

## APPLICATION OF FULL-SCALE THREE-DIMENSIONAL MODELS IN PATIENTS WITH SEVERE SPINE DEFORMITIES

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**Introduction.** Correction of severe spinal deformities remains challenging. Our objective was to describe our experience using three-dimensional (3D) models and individual implants for the correction of severe spinal deformities.

**Methods.** Full-scale 3D models were custom-made for 20 patients with different types of spinal deformities: 5 patients with severe spondylolisthesis, 3 patients with upper cervical deformities, 2 patient with neurofibromatosis, 2 patients with paralytic scoliosis, 7 patients with severe congenital deformities of spine, one patient with tumor of sternum. 3D models were manufactured using rapid prototyping from CT data. In all cases 3D models were used for planning surgical interventions. Using models as a template, individual implants were created for the fixation of the spine in 11 patients. In 2 patients with C1-C2 deformity, anterior transoral C1-C2 fixation using individual plates was performed. In one 9 yrs patient with neurofibromatosis, secondary deformity and sacral hypoplasia, and in 4 patients with paralytic and congenital scoliosis instrumental deformity correction was performed combined with lumbo-pelvic fixation using individual iliac plates. In 4 patients with spondylolisthesis, additional anterior L5-S1 fixation using individual plates and long threaded cages was performed, in one patient with tumor of sternum a custom-made sternum substitute implant was manufactured.

**Results.** The follow-up period was 2 years, with neurological restoration and stable fixation in all cases.

**Conclusion.** Full-scale 3D models offer a useful tool in preoperative planning, allowing full-scale stereoscopic recognition from any direction and distance with tactile feedback. Full-scale 3D models can be effectively used for creating individual implants.

## THE RARE OBSERVATION OF MECKEL'S DIVERTICULUM NECROSIS WHICH THE GIRL HAD WITH THE SUSPICION OF FALLOPIAN TUBE TORSION

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Meckel's diverticulum occurs clinically only while development of complications (peptic ulcer with probable hemorrhage and centesis – 43%; bowel obstruction on the background of the bowel obstruction and intussusception - 25,3%; diverticulitis - 14%, urachal fistula – 3,4%) and is relatively rare. Torsion of the appendages of the uterus takes the 5th place in the structure of urgent gynecological pathology and occurs in almost 3% of girls. We introduce our own observation, which presents difficulties in the preoperative diagnostics of these conditions.

Girl of 15 years old was hospitalized complaining on pain in the lower abdomen, diarrhea up to 3 times per day. In the blood tests minor inflammatory changes were detected. While ultrasound the parovarian tubular formation up to 7 cm long with signs of infiltrative changes from the right side was revealed, which did not allow to exclude an isolated torsion of the fallopian tube. Diagnostic laparoscopy was performed, and it was detected that the uterus and appendages were without signs of inflammation and of normal sizes. At a distance of 30 sm from the ileocecal angle the phagedenic changed Meckel's diverticula up to 7 sm long twisted at the base was detected. Laparoscopic removal of the diverticulum and appendectomy were performed. The postoperative period proceeded smoothly, the girl was discharged home in a satisfactory condition on the 6th day.

**Conclusion:** all girls with a clinical picture of the "acute abdomen" are advisable to perform diagnostic laparoscopy regardless of the results of laboratory diagnostics and ultrasound. In most cases it is possible to perform the curative stage of laparoscopy without conversion.