

Surgical treatment of chronic AC joint dislocation

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Conservative treatment of acromioclavicular joint dislocation does not always succeed. Then a consequence can be a chronic pain and discomfort in shoulder region as well a constant AC joint instability and impaired shoulder function. AC joint stabilization with tendon grafts may diminish these sequels. We assessed the results of surgery in chronic AC joint dislocation. The clavicle was stabilized with semitendinosus and gracilis tendon grafts. The outcomes were Constant shoulder Score (CS), Disabilities of the Arm, Shoulder and Hand (DASH), cross arm test, and complications. Radiographs were taken to evaluate alignment of the AC joint and possible radiological complications.

The mean CS was 83 in the injured shoulder and 91 in the uninjured shoulder. The mean DASH was 14. In 44% of patients, the AC joint was clinically unstable. Osteolysis of the lateral clavicle was remarkably common after surgery. Two patients suffered a postoperative infection.

There was a statistically but not clinically significant difference in shoulder function between the injured and the uninjured side. Moderate disability was found after surgery. In almost half of the patients, the AC joint was not stable after reconstructive surgery.

Results of surgery in chronic AC joint dislocation are not always eligible. Appearance of lateral clavicle osteolysis may ruin the initially stabilized joint.

The lateral clavicle is stabilized and connected to the scapula by the acromioclavicular (AC) and the coracoclavicular (CC) ligaments. These ligaments stabilize the AC joint in both the horizontal and the vertical plane (1). AC joint dislocations are typically classified according to Rockwood, a classification based on the degree of soft tissue injury and clavicle dislocation (2). It is generally accepted that grade I and II AC joint injuries should be treated conservatively (3). For grade IV, V, and VI injuries, surgery has been recommended due to the constant dislocation of the AC joint. Controversy still exists as to the best treatment in grade III dislocations (4,5).

Sometimes conservative treatment does not suc-

ceed and the patient suffers of chronic pain and discomfort in shoulder region as well a constant AC joint instability and impaired shoulder function. To eliminate these unpleasant sequels, delayed surgery is thought to be indicated.

The aim of our study was to assess the functional and radiological results after a delayed AC joint stabilization.

Materials and methods

Between May 2005 and April 2011 39 patients in our hospital have had surgery due to chronic AC joint dislocation. 25 of 39 patients were examined clinically

and radiologically after a mean of 4.2 years. Majority of the patients were male (84%). Indications for surgery were chronic pain and inability to perform normal daily tasks after an unsuccessful conservative treatment (19 patients) or failure of an earlier surgery and persistent pain (6 patients). The mean delay to reconstructive surgery was 435 days (149-1586 days).

Surgical technique

Surgery was performed under general anesthesia in a beach chair position. A vertical incision was made over the pes anserinus area. Semitendinosus (ST) and gracilis (G) tendons were identified and harvested by a tendon stripper. Wound was closed in layers. A sabre incision was made over the AC joint and distal clavicle. The AC joint, distal clavicle and coracoid process were exposed. Two 5.5 mm holes in the superior-inferior direction were drilled at the insertion site of the coracoclavicular ligaments. The prepared tendons and two FiberWire® #5 sutures were threaded under the coracoid process. The clavicle was reset manually. The tendons were pulled through the drill holes, tightened so that the AC joint was congruent and then attached by two 5.5 mm tenodesis screws. If there was enough tendon over the AC joint, it was positioned over the cranial side of the AC joint attached to the acromion with a 3.5 mm Corkscrew™ suture anchor. Finally the double FiberWire® #5 sutures were tied over the clavicle. The wound was closed in layers. The arm was immobilized in a sling for 4 weeks. Postoperatively pendulum motion was allowed. After 4 weeks full range of movement without weight was allowed. After 4 months return to full activities was allowed.

The outcomes were Constant shoulder Score (CS), Disabilities of the arm, shoulder and hand (DASH), clinical stability of the AC joint, cross arm test, and complications. Radiology covered anteroposterior and axillary projections of the shoulder. From radiographs we evaluated the congruency of the AC joint, AC joint arthrosis, osteolysis of the lateral clavicle, and complications.

Results

The mean CS was 83 in the injured shoulder and 91 in the uninjured shoulder. The mean DASH was 14. In 11 patients (44%) the AC joint was clinically unstable. Cross arm test was positive in 6 patients.

There was wound infection in two patients, which

were treated with i.v. and p.o. antibiotics. In one patient the wound infection resulted in removal of tendon graft and screws and was healed only after a deltoid muscle transfer. In two patients the STG reconstruction failed and they had therefore another STG surgery.

In radiographs (AP and axillary) the AC joint was in acceptable alignment in 19 patients. AC joint arthrosis appeared only in 1 patient. Lateral clavicle osteolysis was common, occurring in 18 patients. Within one year after the STG surgery, two patients suffered a fracture in the medial drill hole.

Discussion

Sometimes the conservative treatment of AC joint dislocation fails. Consequences may be persistent pain and insufficiency in shoulder region, inability to perform overhead activities and repeated feeling of instability or weakness.

There are several methods to treat a chronic AC joint dislocation (6–8). Jones et al. (2001) first published a case report discussing reconstruction of coracoclavicular ligaments by autogenous semitendinosus tendon graft (9). Since this publication, the literature of chronic AC joint surgery has expanded.

Reconstructive surgery of chronic AC joint dislocation is demanding because of the lack of stabilizing structures, high torque directing the lateral clavicle, changed anatomical relations, and existence of lateral clavicle osteolysis that may ruin the stabilization.

In our study, the missing coracoclavicular ligaments were replaced by autogenous semitendinosus and gracilis tendon grafts. Indissoluble suture was used to give strength to this reconstruction. Functional results were fairly good. However, the function was not at the level of the uninjured upper limb. Also permanent sensation of disability was common after recovery. Serious lateral clavicle osteolysis was common. In many patients the osteolysis affected as far as the medial drill hole causing graft loosening and clavicular instability.

In AC joint dislocation treatment, the challenge is to choose the primary treatment so that it results in normal function without disabilities. If primary conservative treatment fails and delayed surgery is performed, the challenge is to restore the function and achieve a stable clavicle without lateral clavicle osteolysis.

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