

Survey Of The Management Of Acute Traumatic Unilateral First-Time Anterior Shoulder Dislocation (AFSD) Among Orthopaedic Surgeons In USA

D Mahadeva, M Chong, C Brede, B Miller

Citation

D Mahadeva, M Chong, C Brede, B Miller. *Survey Of The Management Of Acute Traumatic Unilateral First-Time Anterior Shoulder Dislocation (AFSD) Among Orthopaedic Surgeons In USA*. The Internet Journal of Orthopedic Surgery. 2006 Volume 5 Number 1.

Abstract

Aim: To identify the current trend in managing acute traumatic first-time anterior shoulder dislocation (AFSD) among orthopaedic surgeons in USA and to draw comparisons with previous UK study¹.

Design: Postal Questionnaire among Orthopaedic Surgeons in Northern America.

Method: 200 questionnaires were sent out to a random list of active members of The American Orthopaedic Society for Sports Medicine (AOSSM) throughout USA. Questions were laid out in two 'workgroups'. Basic demographic data such as type of practice and surgical specialisation were recorded. In 'Workgroup One' questions regarding method and duration of immobilisation were analysed. In 'Workgroup Two', two case scenarios stratified by age, were analysed to look into the 'post-reduction' management, focusing on trend in technique of stabilisation employed.

Results: The response rate was 55% (109 of 200). 26 percent of respondents derived from academic practices and the remaining 74% of respondents were from privatised institution. Majority of the respondents were regarded as 'surgeons with special interest in sports medicine' (87 of 109, 80%). This was followed by 'shoulder and elbow surgeons' and 'general orthopaedic surgeons' (12% and 8% respectively). The most popular choice of immobilisation was internal rotation (72.5%). However, 24.8% of respondents preferred the external rotation method for immobilisation as advocated by Itoi et al. The mean duration of immobilisation was 2.5 weeks (1/2 weeks to 8 weeks, Std Deviations 1.2weeks). 42.2% (46 of 109) of respondents would perform an immediate arthroscopic stabilisation in young, fit patients presenting with this type of injury. On the other hand, an overwhelming majority of the respondent opted for non-operative management in older patient presented with this problem (98%). The current trend of management in the young, active age group comprised of arthroscopic stabilisation using suture anchors, followed by immobilisation in internal rotation for average 3-4 weeks and return to sports/work at average 5 months post-surgery.

Conclusion: This survey revealed variations among orthopaedic surgeons in managing AFSD on the 'front-line' within USA. There are also observational differences between the findings of this and the UK study previously published. There is a need to address the issue of immobilisation technique. Majority of surgeons used age as a criterion in determining definitive management for this injury. The current trend in managing AFSD in young and active patient who presented with AFSD is arthroscopic stabilisation using suture anchors.

INTRODUCTION

Acute first-time anterior shoulder dislocations (AFSD) are frequent attendants to Casualty departments. The incidence of primary anterior dislocation is estimated to be around 12/100 000¹. Despite this, a consensus on management protocol is still lacking throughout the developed world^{1,13}.

A recent report by the second author highlighted this problem in the UK. In our discussion at the end of the paper, we commented on our interest to see whether our colleagues in the USA had a common treatment regime in place. As a follow up to that, we conducted a questionnaire survey among a sample number of members of the

Survey Of The Management Of Acute Traumatic Unilateral First-Time Anterior Shoulder Dislocation (AFSD) Among Orthopaedic Surgeons In USA

AOSSM(American Orthopaedic Society of Sports Medicine). The aim of this survey was to find out how AFSD after closed reduction is managed among US orthopaedic surgeons who manage this problem in the current clinical setting. We also aim to highlight certain clinical issues regarding the management of AFSD. The latter relates to recent studies coming out of Japan and Australia, which have advocated the use of immobilisation in external rotation following reduction of anterior shoulder dislocation. ^{3,4,5} We aim to find out whether this nouvelle method of immobilisation had filtered through US orthopaedic surgeons. A third mention was to find out what the current trend in the management of AFSD differed for 2 distinct age groups. Observational comparisons were then made with the second author's previous study

METHODS

During the period of Nov'04 to Jan'05, 200 questionnaires were sent out to, an active sample consultant members of AAOSM practising in various institutions. The scope of contacting every possible individual who treated this condition was not possible in view of the numbers this would generate and the probable likelihood of no response. The sampling was random(computer generated) but not blinded. Questionnaires were sent out by post and returned in a pre-paid self addressed envelope. The principle emphasis was on the management of AFSD after closed reduction. Additional documentation on subsequent aftercare was also noted and reviewed.

Questions were laid out such that initial clarification was obtained to determine what practise environment the respondents operated in and if so what their area of interest was(i.e generalist, sports medicine and shoulder specialist). Subsequently, questions were directed to determine as follows:

Operative or non operative as early first choice treatment

If non operative, duration of immobilisation and position in which this was maintained(i.e. internal/external rotation)

If operative, what was their procedure of choice (i.e. arthroscopic/open). Also, separate case scenarios were provided for 2 distinct age groups(<25 and above 30)

Only responses from consultants still actively involved in trauma care at the time of the survey was conducted were included into the final result analysis. The questionnaire responses were recorded and analysed in Microsoft Access

and Excel (version 2003 Redmond, WA, USA)

RESULTS

The response rate was 55% (109 of 200). All respondents were orthopaedic surgeons in active practise. 79.8% of them declared themselves as orthopaedic surgeons with an interest in sports medicine but only 11.9% of them considered the shoulder as their specialist area of interest.

Figure 1

Table 1: Practice Type

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Acad	28	25.7	25.7	25.7
PP	81	74.3	74.3	100.0
Total	109	100.0	100.0	

Figure 2

Table 2: Surgeon Type

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid General	9	8.3	8.3	8.3
Sports	87	79.8	79.8	88.1
Shoud	13	11.9	11.9	100.0
Total	109	100.0	100.0	

Of note, 74.3% of them were in private practise with the other 25.7% being in an academic set up.

In young patients (<25 years), 63/109 respondents would opt for non operative treatment initially via immobilisation. When this was chosen, 71.4% placed the shoulder in a position of internal rotation and 23.8% in external rotation (4.8% did not provide an answer) and the mean duration of immobilisation was 2.6 weeks.

TREATMENT FOR YOUNG

Figure 3

Table 3: Non-operative (young) * Method of Immobilization

	Method of Immobilization (2)			Total
	Int Rotation	Ext Rotation	No answer given	
Count	0	45	15	63
% within Non-operative (young)	0%	71.4%	23.8%	100.0%
% within Method of Immobilization (2)	0%	100.0%	100.0%	57.8%

Where surgical intervention was advocated (46/109), arthroscopic surgery outnumbered open surgery as treatment of choice and arthroscopic suture anchors were the

Survey Of The Management Of Acute Traumatic Unilateral First-Time Anterior Shoulder Dislocation (AFSD) Among Orthopaedic Surgeons In USA

predominant method of doing so. The average duration of immobilisation post surgery was 3.8 weeks and sports enthusiast were allowed to return to activities at an average of 5 months.

Figure 4

Table 4: Surgery for Young (n=46). Most common procedure (1)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Arthroscopic-tacks	1	.9	.9	58.7
Arthroscopic - suture anchor	41	37.6	37.6	96.3
Arthroscopic - suture anchor and Tacks	1	.9	.9	97.2
Arthroscopic - suture anchor and thermal Caps	1	.9	.9	98.2
Arthroscopic - suture anchor or Open	1	.9	.9	99.1
open	1	.9	.9	100.0
Total	46	100.0	100.0	

Figure 5

Table 5: Post-Op surgery. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Duration of Immobilization surgery (weeks)	43	.0	6.0	3.767	1.1038
Return to competitive sports (months)	43	3	8	4.95	1.090
Valid N (listwise)	43				

Note: Only 43 of 46 respondents delivered this information

In the older patient (>30-65 years), 107/109 respondents would opt for non operative treatment initially via immobilisation. When this was chosen, 72% placed the shoulder in a position of internal rotation and 21.5% in external rotation (6.5% did not provide an answer) and the mean duration of immobilisation was 2.6 weeks.

As surgical intervention was only advocated by 2 respondents, further analysis was not carried out.

DISCUSSION

The shoulder is the most common joint dislocated in humans.¹ Historically, we have always acknowledged that in the young, redislocation is of primary concern and there is enough body of evidence today to reaffirm this.¹⁷ Despite this, the orthopaedic fraternity here or across the atlantic have yet to reach a consensus on a comprehensive definitive management protocol.^{1,15} Our objective was to collect information regarding management of patients with AFSD by orthopaedic surgeons in the USA. Excluding our previous

study,¹ we are aware of one similar study conducted among members of the British Shoulder and Elbow Society on the management of shoulder dislocation.⁷ The respondents of that study,⁷ were mainly orthopaedic surgeons with an upper limb special interest. Their views may not accurately represent current practices among the more 'generalist' orthopaedic surgeons who treat this particular problem. The reason for this may be as a result of intimate but perhaps skewed anecdotal knowledge of their longer term functional outcome. This survey was sent out to, a sample active members of AAOSM in the year 2004/2005, as they were considered to be involved in the care of AFSD..

The primary issue being addressed here is that of early stabilisation of AFSD. This has been shown in some prospective trials to be more advantageous than conventional nonoperative treatment. In recent years, a number of studies showed a significant reduction in recurrence rate in patients with AFSD who had undergone arthroscopic stabilisation. The failure rates in conservatively treated patient ranges from 47-92% versus 11-22% in the surgically treated group.^{14, 15, 16, 17, 18} Kirkley et al in a prospective randomised clinical trial, with 24 months follow up, compared arthroscopic stabilisation with nonoperative treated group found that not only was the recurrence rate lower in the surgically treated group but there was a statistically significant difference in disease-specific quality of life in favour of the operative group.¹⁷ Despite these cited studies, from the results of our survey, it appears that, opinion among US orthopaedic surgeons, are still divided. This survey demonstrated that just under half (42.2%) of respondents would perform immediate operative stabilisation in young, fit patients presenting with this problem. This is far greater than the numbers generated in our previous study on UK (19%).¹ The reason for this may in part be explained by financial issues to both the patient and orthopaedic surgeon. Firstly, the young patient who is active will be keen for a definitive solution to resume activities which may otherwise affect his/her income (particularly professional sportsmen). He/she will be more inclined to seek a surgical solution if advised that this is the "superior" solution. For the US surgeon, especially in private practise, the free market health economy allows resources to be more readily available. This facilitates carrying out the procedure. This is in contrast to a social healthcare system like in the UK which has budgetary restraints and hence cost effectiveness has to be primarily established.

The respondents were less keen in considering surgical management for middle aged, and even more so in the elderly patient. There are likely several explanations for this. Firstly, recurrent dislocation is far less likely in the older population as the sleeve avulsion type lesion is not the principal pathology. There is also increased morbidity associated with surgery in the elderly. It is the authors belief that if the shoulder is clinically assessed to be unstable, irrespective of their age, then it should be treated as such. Note to date, the best published results in the literature advocating the use of immediate arthroscopic stabilisation were conducted on a population of United States 'military recruits' rather than the 'general' population.¹⁰ These recruits are likely to be more compliant and their participation in active sports may be a mandatory part of their training. Therefore, the results derived from these excellent centres may not be applicable to the average population. However, we found two multi-centre clinical trials from Canada and Sweden that revealed superior results in early arthroscopic intervention among younger patient (<30 years old) group that reflect more typically of any AFSD population.^{12,13} Despite this, these studies have short periods of follow-up. Meanwhile, opinions among clinicians will remain divided due to the aforementioned shortfalls of these cited studies. The question remains as to whether a more aggressive approach towards immediate arthroscopic treatment will significantly reduce the recurrence rate. Also of note is that most studies have not followed up patients beyond 2 years. This is flawed in many ways as an under 25 year old for example, would be conceivably still active for a significant duration beyond that time. More randomised trials with longer duration of follow-up are required to determine the efficacy of each treatment arms and the age at which immediate repair is necessary in a general population.

The second issue relates to position of immobilisation. Independent studies conducted in Japan and Australia, using magnetic resonance imaging and cadaveric specimens have shown the advantage of immobilisation in external rotation.^{7,8} Immobilisation of the arm in external rotation better approximates the Bankart lesion to the glenoid neck compared to the traditional internal rotation.^{7,8,9} Itoi et al reported no recurrence in dislocation following immobilisation in external rotation for three weeks in a randomised prospective clinical trial.

The optimal angle in which the shoulder should be immobilised and the duration of immobilisation however

remains unresolved. Despite this, internal rotation still remains the preferred position of immobilisation amongst orthopaedic clinicians in the USA as only 24.8% respondents advocated external rotation post reduction. The likely explanation for this is their experiences as a trainee. The above cited studies advocating immobilisation in external rotation have not shown outcome benefit over the traditional position of internal rotation. They have however demonstrated a potential advantage based on biological scientific evidence (bankart lesion is approximated to it's anatomical position) and should prompt us to question the current opinion in depth. A larger prospective study with longer duration of follow up is needed to validate these findings.

The mean duration of immobilisation and follow up suggested for the young conservatively treated group was an average of 2.5 weeks. This is keeping with traditional teaching advocating only 3 weeks of immobility, as anything up to and over this time, the influence on prognosis is minimal.⁶

This study is merely a survey, providing observational data. It is important to note that this was aimed at a chosen selection of participants to draw any comparisons with the UK study that the second author had previously conducted and published. As is the case with any survey, respondents vary their answers according to what they assume the enquirer wants to know. Furthermore, it was assumed that that all patients with acute AFSD present themselves immediately to a casualty department. This is not always the case, as some patients will inevitably be treated in a primary care setting, or may not even come across a health professional at all if they are managed in the 'field'. The results of this survey should be interpreted in light of these biases.

CONCLUSION

We conclude that there is variation in preferred practises in management of AFSD between the USA and UK orthopaedic surgeons in response to the issues incorporated in this survey. On the basis of our results, 27% of respondents advocating conservative treatment in our survey who would immobilise the shoulder in external rotation following reduction (compared to 6.7% in the UK survey). 42.2% would proceed to immediate arthroscopic stabilisation (compared to 19% in the UK survey) There is a need for the issues raised in this survey, to be formally analysed in a randomised controlled clinical trial prior to the

introduction of a protocol for managing this problem.

We do not think that further surveys will add any value to the debate. A well designed randomized controlled trial in an appropriate population which allows for stratification avoids confounding bias and has satisfactory follow up duration is needed to effectively advise on a definitive treatment protocol.

ACKNOWLEDGEMENTS

Mark Chong was also a Research Fellow at the University of Michigan Sports Medicine Center, Ann Arbor, USA 2004/2005. The authors would like to thank all participants from the AAOSM of USA who responded to our survey.

CORRESPONDENCE TO

Mr. D Mahadeva BMedSci BMBS MRCSEd 20A Victoria Square, Newcastle Upon Tyne NE2 4DE Email: mahadeva501@yahoo.co.uk

References

1. Chong M, Karataglis D, Learmonth D. Survey of the management of acute traumatic first-time anterior shoulder dislocation among trauma clinicians in the UK *Ann R Coll Surg Eng* 2006; 88: 454-458
2. Kroner K, Lind T, Jensen J. The epidemiology of shoulder dislocations. *Archives of Orthopedic Trauma Surgery* 1989; 108(5): 288-90.
3. Hovelius L. Incidence of shoulder dislocation in Sweden. *Clinical Orthopedics and Related Research* 1982 June;(166):127-31.
4. Taylor DC, Arciero RA. Pathologic changes associated with shoulder dislocations: arthroscopic and physical exam findings in first-time, traumatic anterior dislocations. *American Journal of Sports Medicine*. 1997 May-June; 25(3): 306-11.
5. Speer KP, Deng X, Borrero S, Torzilli PA, Altchek DA, Warren RF. Biomechanical evaluation of a simulated Bankart lesion. *American Journal of Bone and Joint Surgery*. 1994 Dec; 76(12): 1819-26.
6. Robinson CM, Dobson RJ. Anterior instability of the shoulder after trauma. *British Journal of Bone and Joint Surgery*. 2004; 88-B:469-479.
7. Itoi E, Sashi R, Minagawa H, Shimizu T, Wakabayashi I, Sato K. Position of Immobilization after Dislocation of the Glenohumeral Joint. *J Bone and Joint Surg* 2001;83:661-667
8. Itoi E, Hatakeyama Y, Kido T, Sato T, Minagawa H, Wakabayashi I et al A new method of immobilization after traumatic anterior dislocation of the shoulder: a preliminary study *J Shoulder and Elbow Surg* 2003; 12:413-5
9. Hatrick C, O'Leary S, Miller B, Goldberg J, Sonnabend D, Walsh W. Should acute anterior dislocation of the shoulder be treated in external rotation. *Transactions of the 48th Annual Meeting of the Orthopaedics Research Society*. Dallas, Texas;
10. Kirkley A, Werstine R, Ratjek A, Griffen S. Prospective Randomized Clinical Trial Comparing the Effectiveness of Immediate Arthroscopic Stabilization Versus Immobilization and Rehabilitation in First Traumatic Anterior Dislocations of the Shoulder: Long-term Evaluation. *J Arthroscopic and Related Surgery* 2005;21(1):55-63.
11. Bottoni C, Wilkens J, DeBerardino, T, D'Alleyrand JC, Rooney R, Harpstrite JK, Arciero R. A Prospective, Randomized Evaluation of Arthroscopic Stabilization Versus Nonoperative Treatment in Patients with Acute, Traumatic, First-Time Shoulder Dislocations. Presented at the 26th annual meeting of the AOSSM, Sun Valley, Idaho, June 2000.
12. Wintzell G, Haglund-Akerlind Y, Nowak J, Larsson S. Arthroscopic lavage compared with nonoperative treatment for traumatic primary anterior shoulder dislocation: A 2-year follow-up of a prospective randomized study. *J Shoulder Elbow Surg* 1999; September/October.
13. Arciero RA, Wheeler JH, Ryan JB, McBride, JT. Arthroscopic Bankart repair versus nonoperative treatment for acute, initial anterior shoulder dislocation. *Am J Sports Med* 1994;22:589-594
14. Handoll HH, Hanchard NC, Goodchild L, Feary J. Conservative management following closed reduction of traumatic anterior dislocation of the shoulder. *Cochrane Database Syst Rev* 2006;25:CD004962
15. te Slaa RL, Wijffels MPMJ, Marti RK. Questionnaire reveals variations in the management of acute first time shoulder dislocations in the Netherlands. *Eu J Emer Med* 2003; 10:58-61
16. te Slaa RS, Brand R, Marti RK. A prospective arthroscopic study of acute first-time anterior shoulder dislocation in the young: A 5 year follow-up study. *J Shoulder and Elbow Surg* 2003; 12:529-34
17. Rowe CR. Prognosis in dislocation of the shoulder *J Bone Joint Surgery Am* 1956; 38:957-77
18. Wheeler JH, Ryan JB, Arciero RA, Molinari RN. Arthroscopic versus non operative treatment for acute, initial anterior shoulder dislocations. *Am J Sports Med* 1994; 22: 589-94

Author Information

D. Mahadeva

Trust Registrar, West Cumberland General Hospital

Mark Chong

Specialist Registrar, Trauma and Orthopaedics, Sunderland Royal Hospital

Christopher Brede

Medical Student, University Hospital Michigan

Bruce Miller, MD

Orthopaedic Surgeon, University of Michigan Sports Medicine Center