

## Lengthening Reconstruction Surgery for Fibular Hemimelia: A Review

*Children, 2021 – Dr. Corey Fuller et al.*

### Summary:

Fibular hemimelia (FH) presents with foot and ankle deformity and leg length discrepancy. Many historic reconstructions have resulted in poor outcomes. This report reviews modern classification and reconstruction methods. The Paley SHORDT procedure (SHortening Osteotomy Realignment Distal Tibia) is designed to correct dynamic valgus deformity. The Paley SUPERankle procedure (Systematic Utilitarian Procedure for Extremity Reconstruction) is designed to correct fixed equinovalgus foot deformity. The leg length discrepancy in FH is successfully treated with serial lengthening and epiphysiodesis.

Implantable intramedullary lengthening devices have led to all internal lengthenings. Recent advancements in techniques and implants in extramedullary implantable limb lengthening (EMILL) have allowed internal lengthenings in younger and smaller patients, who would traditionally require external fixation. These new internal techniques with lengthenings of up to 5 cm can be repeated more easily and frequently than external fixation, reducing the need to achieve larger single-stage lengthenings (e.g., 8 cm). Modern reconstruction methods with lengthening are able to achieve limb length equalization with a plantigrade-stable foot, resulting in excellent functional result comparable or better than a Syme's amputation with prosthetic fitting.



### FIGURE

Radiographic sequence of extramedullary lengthening girl with Paley type 3b1 FH with medially placed Precice nail (Nuvasive Specialized Orthopedics, California) (**left**). There is a **Simple Locking IntraMedullary (SLIM) rod** (Pega Medical, Montreal, Canada) and the fibula is fixed with tibio-fibular screws. The foot is fixed with a temporary extra-articular spanning screw from the foot to the tibia anterior to the ankle joint. A 5 cm lengthening was performed causing axial deviation into valgus bending the SLIM rod (**middle**). To correct the valgus, a plate was inserted laterally, and the extramedullary nail removed, after first decompressing the peroneal nerve, performing an anterior compartment fasciotomy and cutting the fibula proximally (**right**).

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