

# Radiographic views in recurrent anterior shoulder dislocation

## Comparison of six methods for identification of typical lesions

In a prospective study of 27 shoulders with recurrent anterior dislocation, we compared six radiographic views for demonstration of the Hill-Sachs defect and the Bankart lesion. The Hill-Sachs defect was most often identified by the Stryker notch view (25/27); it was best visualized and most easily recognized on the 45 degrees craniocaudal view (22/27). This view also had the highest diagnostic yield for demonstrating the Bankart lesion.

The diagnosis of anterior shoulder instability is often difficult because the clinical findings many weeks after the dislocation may be minimal and difficult to interpret. Radiographic visualization of the bony defects created by the anterior dislocation or subluxation confirms the clinical diagnosis. The bony lesions are a posterolateral defect in the humeral head created by the anterior margin of the glenoid cavity (Hermodsson 1934, Hill & Sachs 1940) and a cartilaginous or osseous defect of the anteroinferior glenoid rim or ectopic bone formation at this site (Bankart lesion). Various radiographic views can be used to reveal the osseous defect.

In a prospective study, we have evaluated six radiographic views in the usefulness of documenting these defects.

### Patients and methods

Twenty-five patients with a history of traumatic, recurrent anterior dislocation were examined clinically and radiographically. There were 18 men and 7 women with an average age of 20 (15-31) years. The right shoulder was involved in 13 patients, the left in 10, and both shoulders in 2. The injury (athletic injury in 10 cases) resulting in the first dislocation had occurred 4 (0.5-12) years prior to the investigation, and eight shoulders had dislocated more than 10 times.

A standard radiographic series was made of all the shoulders included in this study. In 18 patients both

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shoulders were radiographed, in 16 patients as a control and in 2 patients because both shoulders were unstable. The radiographic series included the following views (Figure 1): an AP view with the humerus in internal rotation, an axillary view, a 45° craniocaudal view, a Stryker notch view, a Didié view, and a Hermodsson view (Clark 1973).

The 45° craniocaudal view was obtained with the patient in the supine position and the arm in pronation alongside the body. The roentgen beam was directed caudally at an angle of 45° and centered on the acromion. A grid was used.

The Stryker notch view was obtained with the patient in the supine position. The palm of the hand of the affected shoulder was placed on the ear and the elbow faced in a forward direction. The tube was directed cephalad at an angle of 45° and centered on the axillary fold. A grid was used.

The Hermodsson view was obtained with the patient in the supine position and the elbow flexed at 90°. The dorsum of the hand was placed behind the trunk and the thumb was pointed upwards. The film cassette was held superior to the adducted arm. The tube was placed posterolaterad to the elbow joint and the roentgen beam made a 30° angle with the humeral axis and was centered just below the head of the humerus.

The Didié view was obtained with the patient prone and the head turned away from the affected shoulder. The arm was slightly flexed at the elbow and the dorsum of the hand was placed on the iliac crest with the thumb directed upwards. A small pad was placed under the elbow and the film cassette under the shoulder. The roentgen tube was placed above the elbow joint and the beam was centered on the head of the humerus making a 45° angle with the humeral axis.

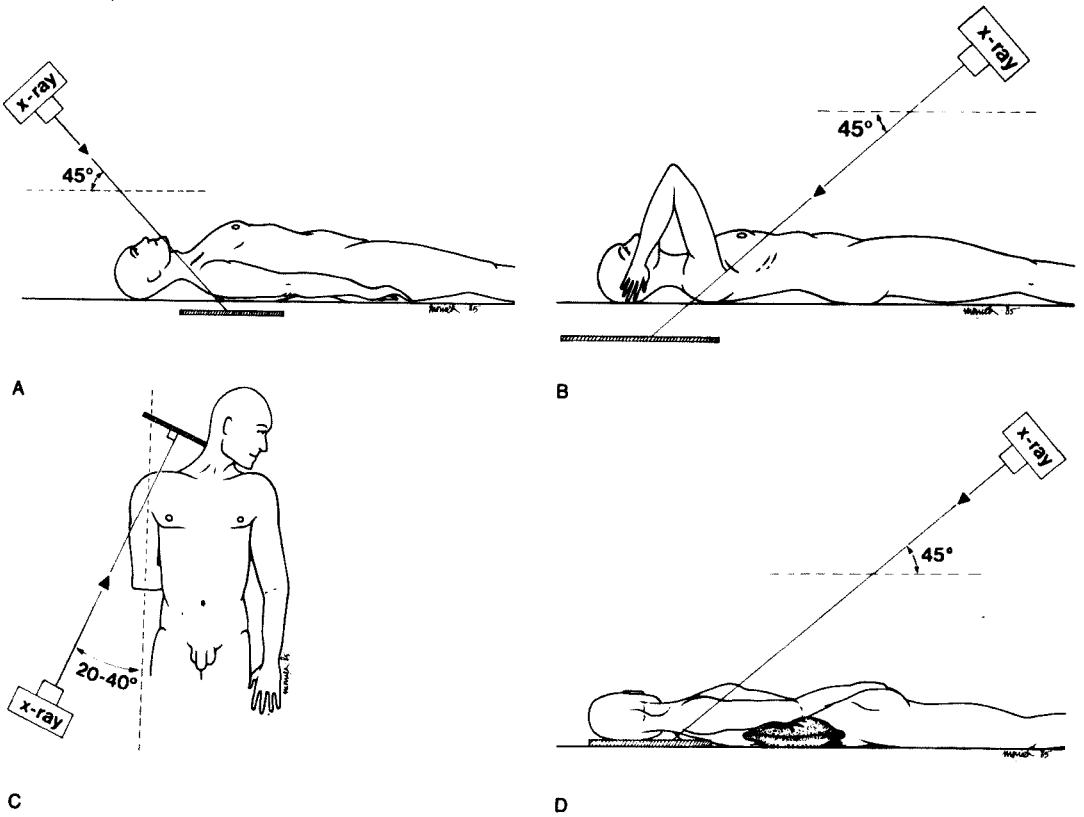


Figure 1. Radiographic views in recurrent anterior dislocation.  
 A. Forty-five degrees craniocaudal view.  
 B. Stryker notch view.  
 C. Hermodsson view.  
 D. Didié view.



Figure 2



Figure 3

Figure 2. Stryker notch view demonstrating a Hill-Sachs defect.

Figure 3. Forty-five degrees craniocaudal view demonstrating a posterolateral humeral head defect and an osseous Bankart lesion.

## Results

The Hill-Sachs defect was seen in 26 of the 27 shoulders and the Bankart defect in 10. In only one shoulder, no defect or anterior glenoid lesion could be demonstrated. The defect was demonstrated on 22/27 craniocaudal views, on 25/27 Stryker notch views, on 7/27 Didiée views, on 7/27 frontal views, and on 12/27 Hermodsson views. It was not seen on any of the axial views.

In 21 of the 26 shoulders the defect was demonstrated on the 45° craniocaudal view, as well as on the Stryker notch view (Figures 2 and 3). A comparison of the size of the defect in those views showed that in 8 cases it was larger on the 45° craniocaudal view than on the Stryker notch view, in 12 cases it was the same, and in only 1 case was it smaller.

In 5 of the 26 shoulders the defect was visible either on the 45° craniocaudal view (1 case) or on the Stryker notch view (4 cases).

The osseous Bankart lesion was seen in 10 of 27 shoulders, all seen on the 45° craniocaudal view; twice on the axial view; and once on the Stryker notch view; finally, it could not be found on the Hermodsson view.

## Discussion

The presence of a posterolateral head defect is strong evidence that a complete anterior dislocation has occurred. Hermodsson (1934) pointed out that this defect is the result of a compression fracture caused by the impact of the head against the anterior rim of the glenoid cavity (Hermodsson fracture). It is an important diagnostic finding if the direction or the traumatic origin of the dislocation is uncertain. In a review of the literature Rowe et al. (1978) reported an incidence of 25–100 per cent. In our series the defect was demonstrated radiographically in all shoulders but one.

The diagnostic yield is affected by the radiographic views used to visualize the defect. In our series the defect was most often seen on

the Stryker notch view and it was best visualized and most easily recognized on the 45° craniocaudal view.

The Bankart lesion was present in one third of the shoulders, all seen on the 45° craniocaudal view, but was seen less often on the other views. Those figures compare well with other reports: Rokous et al. (1972) also observed an osseous Bankart lesion on the West point view in one third of 19 cases and Pavlov et al. (1985) in about one sixth of 53 cases. They used a modified axillary view (West Point), described by Rokous et al. (1972), and the Didiée view.

In our series, the 45° craniocaudal view had a high diagnostic yield in demonstrating both the Hill-Sachs defect and the Bankart lesion. The investigation was simple and both lesions could be demonstrated on the same radiograph (Figure 6). If the defect is not demonstrated on the craniocaudal view, we recommend that a Stryker notch view be added; and if the Bankart lesion is not seen, a Didiée or West Point view is made.

## References

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