



## Bilateral congenital coracoclavicular joint Case report and review of the literature

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The diagnosis of coracoclavicular articulation was made in an elderly woman, who complained of bilateral anterior shoulder pain with impingement. This congenital pseudo-articulation is rarely symptomatic and is usually an incidental radiological finding. Surgical excision of the prominent bony projection, arising from the inferior surface of the clavicle at the level of the coracoid process, relieved the impingement and gave satisfactory pain relief.

### CASE REPORT

A 71-year-old lady presented with bilateral anterior shoulder pain of eight months duration ; the symptoms involved the right side first. There was a history of a fall on the right shoulder two years before. Moreover, she had undergone a coronary bypass operation for ischemic heart disease.

The pain was confined to the anterior shoulder region on both sides. The shoulder mobility was complete. There was supracoracoid tenderness on deep palpation during flexion of the shoulder. Crepitus (impingement) was palpable on both sides from 60° to 100° of flexion (anterior painful arc syndrome). Beyond 100°, flexion was possible up to 130° . There was no weakness of the rotator cuff ; the biceps tendon was intact.

Radiographs of the shoulder showed an accessory joint between the coracoid and the distal clavicle (fig 1). A computerised tomography (CT) scan confirmed the presence of a pseudoarthrosis between the coracoid and the clavicle (fig 2a) ; a three-dimensional reconstruction was also typical (fig 2b).



*Fig. 1.* — Right shoulder : anteroposterior radiograph showing pseudoarthrosis between the clavicle and the coracoid process, a broad coracoid process and a dysplastic lateral clavicle. Note the sternotomy wires ; this patient has had a coronary bypass.

Steroid injections in the region of the pseudoarticulation were tried on two occasions, without significant improvement. Finally, the bony projection, arising from the undersurface of the clavicle, was surgically removed on both sides. This improved

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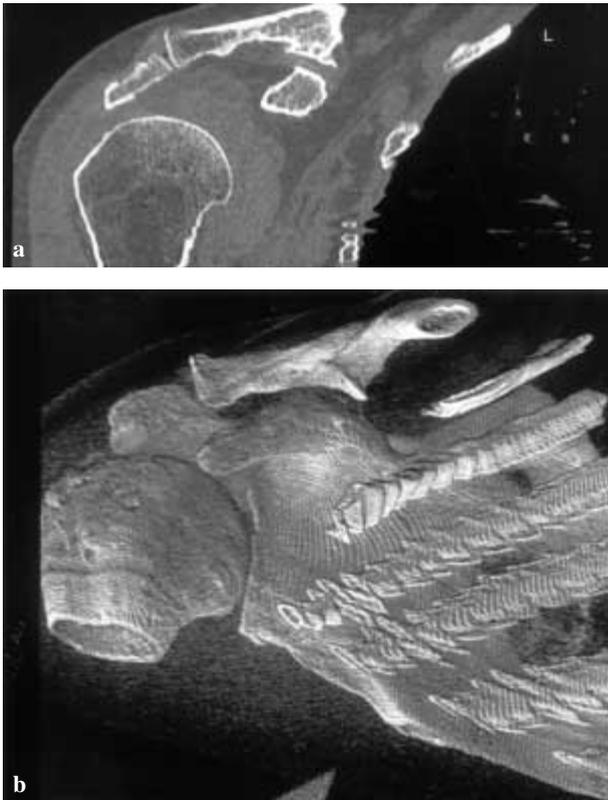
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**Fig. 2.** — Plain (a) and reformatted (b) CT scan of the right shoulder confirming the plain radiographic findings.

the pain and the impingement ; 11 months later the symptoms continued to improve (fig 3).

### DISCUSSION

The existence of a joint between the clavicle and the coracoid process is rare (1). In 1939, Gradoyevitch (1) reported that only 15 cases were known to the medical science. Ten cases had been confirmed anatomically, and five cases had been demonstrated radiographically. Gradoyevitch reported one patient with bilateral coracoclavicular joints. Nutter (4) reviewed 1000 random radiographs of adult shoulders and found 12 with coracoclavicular joints : an incidence of 1.2%. Six of 12 cases were bilateral, and 11 occurred in men. Liberson (2) reported an incidence of nine patients among 1800 shoulders studied (0.5%) ; five had bilateral coracoclavicular joints. According to Wertheimer (6), Poirier found one case in 2300 shoulders (0.04%).



**Fig. 3.** — Radiograph taken 11 months after surgery, showing the enlarged space between the clavicle and the coracoid process.

Radiographs reveal a bony outgrowth from the undersurface of the clavicle. The outgrowth is triangular, and its base is orientated toward the inferior surface of the clavicle. The lateral border of the triangle forms an articular surface with a tubercle on the dorsomedial surface of the coracoid process ; the radiographic findings are typical of a joint. In dissected specimens, Gradoyevitch found coracoclavicular joints to be diarthrodial (they had an articular surface, a true capsule, and an intra-articular synovial membrane). Gradoyevitch reported no abnormal findings of either the acromioclavicular or sternoclavicular joints. The clavicle lateral to the coracoclavicular joint was dysplastic in our case, suggesting some congenital abnormality. Embryologically, the abnormal part of the clavicle at the level of the coracoclavicular joint is where the lateral and the medial ossification centers bridge (3).

The significance of the coracoclavicular joint is controversial. Rockwood *et al* (5) believe that the coracoclavicular joint is an anatomic variation seen on many radiographs, and that it is an incidental finding with little clinical significance. The patients reported by Gradoyevitch exhibited a normal range of motion and were asymptomatic and symmetric (1). Wertheimer (6) however, believes that a coracoclavicular articulation predisposes to fracture of the neck of the humerus. He suggests that a fall on the outstretched hand is normally buffered

somewhat by rotation of the scapula about the thorax, and that this buffering mechanism is not possible when there is an extra articulation between the coracoid process and the clavicle. Wertheimer therefore excised the coracoclavicular joint in manual labourers when they reported pain.

We believe that coracoclavicular joints are congenital, and therefore often bilateral. They can, as in our case, cause symptoms of supracoracoid impingement. The average space between the clavicle and the coracoid process is normally 1.3 cm (5). When this space is reduced, the upper part of the coracoid can impinge against the lower end of the clavicle projection during forward flexion.

Excision of the joint in order to enlarge the space between the clavicle and the coracoid process is reported to be useful when non-operative treatment (physiotherapy and local steroid injection) fails. The condition however has to be differentiated from subcoracoid impingement. Unlike subcoracoid impingement, where contact occurs between a laterally placed coracoid and the proximal humerus with flexion and internal rotation, the impingement in the current case occurred in flexion and neutral rotation. Local anaesthetics and steroids, injected in the exact location, can differentiate the two. The

amount of local anaesthetic injected has to be no more than 1-2 ml. in order to avoid the anaesthetic spreading from the supracoracoid to the subcoracoid area. Preoperative injection of steroids into the joint can also help predicting the response to surgery. Our patient responded well to surgical excision.

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