THE ASSESSMENT OF CHARNLEY ACETABULAR CUP MALPOSITION

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Technical errors are the commonest cause of dislocation of hip prostheses (Hamblen 1984). An excessively antverted or retroverted acetabular component is often responsible. The deleterious effects of such malposition have been documented by Ackland, Bourne and Uhthoff (1986), Fackler and Poss (1980) and Lewinnek et al (1978). These workers were able to measure anteversion or retroversion by utilising the marginal wire markers in the prostheses they studied. Unfortunately, the Charnley hip prosthesis only has a coronal plane wire marker; this exhibits significant radiological distortion only when the cup is malpositioned by more than 20°. Furthermore, excessive anteversion cannot be differentiated from excessive retroversion on either anteroposterior or lateral radiographs. We describe a method which overcomes this difficulty.

Method. Three radiographs are needed, all taken with the cassette placed flat beneath the hip. Figure 1 shows a worrying distortion of the wire marker on the postoperative anteroposterior radiograph of a Charnley hip replacement. The second radiograph (Fig. 2) is taken with the X-ray tube still centred over the hip but angulated to point 20° towards the patient’s head. Because the X-ray beam is ‘retroverted’ the wire marker would appear less distorted if the cup pointed excessively backwards; in fact it is more distorted than in Figure 1, so the cup is not retroverted. The third radiograph is taken with the X-ray tube angulated 20° towards the patient’s feet. Figure 3 shows a more hemispherical appearance of the wire marker indicating an excessively antverted position of the cup.

Discussion. The information obtained from this technique can be used to anticipate early postoperative dislocation and to manage later recurrent dislocation. If an early postoperative radiograph shows an appearance similar to Figure 1 a derotation boot may be worn, mobilisation can be delayed and harmful movements avoided for a time. If recurrent dislocation has occurred and an augmentation device is to be used (Olerud and Karlström 1985), the decision whether it should be added to the anterior or posterior aspect of the cup can be made pre-operatively.

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REFERENCES


