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SURGICAL TREATMENT OF IDIOPATHIC SCOLIOSIS IN ADOLESCENTS

Kholov Z. S., Saliev M. M. and *Kadirov S. S.

Republican Specialized Scientific and Practical Medical Center of Traumatology and Orthopedics, Tashkent, Uzbekistan.

***Corresponding Author: Dr. Kadirov S. S.**

Republican Specialized Scientific and Practical Medical Center of Traumatology and Orthopedics, Tashkent, Uzbekistan.

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Scoliosis is a disease, the main symptom of which is the formation of a multiplanar deformity of the spine, leading component of which is the curvature of the spine in the frontal plane with pathological rotation and structural torsion of the vertebrae, irreversible degenerative changes in the intervertebral discs, ligaments and surrounding muscles.

Scoliosis is a severe progressive disease of the spine, accompanied by impairment of the internal organs and the nervous system (A.C. Coumbourlis, 2006; P. Pialasseetal., 2012). Scoliosis progresses with physical disability and deep mental suffering occurs due to large cosmetic defects (Tomaszewski and Magdalena Janowska Psychologica, 2012; Dagmar Reichel and Juliane Schanz, 2003). The disease causes a gross multiplanar curvature of the spinal column, which consequently disfigures the patient's torsio, disrupts the function of the heart and lungs, and leads to disability (J.WSkubic, J. PKostuik, PB. Suh, PSalo, 2009). It is investigated, that scoliosis affects the cardiovascular, respiratory, urinary systems and the gastrointestinal tract, the nervous system, which led to the statement of the term "scoliotic disease".

Scoliosis is one of the most common diseases of the adolescent orthopedic pathologies. The question of the frequency of scoliosis is widely considered in both Russian and English-language literature, however, the data presented in it are characterized by a wide scatter. Currently, according to Marc A Asher (2006)), scoliosis is detected in 2.5% of children. Some authors report the frequency from 0.47% to 5.2% (WongHK, HuiJH, RajanU, ChiaHP., 2005, CilliK, TezerenG, Taş T, etal. 2009, KoniecznyMR, SenyurtH, KrauspeR., 2013). Idiopathic scoliosis often occurs in girls with a ratio of 1.5 / 1 to 3/1. The ratio increases with age (KoniecznyMR, SenyurtH, KrauspeR., 2013, StirlingAJ. Et al., 1996). 90% of idiopathic scoliosis is a right-sided arch.

In 1982, Y. Cotrel and J. Dubousset proposed a dorsal system for the correction and fixation of the spine. The development of the system has been carried out since the early 1980s, in 1983 the first operation was performed, in 1984 - J. Dubousset's operation using CDI according to the classical technique (with rod bending and derotation maneuver). By 1988, sufficient data had accumulated to formulate the first conclusions, and Y. Cotrel, J. Dubousset, M. Guillaumat published a work (Cotrel Y., Dubousset J., Guillaumat M., 1998). In it, the authors presented a new universal segmental instrumentation system that allows using segmental selective distraction and compression in combination with a derotation maneuver to perform three-plane deformity correction, providing rigid fixation, eliminating the need for external immobilization in the postoperative period. In the frontal plane, during the operation, deformity correction was achieved with simultaneous restoration of the shape of the spine in the sagittal plane, the instrumentation contributed to the formation of thoracic kyphosis with preservation of lumbar lordosis and prevented the development of "flatback" syndrome (J.W. Skubic, J. P. Kostuik, P.B. Suh, P. Salo 2009).

In 2015-2020, only 185 patients with scoliotic deformity of the spine were operated on in the Department of Congenital Deformity of the Skeleton of the Republican Scientific and Practical Center of Traumatology and Orthopedics of the Ministry of Health of the Republic of Uzbekistan. Of those, 76 patients were boys and 109 girls. Age of patients from 12 to 18 on average 14 + 2.3 All patients underwent spinal deformity correction using the modern CDI system.

The operation is performed as follows: In the prone position of the patient, an incision is made along the line of the spinous processes from the level of the Th3-L3 vertebrae. Retraction of posterior bone structures is performed along the access from both sides relative to the line of spinous processes. The supraspinous and interosseous ligaments are removed. In the bodies of the lumbar vertebrae, bone canals are formed on both sides for the installation of transpedicular screws. Bone canals are formed in the bodies of the thoracic vertebrae for the

installation of transpedicular screws. X-ray control is performed in 2 projections, after it has been determined that the position of the markers in the vertebral bodies were correct. Through the formed canals, pedicle screws are installed along the curvature arcs. In most cases, laminar hooks are placed on both sides of the upper thoracic vertebrae. Pedicle hooks are installed. On the left side relative to the line of spinous processes, the supporting elements are connected by a rod. The rod is rotated by 90 degrees and the derotation effect of the vertebrae is eventually achieved. The supporting elements are stabilized on the bar. After that, the rod is installed from the opposite side, by means of direct pressure in the thoracic spine, derotation of the vertebrae is achieved, segmental contraction of the supporting element is provided. After a positive wake-up test, the system finally stabilizes. Posterior fusion is performed. Drainage is left in the wound. The wound is sutured in layers.

Clinical example: Patient A., 15 years old, # of history 5804. Was admitted to our centre on 11.04.2016. The operation was performed according to the method described above on 04/12/2016. In figure 1, it shows a radiograph and a photo of the patient before the operation.

Fig. 1: X-ray and photo of patient A., before surgery.

The patient was laid down and prepared according to the above method. At the stage of correction: in the vertebral bodies from L3 to L1, bone canals were formed on both sides for the installation of pedicle screws. Bone canals were formed in the vertebral bodies Th11, Th5 on the left, Th9 on the right for the installation of pedicle screws. Through the formed canals, pedicle screws were installed along the curvature arcs. Laminar hooks were also installed on both sides at Th3, right at Th11, left at Th6. The pedicle hook is installed on the Th4 on the right. On the left side relative to the line of spinous processes, the supporting elements were connected by the rod. The rod was rotated by 90 degrees and the derotation effect of the vertebrae was achieved. The supporting elements were stabilized on the bar. After that, the rod was installed from the opposite side, by direct pressure in the thoracic spine, derotation of the vertebrae was achieved, and segmental contraction of the supporting elements along the rod was given. The rods are connected by 2 connectors. The wake-up test was positive. The system is finally stabilized. Posterior fusion was implemented. Drainage was left to the postoperative bed. Layered suture of the wound. Aseptic dressing. In figure 23, it is shown a photo and X-ray of the same patient after the operation using the above technology. After awakening, movements in the lower extremities are preserved.

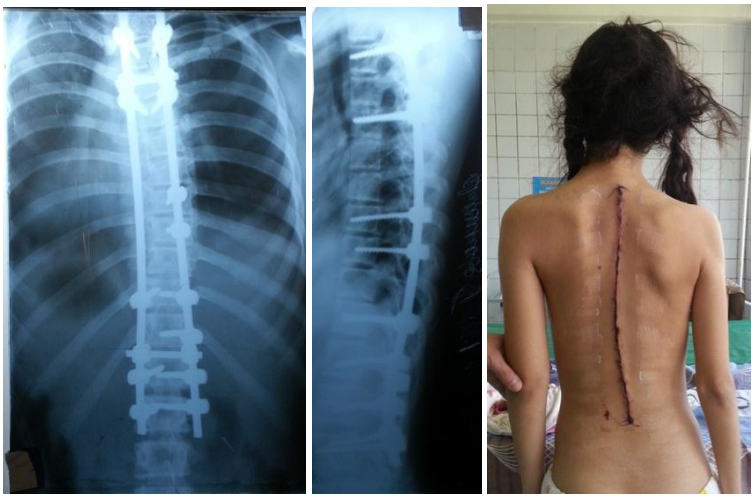

Fig. 2: Photo and X-ray of patient A., after surgery.

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