

Reposition of a radial neck fracture by a percutaneous Kirschner wire

A case report

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Case report

A 13-year-old boy sustained an elbow injury during a gymnastics lesson. Radiographs showed an epiphysiolysis, Salter-Harris type I, with dislocation of the radial head. Under general anesthesia, a closed reduction with fluoroscopic control failed because of soft tissue swelling and the unfavorable position of the radial head. We decided to perform a percutaneous reduction, using a Kirschner wire.

Operation technique

The arm was positioned on a hand table. The fluoroscopy tube remained in the same position, the arm was moved to obtain views in different directions.

To determine the entry point of the Kirschner wire on the skin, we used a technique described for the percutaneous entry of cannulated screws in the treatment of epiphysiolysis capitis femoris (Wenger 1992). In an anteroposterior view, the angle of angulation of the radial head was determined and the wire was used to mark this axis on the skin. In a lateral view, the longitudinal axis of the radius was determined and, again with the help of a wire, this angle was drawn onto the skin. The entry point for the wire was at the crossing of both lines. The Kirschner wire was then introduced through a small skin incision.

Under fluoroscopic control, the wire was guided to the margin of the radial head.

We were able to reposition the radial head without applying major force. A plaster was used for 3 weeks. 6 months later, the function of the elbow was normal, except for a pronation limitation of 20 degrees. Radiographs at that time showed good healing with periarticular callus. There were no signs of avascular necrosis of the radial head.

Discussion

5-7 percent of all lesions of the elbow in children are radial neck fractures. When the angulation of the radial head is 30° or less, treatment with collar and cuff or a splint is considered sufficient, whereas angulation exceeding 30° indicates closed reduction under general anesthesia (Newman 1977, Vahvanen and Gripenberg 1978, Wilkins 1984, Tachdjian 1990). Translation of the radial head by 3-4 mm or more is also an indication for reposition (Newman 1977).

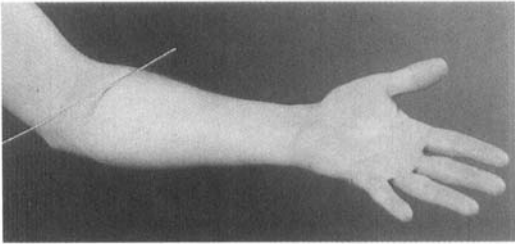


A 13-year-old boy sustained an elbow injury with an epiphysiolysis, Salter-Harris type I, with dislocation of the radial head.

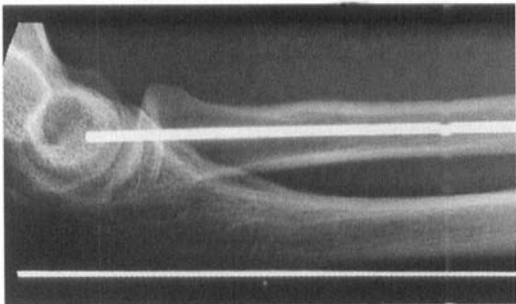
Operation technique illustrated on author's arm



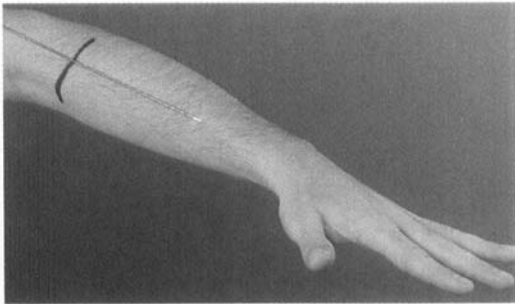
Anteroposterior view with the guide pin parallel to the radial head.



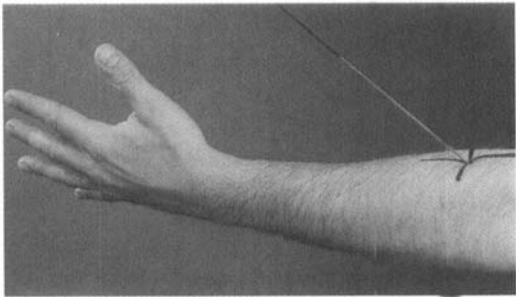
Skin is marked parallel to the anterior pin.



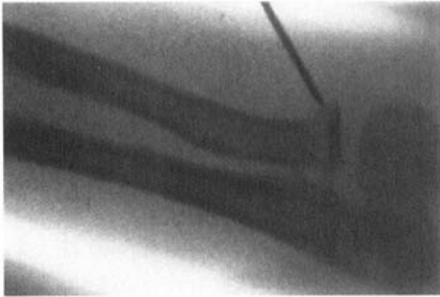
Lateral view with guide pin parallel to the radius.



Skin is marked parallel to the lateral pin.



The entry point of the wire is the intersection of the two lines



Reposition under fluoroscopic control on the patient.



The patients elbow 6 months after treatment.

Jeffrey (1950) emphasized the importance of knowing the exact position of the radial head to apply the reposition pressure on the right spot. If closed reduction fails, one should consider surgical reposition.

To avoid open surgery, Angelov (1981) described a technique for percutaneous reposition for which he used a bident. The technique we used requires no special instruments.

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