

Limb Lengthening in Children with a Distraction Nail

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What was the question? Limb length discrepancy in children with open growth plates were treated until now conservatively or by callus distraction using external fixation. Fully implantable systems are available only after maturity. Could it be an option to use these systems earlier in cases where the lengthening needs to be done in two steps because of the huge amount needed? Which option can be offered by the System?

How did you answer the question? In 16 patients (9f, 7m) with the medium age of 11,8 years (8–15) fully implantable distraction nails were used at the femur in a special minimal invasive technique to correct a limb length discrepancy of >4cm. In 5 cases a relevant deformity was corrected in the same surgery. In all cases a final step of lengthening was planned at the femur and at the tibia as well at maturity.

What are the results? In 15 cases the goal of lengthening was achieved without any complication. In one case of proximal femoral deficiency lengthening has to be stopped because of increasing tendency of knee joint luxation. Bone formation occurred circular around the nail. Full load bearing was possible in the average after 2,2 day/mm. No technical problems occur. 11 patients had a temporarily reduction of range of motion during lengthening which was recurrent completely. In one case growth irritation in the lateral X-ray was observed which can be corrected at the final step. At the end functional and cosmetic result was perfect in all 15 cases.

What is your conclusion? Fully implantable distraction nails are a favorable option at the femur even for children with open growth plates to correct limb length discrepancy and axis deviation. The treatment has a low pain level, is comfortable and nearly no scars are visible. The treatment needs experiences with minimal invasive nailing technique and should be done in specialized centers only. Preoperative planning and clinical and radiological control by the surgeon himself is mandatory. At the tibia there is no experience up to now. Summarizing fully implantable distraction nails can avoid external fixation to perform lengthening of the femur even if the growth plates are still open.