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## A new method for preventing the iatrogenic rupture of fetal membrane and amniotic fluid disposal in fetal surgery and a new amniotic catheter model for its implementation

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Complications of fetoscopic surgery for feto-fetal transfusion syndrome (reverse arterial transfusion syndrome, diaphragmatic hernia, urethral valve, spinal cord hernia, and sacral coccygeal teratoma) may include iatrogenic rupture of fetal membranes followed by miscarriage or pre-term birth and fetal death in 5% to 30%. This limits the clinical application of fetal surgery and requires the development of new methods of sealing the defects of membranes. This is the main objective of this study. The membranes are sealed using a new model of the amniotic catheter, which is made from a flexible elastic material and contains several channels from the proximal end, two of which are designed to release a sealant. To seal the trocar holes in membranes, we introduce the tissue sealant through the canal in the catheter, and slowly withdrawing the catheter, we gradually add the sealant through the main canal in the distal catheter. The sealant cumulates in the puncture channel and around it, completely closing the trocar hole. The platelet rich plasma-sealant, created in Research Center of Obstetrics, Gynecology and Perinatology in Moscow is used as a tissue sealant. This sealant is characterized by high adhesive ability and elasticity, having full biocompatibility with the tissues of the female body, possessing the convenience of use, allowing significantly reduction in the perioperative blood loss, reduces allogeneic transfusions and achieves the reliable sealing of the bladder. The new method of hermetic sealing of the bladder with an amniotic catheter was initially used on isolated amniotic membranes (38 experiments) and then on uterus of non-pregnant rats (32 experiments) with hermetic sealing of trocar holes in uterine horns and in the anterior

abdominal wall followed by histological examination of the containment zones. The results allow us to suggest the reliable sealing of trocar holes with an extensive network of new blood vessels growing through the sealing zone. In future, we plan to use the new model of fetal amniotic catheter during the fetoscopic surgery. The application of the new method of hermetic sealing of membranes, based on the use of the new model of an amniotic catheter allows to reduce the risk of miscarriage and preterm birth and provides the possibility to conduct fetoscopy at earlier terms of pregnancy, increasing fetal survival in various pathologies requiring the use of fetal surgery.

### Speaker Biography

Schneiderman M is working as a Professor of Medicine. He received his Bachelor's degree from the Medical University of Orenburg in 1965. After obtaining PhD degree from the Medical University of Moscow in 1967, he worked as an Assistant Professor in Medical University of Moscow, and from 1972 he worked as Gynecological Surgeon at Moscow Gynecological Hospital No.5. In 1979 he became the Director of the Gynecological Clinic at Old Arbat Street in Moscow. Between 1997-1982, he also consulted as an Assistant Professor in the clinic of Dr. Rokhlin in San Francisco (USA). In 2013, he joined Academician V I Kulakov Research Center of Obstetrics, Gynecology and Perinatology Ministry of Healthcare of Russia (Moscow) as a Professor. He has received various awards in the field of infertility treatment, new methods of surgical treatment of gynecological diseases, in obstetrics.

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