PREGNANCIES COMPLICATED BY PLACENTA PREVIA AND PLACENTA ACCRETA SPECTRUM DISORDERS ARE ASSOCIATED WITH A HIGH RISK OF MASSIVE OBSTETRIC HEMORRHAGE, MAKING THE SELECTION OF THE SAFEST AND MOST EFFECTIVE DELIVERY STRATEGY CRITICALLY IMPORTANT.

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Abstract. *In many countries of the world, including the Russian Federation, hysterectomy is recommended if the blood loss exceeds 1500–2000 ml and methods such as uterotonic agents, blood components, clotting factors, and uterine artery ligation do not give the expected result. According to world statistics, deep penetration of the placenta into the uterine wall (placenta accreta spectrum) is one of the main reasons for hysterectomies performed in obstetric practice (Dandolu V.,2012; Daskalakis G.,2007, Wu S.,2005). Avoiding hysterectomy and preserving reproductive potential in patients with placental invasion is one of the important tasks of modern obstetrics.*

Keywords: *LivaNova Autotransfusion XTRA autohemotransfusion device, cesarean section, autologous erythrocyte reinfusion.*

Introduction. The number of pregnant women with placenta previa and placenta accreta has increased 1.5-fold over the past decade. This condition is a high-risk group for developing massive obstetric hemorrhage and has a significant impact on maternal morbidity and mortality.

Relevance. Placenta accreta is divided into three types depending on the depth of penetration of the placenta into the uterine muscle layer: placenta accreta, placenta increta, and placenta percreta. Placenta increta is characterized by deep penetration of the placenta into the myometrium and can be accompanied by severe, life-threatening bleeding as a result of incomplete separation of the placenta. Currently, the incidence of placental abruption is significantly increasing due to the increasing number of cesarean sections. The main blood supply to the uterus is provided by the internal iliac arteries.

Theoretically, ligation or embolization of both internal iliac arteries could effectively reduce uterine blood flow and reduce uterine bleeding. **Objective**. To evaluate the clinical application and outcomes of the “LivaNova Autotransfusion XTRA” autotransfusion system in the management of delivery complicated by massive hemorrhage in pregnancies with complete placenta previa and placenta accreta spectrum disorders.

Materials and Methods. The study and control groups were formed based on medical records and direct observations of operative deliveries conducted at the Khorezm branch of the Republican Specialized Scientific and Practical Medical Center for Mother and Child during 2020–2025. A total of 212 patients were diagnosed with complete placenta previa and placental invasion. Among them, in the retrospective group, massive hemorrhage occurred in 13 out of 131 patients and bleeding was managed using conventional methods. In the prospective group, all 31 patients experienced massive hemorrhage, and direct autotransfusion was performed in 27 patients.

The control group consisted of 50 patients without massive hemorrhage. The following demographic and obstetric parameters were analyzed: maternal age, number of pregnancies (gravida), parity, obstetric history and delivery outcomes, gestational age at delivery, placental localization and invasion into the uterine wall, number of previous cesarean sections and related complications, as well as history of massive hemorrhage and blood transfusion. Analysis revealed differences between the study and control groups in parity, number of pregnancies, gestational age at delivery (25–36 weeks in the study group versus 37 weeks in the control group), number of uterine scars, intrauterine manipulations including abortions and manual uterine curettage, as well as somatic and obstetric pathologies associated with the current pregnancy.

No cases of amniotic fluid embolism or adult respiratory distress syndrome were recorded in either the study or control groups. Statistically significant differences between groups were identified regarding infectious complications, need for mechanical ventilation, disseminated intravascular coagulation syndrome (DIC syndrome), and duration of postoperative hospitalization. During the study, an average of 61.3% of transfused erythrocyte mass in surgeries complicated by massive hemorrhage consisted of processed autologous erythrocytes collected using the “LivaNova Autotransfusion XTRA” system.

Results. The study included clinical data from 31 patients in the prospective group. The duration of hospitalization, clinical course, and effectiveness of therapeutic interventions were evaluated. Analysis of hospital stay demonstrated that the average duration of inpatient treatment was 3.48 ± 3.19 days, with a minimum of 3 days and a maximum of 11 days. Distribution analysis showed that 26 patients (83.9%) were hospitalized for up to 5 days, while 5 patients (16.1%) required treatment for more than 5 days.

The presence of uterine scars and duration of surgical intervention were also analyzed in the prospective group. Results showed that uterine scars were present after one previous cesarean section in 5 patients (16%), after two cesarean sections in 19 patients (61%), after three cesarean sections in 6 patients (19%), and after four cesarean sections in 1 patient (3.2%). Analysis of operative duration demonstrated that most

procedures were completed within a relatively short period. In the majority of cases, surgical duration remained within the standard operative timeframe of approximately 30–60 minutes. Regarding the relationship between placental invasion and massive hemorrhage, in the retrospective group massive bleeding occurred in patients diagnosed with placenta accreta in 2 cases (15.3%), placenta increta in 1 case (7.69%), and placenta percreta in 10 cases (76.9%). In the prospective group, massive hemorrhage was observed in placenta accreta in 3 cases (10%), placenta increta in 8 cases (26.7%), and placenta percreta in 19 cases (63.3%). Placenta previa without invasive placentation was identified in 9 patients in the retrospective group and in 1 patient in the prospective group, and no massive hemorrhage occurred during surgery in these cases.

Conclusion. This study is one of the first to systematically evaluate the safety of autotransfusion technology in obstetric practice. Currently, there is insufficient clinical evidence regarding autotransfusion of erythrocytes collected during obstetric surgical bleeding. However, it has been reported that large-volume autotransfusion may in some cases be associated with the development of clinically significant coagulopathy.

Despite the theoretical risks associated with cesarean section, many authors have discussed their clinical experience with intraoperative blood collection and reinfusion. Several scientific reports, clinical observations, and retrospective analyses of patients with placenta previa suggest that the “LivaNova Autotransfusion XTRA” autotransfusion system is a useful adjunctive method for the management of hemorrhage during severe obstetric surgery. The incidence of amniotic fluid embolism in the general obstetric population is estimated to range from approximately 1:8,000 to 1:80,000 deliveries. In addition, considering that the baseline rate of postoperative infectious complications after cesarean section is around 20%, this study had sufficient statistical power to detect at least a 25% increase in infectious complications.

Therefore, our study may be considered adequately powered to identify clinically significant adverse outcomes associated with the use of the “LivaNova Autotransfusion XTRA” autotransfusion system in obstetric practice. There are also several conditions that may limit the use of the “LivaNova Autotransfusion XTRA” system.