

Ilizarov apparatus was incorrectly fixed in 2 patients with diaphyseal humeral fracture; wrong technique in osteosynthesis of intraarticular fractures of the elbow was recorded in 6 patients. Some mistakes in diagnosis were recorded in 3 children with forearm fractures-dislocations. Postoperative osteitis was present in 11 children at various sites after osteosynthesis (clavicle, humerus, femur, leg, astragalus). Pseudoarthrosis following osteosynthesis developed in 38 patients, in the majority after diaphyseal fractures and osteosynthesis with screwed plates, intramedullary rods, and bolts. There was found fracture of the metal fixator at the level of the primary fracture in 8 cases, which certainly proves the presence of post-traumatic pseudoarthrosis.

**Discussions.** All cases of pseudoarthrosis developed after performing metal osteosynthesis. Also, purulent complications occur after osteosynthesis, being life-threatening complications (damage to subclavian vessels during surgery with a fatal outcome, migration of the pin end into the mediastinum, aorta and pericardium, etc.). In this regard, the indications for surgical treatment should be strictly selected and surgery has to be performed by the specialist who will avoid possible complications. In diaphyseal fractures of the humerus, forearm, femur and leg, it is necessary to comply with osteosynthesis requirements in order to avoid major removal of periosteum from the bone, endosteal trauma, therefore osteosynthesis has to be performed with fine and relatively stable devices. Osteosynthesis of elbow fractures must be made through an anatomical-functional approach, neither muscles and tendons sections, nor olecranon osteotomy. Delicate surgical technique, protection of the tissues adjacent to the joint, maximum possible limitation of wound exposure are among the factors of preventing complications.

**Keywords:** osteosynthesis, complications and failures, prophylaxis.

## OSTEOSYNTHESIS IN METAPHYSEAL FRACTURES IN CHILDREN



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**Objective of study.** To implement the method of fine osteosynthesis in the metaphyseal open fracture, fractures with neurovascular disturbances, intraarticular fractures.

**Material and methods.** During 5 years in the Clinic of Orthopedics and Traumatology of the Mother's and Child's Institute 547 children with metaphyseal fractures were treated surgically: 75 children had proximal metaphyseal fractures of the shoulder, 290 children suffered from distal metaphyseal fractures of the arm, 35 kids were with distal metaphyseal fractures of the hip and 147 children had proximal and distal metaphyseal fractures of the thigh. The osteosynthesis was performed with Ilizarov and Kirschner pins.

**Results.** Postoperatively plaster casts were applied for the 4-8 weeks depending on the age of the patient and of the fractured segment. Unsatisfactory results were observed in patients from vulnerable families, possibly because of not respecting the orthopedic regimen, and consisted from angular deformities after repeated traumas and inflammation around pins.

**Discussion.** The majority of metaphyseal fractures are treated conservatively. In some cases surgery is absolutely indicated. In our clinic metaphyseal fractures are treated surgically using fine and minimally invasive osteosynthesis with pins. Osteosynthesis with pins allows adequate stabilization of the bone fragments. In children with metaphyseal fractures the osteosynthesis with Ilizarov and Kirschner pins was used, 2-4 pins depending on fractured segment, age of the patient and fracture complexity. The pins are introduced crisscross, transcutaneously and transosteally. The tactics and techniques of the surgical intervention is individualized in each case, depending on the fractured segment, type of the fracture, character of displacement, and age of patient. The external immobilization – plaster casting is applied for 4-8 weeks depending on the fractured segment and the patient's age, and the orthopedic regimen should be strictly respected.

### Conclusions.

1. In metaphyseal fractures osteosynthesis should be fine and minimally invasive.
2. Using of huge metallic plates compromises the fractured segments grow.
3. The tactics and technique of surgical intervention should be individualized depending on level and type of fracture, displacement of fragments and kid's age.
4. External cast provides perfect stability of the osteosynthesized fragments.

**Keywords:** osteosynthesis, metaphyseal fractures, children

## TRANSPEDICULARY OSTEOSYNTHESIS AND PARTICULARITIES OF CORRECTION OF CHILDREN WITH SEVERE AND VERY SEVERE SCOLIOSIS



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**Work's goal:** improvement of a life quality of children with spine deformations, by working out of surgical treatment algorithm.

**Material and methods.** 109 patients with severe scoliotic deformations have been pre- and postoperatively examined. The evaluation included collecting of anamnesis data, clinical examination, labs and imaging (standard radiography/ with functional tests, magnetic resonance) with a follow-up of 1 to 15 years. Children were aged between 5 and 17 years; they were predominantly girls – 69 (76 %).

**Results.** The main goals of surgical interventions were: elimination of the compression factor, deformation and disbalance correction and spine stabilization. The distant results of surgical treatment were good – 68,4%, satisfactory – 24,1% and unsatisfactory – 3,5%.

**Conclusions.**

1. Optimum methods of correction of difficult rigid scoliotic spine deformations were: forward spine release; dorsal correction, total fasetektomy (the bottom and top facing) throughout correction by Pontus' method and backbone fixation by a metal construction.

2. Surgical treatment of difficult juvenile scolioses began at 8-10 years old, with the following dorsal correction by "a growing construction", without posterior spine fusion execution.

3. In cases of congenital deformations primary operative defect's correction was carried out at children at the age of 5-7 years – "blocking spondylosyndesis" at curvature top with the follow-ing dorsal correction by "a growing construction" without posterior spine fusion execution.

4. Final correction of deformation, posterior spine spondylosyndesis and thoracoplasty are carried out on the end of spine growth.

**Keywords:** surgical treatment, deformation, scoliosis, children.

## OSTEOSINTEZA NUSS IN SURGERY OF CHEST MALFORMATIONS IN CHILDREN



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**Purpose.** Improvment of the quality of life of children with chest deformities, by the application of advanced technologies in surgical treatment.

**Material and methods.** In the Clinic of Pediatric Vertebrology, Orthopedics and Traumatology during the years 2012-2015, 21 children aged between 5 and 14 years old with congenital chest malformations were operated: 12 (57,1%) children with excavated chest, 9 (42,9%) patients with chest deformity caused by scoliosis with "thoracic hypoplasia syndrome" -14 boys (66,7%) and 7 girls (33,3%).

**Results.** Good results (no complaints, functional disorders of the lungs and heart are not obvious, chest deformation was removed) - were observed in 19 (90,5%) patients. Satisfactory results (a slight deepening in the anterior wall remains, there are no complaints) - 2 (9,5%) patients.

**Conclusions.**

1. Conservative treatment or delayed surgical treatment led to irreversible disorders and complications of the functions of internal organs.

2. Surgical correction of severe chest deformities is the only method that allows to prevent the progression of internal organs dysfunctions.

3. Mini invasive Nuss procedure is the most beneficial method of correction of deepening chest deformities.

**Keywords:** chest malformations, surgery, children.

## OSTEOSYNTHESIS IN CHILDREN AND TEENAGERS WITH TRAUMATIC SPINE DEFORMATIONS



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**Work's goal:** Rising of treatment's efficiency at traumatic deformations of thoracal and lumbar spine department at children by means of development differentiated surgical tactics.

**Material and methods.** 29 patients with spine deformations have been pre- and postoperatively examined. The evaluation included collecting of anamnesis data, clinical examination, labs and imaging (standard radiography/ with functional tests, magnetic resonance) with a follow-up of 1 to 5 years. Children were aged between 3 and 17 years. The indications to operative treatment were: spine instability (on F.Denis' scale) at which there are damages of two or more backbone's colons, according to AO/ASIF classification (Gertzbein S.D., 1994): Types AI – 3 (10,3%) patients, AII-AIII – 14 (48,3%), BI-BIII – 7