Original article

Diagnosing shoulder dislocations: time for a change of view

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Posterior shoulder dislocations are uncommon, with frequent delays in the diagnosis. Three missed posterior dislocations within our hospital caused us to review the standard radiographs taken and the knowledge of this condition. A total of 40 radiographers and 40 casualty officers were surveyed. Of the radiographers, 63% felt it unnecessary to perform two views, they complained that laterals were difficult to obtain because of patient distress. All the radiographers surveyed knew of alternative views, but would not perform them unless specifically requested. Casualty officers claimed always to request two views, but did not in 75% of cases. Only 20% were aware of alternative views, all would accept one view for exclusion of a dislocation and none were aware of the radiographic signs associated with a posterior dislocation. Increased education and a change of view would assist in decreasing the rate of missed diagnoses.

Key words: Posterior – Shoulder – Dislocation

In a 6-month period, five patients with posterior shoulder dislocations presented to our casualty department. The diagnosis was missed in three cases, causing a delay in treatment ranging from 4 days to 8 months (Table 1). All subsequently required reduction under general anaesthetic, with two requiring open reduction. In the first case, no X-ray was taken, in the second only an antero-posterior view,

and despite an antero-posterior and lateral view in the third case the diagnosis was missed. All cases had classic symptoms and signs that indicated a possible dislocation on initial presentation.

The posterior dislocation was obvious when a second radiograph was taken, *i.e.* trans-thoracic, lateral-scapular or axial.

Table 1 Patients

Patients	Age (years)	Aetiology	X-ray	Views	Diagnosis delay
PD	66	Myocardial infarction/fall	No	–	8/12
MH	42	Fall	Yes	AP	5/12
PM	37	Fall	Yes	AP/lateral	4 days
MZ	21	Multidirectional instability	Yes	AP/lateral	None
MP	32	Seizures	Yes	AP/scapular	None

AP, antero-posterior; MI, myocardial infarction; MDI, multidirectional instability

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Table 2 Responses of 40 radiographers

Questions to radiographers	Answers
How many radiographs are required to assess a suspected shoulder dislocation?	
None	1
1	24
2	15
What views does your department routinely perform for a suspected shoulder dislocation?	
Antero-posterior	40
Lateral	40
Axial (if problems)	8
Do you experience problems obtaining these views?	
Antero-posterior	No
Lateral	26 (Yes)
What are the problems?	
Patient pain/distress	32
Positioning	15
If you cannot get the view, do you try an alternative?	
Yes	10
No	30
Are you aware of alternative views?	
Axial	40
Lateral scapular	31
Trans-thoracic	22

Table 3 Responses of 40 casualty officers

Questions to casualty officers	Answers
If you suspected a shoulder dislocation, would you request a radiograph?	
Yes	31
No	9
What views would you request?	
Antero-posterior	40
Lateral	36
Axial	4
Oblique	8
Lateral chest	1
Clavicle	1
How many views are adequate?	
One	8
Two	32
2 but usually get 1	22
What reasons are given for not receiving two views?	
Not necessary	25
Patient pain	15
Do you know of any alternate views?	
Yes	8
No	32
Do you know specific signs to look for in diagnosing posterior shoulder dislocation?	
Yes	0
No	40

The aim of this study was to assess the level of knowledge of radiographers and casualty officers with regard to appropriate radiographs necessary to exclude a posterior shoulder dislocation.

Patients and Methods

A telephone survey of 40 district and teaching hospitals in the UK was performed. The senior radiographer and an on-duty casualty officer were invited to participate, with a 100% participation rate.

In addition, a prospective review of 20 patients' notes and radiographs, of patients presenting to Basildon General Hospital with suspected dislocation of the shoulder was undertaken. Presenting history, radiograph request forms and radiographs were reviewed.

Results

The senior radiographers were asked the questions in Table 2: 95% classified themselves as senior, *i.e.* qualified for more than 3 years. Of the total radiographers questioned, 60% felt that one radiographic view was adequate to assess a joint radiologically. All departments routinely performed an

antero-posterior radiograph. However, the second view caused problems to 65% of those surveyed. All felt that the lateral radiograph caused unnecessary pain and distress to the patient and would not routinely perform the second view. Only 25% would automatically attempt an alternate view, although all were aware of at least one alternative view.

The casualty officers consisted of 35 senior house officers and 5 staff grades, without surgical qualifications. Results are summarised in Table 3. All doctors claimed to request two views, but on reviewing the 20 request forms in part one of the study, 75% stated shoulder, but did not specify the views. Although 75% could name one radiographic view of the shoulder joint, only 20% were aware of any alternative views of the shoulder that could assist in diagnosis. Some 55% claimed they frequently only received one view of the shoulder regardless of a fracture or dislocation being present. Only 15% would request further views, the remainder would accept one radiograph as adequate. None of the casualty officers were aware of the radiographic signs associated with a posterior shoulder dislocation.

Review of the request forms revealed that specific views were not requested in any of the cases – in 45% of

Table 4 Alternative radiographic views in shoulder dislocation

Description	Position
Transthoracic lateral Position: standing, sitting or lying down. The normal arm is held over the patient's head Cassette: against the affected shoulder, vertical Beam: horizontal through normal axilla View: Maloney's arch – line made by lateral border of scapula, glenoid neck, humeral neck and shaft becomes sharp	
Trans-scapular/true lateral Position: standing or sitting Cassette: anterior against shoulder. Perpendicular to the long axis of the scapula Beam: shot along long axis of scapula, posterior to anterior. View: the scapula is visible as a 'Y' with the humeral head superimposed on the glenoid, if the joint is intact	
Axillary view Position: standing, sitting or lying down, abducting the affected arm 70–90° Cassette: horizontal above the shoulder Beam: at an angle of 45° through axilla View: glenoid is flanked by the coracoid and acromion, with its relation to the humeral head	
Axillary view, rolled cassette Position: standing, sitting or lying down. Not necessary to abduct arm Cassette: a rolled cassette is placed in the axilla Beam: vertical through shoulder View: similar to above. Magnified and with more distortion at edges	
Angle-up view Position: standing, sitting or lying down Cassette: vertical posterior to shoulder Beam: at an angle of 35° 'down-to-up' View: the dislocated head is seen under the postero-inferior rim of the glenoid	
Valpeau view Position: standing, buttocks against table, upper body bent backward 45–60° Cassette: horizontal on table against lower back, under shoulder Beam: vertical through shoulder View: similar to axillary view	
Cephalo-scapular Position: standing or sitting. The upper body is bent forward, keeping the long axis of the scapula horizontal Cassette: vertical, posterior to the patient Beam: from anterior to posterior along the long axis of the scapula View: view is similar to an axillary radiograph	

cases only one view was taken. One surgical neck of humerus fracture had not been identified.

Discussion

Posterior dislocations of the shoulder are not common, but frequently result in significant long-term disability due to the delay in diagnosis.^{1–6} This study clearly highlights a problem in diagnosis. The majority of radiographers reviewed felt that the lateral shoulder radiograph caused pain and distress, and would not routinely perform it. Movement of the affected arm during radiological evaluation causes the pain and distress.

Alternative views, not requiring the patient to move their affected arm, have been described. Views previously described include: the Valpeau^{3,7,8}, trans-scapular^{2–4,8,9}, transthoracic^{1,3,6,7,9}, cephalo-scapular³ and the angle-up view.^{3,4,8} Although the original description of the axillary view required the patient to abduct their arm between 70–90°, an adequate view can also be obtained by placing a curved cassette in the patient's axilla. The axillary view^{1,2,4,6,7,9} is considered the gold standard second view by some authors. Table 4 summarizes how these views are taken and gives a description of the view obtained.

Although the diagnosis of a posterior shoulder dislocation can be made on an antero-posterior radiograph, two views

are needed to exclude confidently the diagnosis. It is unacceptable to treat a patient based on only one radiographic view of the afflicted joint.^{1,3,6,7} An education programme is needed to up-date both medical and radiographic staff of the necessity in obtaining two views of the joint as well as the diagnostic signs to look for when suspecting a posterior shoulder dislocation.²⁻⁴ This would greatly reduce the incidence of missed dislocations and the inevitable medico-legal actions that will ensue.

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