

Fracture of the humeral capitellum fixed with absorbable polyglycolide pins

1-year follow-up of 8 adults

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Absorbable self-reinforced polyglycolide pins were used for transarticular fixation of displaced Type I capitellar fracture in 8 adult women. An anatomical reduction was obtained, the fixation was stable, and function became good in all the cases. A sterile synovitis in one case was drained and subsided within 3 weeks, without further intervention.

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A fracture of the humeral capitellum is a rare injury occurring as 2 types. The Type I fracture involves a major part of the capitellum, typically displaced upwards and forwards (Collert 1977); reduction and fixation are usually mandatory. The Type II fracture is a minor cartilaginous lesion, sometimes associated with fracture of the radial head; it is often treated conservatively.

We report 8 consecutive cases of Type I capitellar fracture treated with absorbable polyglycolide pins (Hirvensalo et al. 1990).

Patients and methods

From June 1986 to January 1991, 8 women with a totally displaced fresh Type I fracture of the humeral capitellum were operated on at our department. Their average age was 40 (17–68) years. They all had fallen on the outstretched extremity. In 2 cases the fracture extended to the trochlear surface (Table 1). All but Case 3 were operated on within a week of the accident.

At operation the fracture was exposed through a lateral approach splitting the origin of the extensor muscles and the radio-humeral capsule. The fragment was reduced and held in place while drilling at least two diverging 2-millimeter channels through the fragment into the humerus. The first drillbit was held in the channel while drilling the other one, in order to avoid redisplacement of the fragment. Then the self-reinforced polyglycolide pins (2 mm in diameter and 30

mm in length) were tapped into the channels with an applicator and buried under the cartilage surface.

All had plaster cast immobilization for 3 weeks, with the elbow flexed in 85–90 degrees. Thereafter free motions were allowed. Radiographic and clinical check-ups were arranged at 3 weeks, 6 weeks, 3 months, 6 months, 12 months (Figure 1). Function was evaluated, using the scoring scale by Broberg and Morrey (1986).

Table 1. Displaced fracture of the humeral capitellum of 8 women, fixed in anatomical position with absorbable polyglycolide pins

A	B	C	D	E	F	G	H	I	K
1	68	4	–	–	12	–	–	5	99
2	17	1	–	–	12	+	–	8	98
3	56	53	–	–	12	–	+	0	99
4	40	1	+	+	12	–	+	15	97
5	53	2	+	–	12	–	–	0	100
6	22	3	–	–	15	–	–	0	100
7	31	6	–	–	12	–	–	0	100
8	35	1	–	+	6	–	–	10	98
A Case					H Radiographic arthrosis				
B Age					I Limitation of extension (degrees)				
C Days from injury to operation					K Functional score (Broberg and Morrey 1986), excellent 95–100 points				
D Trochlear involvement					good 80–94				
E Comminution of the fragment					fair 60–79				
F Months follow-up					poor 0–59				
G Synovitis									

Figure 1. Case 5.



Typical displacement of the Type I capitellar fracture.



After operation; good congruity without any signs of secondary arthrosis.

Results

An anatomical position of the fragment was achieved in all the cases. No failures of the fixation occurred (Figure 1). Cases 3 and 4 had posttraumatic arthrosis at the final radiographic evaluation. No intraoperative complications ensued.

No bacterial wound infections occurred. In Case 2, a sterile synovitis of the elbow joint developed 8 weeks postoperatively. An aspiration with a needle showed grayish fluid. The bacterial cultures were negative. The aspiration was repeated after 1 week, and the synovitis subsided within 3 weeks.

Function became good in all the cases, even though 4 had restriction of extension 5–15 degrees; all were painless without limitations of work or sport activities.

Discussion

The radiographic signs of secondary arthrosis seen in 2 cases may be associated with the delay of 8 weeks before the osteosynthesis (Case 3) and with the comminution of the fragment (Case 4). The transarticular fixation did not cause any radiographic changes in the patients with non-comminuted fracture, and when the operation was accomplished within the first days after the accident.

The only complication associated with the method, synovitis of the elbow joint, did not compromise the final functional or radiographic result. This transient sterile tissue reaction can be considered as a foreign-body reaction against the polyglycolide material (Böstman et al. 1990).

Our results are in accordance with the good results presented by Collert (1977), Lansinger and Märe (1981), and Moisheff et al. (1991), all of them recommending open reduction and internal fixation with metallic pins or screws of the Type I capitellar fracture. The advantage of our method is that the absorbable pins need not be removed.

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