Fractures of the Proximal Femur in Patients with Total Hip Endoprostheses*

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Summary. Between October 1982 and October 1983 three patients were admitted to the Orthopedic Clinic of the University of Vienna who had suffered complicated fractures of the proximal femur, with concomitant loosening of previously implanted total hip endoprostheses. To replace them we used the KMFTR Endoprosthesis. The Kotz Modular Femur and Tibia Reconstruction Endoprosthesis was originally developed for the surgical management of bone tumors. The implantation followed the principle of intramedullary splinting and transfer of force. Fragments of bone adhering to the surrounding muscles were positioned around the endoprosthesis and the periosteum was carefully reconstructed. After a follow-up period of 1 year on the average the patients were very content with the results and were essentially not restricted in their scope of activities. Walking capacity and mobility were satisfying at last checkup. Radiographically, a consolidation of the femur with solid bony incorporation and a firm fit of the prosthesis were observed.


Comminuted fractures and fractures with massive osteolysis of the proximal metadiaphyseal femur in patients with total joint endoprostheses in the same hip pose considerable problems in regard to their surgical management [9]. Such fractures occur most frequently during traffic accidents. Some are due to falls caused by unsteadiness and pain during walking in patients with already loosened total hip replacements. Some are seen in cases of massive osteolysis of the bone surrounding the endoprosthesis. Such comminuted fractures used to be treated by various methods of osteosynthesis (AO) or plate osteosynthesis using bone cement. The endoprosthesis was either left in place or removed (see Fig.1) [9]. Schneider reports on three diaphyseal fractures in the immediate vicinity of the endoprosthesis which were treated by implanting a custom-made endoprosthesis [7]. The usually unavoidable use of bone cement, which is suspected to be toxic to the surrounding strata of bone, carries with it the renewed danger of loosening, pain, and future falls.

The Orthopedic Clinic of the University of Vienna has been using a modular cement-free system of endoprostheses for joint replacement after tumor resections (KMFTR Endoprosthesis) [4, 5]. This system can be employed to bridge defects of various sizes after comminuted fractures or massive osteo-

* Three case reports of revision arthroplasties using a cement-free modular reconstruction endoprosthesis (Kotz Modular Femur and Tibia Reconstruction—KMFTR—System)

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Fig. 1. N.E., male, aged 78: results 2 years after treatment of a subtrochanteric fracture of the left hip with a Mueller-Charnley total hip endoprosthesis by means of osteosynthesis

Fig. 2. KMFTR System, complete set of component parts

Fig. 3a-c. D.E., female, aged 51. a October 21, 1982: pathologic fracture of the left femur in the apex area of a cemented Mueller-Charnley total hip endoprosthesis with bone structures massively altered by osteolysis. b November 16, 1982: 12 days after implantation of a KMFTR Endoprosthesis. c March 19, 1984: 17 months after surgery. Good clinical results and regeneration of the bone structure around the endoprosthesis

lysis and to achieve primary stability. We have operated on three patients with this diagnosis at our clinic and present here the methods and results in case reports.

Method

The KMFTR is the latest development in a long series of tumor endoprostheses. The custom-made cemented endoprostheses [8] were followed by custom-made models, which could do without the use of bone cement until a modular cement-free system could be designed (KMFTR System) [3, 4]. The ready availability of a complete set of endoprostheses with various lengths of prostheses, extension and connection pieces, as well as anchorage parts of different sizes, also permits the employment of the KMFTR System in traumatology. The delay caused by the manufacture of custom-made endoprostheses has been eliminated, and bone fractures with loosened endoprostheses and comminuted per trochanteric fractures can now be treated immediately.

The KMFTR endoprosthesis is made of Vitallium and permits reconstruction of the proximal or distal