

Arthroscopic treatment of Glenoid Fractures

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Abstract

Arthroscopic joint surgery has recently undergone an exponential evolution, expanding its applications in traumatology allowing that ORIF techniques could be performed by using minimally invasive methods within the intraarticular space. However arthroscopic glenoid fixation for acute fractures have not been usually reported in the literature. This study presents a case series of arthroscopic fixation of the anterior glenoid. The six-month assessments using the UCLA Score, showed Good/Excellent results in 11/12 patients.

None of the patients presented recurrences of the dislocation and range of motion losses were minimal.

Keywords: Glenoid Fractures, Arthroscopic treatment, functional outcome

Introduction:

Arthroscopic joint surgery has recently undergone an exponential evolution, expanding its applications in traumatology allowing that ORIF techniques could be performed by using minimally invasive methods within the intraarticular space [1]. The isolated fractures of the glenoid rim are many times associated with shoulder dislocation [2], and according to the abduction and rotation of the arm, can compromise small or larger parts of the bone [3] (small undisplaced fractures; larger and displaced fractures; cominutive fractures). Most of the time are single fracture or small cominuation; such characteristics allow a firm fixation using screws [4] and/or suture anchors [5] by using arthroscopic techniques. Glenoid fractures associated with others parts of the bone, are treated different requiring an open reduction and internal fixation [6]. Most of the glenoid fractures reported thus have been associated with shoulder dislocation, and are results of high energy trauma [2].

The surgical procedures are indicated if the shoulder is unstable after reduction [3]. Small fragments (< 5mm) and patients 50 years of age and older, are best treated non-surgically, showing good results as pain and joint mobility are evaluated. Larger and displaced fragments, involving more than 20% of the articular surface, can curse with a unstable shoulder, requiring surgery [7].

Methods

From 2004 to 2015, we treated 12 patients (12 shoulders) with a displaced glenoid fracture, following a shoulder dislocation; 10 were men, and 2 women. Ages ranging from 20-61 years old, with a mean age of 33.2; 6 patients dislocated their shoulders in a motorcycle accident; 1 in a bike accident; 1 skiing and 4 falling from standing height. The time between the trauma and the surgery was 3-14 days (mean 4.8 days). They all had articular instability, and a "loosen shoulder felling" during the ROM, at any degree.

In 9 cases, only 1 cannulated screw was necessary; 3 cases required 2 screws (Fig 2-A and Fig 2-B). In 2 patients, a labral repair was necessary to be added, using 1 suture anchor; 1 patient had a cominutive fracture, requiring the use of the 2 sutures anchors.

Treatment

The arthroscopic treatment of glenoid fractures can be performed using the same technique and materials of labrum repair or cannulated screws.

We prefer the beach chair position; the optical goes on the posterior portal and instrumentation in the antero superior and antero inferior portal

The first step, and extremely important one, is to irrigate overly the shoulder cavity, to wash away the hematoma and any debris. Usually, the bony fragment is displaced in an inferior and medial position in relation to the articular surface.

After identification, the fragment is cleared of any debris, allowing it's free mobility, and a K wire is used as a joystick (Fig 1-A), aiding the reduction.

Preferably, the procedure should take place within few days of the trauma; any delay of that time can make the reduction harder, due to fibrous tissue.

Once the reduction has been achieved, the fragment is than fixed with a K wire (Fig 1-B); special attention should be taken not to fix the fragment in a too inferior position, risking any damage to the axilar nerve. After the reduction and fixation of the fragment has been completed, we use K wire as a guide to place a cannulated screw of a smaller diameter as a final hardware fixation device. This is a particular difficult step; the apparatus to insert the screw is usually short, making the use of cannulas nearly impossible, especially in patients with a developed muscles in the shoulder area.

Quite often the cannulas are removed, and a

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Discussion

Glenoid fractures are cause of recurrent anterior shoulder instability [8] thus the fracture fixation can be one of the best options for treating this traumatic condition.

There are just few papers related to this technique and this study's data reproduces the current literature's success [9]. The arthroscopic method for handle bony surgeries present advantage of the minimally invasive procedures [10] but will also need more training and arthroscopic skills [11]. This is one of the largest series in literature and presents promising results for treating acute fractures of the anterior glenoid rim by using a minimally invasive procedure. To this moment the author has just assessed six-months post-surgery, however longer follow up is required in order to assess long term advantages and complications related to this procedure.

Conclusions

Despite been a less frequent injury, the arthroscopic treatment of glenoid fractures is efficient, with good clinical and functional outcomes.

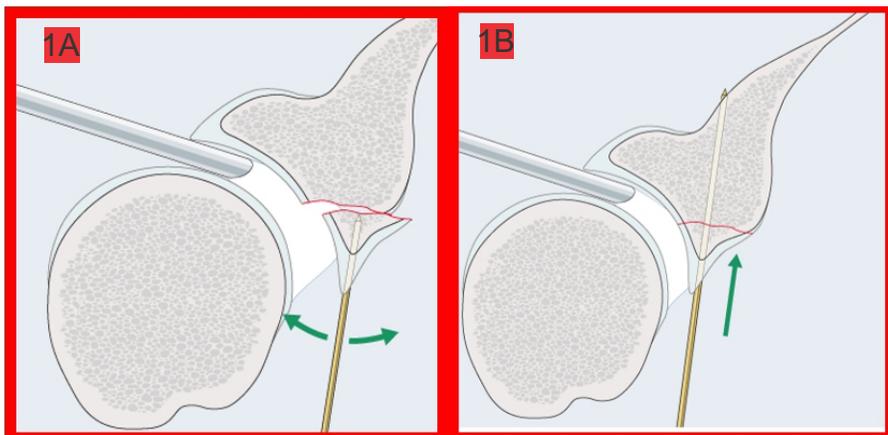


Figure 1 a-b: Fragment is joysticked using a K wire and once reduction is achieved the same K wire is used to fix the fragment

mini open access is used.

Other important detail is the location of the screw; the suture anchors or screws can be placed closer to the articular surface (near the border, in a extra articular position), avoiding any interference with the articular cartilage or mobility of the shoulder (Fig 2 A,B).

The post op care and rehab protocols were similar to glenohumeral instability.

Results

The six-month assessments using the UCLA SCORE, showed Good/Excellent results in 11 patients. The oldest patient (61 years old) had post traumatic arthrosis (seen on imaging studies), with mild pain, mild instability, and small deficit ROM. None of the patients presented recurrences of the dislocation. Loss of range of motion was minimal. A minimal discomfort was present in 11/12 patients mainly in the extremes of the movement.

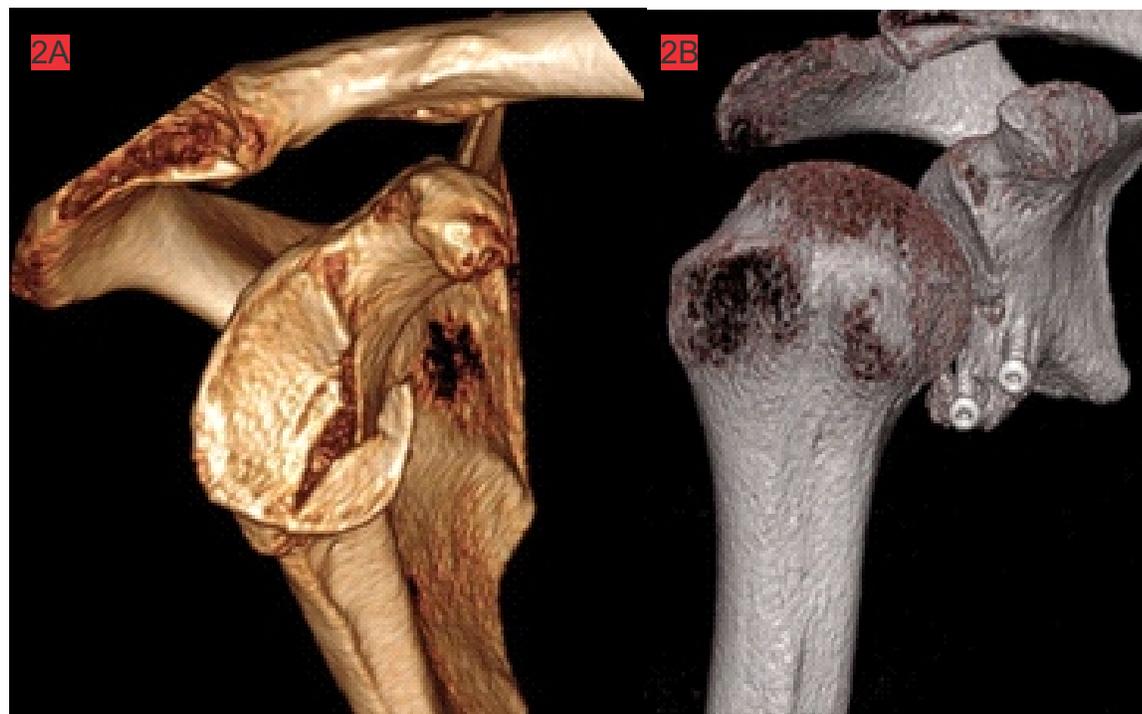


Figure 2a-b: Position of the screw should be such that it does not interferes with the articular cartilage or shoulder mobility

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