

Hip Dysplasia – reduction of proximal Migration before Arthroplasty using a fully implantable motorized Distraction Nail

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Introduction

In cases of proximal migration of the femoral head due to dysplasia of the acetabulum total hip arthroplasty (THA) is a challenge and combined with shortening of the leg, a high risk of nerve palsy or a risk of infection using an external fixator to distalize the femur.

Method

Fully implantable distraction devices have been used frequently for leg lengthening and are offering a new perspective with a new developed pelvic support plate to perform soft tissue distraction of the thigh. The energy necessary for the distraction can be delivered wireless through the skin by an external power and control unit. 14 patients (8m, 6f) with a mean age of 36 years (15-73) were treated using a fully implantable nail before arthroplasty. The mean distraction amount was 52mm (32-60). In an initial surgery the femoral head was resected and the cup of THA was implanted in anatomic position with or without enhancement of the acetabulum. After surgery distraction was started with 2mm/day and the proximal migration was compensated completely. In a second surgery the distraction nail was removed and the stem was inserted to finalize the THA.

Results

In all patients the soft tissue distraction of the thigh was finished as planned preoperatively, so that THA could be performed in anatomic position. No infection occurred. The first 5 patient had a high pain level because the connection to the pelvis was rigid and not flexible enough. After that a new support device was used allowing more mobility leading to a significant better range of motion and a lower pain level.

Conclusion

A fully implantable motorized distraction nail seems to be a favourable option for reduction of a high hip dislocation by continuous soft tissue distraction before THA avoiding acute intraoperative stretching and to reach equal leg length.

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