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## CLINICAL ARTICLE

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# Shoulder dislocations: Management by doctors in emergency units

MJ Mulder MBChB(UCT), FCS(SA) (Orth)

Orthopaedic surgeon, Constantiaberg Medi-Clinic and Somerset Hospital

SJL Roche MBChB(UCT), FCS(SA) (Orth)

Head Shoulder and Elbow unit, Department of Orthopaedics, University of Cape Town

BC Vrettos MBChB(Zim), FRCS(Eng), FCS(SA) (Orth), MMed(Orth) (UCT)

Cape Town Centre for Bone and Joint Surgery, Vincent Palotti Hospital

**Reprint requests:**

Dr MJ Mulder

Suite 209A

Constantiaberg Medi-Clinic

Burnham Road

7800 Plumstead

Tel: (021) 797-9141

Fax: (021) 797-9141

Email: dr.m.mulder@gmail.com

### Abstract

The risk of recurrent instability after shoulder dislocation reduces with increasing age at time of first dislocation with recurrence in young patients of up to 100%. While traditional immobilisation has been shown to be ineffective, recent research suggests immobilisation in external rotation for three weeks reduces recurrence rates. We developed a questionnaire to determine how doctors working in emergency departments manage acute shoulder dislocations, to assess their knowledge and determine the source of their knowledge.

Doctors staffing the emergency departments of private and provincial hospitals, and registrars in emergency medicine, were surveyed regarding:

- details of the doctor's rank, experience and training
- number and details of dislocations managed and type and length of immobilisation
- knowledge of prognosis for future dislocation
- current and preferred sources of information.

Responses were subjected to multivariate analysis, allowing evaluation of the prevalence of misconceptions and identification of subsets of doctors who were better informed or who held similar beliefs.

Seventy questionnaires were completed (66.6%), with an average of 7.5 years post-graduate experience. All immobilised their patients for a period of between 1 and 6 weeks; however none did so in external rotation. Only 27% would refer patients for assessment by an orthopaedic surgeon. The redislocation rate for young patients was correctly chosen by 32.8%. Two-thirds of doctors incorrectly believed that redislocation is more common with increasing age. No group of doctors had statistically better knowledge than another. Books and colleagues were the most common, but were not the most preferred, sources of information.

We concluded that doctors working in emergency departments appear to have a poor understanding of existing and newer treatment options for shoulder instability and are not referring patients appropriately for orthopaedic specialist assessment. A variety of sources of knowledge are utilised, suggesting that multiple sources are required to better inform doctors of current and new treatment options.

## Introduction

A large body of literature concerning all aspects of shoulder dislocations exists, with in excess of 200 publications in the first half of 2009 alone; keeping abreast of new developments and updating evidence-based management strategies is not therefore a simple task.

Acute shoulder dislocations are commonly encountered in the emergency medicine setting, with an incidence of between 8.2 and 12.3 per 100 000 reported.<sup>1,2</sup>

Despite the reported frequency, we saw few referrals of patients who had sustained an acute first-time shoulder dislocation as compared to the number of patients referred with recurrent dislocations. We sought to identify the reasons for this referral pattern by surveying doctors working in emergency units about their understanding of the post reduction management of shoulder dislocations.

We aimed to identify how frequently these doctors encounter patients with this pathology, what their preferred form of immobilisation is and for how long they feel this is necessary. We wanted to identify their use of physiotherapy, referral patterns and their knowledge regarding newer treatment modalities such as immobilisation in external rotation following reduction. We suspected that doctors were of the opinion that shoulder dislocations were often an isolated event, and that no specialist follow-up was required. By analysing their responses we aimed to identify which groups of doctors had a better understanding of this subject.

Evidence supporting immobilisation in external rotation following reduction is growing. Cadaver and MRI studies showing coaptation of the Bankart lesion with improved healing potential with the arm in external rotation have been confirmed in prospective clinical trials.<sup>3,4,5</sup> Itoi achieved a 38% relative risk reduction with this form of immobilisation, with statistically lower redislocation rates if this is instituted on the first day following reduction as compared to day 2 or 3.<sup>6</sup> Seybold found similarly encouraging outcomes in a small series.<sup>5</sup> These findings are encouraging especially as in these studies recurrence appears to be reduced in those with the highest risk profile. In 2009 however Finestone released his data showing no statistical difference at between 2 and 4 years in groups of soldiers treated with either internal or external rotation.<sup>7</sup> There are currently a number of prospective trials under way to clearly outline the benefit of immobilisation in external rotation following reduction. But against the background of evidence demonstrating that immobilisation in internal rotation has no impact on future dislocations, the existence of evidence that external rotation may be of benefit makes a compelling case for a policy of external rotation immobilisation. In the context where few patients are being referred to a specialist unit for evaluation and possible surgical stabilisation to prevent future dislocations, a policy of external rotation immobilisation may reduce the number of young patients who develop recurrent instability.

By surveying their current and preferred sources of information we aimed to identify means of transferring knowledge and new treatment strategies to improve doctor's understanding of this common pathology.

Surveys of the management of acute first-time dislocations by specialist orthopaedic and emergency medicine doctors in the UK and Netherlands have revealed variations in management.<sup>8-10</sup> Our hypothesis is that there is a similar variability in the management by emergency medicine practitioners staffing emergency and trauma units from which we received referrals and thus undertook this survey.

## Materials and methods

Ethics approval was obtained from our institution's research committee prior to proceeding with this study.

A pilot study conducted among a random sample of doctors from the study population was performed to gauge the responses and compile the questionnaire. Respondents were questioned as to their experience and training, management of an acute dislocation, likelihood of future dislocations and preferred sources of medical knowledge.

The tick-box questionnaire was distributed by hand to 105 doctors working in primary, secondary and tertiary state hospitals in the Cape Town metropolitan area as well as five private hospitals which offer an emergency unit.

A covering letter outlined the objectives of the study and assured anonymity of respondents.

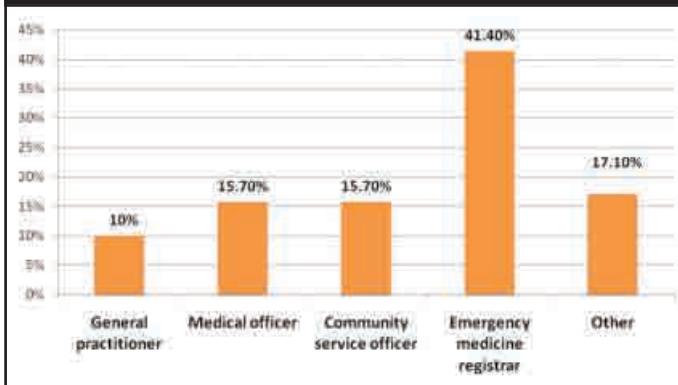
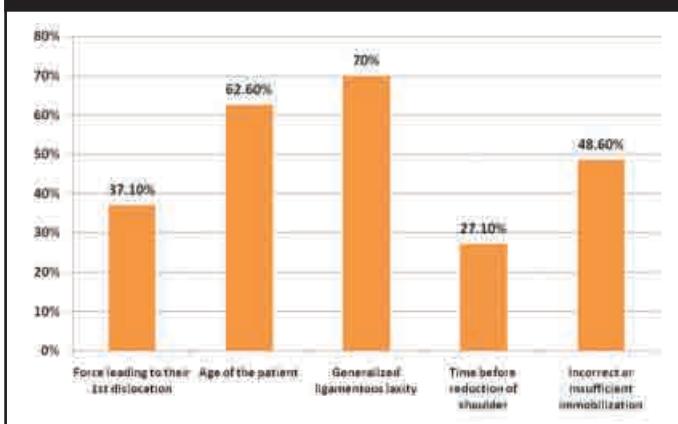
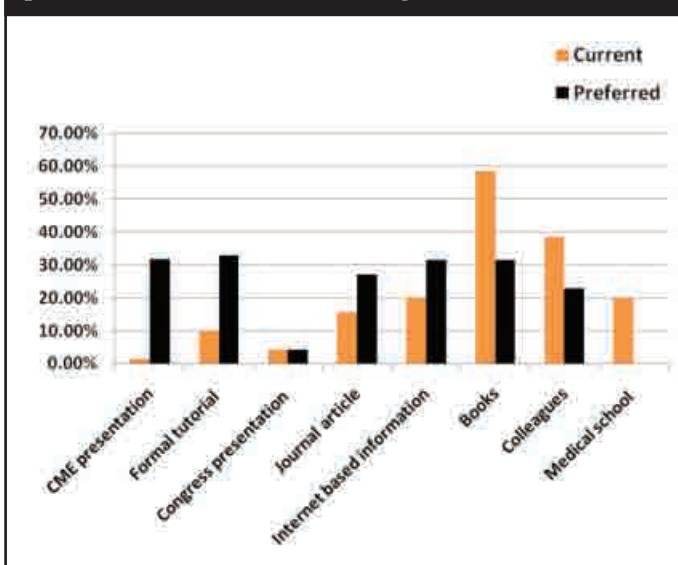
The prepared questionnaire was divided into four modules. The first elicited details of the doctor's rank, post-graduate experience and training. The second surveyed exposure to and management of acute first-time shoulder dislocations; in particular the type and length of immobilisation, their use of physiotherapy and referral patterns. Module 3 queried their knowledge of prognosis after first dislocation with respect to age and predictors for recurrence. The final set of questions looked at current and preferred source of knowledge.

Responses were collected and recorded in Microsoft Access and Excel. Analysis was performed by the statistician of the primary health care directorate, University of Cape Town.

## Results

The response rate was 66.6% (70 out of 105). The largest group of respondents consisted of registrars specialising in emergency medicine (41.4%), with the remainder being spread among general practitioners (10%), community service officers (15.7%), medical officers (15.7%) and other disciplines (17.1%) (see *Table 1*).

**We suspected that doctors were of the opinion that shoulder dislocations were often an isolated event, and that no specialist follow-up was required**

**Table I: Detail of the ranks of doctors taking part in survey****Table II: Factors which doctors feel will predict future dislocations****Table III: Comparison between doctors' current and preferred sources of continuing medical education**

The average respondent had 7.5 years post-graduate experience; over 50% had completed their internship more than 6 years earlier.

Only 8.6% had postgraduate experience in orthopaedic surgery, while 58.6% had received, or were undergoing, training in emergency medicine.

There was no difference in responses from the different categories of doctors, rank nor years of experience. There were too few respondents with orthopaedic training to make statistical comparisons with other groups.

Confirming the high incidence of this injury, 58.6% of respondents reported seeing a shoulder dislocation at least every week or month.

Almost all doctors (98.6%) immobilise patients following reduction, all doing so in some form of internal rotation immobiliser such as a collar and cuff, with or without a body bandage or commercially available shoulder immobiliser. No doctors employed a protocol of immobilisation in external rotation following reduction. Duration of immobilisation varied between 1 and greater than 6 weeks with 65.9% routinely immobilising between 2 and 4 weeks.

More than half of respondents (52.9%) believed that the length of immobilisation affected redislocation rates. Among the 27.1% of doctors who correctly believed that length of immobilisation did not affect recurrence, 31.6% would nonetheless advise immobilisation for 3 weeks or longer.

Regarding opinions on physiotherapy; 58.6% of respondents routinely send all patients to physiotherapy. Thirty-five per cent believe that it can prevent future dislocations.

In response to a question about when a patient who has sustained a first traumatic dislocation of the shoulder can return to sport, only 27% would refer a patient to an orthopaedic surgeon prior to allowing them to return to sporting activities. Another 52.9% would allow a patient to return to sporting activities after only 3 weeks, either with or without physiotherapy. A stable shoulder was listed as a prerequisite for returning to sport by 21.5%.

Only 32.8% knew the correct recurrence risk in young individuals, while more alarming was that more than two-thirds of doctors incorrectly believed that recurrence was more common with increasing age.

*Table II* shows the factors which respondents feel increase the chances of a subsequent dislocation.

Over 80% of doctors surveyed have been exposed to information about shoulder dislocations in the past 3 years. Books (58%) and information passed on from colleagues (38%) represent the main sources.

Doctors were asked to indicate their preferred sources of information regarding shoulder dislocations. Responses differed; *Table III* compares the current and preferred sources of information. Formal presentations are preferred by about 30% of doctors, yet fewer than 10% currently have access to them.

## Discussion

Doctors staffing emergency units are a diverse group; a combination of doctors with interest and enthusiasm for the discipline of emergency medicine, or those from other specialties required for other reasons to work in such units. The training and experience of these doctors vary. The demographics of our respondents reflect the study population in the Cape Town, but may vary from that of other areas in South Africa. The high proportion of emergency medicine trainees reflects the presence of two medical schools offering registrar training in this discipline. We recognise that this survey is done in the context of the local health service, with tiered health care facilities from primary through to tertiary hospitals in the state sector and a greater access to specialist treatment in the private sector.

We were not able to identify any group that appeared to have a better understanding of the issues involved partly because of the small sample size of respondents in some groups. Similar variations in opinion regarding management were found in a 2006 survey of trauma and orthopaedic specialists in the United Kingdom; these authors suggested the need for institutional protocols to compensate for this lack of consistency.<sup>8</sup> Indeed variations in management exist among shoulder and elbow surgeons regarding management of young patients following reduction.<sup>10</sup> These controversies however relate to the choice of surgical versus conservative management of first time dislocators.

All but one doctor routinely immobilised patients following reduction. The rationale for immobilisation following reduction has been to allow capsuloligamentous structures to heal by scarring and confer stability against future dislocations.<sup>11</sup> However, even Rowe's landmark study based on the review of 488 patients was unable to show a clear benefit from immobilising patients following reduction. The value of immobilisation in internal rotation has been questioned by a number of authors. None has found a statistical benefit in those patients immobilised in internal rotation as compared with those who were not immobilised, regardless of duration<sup>12-14</sup> It has been shown that prolonged immobilisation following reduction in older individuals may have detrimental effects to recovery. Te Slaa *et al*, in their study of orthopaedic surgeons' management of shoulder dislocations, found that 57% immobilise for 2-4 weeks, while 30% immobilise for less than 2 weeks. Among our respondents, 65.9% immobilise for between 2 and 4 weeks.<sup>9</sup>

None of our respondents immobilise patients in external rotation following reduction. The value of this form of immobilisation as discussed in the introduction is recognised and reported in not only orthopaedic, but non-orthopaedic literature.<sup>8,13,15-17</sup> As it represents a dramatic departure from the conventional means of immobilisation, any attempt to institute a protocol of routine external rotation following reduction would require education as to its benefit. A successful policy would rely on informed, motivated participation by emergency medicine doctors. Itoi demonstrated that redislocation rates were lower if treatment was instituted on day 1 as compared with subsequently.<sup>3</sup> In addition initial motivation to wear the apparently cumbersome brace would have to come from the doctors who are involved in the initial assessment and reduction (*Figure 1*). In our referral area there is an inadequate number of surgeons currently performing stabilisation procedures considering the size of the population and the frequency of the injury (with the waiting list for shoulder surgery of a minimum of 3-and-a-half years). Any policy which could reduce the number of individuals developing recurrent instability will be of financial and social benefit, particularly as those with the greatest risk of recurrence are young and economically active.

Cost is a significant factor; braces available through a prosthetic service are expensive. This is less restrictive in the private sector, but may be prohibitive in the state sector. Low cost, user-friendly alternatives must be sought such that they may be as freely available as the slings which they should in many cases replace.

While there is little doubt regarding its benefit in multidirectional instability, the use of physiotherapy to prevent recurrence following an acute traumatic dislocation remains controversial. Kralinger demonstrated that physiotherapy provided no statistical benefit in reducing future dislocations among young individuals.<sup>12</sup> Work by Aronen on a small group of sailors, suggested that physiotherapy-led rehabilitation can reduce the rate of redislocation to 25%; these results have not been replicated by others.<sup>18</sup>



**Figure 1: External rotation shoulder immobiliser**

Buss found that 11 of 30 athletes treated with rehabilitation following dislocation dislocated again within the same sports season and 16 had stabilisation procedures performed at the end of the season.<sup>19</sup> Rehabilitation regimens following dislocations vary, but where there is disproportionate strengthening the pectoralis group, this may place the shoulder at greater risk in the presence of the Bankart lesion.<sup>20</sup> Physiotherapy is widely prescribed; 58.6% of doctors in our survey routinely send all patients for physiotherapy, with 35.7% believing that it can reduce future dislocations. Te Slaa *et al*, in their survey, found 65% do not routinely utilise physiotherapy.<sup>9</sup>

Evidence is divided on whether sporting participation is predictive for future dislocation; Hovelius and te Slaa were not able to show any increased risk of redislocation with sport participation.<sup>14,21,22</sup> Other authors have demonstrated increased risk with return to overhead or contact sport.<sup>1</sup> Age-related redislocation risk and increased risks relating to overhead sport and particularly contact sports such as rugby need to be explained to the patient prior to return.<sup>1,23</sup> Our questionnaire was not specific as to which sport doctors would allow their patients to return to; however the fact that only 27% feel that a specialist should assess a patient prior to return to sport, and over 50% feel that patients can return after just 3 weeks, highlights a lack of understanding. Patients require a thorough examination to identify unidirectional or multidirectional instability and be advised about surgical or rehabilitative treatments prior to engaging in sporting activities. Furthermore rotator cuff tears, neurovascular damage or bony injuries must be ruled out. In the context where a specialist service is not available, the recognition that a stable shoulder is a prerequisite prior to return to sports is reasonable.<sup>23</sup>

The results of this survey however reveal a poor understanding of post-reduction management, in particular lack of appreciation of the risk of redislocation and necessity for specialist assessment. It is a concern that 67.1% of respondents incorrectly believe that redislocation is more common with increasing age. Given that these are frequently the only doctors to see these patients, it suggests that incorrect information is being conveyed to individuals who have suffered this injury. It would appear that an acute shoulder dislocation in a young individual is perceived to be a frequently encountered, relatively benign event with a low risk of recurrence. We suggest that this is the most clinically relevant misconception to be highlighted by our study.

Lack of competency regarding diagnosis and treatment of musculoskeletal pathology has been documented by researchers in Australia, Ireland, United States, Canada, Barbados and India and has been principally linked to a deficiency in undergraduate education in these countries.<sup>24-26</sup>

**The results of this survey reveal a poor understanding of post-reduction management, in particular lack of appreciation of the risk of redislocation and necessity for specialist assessment**

There is a marked discrepancy between the approximately 27% of visits to a doctor for musculoskeletal complaints, and the <2% of time devoted to undergraduate orthopaedic education.<sup>24</sup> These facts, coupled with the volume of evidence relating to shoulder dislocations make it unreasonable to expect specialist levels of knowledge from doctors dealing with the diverse range of pathologies encountered in emergency medicine. However it does oblige orthopaedic surgeons to convey clinically relevant knowledge to these doctors in order to improve outcomes through their greater understanding of the natural history of this pathology.

According to responses, doctors are continually updating their knowledge on this topic; 80% have received information in the past 3 years, and *Table III* shows the variety of sources. Books and information from colleagues are currently the dominant source of knowledge. When questioned as to their preferred sources, more were in favour of formal, structured continuing medical education formats such as tutorials, CME talks or Internet-based information, than those they are currently receiving. These are frequently available to doctors in the private casualties through specialist-led CME programmes, while medical officers and community service doctors in the state sectors have less educational contact with specialists and are more reliant on senior emergency medicine colleagues and books. Methods to address this could be through integration of state sector doctors into the CME programmes available through private hospitals or dedicated orthopaedic seminars, run on an annual basis aimed at doctors in the state sector and private sector to update them on diagnostic and treatment modalities.

In conclusion our study has highlighted that doctors working in emergency departments appear to have a poor understanding of existing and newer treatment options for shoulder instability. They are 'under-referring' patients for specialist orthopaedic assessment. No group of doctors appeared to have better knowledge than another. We have drawn attention to possible more effective means of transferring information to these doctors and believe that it is our responsibility to pass on knowledge to those who frequently encounter this common injury.

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