

13. INNOVATION IN THE TREATMENT OF MYELOMENINGOCELE: ADVANCED APPROACH TO CORRECTION THROUGH FETAL SURGERY



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Introduction. Fetal surgery, also known as intrauterine surgery, has evolved significantly over the years. This specialized branch of surgery focuses primarily on treating congenital conditions and abnormalities of the developing fetus. Prenatal repair of myelomeningocele (MMC), the most common and severe form of spina bifida, is an exceptionally delicate surgical procedure in which fetal surgeons open the uterus and close the opening behind the baby while it is still in the womb. Because spinal cord injury progresses throughout the gestational period, prenatal repair of myelomeningocele can prevent further damage.

Aim of study. The research was conducted on PubMed using the keywords "fetal surgery," "spina bifida," "myelomeningocele," and "prenatal."

Methods and materials. Scientific papers were selected based on inclusion criteria, which involved patient groups treated with both prenatal and postnatal surgery, recovery period, postoperative well-being of patients, operating time and the effectiveness of the procedure itself. Articles mentioning patients with major complications were excluded. Risk of bias was not assessed, and PRISMA criteria were used for data synthesis. Within the carefully curated selection of 12 articles, we have delved into two impactful studies that contribute significantly to the field. The initial study, led by the esteemed National Institute of Child Health and Human Development (NICHD), meticulously scrutinized a cohort of 183 patients treated between 2010 and 2020. Notably, 91 patients underwent prenatal surgery, while 92 underwent postnatal intervention. The second study, conducted at the Saint Louis Fetal Care Institute, methodically investigated a cohort of 58 patients, all of whom received prenatal treatment, spanning the years 2011 to 2017.

Results. According to the first study, children from the group that underwent prenatal surgical intervention showed a significantly higher likelihood of achieving independent mobility (44.8% compared to 23.9% in the group that underwent surgery after birth). Subsequent research indicates that prenatal repair of myelomeningocele improves motor outcomes at the age of 30 months compared to postnatal repair. Within the cohort of 58 patients analyzed in the second study, 2 unfortunately succumbed to prematurity (3.44%), and 30 required treatment for hydrocephalus (51.72%).

Conclusion. Fetal surgery for spina bifida brings remarkable benefits, notably reducing the need to divert fluid from the brain, enhancing mobility, and increasing the likelihood of independent walking for the baby. This intervention addresses and mitigates the effects of spina bifida, a congenital condition impacting the spinal cord. By surgically repairing the myelomeningocele (MMC) prenatally, the procedure contributes to improved long-term outcomes for affected individuals, preventing ongoing damage and fostering a foundation for healthier development. This proactive approach underscores the transformative impact of medical innovation on the lives of those with spina bifida.