Most shoulders are arthrodesed in 20° to 50° of abduction, so that the suprascapular nerve is stretched when the arm is hanging by the side and may be more vulnerable to acute or chronic trauma. The arthrodesed shoulder is not always pain free even if there is radiographic evidence of bone fusion; Cofield and Briggs (1979) reported moderate or severe pain in 17 of 66 arthrodesed shoulders, and Vastamäki (1987) in eight of 23. Entrapment of the suprascapular nerve should be considered as the cause of pain in these cases.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

ULTRASOUND DIAGNOSIS OF NEONATAL FRACTURE SEPARATION OF THE UPPER HUMERAL EPiphysis

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Injury to the upper limb during a difficult birth may produce swelling, reluctance to move the arm and discomfort on passive movement. Possible causes include brachial plexus injury, shoulder dislocation, fracture of the clavicle, fracture separation of the upper humeral epiphysis, fracture of the humeral shaft, septic arthritis and even osteomyelitis. Plain radiographs may show a fracture, but are of limited value in diagnosing separation of the unossified epiphysis of the neonatal head of the humerus. We present a case in which ultrasound showed a Salter type-1 injury (Salter and Harris 1963) despite a normal radiograph.

Case report. A 33-week mature girl was delivered by Caesarean section, at which considerable difficulty was encountered during delivery of the shoulders, upper limbs and trunk. Her birth-weight was only 1870 g and she was seen not to move her left arm. The upper part of the arm became swollen, and movement caused her to cry.

Plain radiographs were normal, but examination using a Sonoline SL 1 with a 7.5 MHz linear transducer showed some periosteal elevation at the junction of the cartilaginous humeral head and the metaphysis. Abduction of the arm demonstrated movement between the humeral head and the metaphysis. In Figure 1 both humeri are shown. On the left, the fractured humerus is abducted, the shaft is in a valgus position, with elevation of the upper part of the periosteum (small arrow), and the deltoid (large arrow) is displaced laterally. The unaffected right arm is shown for comparison. In Figure 2 the left arm is imaged in adduction and the shaft is now seen to be reduced. Treatment by immobilisation underneath clothing relieved all symptoms within three days. Plain radiographs at three weeks confirmed the diagnosis (Fig. 3).

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Discussion. Ultrasound does not normally provide good images of bone, but the periosteum and its elevation can be well visualised (Howard and Einhorun 1991). Plain radiography cannot detect this until some new bone has been laid down. The upper humeral epiphysis is at risk of injury during difficult births. Ekengren, Bergdahl and Ekström (1978), reporting a series of 20 patients with epiphyseal birth injuries, noted that treatment was complicated and prolonged in seven with a delay in diagnosis. Such an injury may cause rotation of the upper humeral epiphysis sufficient to require corrective osteotomy in later life (Blount 1955; Ogden 1982).

When initial radiographs are normal, arthrography may be necessary to make the diagnosis, but we have shown that real-time ultrasound examination does not only show the movement between the head and the shaft, but can also confirm accurate reduction with the limb immobilised in the optimal position. We recommend the use of ultrasound when there is a possibility of an epiphyseal injury.

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PATELLOTIBIAL IMPINGEMENT IN KINEMAX STABILISED TOTAL KNEE REPLACEMENT

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The factors influencing success in total knee replacement (TKR) include soft-tissue balance and limb and component alignment. Sound design of the prosthesis is a pre-requisite. We report two cases in which there was abutment of the patellar button on the tibial stabiliser peg of stabilised Kinemax prostheses (Howmedica International Inc, England). The operations were performed by two different surgeons using general anaesthesia and tourniquets with mid-line approaches and Gobet instrumentation for bone preparation and limb alignment (Ewald, Walker and Sledge 1988).

Case 1. A 75-year-old woman with rheumatoid arthritis had a left TKR, using medium-sized components with an 8 mm stabilised tibial element. After insertion of the prosthesis, abutment of the patellar button on the tibial peg was noted at 80° of flexion. She was able to flex to 90° on discharge. At seven-month follow-up she had knee flexion of 100° and some anterior knee pain.

Case 2. A 67-year-old woman with rheumatoid arthritis had a left TKR, using small components and a 15 mm stabilised tibial element (Fig. 1). Again, patellar abutment against the tibial peg was observed at 80° of flexion, and further flexion resulted in forward displacement of the patella (Fig. 2). Knee flexion of 100° on discharge...