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## **FETAL SURGERY**

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**Resume.** *Fetal surgery is relatively new. This is the type of surgical interventions that are used to treat birth pathologies in fetuses who are still in the pregnant uterus. The first fetal surgical techniques were developed at the University of California, San Francisco in 1980 by Dr. Michael R. Harrison and his research colleagues.*

**Keywords:** *the type of surgical interventions.*

**Topicality.** Most pathologies are not treatable through fetal intervention. The exceptions are some problems for which correction *in utero* is feasible. Early correction (prior to birth) of these problems gives more chances to recovery of a baby.

**Purpose:** congenital pathologies, correction, fetal intervention, endoscopic surgery.

**Tasks:**

1. To highlight the development of fetal surgery.
2. To describe the types of fetal surgery.
3. To consider its complications and risks.

**Material and methods.** The material for research was scientific articles.

**Results and its discussion.** On April 26, 1981, Dr. Michael R. Harrison performed the first successful human open fetal surgery in the world. He was the first surgeon who did it! Currently, it is used in cases where a potential reduction in the frequency of fetal loss is possible.

There are two types of fetal surgery: open fetal surgery and minimally invasive (endoscopic) surgery.

It is an interesting fact, that in practice, fetal surgery is different in the USA and Europe. Open fetal surgery is rarely used in Europe, except for operations on the placenta. But in American fetal treatment centers this type of intervention is often used. This is due to the attitude of perinatologists, and not to the regional differences in the nature of the diseases.

In our country several high-tech medical interventions, including fetal minimally invasive surgery, have been performed at the National Scientific and Practical Center "Mother and Child " for several years. For example, cordocentesis with subsequent intrauterine blood transfusion is the only effective method of treating hemolytic disease of the fetus.

Open fetal surgery is similar in many respects to a normal cesarean section performed under general anesthesia, except that the fetus remains dependent on the placenta and is returned to the uterus. Before the last stitch is made in the uterine wall, the amniotic fluid is replaced. Often babies who have been operated on in this manner are born pre-term.

Nowadays this type of fetal intervention is used rarely. In general, it is used for myelomeningocele and sacrococcygeal teratoma.



*Picture 1* – Open operation

Advantage of fetal endoscopic surgery is an access to the fetus without the need for a hysterotomy incision. It gives more chances of controlled post-operative tocolysis and term gestation after fetal intervention. However, minimally invasive fetoscopic surgery has certain risks to both fetus and mother.

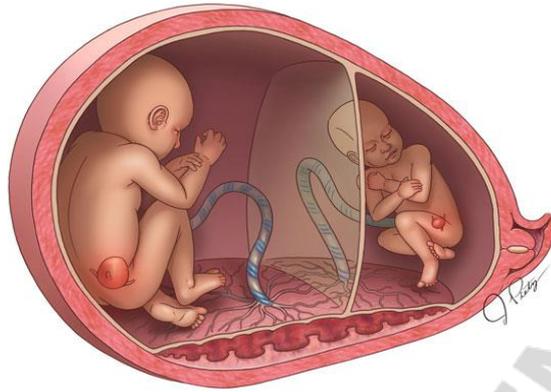


*Picture 2* – Fetal endoscopic surgery

Fetal endoscopic surgery is used for:

- 1) severe twin-to-twin transfusion syndrome;
- 2) congenital diaphragmatic hernia;
- 3) obstructive uropathy;
- 4) etc.

Severe twin-to-twin transfusion syndrome leads to 80% to 100% dual mortality. Endoscopic laser coagulation of connecting vessels improves outcome to 80% survival of at least 1 twin.



**Picture 3** – Twin-to-twin transfusion syndrome

Types of treatment:

- 1) Endoscopic laser coagulation of anastomoses;
- 2) Serial amnioreduction

Endoscopic laser coagulation of anastomoses is a more effective first-line treatment than serial amnioreduction for severe twin-to-twin transfusion syndrome diagnosed before 26 weeks of gestation.

According to one of the studies the laser group had a higher likelihood of the survival of at least one twin to 28 days of age (76% vs. 56%). Infants in the laser group also had a lower incidence of cystic periventricular leukomalacia (65% vs. 14%) and were more likely to be free of neurologic complications at six months of age (52% vs. 31%).

Open fetal surgery is reasonably safe for the mother, but for the fetus, safety and effectiveness depend on the specific procedure, the reasons for the procedure, and the gestational age and condition of the fetus. According to a study in the United States 2003, the overall perinatal mortality after open surgery has been estimated to be approximately 6%.

Open fetal surgery seems to show lower rates of procedure-related complications than does endoscopic surgery, but the rate of hysterotomy scar complications is high after open surgery.

Conclusion: fetal surgery gives hope to life and recovery of children with deadly diseases, but has its own risks.

#### **Literature**

1. Endoscopic laser surgery versus serial amnioreduction for twin-to-twin transfusion syndrome / M. V. Senat, J. Deprest, M. Boulvain, etc. // *N. Engl. J. Med.* – 2004. – № 351 – p. 136.
2. Fetal pain perception and pain management / M. Van de Velde, J. Jani, F. De Buck, etc. // *Fetal Neonatal Med.* – 2006. – № 11 – p. 232.
3. Current outcome of antenally diagnosed cystic lung disease / M. Davenport, S. A. Warne, S. Cacciaguerra, etc. // *J. Pediatr. Surg.* – 2004. – № 39 – p. 549.