3.6 Total hip replacement with all alumina bearings in patients under 30 years of age

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Introduction

Young patients with hip pathologies undergo heavy handicaps within their personal and professional lives. Total hip arthroplasty must last as long as possible and take into account the bone structure and the soft tissues.
With wear rates of less than 5 µ/year and almost no osteolysis on the long term, total hip replacement with all alumina bearings is an answer.

Materials and Methods

Between September 1979 and July 2002, 101 consecutives total hip arthroplasties with all alumina bearings (53 rights, 48 lefts) were performed on 75 patients (42 women and 59 men). Their average age was 24.1 years (13 to 30 years old). 24 arthroplasties were bilateral and 16 of them were implanted in one operation. 2 revisions of the same hip on under 30 year olds are included.

The preoperative diagnosis was avascular necrosis in 56 hips (steroid induced for 39 hips), inflammatory diseases in 13 hips, consequences of an acetabulum fracture in 8 hips, infection in the newborn in 7 hips, epiphysiolysis in 6 hips and miscellaneous in 11 hips.

76 of these arthroplasties performed in 56 patients (24 women and 32 men) have had a 2 years follow-up or more. 25 hips had previous surgery and 10 had a previous history of infection. The average preoperative Postel Merle d'Aubigné score was 11.3 ± 2.5 (Pain : 3.0 ± 1.2, range of motion : 4.7 ± 1.3 and walking ability: 3.6 ± 1.3).

As for the femoral stems (Ceraver Osteal company, Roissy, France), 60 were cemented and 16 cementless.

There were 5 different types of sockets (Ceraver Osteal company, Roissy, France) : 31 alumina cups (23 cementless, 8 cemented), 6 threaded titanium shell with an alumina liner, 13 cementless press-fit Ti alloy shell with an alumina liner and 26 Ti alloy rough and hydroxyapatite-coated.

Results

At the latest follow-up, one patient (2 hips) had deceased before 2 years, five patients (5 hips) were lost (foreign countries) and 69 hips (50 patients) were examined. The average follow-up was 7.3 years (2 to 18.6 years).

There were 9 revisions (average follow-up : 8.5 ± 5.2 years). 2 bipolar revisions : 1 infection (patient with rheumatoid arthritis with 10 years follow-up) and 1 aseptic loosening (18.6 years). There was 7 other aseptic loosenings of the

acetabular component (2 after a road accident (Fig. 1, 2) and 1 after pseud-arthrosis of the graft). 5 revisions were due to acetabular failure (1 bipolar) and 3 of them were cementless alumina cups.

Figure 1:
Post-operative.

Figure 2:
7 years follow-up, road accident.

55 arthroplasties had a Postel Merle d'Aubigné score that was very good or good (16 to 18), 5 had a fair one (12 to 15) and 1 had a poor one (less than 12). 53 hips were in sports or active categories (36 before surgery). 3 women with unilateral arthroplasty gave birth without any problem.

Radiologic data showed 7 sockets with a radiolucent line. Only one of them was circumferencial without any migration of the cup. There were 10 stems with limited radiolucent lines in zone 7. No osteolysis was observed in either the femur or the acetabulum.

At the latest follow-up, 52 hips were graded A (good and very good clinical results, no radiological problem) (Fig. 3-6), 5 were graded B (good or very good clinical results but evidence of a radiological problem), 2 were graded C (poor clinical results, no radiological problem), and 10 were graded D (poor clinical results, evidence of a radiological problem. 9 revisions were included).

Figure 3:
Preoperative X-ray.

Figure 4:
7.5 years follow-up.

Figure 5:
Preoperative X-ray.

Figure 6:
7.5 years follow-up.

Conclusion

Total hip arthroplasty with all alumina bearings in young patients give acceptable results but it is difficult surgery. The main problem is related to socket fixation. There is an apparent improvement with metal backed alumina that needs to be confirmed with long-term results.

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