

# COXA VARA AND VALGA CORRECTION ON TELESCOPIC NAILS IN OSTEOGENESIS IMPERFECTA



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**Background:** Varus or valgus deviations of the femoral neck in Osteogenesis Imperfecta had been an ignored chapter because classic correction procedures were applied in medical practice with unsatisfying results. Until the use of telescopic rods, coronal deviations remained unsolved and the distal configuration of the proximal femoral extremity remained uncorrected or partially corrected which required extensive use of wheel chair or bed immobilization of the patient. The concomitant correction of complex deformities, coxa vara/valga and femoral integrated configuration, has been a progress which allowed patients to walk with or without support.

**Purpose:** The purpose of this study is to present the Burnei's technique, a therapeutic alternative in deformity corrections of the varus or valgus hip in children with Osteogenesis Imperfecta.

**Material and methods:** The paper is a retrospective study performed in a single center which analyses Burnei's technique and other procedures described in literature.

The content of the paper is based on a 12 years experience, on a series of 51 patients with Osteogenesis Imperfecta out of which 10 patients (13 hips) presented frontal plane deviations of the femoral neck.

**Results:** All patients with Osteogenesis Imperfecta which presented coxa vara or valga were submitted to investigations with the purpose to assess the possibility of extending the surgical intervention to the distal segment of the lower limb, to establish the association of severe deformities of the proximal extremity of the femur and the necessity of postoperative intensive care. Burnei's technique: The operation was first performed in 2002. A subtrochanteric osteotomy is made in an oblique cut, from the internal side to the external side and from proximal to distal for coxa vara, or using a cuneiform resection associated with muscular disinsertions. Only telescopic rods are used for osteosynthesis.

**Conclusions:** Burnei's technique is simple, it corrects concomitant with Sofield-Millar the varus and valgus deviations. Even though only a telescopic rod is used, no stress fractures were seen postoperative, deviation recurrence or assembly loss.

**Keywords:** Osteogenesis imperfecta, coxa vara, coxa valga, only rod correction, Burnei's technique.

# OPEN OSTEOSYNTHESIS IN DIAPHYSEAL FRACTURES IN CHILDREN WITH POLYTRAUMA



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**BACKGROUND:** The objective of the study was to appreciate the combinations of diaphyseal fractures in children, surgical methods of treatment and their results.

**METHODS:** In a Level III trauma center we reviewed 13790 patients. Emergency trauma injuries were 33.9% (4687 children). 178 children were treated with multiple injury, which constitutes 3.7% of all children hospitalized with urgent injuries, which were performed 217 interventions.

**RESULTS:** Diaphyseal fractures in children with polytrauma in different combinations was detected in 64 children (35,9%), they were carried out 86 surgery. More commonly diaphyseal fractures were recorded combined and associated in next component humerus-humerus – 3 children (6 interventions), humerus-forearm – 10 children (12 interventions), humerus-lower thigh – 1 child, humerus-femur – 5 children (4 interventions), forearm-forearm – 6 children (8 interventions), forearm-leg – 4 children (5 interventions), femur-femur – 6 children (12 interventions), femur-femur-leg – 5 children (12 interventions), femur-leg-forearm – 2 children (2 interventions), femur-leg – 3 children (4 interventions), femur-wounds-brain trauma – 16 children (12 osteosynthesis), leg-leg – 2 children (6 interventions), leg-brain trauma – 1 case. It was need the humeral fixation in 13 cases, 19 cases of forearm, the femur osteosynthesis 39 cases and open fractures leg 15 cases. The open fixation of humerus fractures was the fixing with three brooches clasped 8 children, with screws – 2 children and 3 cases performed by fixing metal plate and screws. To 2 children was applied external fixation device as immobilisation. The open osteosynthesis in forearm fractures was performed centro-medullary with brooches Ilizarov in 12 cases and in 7 cases performed additional cortical fixation with brooches Kirşner. Femoral intramedullary osteosynthesis with nail metal were subjected 23 children, brooches added to 5 children and 6 cases with additional fixation- screw and wire in 5 cases osteosynthesis plate and screws in leg fractures. Osteosynthesis of leg fractures finished with Ilizarov device application

to 3 children, and Gofman device in 4 children and to 6 children with pins and screws, metal plate and screws 2 children. Complications were not found.

**Conclusions:** Osteosynthesis of diaphyseal fractures in multiple injury requires combining materials from internal and external fixation with minimal trauma, lasting attachment, so will be improved the life quality in patients with politrauma.

**Keywords:** open osteosynthesis, politrauma, children.

## EXTERNAL OSTEOSYNTHESIS IN COMBINATION WITH THE USAGE OF THE ARTIFICIAL COMPOSITE BIODEGRADED IMPLANT AT TREATMENT OF PSEUDOARTHROSES AND PATHOLOGICAL FRACTURES AT CHILDREN



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**Work's goal:** rising of efficiency of children's treatment with innocent osteal lesions of a locomotorium and the acquired nearthrosis.

**Material and methods.** In Clinic of Vertebrology, Orthopedics and Traumatology of the "N.Gheorghiu" Scientifically-Practical Center of Children's Surgery 39 children, aged between 1,8 and 17 years, with posttraumatic pseudoarthrosis and pathological fractures were operated. The method of treatment consisted in using of an osteosynthesis in the form of applying external fixation devices in combination with intra focal introduction of the biodegraded implant. Biodegraded implant containing 70 - 80% of the salt component in the form of hydroxyapatite crystals with nanoscale (43-45 nm), the rest - the biopolymer (collagen), the composite has a porosity of 70% to ensure the rapid lysis of cells in the body. Material was introduced into the defect as an injection and open way. After applying of the device of external fixation, intra focal endermic puncture by filling of a cavity with material in combinations with an antibiotic for 70% was carried out to patients with pathological fractures against the background of dystrophic osteal cysts-11, fibrous dysplasia-9, acquired nearthrosis: posttraumatic-7 and osteomyelitis-6 consequences. The volume of filled bone's defect varied from 4cm<sup>3</sup> to 200cm<sup>3</sup>. Open surgical intervention with excising of tumor to a healthy tissue and filling of the formed defect with plates with an antibiotic was carried out to 6 patients with pathological fracture against an osteoblastoclastoma, after applying of the device of external fixation.

**Results.** At all patients after 1 year there came full reorganization of the pathological center.

**Conclusion.**

1. Injection introduction of a composite allows providing an adnation of osteal fragments without operation in case of the slowed-down consolidation of fracture or nearthrosis.
2. Biodegraded composite materials have essential advantages in comparison with an allobone (ability to stimulate reparative processes and to be utilized by the organism, development primary micro vascular canal).
3. Composite is capable to provide an angiogenesis in its introduction zone and the accelerated ossification in the field of defect.

**Keywords:** an osteosynthesis, children, a pseudoarthrosis, the biodegraded implant.

## OSTEOSYNTHESIS IN INTRAARTICULAR FRACTURES IN CHILDREN



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**Objective of study.** Intraarticular fractures in children are the most complicated fractures, but failures in diagnosis, treatment tactics and technique of these fractures lead to unsatisfactory results, occurrence of post-traumatic deformities, disorders of function and growth.

**Material and methods.** Over 50 years we have operated approximately 2,000 children with intraarticular fractures, aged between 10 months and 18 years. Over 95% of those operated had complicated elbow fractures and follow-up consequences. The surgical method included: an appropriate approach for perfect adaptation of fragments without muscle and tendon sections, without osteotomies; restoration of traumatized muscles; perfect reposition of fragments; relatively stable and fine