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A Novel Approach in Endoprosthetic Pelvic Reconstruction

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Introduction:

Mobile and durable reconstruction of the coxofemoral joint while avoiding limb-length discrepancy is a major challenge after periacetabular tumor resections. Massive allograft and megaendoprosthetic reconstruction procedures are being performed with usually unsatisfactory long-term results. We propose a new endoprosthetic reconstruction technique for internal hemipelvectomy, in which the ground reaction force is transferred to the spine through the shortest route possible.

Methods:

We present our experience with 5 patients (M/F : 2/3) who underwent internal hemipelvectomy between 2005-2012. The mean age of patients was 29.4 (16-40) years. The mean follow-up period was 22 (3-52) months. The pathology was GII or GI-II chondrosarcoma in 3 patients, classical osteosarcoma in 1 patient and low-grade fibroblastic osteosarcoma in 1 patient. The pelvic resection was type I+II in two patients, I+III in two patients and II+IV in one patient.

The reconstruction was planned practically as a total endoprosthetic hip replacement. The acetabular components were implanted cementless with screw fixation at the proximal osteotomy site: sacroiliac joint in three patients, wing of sacrum in one patient and body of S1 vertebra in 1 patient. The leg length discrepancy was compensated with proximal femur replacement prostheses implanted cementless into the upper ends of femora through femoral neck osteotomy. Size 22 femoral head components were used. Capsular reconstruction was done with prolene mesh.

Results:

Three patients were complicated by hematoma and prolonged drainage and one of them developed wound necrosis in the early postoperative period. These complications were managed successfully with debridement, vacuum-assisted closure and antibiotherapy. No prosthetic dislocation or loosening occurred. None of the patients required revision. One patient has radiographic finding of polyethylene wear. Mean MSTS score was 70%(50-80). One patient died of disease. Two patients underwent metastasectomy for pulmonary nodules. Two patients currently have no evidence of disease.

Conclusion:

Although only short-term results are available, this technique has yielded outcomes comparable to those of other reconstruction methods. We believe this reconstruction to be biomechanically superior. However long-term results will be necessary to justify this assumption.

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