CASE REPORT

A customised replacement for polyostotic fibrous dysplasia of the upper femur

A 51-YEAR FOLLOW-UP

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We report the case of a 12-year-old boy with polyostotic fibrous dysplasia of the upper femur in whom a massive customised polyethylene prosthesis functioned successfully for more than fifty years.

Case report

In 1949, a boy aged 12 years presented with polyostotic fibrous dysplasia (Fig. 1). At that time, the only satisfactory treatment for a case of such severity was disarticulation through the hip. An artificial limb for such an amputation would have provided very poor function. Therefore, it was decided to amputate the limb through the middle third of the thigh, fillet out the femur and substitute the proximal femur with a polyethylene implant. This implant articulated directly with the acetabulum enabling an above-knee, ischial-bearing artificial limb to be fitted. The prosthesis (Fig. 2) was carved from a block of polyethylene measuring 10 x 4 x 3 inches. Channels were made in the prosthesis for the attachment of the flexors and extensors of the hip, the adductors and vastus lateralis. The operation itself was performed on 2 August 1949. At the time of insertion, the head of the prosthesis required some filing to obtain a good fit.

By 22 September 1949, the state of the stump was normal, the boy had been measured for an artificial limb and was walking on a temporary pylon. He was fitted with an artificial limb on 31 March 1950, and by October of that year he was playing football and swimming. He continued to mobilise without difficulty using an above-knee prosthesis, eventually driving an automatic car, working full time and climbing ladders for home decorating.

In May 2000, the patient's stump became acutely swollen and painful, obliging him to discontinue his usual employment as a cleaner.

Fig. 1

Pre-operative radiograph demonstrating polyostotic fibrous dysplasia.
The patient’s inflammatory markers were raised (C-reactive protein 40 mg/l) and MRI suggested an infection. When the symptoms did not settle with a course of antibiotics, it was decided to revise the proximal femoral prosthesis (Fig. 3). This was performed successfully in March 2001. A new proximal femoral prosthetic stump was constructed from a titanium body and a cobalt-chrome head which articulated with a cemented polyethylene acetabular cup (Fig. 4). The removed polyethylene prosthesis was found to be macroscopically intact with no gross wear. There was no evidence of osteolysis around the acetabulum although histological specimens sent at the time of revision did demonstrate many deposits of high-density polyethylene, associated with a foreign body giant cell reaction. The patient has since died from an unrelated cause.

This massive customised polyethylene prosthesis, which had remained in situ for more than 50 years, successfully converted a disarticulation of the hip to an above-knee amputation.

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.

References