

# Rotation osteotomy for dislocation of the radial head

6 cases followed for 7 (3-10) years

Toshiro Futami, Yukio Tsukamoto and Tadashi Fujita

We performed rotation osteotomy of the radius in 5 patients with congenital and 1 with post-traumatic anterior dislocation of the radial head. At a mean of 7 (3-10) years follow-up, the chief complaints had dis-

appeared and an anatomical radiographic reduction had been obtained in all the cases. Except for 1 case with limited supination of the forearm, no postoperative complication was noted.

Department of Orthopedics, Kitasato University East Hospital, 2-1-1 Asamizodai, Kanagawa, P.O. Box 228, Japan  
Tel +81-427 48 9111. Fax +81-427 48 9119  
Submitted 91-01-22. Accepted 92-02-03

The treatment for congenital or inveterated post-traumatic dislocation of the radial head is controversial (Caverias 1957, Storen 1958, Vesely 1967, Lloyd-Roberts and Bucknill 1977). We present 6 cases with this condition treated with rotation osteotomy of the radius.

## Patients and methods

5 patients with congenital and 1 with post-traumatic anterior dislocation of the radial head were treated. There was 1 woman and 5 men and their mean age was 13 (8-19) years. Their chief complaints were pain on motion of the elbow in all cases, loss of flexion in 5 cases (15°-25° compared with the normal side), and a bony prominence at the anterior side of the elbow (mainly a cosmetic problem) in 3 cases. Before the operation, manual reduction of the radial head was easily obtained by supination of the forearm in all

cases.

An osteotomy was performed at the middle of the radius, the proximal part of the radius rotated externally 40°, and the bone fixed with a metal plate. A shortening osteotomy (about 5 mm) was performed in 2 cases that exhibited overgrowth of the radial length. Postoperative external fixation was applied for about 3 weeks. The mean follow-up period was 7 (3-10) years.

## Results

All patients exhibited painless motion, anatomical reduction of the radial head (Figure 1), and an improved range of elbow motion (10° on an average). All the patients temporarily exhibited limited forearm supination, which disappeared within 6 months in 5 cases. In one case, a 19-year-old man with congenital dislocation, persistent limited forearm supination (30°) was noted.

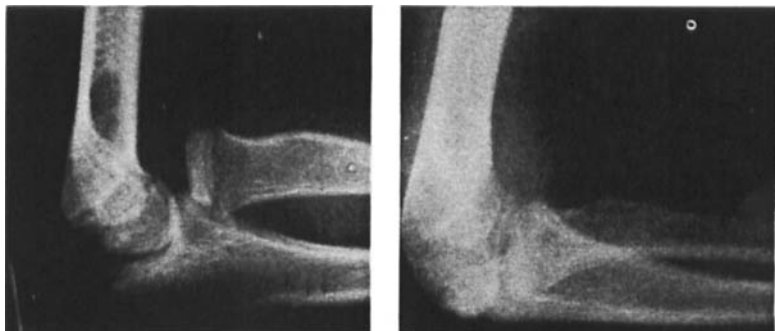


Figure 1. An 8-year-old boy with traumatic anterior dislocation of the radial head. After the operation, the radius is in normal position.

## Discussion

In general, the majority of patients with prolonged radial-head anterior dislocation are asymptomatic and have no functional limitation due to the minimal loss of motion or the compensatory wrist motion and shoulder motion (MacFarland 1936, Caverias 1957, Vesely 1967, Lloyd-Roberts and Bucknill 1977, Mardam-Bey and Ger 1979). However, some adolescent patients seek medical treatment because of pain on motion and/or loss of elbow flexion, possibly due to overuse (including sports activities). For these patients with significant clinical symptoms, surgical treatment with an annular ligament reconstruction (Lloyd-Roberts and Bucknill 1977) or excision of the radial head may be indicated (Caverias 1957, Mardam-Bey and Ger 1979). However, some authors are critical of annular ligament reconstruction because of the incidence of recurrence of redislocation (Lloyd-Roberts and Bucknill 1977). Excision of the radial head is a palliative method that does not restore the relationship of the bone at the elbow. Joint instability may develop, resulting in elbow arthrosis (Caverias 1957, Mardam-Bey and Ger 1979).

We believe that prolonged dislocation should be corrected (before the end of bone growth), since it may induce elbow deformity and instability (Mardam-Bey and Ger 1979), followed by bone erosion and tardy nerve palsy in the future if the patient is active in sports and/or their occupation. Rotation osteotomy of the radius is a surgical procedure based on the principle of functional anatomy according to which the radial head attains its largest stability when the forearm is externally rotated. It reduces the tension of the biceps muscle, which is considered the main factor responsible for recurrent anterior dislocation, and which increases the tension of the pronator teres and pronator quadratus muscles (Figure 2).

The only complication in our series was persistent limited forearm supination in one case. The fact that this patient was the oldest (19 years old) in our series, suggests that rotation osteotomy should be recommended reservedly when the patient is no longer an adolescent.

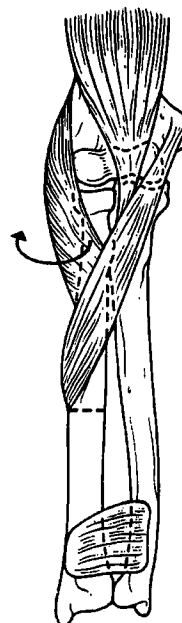


Figure 2. Possible mechanism of the reduction: rotation osteotomy of the radius reduces the tension of the biceps muscle, and increases the tension of the pronator teres and quadratus muscles.

## References

- Caverias D E. Some observations on congenital dislocation of the head of radius. *J Bone Joint Surg (Br)* 1957; 39: 86-9.
- Lloyd-Roberts G C, Bucknill T M. Anterior dislocation of the radial head in children: aetiology, natural history and management. *J Bone Joint Surg (Br)* 1977; 59 B (4): 402-7.
- MacFarland B. Congenital dislocation of the head of the radius. *Br J Surg* 1936; 24: 41-9.
- Mardam-Bey T, Ger E. Congenital radial head dislocation. *J Hand Surg (Am)* 1979; 4 (4): 316-20.
- Storen G. Traumatic dislocation of the radial head as an isolated lesion in children. *Acta Chir Scand* 1958; 116: 144-9.
- Vesely D G. Isolated traumatic dislocations of the radial head in children. *Clin Orthop* 1967; 50: 31-6.