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## COMMENTARY

### Managing Bony Defects of the Shoulder Joint that Occur in Association with Dislocation

Fred RT Nelson\*

Henry Ford Hospital, 2799 West Grand Blvd, Detroit Michigan 48202, USA

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The authors give a comprehensive review of the wide range of bone and soft tissue disturbances resulting from both anterior and posterior shoulder dislocations wherein a defect in the humeral head often occurs [1]. They review the literature on physical examination and imaging techniques that help define the extent of the injury, acting as tools in both non-surgical and surgical planning. In a few cases this is based on age and other demographics. There are several key concepts available for treatment planning. One is the glenoid tracking theory [2]. The theory is based on the shape and location of the humeral head defect relative to the glenoid bone and soft tissue lesions. This is supplemented by their review of the classification of Hill-Sachs lesion. This classification is based on the size and shape, but does not take into account the location of the posterior humeral head defect [3].

Their review includes both anterior and posterior dislocations. The range of procedures for anterior dislocation includes conservative management, rotation humeral osteoplasty, capsular shift, remplissage (transfer of the infraspinatus tendon with a portion of the greater tuberosity into the humeral head defect), and other humeral head procedures such as defect restoration. The review also includes non-surgical and surgical treatment of posterior dislocations including management of humeral head defects that play a role in recurrence.

This review is not designed to answer the question of best techniques but is rather a comprehensive review of current techniques. Therein lies its message. In contrast to this article, there are recent reviews, some using meta-analyses, to evaluate specific surgical techniques wherein it is difficult to sort out the influence of patient subpopulations covered in many of those reviews. One of these analyzed the timing of surgery after first dislocation relative to delaying the surgery until further dislocation occurred [4]. It was concluded that there was evidence to support immediate arthroscopic repair for primary anterior shoulder dislocations over conservative treatment in young active patients. This is in contrast to another metaanalysis supporting the possibility of initial physical therapy [5]. This would reduce the risk of failure and revision rates. There was moderate-quality evidence that

half of the patients managed with physiotherapy after a first-time traumatic shoulder dislocation did not experience recurrent shoulder dislocations. Another meta-analysis comparison was on open versus arthroscopic repairs, some of which would have Hill-Sachs lesions [6]. With recent advances in arthroscopic techniques and fixation, the nearly double recurrence rate seen in arthroscopic repairs dropped to being insignificantly different from open repair. Another advantage of arthroscopic repair is a significant decrease in external rotation deficits. In a younger, physically active patient series, the rate of return to play was evaluated by a meta-analysis of 3 procedures. These were open repair (Bankart), arthroscopic repair, and the Latarjet procedure [7]. This analysis does not take into account the long-term effect of these 3 procedures. There have been several analyses comparing Bankart versus Latarjet procedures for recurrent anterior dislocations. One was not a meta-analysis and compared qualifying Latarjet series to 2 arthroscopic and 6 open Bankart procedure series. The Latarjet procedure produced fewer recurrences, better patient-reported outcomes, and surprisingly, a less restricted external-rotation motion than the Bankart repair [8]. Another comparison of the open Latarjet procedure to open Bankart repair found that the Latarjet procedure is possibly a superior alternative to the Bankart repair, offering greater stability with no significant increase in complications [9].

In systematic reviews, including meta-analyses, subdivision into phenotypic categories such as demographics and comorbidities is often too diluted to perform [10]. However, there are a number of phenotypic risk factors related to initial dislocations and recurrent dislocations that occur with or without treatment. Regardless of the anatomic structure involved in a shoulder dislocation, there may be a variety of interventions wherein the age, sex, physical condition, mechanism of injury, and vocational demands of any given individual can have a huge impact on the treatment options. An interesting subset of individuals are collision athletes [11]. In the meta-analysis by Paulino Pereira *et al.*, it was found that after an open Bristow-Latarjet procedure collision athletes are at the same risk for redislocation as noncollision athletes. Postoperative outcomes were good, but numerous comp-

\* Address correspondence to this author at the Henry Ford Hospital, 2799 West Grand Blvd, Detroit Michigan 48202, USA; Tel: 313 982 8496; Fax: 313 982 8459; E-mail: [fnelson1@hfhs.org](mailto:fnelson1@hfhs.org)

lications occurred in both groups. In a meta-analysis of risk factors for recurrent dislocations in nonoperative treated shoulders, an age of less than 40 years old was a predominant factor [12]. Also, male sex and hyperlaxity increased the risk of a second dislocation. The predominance of men in redislocation was also seen in another study [13]. A study of recurrent dislocation after an arthroscopic Bankart repair risk factors included age less than 19 years, Caucasian ethnicity, and bilateral instability of the shoulder [14]. Of note, concurrent greater tuberosity fracture has been associated with a lower recurrence rate [15]. Conversely, the pattern of concurrent rotator cuff injury increases with age [16]. In an epidemiologic review, factors that influence dislocation and redislocation were described as modifiable versus non-modifiable [17]. The non-modifiable are demographic features such as sex and anatomic structure. Although most primary dislocations occurred in young men, the incidence is increased in women aged over 50 years, but not in men. The reasons for this are unknown [18]. Typically, the dislocation incidence is greater in young men than young women. However, in some sports, women have a similar dislocation rate to men [19]. Anatomically, tall and thin glenoids are at higher risk for primary dislocation compared with short and wide glenoids. Also, the risk of instability increased by 20% for every 1-mm increase in coracohumeral distance [20].

The authors of the subject of this commentary suggested the following: "More research and collaboration is needed to determine the optimal method of assessing and managing these patients." Factoring in the presence and absence of humeral head defects, research could include evaluation of demographics and concurrent conditions that can impact surgical selection and outcomes and redislocation. When it comes to the decision-making process on any given patient, when a physician comes to that crossing: stop, look, and listen.

## REFERENCES

- [1] Yates JB, Choudhry MN, Waseem M. Managing bony defects of the shoulder joint that occur in association with dislocation. *Open Orthop J* 2017; 11: 1245-57. [<http://dx.doi.org/10.2174/1874325001711011245>] [PMID: 292 90863]
- [2] Metzger PD, Barlow B, Leonardelli D, Peace W, Solomon DJ, Provencher MT. Clinical application of the "glenoid track" concept for defining humeral head engagement in anterior shoulder instability: a preliminary report. *Orthop J Sports Med* 2013; 1(2): 2325967113496213. [<http://dx.doi.org/10.1177/2325967113496213>] [PMID: 2653 5236]
- [3] Rowe CR, Zarins B, Ciullo JV. Recurrent anterior dislocation of the shoulder after surgical repair. Apparent causes of failure and treatment. *J Bone Joint Surg Am* 1984; 66(2): 159-68. [<http://dx.doi.org/10.2106/00004623-198466020-00001>] [PMID: 669 3441]
- [4] Adam M, Attia AK, Alhammoud A, Aldahamsheh O, Al Ateeq Al Dosari M, Ahmed G. Arthroscopic Bankart repair for the acute anterior shoulder dislocation: systematic review and meta-analysis. *Int Orthop* 2018; 42(10): 2413-22. Epub ahead of print [<http://dx.doi.org/10.1007/s00264-018-4046-0>] [PMID: 2998 2868]
- [5] Kavaja L, Lähdeoja T, Malmivaara A, Paavola M. Treatment after traumatic shoulder dislocation: a systematic review with a network meta-analysis. *Br J Sports Med* 2018; 52(23): 1498-506. Epub ahead of print [<http://dx.doi.org/10.1136/bjsports-2017-098539>] [PMID: 2993 6432]
- [6] Hohmann E, Tetsworth K, Glatt V. Open versus arthroscopic surgical treatment for anterior shoulder dislocation: a comparative systematic review and meta-analysis over the past 20 years. *J Shoulder Elbow Surg* 2017; 26(10): 1873-80. [<http://dx.doi.org/10.1016/j.jse.2017.04.009>] [PMID: 2868 8936]
- [7] Ialenti MN, Mulvihill JD, Feinstein M, Zhang AL, Feeley BT. Return to play following shoulder stabilization: a systematic review and meta-analysis. *Orthop J Sports Med* 2017; 5(9): 2325967117726055. [<http://dx.doi.org/10.1177/2325967117726055>] [PMID: 2894 4249]
- [8] Bliven KCH, Parr GP. Outcomes of the Latarjet procedure compared with Bankart repair for recurrent traumatic anterior shoulder instability. *J Athl Train* 2018; 53(2): 181-3. [<http://dx.doi.org/10.4085/1062-6050-232-16>] [PMID: 2935 0555]
- [9] An VV, Sivakumar BS, Phan K, Trantalis J. A systematic review and meta-analysis of clinical and patient-reported outcomes following two procedures for recurrent traumatic anterior instability of the shoulder: Latarjet procedure vs. Bankart repair. *J Shoulder Elbow Surg* 2016; 25(5): 853-63. [<http://dx.doi.org/10.1016/j.jse.2015.11.001>] [PMID: 2680 9355]
- [10] Nelson FRT. The value of phenotypes in knee osteoarthritis research. *Open Orthop J* 2018; 12: 105-14. [<http://dx.doi.org/10.2174/1874325001812010105>] [PMID: 29619 124]
- [11] Paulino Pereira NR, van der Linde JA, Alkadhimi H, Longo UG, van den Bekerom MPJ. Are collision athletes at a higher risk of re-dislocation after an open Bristow-Latarjet procedure? A systematic review and meta-analysis. *Shoulder Elbow* 2018; 10(2): 75-86. [<http://dx.doi.org/10.1177/1758573217728290>] [PMID: 2956 0032]
- [12] Olds M, Ellis R, Donaldson K, Parmar P, Kersten P. Risk factors which predispose first-time traumatic anterior shoulder dislocations to recurrent instability in adults: a systematic review and meta-analysis. *Br J Sports Med* 2015; 49(14): 913-22. [<http://dx.doi.org/10.1136/bjsports-2014-094342>] [PMID: 259 00943]
- [13] Kao JT, Chang CL, Su WR, Chang WL, Tai TW. Incidence of recurrence after shoulder dislocation: a nationwide database study. *J Shoulder Elbow Surg* 2018; 27(8): 1519-25. [<http://dx.doi.org/10.1016/j.jse.2018.02.047>] [PMID: 2970 5013]
- [14] Mahure SA, Mollon B, Capogna BM, Zuckerman JD, Kwon YW, Rokito AS. Risk factors for recurrent instability or revision surgery following arthroscopic Bankart repair. *Bone Joint J* 2018; 100-B(3): 324-30. [<http://dx.doi.org/10.1302/0301-620X.100B3.BJJ-2017-0557.R1>] [PMID: 29589497]
- [15] Leroux T, Wasserstein D, Veillette C, et al. Epidemiology of primary anterior shoulder dislocation requiring closed reduction in Ontario, Canada. *Am J Sports Med* 2014; 42(2): 442-50. [<http://dx.doi.org/10.1177/0363546513510391>] [PMID: 2427 5862]
- [16] Murthi AM, Ramirez MA. Shoulder dislocation in the older patient. *J Am Acad Orthop Surg* 2012; 20(10): 615-22. [PMID: 23027691]
- [17] Cameron KL, Mauntel TC, Owens BD. The epidemiology of glenohumeral joint instability: incidence, burden, and long-term consequences. *Sports Med Arthrosc Rev* 2017; 25(3): 144-9. [<http://dx.doi.org/10.1097/JSA.0000000000000155>] [PMID: 28777 217]
- [18] Shah A, Judge A, Delmestri A, et al. Incidence of shoulder dislocations in the UK, 1995-2015: a population-based cohort study. *BMJ Open* 2017; 7(11): e016112. [<http://dx.doi.org/10.1136/bmjopen-2017-016112>] [PMID: 2913 8197]
- [19] Peck KY, Johnston DA, Owens BD, Cameron KL. The incidence of injury among male and female intercollegiate rugby players. *Sports Health* 2013; 5(4): 327-33. [<http://dx.doi.org/10.1177/1941738113487165>] [PMID: 2445 9548]
- [20] Owens BD, Campbell SE, Cameron KL. Risk factors for anterior glenohumeral instability. *Am J Sports Med* 2014; 42(11): 2591-6. [<http://dx.doi.org/10.1177/0363546514551149>] [PMID: 2524 8922]