



Mid-term Results of Femoral and Tibial Osteotomies and Fassier-Duval Nailing in Children With Osteogenesis Imperfecta

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Background:

Patients with osteogenesis imperfecta (OI) have significant burden of both fractures and bony deformities. The present approach to care in this disorder is a combination of surgical care with intramedullary rod fixation, cyclic bisphosphonate therapy, and rehabilitation with goal of maximizing patient function and quality of life.

Methods:

Retrospective chart review identified 58 children with OI who had realignment osteotomies with Fassier-Duval (FD) intramedullary nailing of the lower extremity by a single surgeon. This is a consecutive series treated between 2003 and 2010. Postoperatively, patients were followed up clinically and radiologically. Motor function was assessed using the Brief Assessment of Motor Function score and the walking scale subset of the Gillette Functional Assessment Questionnaire.

Results:

Fifty-eight patients had 179 lower extremity FD intramedullary rods placed. This technique allowed for intervention on multiple long bones, with 29% having bilateral femur and tibial rodding in the same procedure. Revisions were required in 53% of patients, which occurred at a **mean time of 52 months after initial rodding surgery**. In most cases, revision surgery was related to patient growth and subsequent fracture, although rod migration did occur in a minority of patients. Nonunion or incomplete union was 14.5% in this series. Bisphosphonate infusion was not postponed after surgical procedures. Patients had improvement in mobility status at the latest follow-up.

Conclusions:

This series lends evidence to the medium-term utility of FD intramedullary rods as an effective and less invasive platform for stabilization and correction of deformity in long bones of patients with OI. Relatively low blood loss and relatively short hospitalizations were noted. Nonunion rate was comparable with existing literature noting that our patients did not have postsurgical postponement of bisphosphonate therapy.

TABLE 2. Indications for Femoral Fassier-Duval Rod Revision in 26 Patients

Indications	No. Patients
Femur fracture	11
Femoral neck fracture	(3)
Bending of the rod (Fig. 2)	7
Proximal lateral migration of the female portion of the rod resulting in lateral hip pain, thigh pain, or a stress response of the proximal femur	4
Pain with ambulation	4

TABLE 3. Indications for Tibial Fassier-Duval Rod Revision in 20 Patients

Indications	No. Patients
Tibia fracture	10
Pain with weight bearing	7
Bending of the rod	3