

Managing type-III acromioclavicular joint injuries

Between 2009 and 2016, Work-SafeBC accepted almost 1880 claims for acromioclavicular (AC) joint injuries. More than 80% of injured workers were males in the construction, service trades, or transit operator sectors. Only 1% required surgical correction, while others received appropriate rehabilitation. Treatment of type-III (completely displaced) AC joint injuries (**Figure**) has been controversial. In the 1970s, treatment was generally surgical, and while this has changed to some extent, the debate regarding surgical and nonsurgical treatment persists.¹

Mechanism of injury

The most common mechanism of AC joint injury is direct trauma to the lateral aspect of the shoulder, when the arm is in an adducted position. The direct force drives the acromion inferiorly while the clavicle remains in place, leading to disruption of the acromioclavicular and coracoclavicular ligaments.¹⁻³ Indirect mechanisms of injury resulting from a fall on an outstretched arm or elbow have also been reported.^{1,3}

This article is the opinion of WorkSafeBC and has not been peer reviewed by the BCMJ Editorial Board.

Clinical evaluation

Patients typically present with the injured arm in an adducted and supported position. Pain will localize to the AC joint on palpation and can be accentuated with abduction and cross-body adduction of the arm, though this is usually challenging, given the acuity of the injury. Tenting of the skin may also be present, depending on the degree of displacement.³ The authors' practice is to clinically attempt a reduction of the AC joint to help discern a type-III from a type-V injury (**Table**). Done carefully, this can result in minimal discomfort to the patient.

Imaging

Radiographs are the initial and frequently only investigations required for AC joint injuries. The anteroposterior (AP), axillary, and Zanca (AP with 10- to 15-degree cephalad tilt) are the recommended views. The AP and Zanca views identify the amount of superoinferior displacement, and the axillary view evaluates anteroposterior displacement. The AP and Zanca views should be performed bilaterally to allow for comparison to the uninjured side.¹⁻³

Historically, stress views with the patient holding weights in each arm

were performed. These are not required, as they are generally painful and have no impact on clinical decision making.¹⁻³

Classification

AC joint injuries are classified according to the Rockwood Classification (**Table**).

Management of type-III AC joint injuries

Management of type-III injuries has been controversial, a major reason being the introduction of arthroscopic innovation. Unfortunately, no comparative data on minimally invasive versus nonsurgical management of this injury currently exists. The Canadian Orthopedic Trauma Society performed the most useful randomized controlled trial, which centred on plate fixation versus nonoperative management.^{4,5} This study and its follow-up, reported in 2017, failed to show a benefit to the acute surgical management of these injuries. Other studies in this area include a series of patients with AC joint injuries who were treated with hook plate fixation.⁶ This series had a small sample size and lacked a comparative nonoperative group.

Several studies have questioned the benefit of hook plate fixation. A

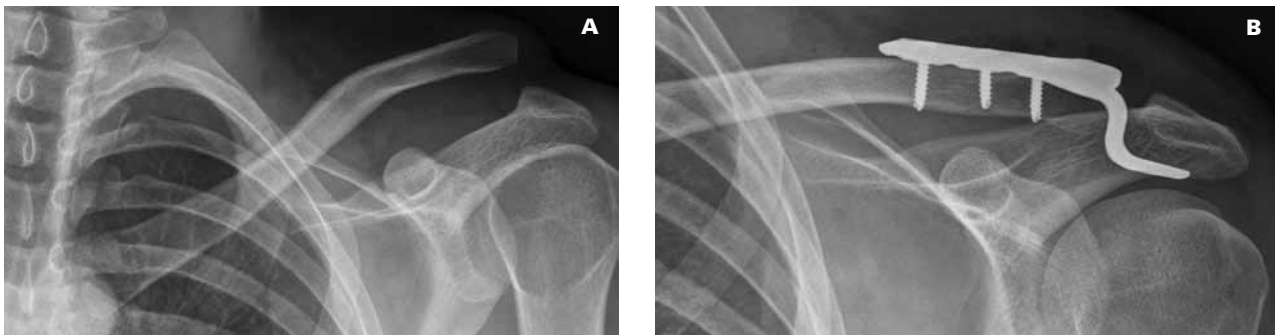


Figure. Two cases of type-III AC joint injuries. A. Type-III AC disruption. B. Postoperative repair of type-III AC disruption.

retrospective cohort study compared the clinical outcomes between hook plate fixation and conservative management, using quality-of-life measures and patient questionnaires.⁷ The operative group consisted of 5 type-III injuries and 6 type-V injuries treated with hook plates. The conservative group included 4 type-III and 17 type-V. Mean follow-up time for the surgical group was 32.4 months, and for the conservative group, 34.77 months. No difference was noted in SF36, VAS, DASH, Constant, or Global Satisfaction scores. With radiographic follow-up, a significant difference in persistent AC joint dislocation (100% of the conservative group versus 36.36% of the operative group, $P=0.0001$) was noted. Despite the difference in radiographic outcome, there seemed to be no difference in functional outcomes.

Several studies support the acute management of AC joint stabilization arthroscopically.⁸⁻¹⁰ The one major limitation of these studies is the lack of comparison to a nonoperatively treated cohort. Given the superior outcomes following nonsurgical care, caution must be exercised when performing an acute stabilization with an innovative procedure that has not been shown to be superior to nonoperative care.

Complications

The most common complications as-

sociated with nonsurgical treatment are development of late AC joint arthrosis and persistent instability. Surgical options for these late complications include distal clavicle resection and ligament reconstruction, depending on the exact complaint and degree of displacement.¹ Identifying the correct patient for chronic AC joint reconstruction remains a challenge.

Summary

At this time, evidence supports the nonsurgical treatment of acute type-III AC joint injury. Although significant innovation toward minimally invasive techniques has been made, the literature supporting its use is lacking.

For assistance

For assistance with an injured worker patient with a type-III AC joint injury, please contact a medical advisor in your nearest WorkSafeBC office.

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Table. Rockwood Classification of AC joint injuries.

Type	Direction of clavicle displacement	Radiographic findings
I	None	No increase in coracoclavicular (CC) interspace
II	Superior	CC interspace increase of < 25%
III	Superior	CC interspace increase of 25% to 100%
IV	Posterior	Axillary view necessary to diagnose. Distal clavicle displaced posteriorly through trapezius.
V	Superior	CC distance > 100% of contralateral (clavicle herniated through deltotrapezial fascia)
VI	Inferior	Distal clavicle is subacromial or subcoracoid. Rare injury.