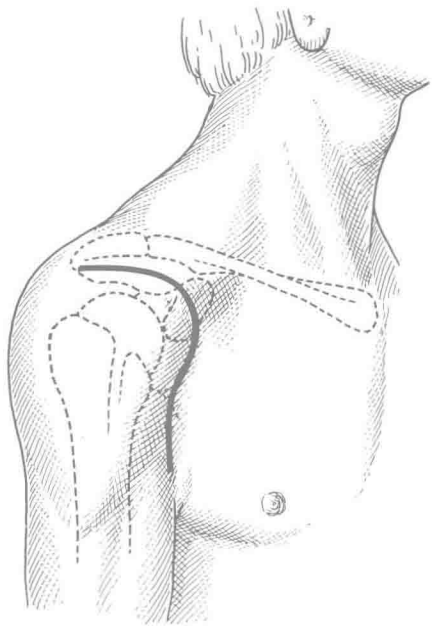

Fig. 1-9. — *Lateral extension.*

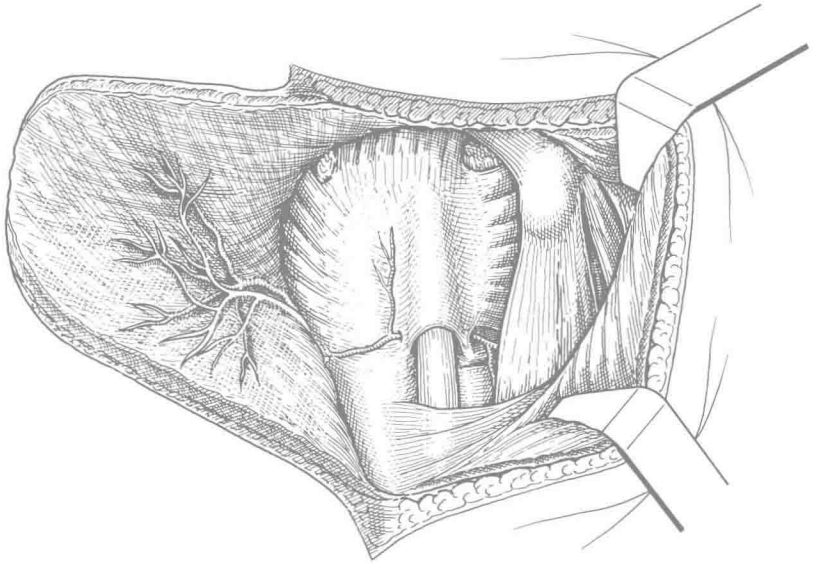

Fig. 1-10. — *Exposure of the subdeltoid bursa and anterior aspect of the shoulder.*