



Current Medical Procedures in Fetal Surgery

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Description

Fetal surgery is a procedure performed on an unborn baby (fetus) in the uterus (*in utero*) to help improve the long-term outcome of children with specific birth defects. Because these defects often worsen as a fetus develops, fetal surgery done by a team of experts focuses on treating and improving the conditions before birth.

Fetal surgery commonly referred to as antenatal surgery or prenatal surgery is a developing area of maternal-fetal medicine that includes a wide range of surgical procedures intended to address congenital defects in foetuses while they are still inside the pregnant uterus. There are three main types: percutaneous foetal therapy, which involves inserting a catheter under continuous ultrasound guidance, minimally invasive fetoscopic surgery, which uses small incisions and is guided by fetoscopy and sonography, and open foetal surgery, which completely opens the uterus to perform surgery on the foetus. Due to the necessity of a uterine incision, the mother is administered anaesthetic gases to stop contractions. Therefore, during these “open” foetal procedures, the mother and the infant are both given general anaesthesia.

Fetal intervention is relatively new. Advancing technologies allow earlier and more accurate diagnosis of diseases and congenital problems in a fetus. Fetal surgery, a highly sophisticated medical procedure to correct birth defects inside the womb, calls for the highest calibre of care for both the mother and the unborn child. We can now pinpoint more accurately when conditions deteriorate while a foetus is developing thanks to improved prenatal imaging and diagnostic techniques.

In particular, the subspecialties of neonatology (the care of newborns, especially those at high risk), maternal-fetal medicine (the care of high-risk pregnancies),

and paediatric surgery are used in foetal surgery. Fetal surgery also draws heavily from the fields of surgery, obstetrics and gynaecology, and paediatrics. To become proficient, it frequently entails training in obstetrics, paediatrics, and the art of doing both invasive and minimally invasive surgery, which calls for multiple years of residency and at least one fellowship (typically lasting more than one year each). In the US, it is feasible to receive training in this method regardless of whether one's first field of study was surgery, paediatrics, or obstetrics. These procedures are often carried out at Level I trauma centres in major cities, at academic medical centres that offer the complete range of maternal and new-born care, due to the extremely high risk and complexity of these situations. This involves having access to numerous surgeons and doctors, nurse experts, therapists, and a social work and counselling team, as well as having access to a high-level neonatal critical care unit, appropriate operating theatres, and equipment. The cases may be referred from several hospitals at different levels, often from far away and across state and provincial boundaries. In continents other than North America and Europe, these centres are not as numerous, though the techniques are spreading.

Fetal intervention carries risk for both the foetus and the expecting mother. There is a danger that scarring of the uterus will make subsequent pregnancies challenging in addition to the typical risks connected with any surgery. In particular, this risk is higher than that of a standard Cesarean section for a number of reasons, including: the incision is typically vertical, increasing the risk of complications in subsequent pregnancies; the surgery lasts longer while the foetal intervention is performed; and a second surgery, a Cesarean section, is necessary days or weeks later to deliver the baby, which carries its own set of risks.