

## Limb Lengthening after internal Hemipelvectomy with the Fitbone-System

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### Background:

Internal hemipelvectomy after resection of malignant bone tumors of the pelvis is one option accepting a shortening of the leg which may be aggravated by the growth of the contralateral side in case of children. The method of kallusdistraction offers the potential of bone lengthening but the adjacent joints are set under high pressure with a considerable risk of luxation. It is unknown what happens in cases of internal hemipelvectomy with or without arthroplasty if lengthening of the femur is performed.

### Questions/Purposes:

Does kallusdistraction using a fully implantable system (Fitbone) offers an alternative to patients with limb length discrepancy after internal hemipelvectomy?

### Patients and Methods

Using fully implantable, motorized distraction nails (Fitbone), kallusdistraction can be performed without external fixation. Lengthening can be controlled wireless by an external control unit and the risk of infection is minimal. Exercises can be done without restrictions to prevent contractures and stiffness. In 5 patients (2male, 3 female) mean age 16,8 years, limb lengthening was performed with the Fitbone-device after resection of a malignant bone tumor of the pelvis which was treated by an internal hemipelvectomy. In all cases the lengthening nail was implanted into the femur retrograde through the knee joint. The osteotomy was performed about 9cm proximal of the knee joint level. Because the tibia was shortened in 2 cases as well, another distraction nail was implanted in the tibia and lengthening was performed simultaneously.

### Results:

The mean lengthening was 10,5 cm (femur 8 cm, tibia 3,6 cm). The mean follow up period was 28 months (12/42) after finishing lengthening. No technical complication occurred. In all cases bone formation was circular and sufficient. The position of the hip joint/prosthesis and the functional use remained unchanged.

### Conclusion:

From our preliminary experiences limb lengthening of the femur and the tibia with fully implantable, motorized distraction nails (Fitbone) seems to be suitable and effective even after internal hemipelvectomy with or without arthroplasty. If the joint was able to carry full load before for at least 2 years, the lengthening process do not increase the tendency of luxation.

