



Management of the first episode of traumatic shoulder dislocation

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- Shoulder joint dislocation is the most common joint dislocation seen in the emergency department.
- Traumatic dislocation may cause damage to the soft-tissues surrounding the shoulder joint and sometimes to the bone. The treatment, which aims at restoration of a fully functioning, pain-free and stable shoulder, includes either conservative or surgical management preceded by closed reduction of the acute dislocation.
- Conservative management usually requires a period of rest, generally involving immobilisation of the arm in a sling, even though it is still debated whether to immobilise the shoulder in internal or external rotation.
- Operative management, with no significant differences in term of re-dislocation rates between open and arthroscopic repair, incorporates soft-tissue reconstructions and/or bony procedures and is recommended in young male adults engaged in highly demanding physical activities.
- At our institution, non-operative management is favoured particularly for patients with multi-directional instability or soft-tissue laxity. Conservative measures are often preferred in older patients or younger patients that are not actively engaged in overhead activities. Immediate surgery on all first-time dislocations may subject many patients to surgery who would not have had any future subluxation.
- For these reasons, initially we will always try physical therapy and activity modification for the vast majority of our patients.

Keywords: dislocation; shoulder instability; arthroscopy; Bankart; Latarjet; physical therapy

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Introduction

Shoulder joint dislocation is the most common joint dislocation in the emergency department (8 to 17 cases/100 000

inhabitants/year).¹ In 95% of cases, the upper end of the humerus is pushed out of the joint socket in a forward direction, usually as a result of a low-energy accident.¹ The shoulder joint has the greatest range of motion of all the joints in the human body; for this reason it is the most unstable joint.² Once a dislocation has occurred, the shoulder is more susceptible to re-dislocation. In the literature, recurrence has been reported in 85% to 92% of cases.³

Traumatic dislocation may cause damage to the soft-tissues surrounding the shoulder joint and sometimes to the bone.⁴ In the classical Bankart lesion, the separation of the anterior capsule and the labrum from the glenoid rim occurs; sometimes it can be accompanied by a glenoid rim fracture (bony-Bankart).^{4,5}

Associated lesions such as humeral avulsion of the glenohumeral ligaments (HAGL), extended labral detachment, rotator cuff tendon tears and impaction fractures of the humeral head (Hill-Sachs lesion) can also occur.⁴ There is no single pathological lesion that is common to all recurrent dislocations.

Conservative treatment

The treatment for shoulder dislocation, which aims at restoration of a fully functioning, pain-free and stable shoulder, includes either conservative (non-surgical) or surgical management. Both are generally preceded by closed reduction of the acute dislocation (Figs 1 and 2). Subsequent conservative management usually requires a period of rest, generally involving immobilisation of the arm in a sling, for three to six weeks, followed by a supervised physiotherapy and rehabilitation programme. Operative management, which may involve open or arthroscopic surgery, incorporates soft-tissue reconstructions (repair of labral detachment with or without capsular shift) and/or bony procedures (e.g. transfer of the coracoid process) and is usually followed by a supervised physiotherapy programme.⁴⁻⁶



Fig. 1 Left shoulder fracture-dislocation before reduction.



Fig. 2 Left shoulder fracture-dislocation after reduction.

Even though the literature is currently unclear about the best procedure to use after the first shoulder dislocation, the available data support primary surgery in young adults (usually male) engaged in highly demanding physical activities (military personnel and athletes).⁶ In 2008, Hovelius and Saeboe also demonstrated that shoulders that suffer only a single dislocation are at risk for arthropathy and identified different risk factors.⁷

Considering conservative management, it is still debated whether to immobilise the shoulder in internal or external rotation. Handoll et al⁸ did not find any difference in recurrence rate; in a recent update of his systematic review,⁹ the authors did not report any difference between these two strategies in terms of healing and return to sports. Liavaag and Itoy^{10,11} reported a lower recurrence rate after casting in external rotation. This kind of immobilisation can reduce the labrum back to a more anatomical position. However, these results have proven difficult to reproduce in later studies.¹²

One review addresses all surgical *versus* all non-surgical treatments, showing increased recurrence in the non-surgical group.¹³ Furthermore, Kirkley and Wintzell^{14,15} reported a delayed re-dislocation in the surgical group. With regard to surgical treatment, there are no significant differences in terms of re-dislocation rates between open and arthroscopic repair.¹⁶⁻²¹

Arthroscopic and open surgical treatment

During the last decade, a marked shift from open shoulder stabilisation to arthroscopic surgery has occurred.²² The Latarjet procedure (open and arthroscopic) (Figs 3 and 4) is a well-recognised and accepted technique for surgical treatment of anterior instability associated with significant bone defects. The procedure, performed in the ‘beach-chair’ position, involves transfer of the horizontal limb of the coracoid process along with the conjoint tendon to the anterior glenoid rim for reconstruction of the glenoid bone loss. The procedure was first described by Latarjet in 1955 and several modifications have evolved thereafter.^{23,24} Recently, Lafosse and Boyle described an arthroscopic technique for this procedure giving a safe and reproducible coracoid fixation to the deficient anterior glenoid.²⁵

For the Bankart procedure (performed arthroscopically), the lateral decubitus position is the predominant position for the operation. In the systematic review by Frank et al,²⁶ lower recurrence rates were noted using the lateral decubitus in comparison with the supine decubitus position, with no differences in terms of functional outcome and return to sport.

An analysis of the technical aspects of the arthroscopic Bankart procedure,²⁷ as performed in the United States, shows that three portals are usually used for working



Fig. 3 Anteroposterior view of Laterjet procedure.



Fig. 4 Lateral view of Laterjet procedure.

Table 1. Recurrence rate and range of motion for any procedure

Author	Study	Treatment	Procedure	Recurrence	ROM
Handoll et al ⁸	Systematic review	Conservative	External rotation vs internal rotation immobilisation	NS	NA
Hanchard et al ⁹	Systematic review	Conservative	External rotation vs internal rotation immobilisation	NA	No statistically significant difference
Brophy et al ¹³	Systematic review	Conservative vs Surgical	Immobilisation vs open/arthroscopic procedures	Short term: 46% vs 7% Long term: 58% vs 10%	NA
Kirkley et al ¹⁴	Prospective RCT	Conservative vs Surgical	Immobilization vs arthroscopic procedures	2 years follow-up: 47% vs 15.9%	No statistically significant difference
Pulavarti et al ¹⁷	Systematic review	Surgical	Arthroscopic vs open surgery	NS	No statistically significant difference
Grumet et al ³⁰	Systematic review	Surgical	Arthroscopy after first dislocation vs recurrent instability	NS	NA
Frank et al ²⁶	Systematic review	Surgical	Beach chair vs lateral decubitus position in arthroscopic Bankart procedure	Lower recurrence rates in lateral decubitus	No statistically significant difference
Milano et al ²⁸	Prospective RCT	Surgical	Absorbable vs nonabsorbable sutures in arthroscopy	NS	NA
Kim et al ³¹	Prospective RCT	Surgical	Early vs delayed mobilisation after arthroscopic Bankart procedure	NS	No statistically significant difference

NS, no statistically significant difference in redislocation rate; NA, not available

portals, three anchors are preferred and these are generally single-loaded and have a bio-composite structure. No differences in re-dislocation rates have been reported with absorbable or non-absorbable implants.^{28,29} A simple suture configuration is used; anterior portal viewing, trans-subscapularis approach and additional posterior anchors or capsular sutures are infrequently used. Other adjuncts such as rotator interval closure and remplissage are also infrequently used. Furthermore, conversion to an open approach is rarely necessary.

Hiemstra et al²⁰ reported no difference in rotational strength after open or arthroscopic surgery but the overall strength is decreased compared with the contralateral

shoulder. Only one randomised controlled trial reported better functional and disability scores after arthroscopic repair compared with open surgery.¹⁹

A systematic review³⁰ analysed the differences between arthroscopic stabilisation after the first episode of dislocation compared with stabilisation after recurrent instability and reported no difference in dislocation recurrence or complication rate, although the studies were not entirely comparable with regard to different surgical techniques and rehabilitations protocols.

Early mobilisation favourably affects pain and functional recovery in the first months but it does not affect recurrence rate or functional results at final outcome (Table 1).³¹

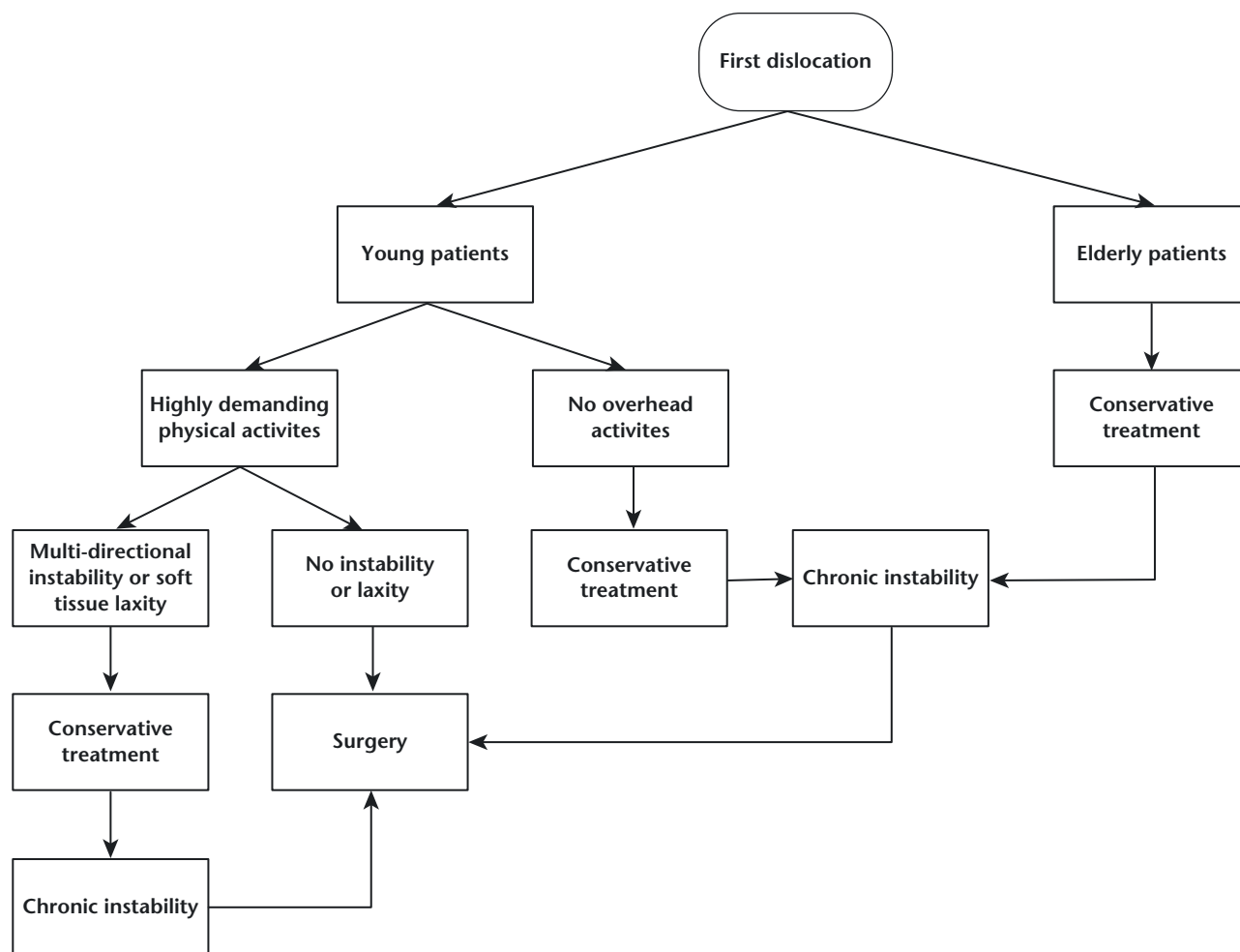


Fig. 5 Treatment algorithm.

Conclusions and recommendations

For all first-time dislocators, non-operative management is favoured at our institution. This is particularly the case for those with multi-directional instability or those with soft-tissue laxity.³² Physical therapy and activity modification are trialled initially in this cohort. Those with multi-directional instability with recurrent and debilitating laxity may be treated with open capsular shifts. Conservative measures are often much preferred in older patients or younger patients that are not actively engaged in overhead activities, which may include baseball, hurling or pull-ups. However, younger more active patients are known to have a higher recurrence rate. In fact, at the United States Military Academy, 85% of patients who had a shoulder dislocation went on to have some type of instability event within nine months.³³ These patients are subject to rigorous daily physical training and may not necessarily reflect the average adult population. Sachs et al published an analysis of 131 patients followed

prospectively after shoulder dislocation. It showed that only one-third of patients experienced later instability.³⁴ Despite a recent trend towards immediate stabilisation in first-time dislocators,^{35,36} we believe that, given the findings of Sachs et al, immediate surgery on all first-time dislocators may subject many patients to surgery who would not have any future instability. The latest update of the biggest study on first-time dislocators³⁷ suggests that, although more than 50% of young ones tended to recur, treating all patients surgically is almost certainly overtreatment. It is important to note that complication rates have not been considered in this study. A ‘wait and see’ approach and good communication between surgeon and patient about when to treat is probably the best option. Cultural and economic factors should be considered also (Fig. 5).

For these reasons, we will always try physical therapy and activity modification for the vast majority of our patients initially. ‘Watch and wait’, strict surveillance and

immediate re-evaluation in case of recurrence are the best options in deciding whether to perform surgery or not.

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