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MASSIVE OBSTETRIC BLEEDING

(modern aspects of treatment)

Monograph for obstetricians-gynecologists, masters and clinical residents.

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The monograph is devoted to one of the current problems of obstetrics and gynecology. The use of an optimized method of subtotal and total hysterectomy performed in obstetrics for massive bleeding, a compariso n of the advantages of the traditional method and conservative treatment methods, preoperative preparation, choice of surgical tactics and metho ds, and postoperative care are described in detail. Based on the results obtained, a new method of operation and a number of therapeutic – diagnostic conclusions, conclusions and practical recommendations were proposed.
The monograph can be used in the training of obstetricians-gynecologists, graduate students and clinical residents.

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INTRODUCTION

LIST OF ABBREVIATIONS

BP - Blood pressure
ALT – Alanine aminotransferase
AST – Aspartate aminotransferase
APTT – Activated partial thromboplastin time
BDP – Biparietal size
WHO – World Health Organization
HES – Hydroxyethyl starch
HS - Hemorrhagic shock
DIC – Disseminated intravascular coagulation
ITT – Infusion-transfusion therapy
UTI – Urinary Tract Infection
APV – Artificial pulmonary ventilation
SI – Shock Index
L– Leukocyte
MOH - Massive obstetric hemorrhage
IU – International Unit
MM – Maternal Mortality
INR – International Normalized Ratio
MRI – Magnetic resonance imaging
UTPBF– Uterofetal-placental blood flow
HT - Human Thrombin
NM – Near Miss
HB -- Hemoglobin
VBL – Volume of blood loss
CBV – Circulating blood volume
ARVI -- Acute respiratory viral infection
COGH -- Complicated obstetric gynecological history
ARD-- Acute respiratory disease
PDF – Fibrin degradation products
PANLP - Premature abruption of a normally located placenta
PPH – Postpartum hemorrhage
PAK -- Pathological obstetric hemorrhage
UNDP -- United Nations Development Program
RCT – Randomized controlled trial
SBP – Systolic blood pressure
FFP – Fresh Frozen Plasma
SZB – Somatic diseases of pregnant women

CIS – Commonwealth of Independent States
FGRS – Fetal growth retardation syndrome
BCS -- Blood coagulation system
SAMM – Severe acute maternal morbidity
TEG – Thromboelastography
USE – Ultrasound examination
CMV – Cytomegalovirus infection
HR – Heart rate
ECG – Electrocardiography
EGG – Extragenital diseases
AFE – Amniotic fluid embolism
UNFPA – United Nations Population Fund

INTRODUCTION

One of the priorities of the World Health Organization (WHO) is maternal and child health. Improving the quality of medical care for women of fertile age, pregnant women, women in labor, reducing maternal and child mortality, and patient satisfaction are the main criteria in assessing the activities of the obstetrics and gynecology service.

In Uzbekistan, in the context of ongoing radical changes in healthcare, the main priority areas of ongoing reforms are the optimization of obstetric services and the reduction of maternal and perinatal mortality. A systematic search is being carried out for fundamentally new, more modern approaches to service management in accordance with the objective situation in the country and global health care. According to UN estimates, the number of global births has stabilized at about 140 million per year, and the total fertility rate has been steadily declining, dropping to 18% in 2019. The majority (65%) of these births proceed vaginally without complications for women and children with physiological blood loss of 500 to 1000 ml of blood. However, in 3 – 8% of cases, the volume of blood loss may exceed 1.5% of the mother's body weight and is considered massive bleeding. Massive obstetric hemorrhage is a critical condition (near miss maternal morbility), requiring immediate intensive care in combination with infusion-transfusion therapy, surgical intervention and often (1:30) ending in maternal bleeding.

According to world statistics, obstetric hemorrhage occupies a leading place in the structure of causes of maternal mortality and morbi dity. Every day, 810 women die from complications associated with pre gnancy or childbirth, of which about 380 are associated with massive obstetric hemorrhage due to hemorrhagic shock, disseminated intravascular coagulation syndrome and multiple organ failure. If in 2017 the global maternal mortality rate from obstetric hemorrhage was 27.3%, then in developing countries it ranges from 17 to 40%, i.e. 1 case per 1000 births per year. In developed countries, in the structure of maternal mortality, MOB is 11.0% in the USA, 1.7% in Scandinavia, and 14.7% in Russia. According to a report on a confidential study of maternal mortality cases in Uzbekistan, there is a decrease in MS from MOB from 97 (25.8%) in 2015 to 55 (22.2%) in 2017. Timely diagnosis,

coordinated work of the resuscitation and surgical teams, complex intensive treatment and properly developed obstetric tactics help reduce MS from MOB. If there is no effect from the conservative intensive therapy or organ-preserving methods adopted, such as B-Lyncl, Pereira, doping of three pairs of vessels, in case of atonic bleeding, the scope of the operation for vital reasons is expanded to total hysterectomy (Pakhomova, 2016; Yusupbaev, 2019) - this method is the last stage if all previous surgical measures do not give the desired effect. The advantage of hysterectomy for massive obstetric hemorrhages, especially atonic ones, is the rapid elimination of the source of bleeding. The second and third report on a confidential study of maternal deaths in Uzbekistan indicated that in 34% of cases with MOB, surgical hemostasis was started late and was accompanied by technical difficulties, sometimes with large blood loss during total hysterectomy.

The analysis of the relevance and relevance of the dissertation topic indicates that despite the global measures taken in the world to prevent MOB, they still pose a real threat to the health and life of the mother, requiring the search for more effective measures for their prevention, conservative and surgical treatment. We offer an optimized version of subtotal and total hysterectomy for MOB, which we obtained as a result of our scientific work, improves the technique of performing the operation, reduces its execution time and reduces blood loss, thereby improving the outcome of the operation, which in turn reduces maternal mortality. All results obtained will be our contribution to achie ving and fulfilling commitments (like most international communities) to reduce the global maternal mortality ratio to less than 70 per 100 thousand live births by 2030, which requires efforts from our government.

To date, there are no definitive criteria and a single point of view in defining massive obstetric hemorrhage. Blood loss of up to 1000 ml qui te often occurs during childbirth, especially during cesarean section deli very, but this condition does not have an important clinical manifestation and does not lead to a sharp change in hemodynamic parameters. The following criteria are typical for massive blood loss: loss of 100% of blood volume within 24 hours, or loss of 50% of blood volume within 3 hours or less, or 150 ml/min, or 2% of body weight wit hin 3 hours. Some of the currently accepted international criteria definin g the term “massive obstetric hemorrhage” are the following: blood loss

of more than 1500 ml, a decrease in hemoglobin level of less than 4 g/dl, and the need for emergency transfusion of more than 4 units. volumes of red blood cells. There are conflicting data on the incidence of MOB, according to Russian scientists it ranges from 1.7 to 8%, and according to world data, pathological postpartum hemorrhage is 6–11%, of which massive from 1 to 3% with significant differences by region. The main causes of bleeding are disturbances in the processes of separation of the placenta and discharge of the placenta, abruption of a normally located placenta, placenta previa,sepsis, obstetric embolism, traumatic injuries of the birth canal, uterine rupture, uterine atony and coagulopathy, most of them are accompanied by massive obstetric hemorrhage.

Domestic scientists have been studying this problem. They found that treatment of massive obstetric hemorrhage should be early and comprehensive. According to our national obstetric standards, surgical hemostasis must begin when the volume of blood loss is 1500 ml; often doctors delay with laparotomy and various surgical methods to stop bleeding. The effectiveness of treatment of this critical condition associated with MOB can only be ensured by the coordinated work of obstetricians-gynecologists and the resuscitation team, timely identification of the etiology of disorders and its elimination.

Many authors give preference to organ-preserving operations, however, when measures to stop uterine bleeding are ineffective and the mother is in threatening conditions, hysterectomy is widely used to save the life of the mother. Only complex treatment, including a combination of infusion therapy, blood replacement therapy and surgical bleeding control, leads to an improvement in the condition. Our scientific research is devoted to optimizing the operation of subtotal and total hysterectomy for massive obstetric hemorrhage to improve the outcome of the operation and reduce maternal mortality from hemorrhage.

CHAPTER I. MODERN CONCEPTS ABOUT MASSIVE OBSTETRIC BLEEDING, PROBLEMS OF SURGICAL AND CONSERVATIVE TREATMENT

§1.1. Massive obstetric hemorrhage is the cause of maternal mortality in the world and in Uzbekistan

Massive obstetric hemorrhage, accompanied by hemorrhagic shoc k, disseminated intravascular coagulation syndrome and multiple organ failure, is the main cause of maternal mortality in the world and account s for up to 25% of its structure. According to literature data, about 62–65% of births passing through the natural birth canal are accompanied by physiological blood loss, 1/3 of the patients l ose from 500 to 1000 ml of blood, and in 3–8% of cases the volume of blood loss exceeds 1.5% of the mass of the mother's body an d is considered massive, requiring transfusion of red blood cells and oft en hysterectomy.

However, to date there is no consensus on the exact definition of MOB in the postpartum period, although in most medical institutions it is defined as a blood loss of more than 1500 ml, or more than 30% of th e blood volume, when the need for blood transfusion arises. In most per inatal centers and maternity complexes in the CIS, the following criteria are adopted for the installation of a MOB: loss of 100% of bcc within 2 4 hours, or loss of 50% of bcc within 3 hours or less, or 150 ml/min, or 2% of body weight within 3 hours. Some of the international criteria tha t define the term “massive obstetric hemorrhage” are blood loss of more than 1500 ml, a decrease in hemoglobin level of less than 4 g/dl, and th e need for emergency transfusion of more than 4 units. volume of red bl ood cells.

Literary data provide conflicting information on the incidence of PPH in the world, from 6 to 11%, of which 1 to 3% are MOB. According to M.N. Surina, T.Yu. Marochko (2016), in the Kemerovo region of the Russian Federation, MOB complicates an average of 0.5–5.0% of births, and according to WHO, scientific studies conducted from November 2014 to November 2015 studies in the Metro East region (Cape Town, South Africa) found an incidence of this condition of 3/1000 births, and a frequency of massive transfusions of 4/10,000 births; These results are based on 32,862 births during the study period. According to WHO (2019), 14 million women develop massive bleeding

every year in the world, and the prevalence of postpartum hemorrhage (more than 500 ml) in the world is approximately 6% of all pregnancies, severe postpartum hemorrhage (more than 1000 ml) is 1.96%. As a result, the frequency of occurrence of MOB varies throughout the world; it was very important for us to study the frequency of occurrence of this condition in such an ecologically unfavorable region as the city of Urgench and three districts of the Khorezm region.

There are many possible causes of MOB associated with obstetric and somatic pathologies on the part of the mother. Obstetric causes incl ude abruption of a normally located placenta, placenta previa, obstetric embolism, disturbances in the processes of placental separation and plac enta discharge, traumatic injuries to the birth canal, uterine rupture, decr eased contractile activity of the myometrium (uterine atony), coagulopat hies, cesarean section and septic complications, the majority of which ar e accompanied by MOB, in addition, surgery, cesarean section, conserv ative myomectomy during cesarean section, subtotal and total hysterect omy. Recently, the structure of pathological bleeding has undergone sig nificant changes: the frequency of bleeding against the background of a large fetus, induced labor, abruption of a normally located placenta, pla centa previa and true placenta accreta is increasing, however, consistent ly high numbers occur with bleeding associated with impaired contractil ity of the uterus during childbirth and in the early postpartum period, i.e . due to uterine atony. Based on scientific research conducted in the Bu khara region N.N. Karimova (2020), the main causes of massive obstetr ic hemorrhage in the retrospective group were impaired contractility of the uterus - uterine atony (68.6%), anomalies of placenta attachment (62.0%), PONRP (29.0%), delivery of a large fetus (28.1%), severe preeclampsia (13.3%), most.

After bleeding, patients developed iron deficiency anemia of varying severity.

Somatic diseases leading to the development of pathological obste tric bleeding include blood diseases (congenital and acquired thrombop hilias) and hereditary disorders of hemostasis, severe extragenital pathol ogy (chronic hypertension, pathology of the cardiovascular system, neur oendocrine pathology diabetes mellitus, metabolic disorder - obesity), increasing childbearing age and ecology.

Most maternal deaths occur due to placental abruption, placenta previa and disturbances in the hemostatic system. However, postpartum

hemorrhage accounts for approximately 25 to 30% of all maternal deaths, and a loss occurs in seven women every hour.

Maternal mortality (MM) is a key indicator of the health status of women of reproductive age and an indicator of the performance of the c ountry's healthcare system, reflecting the quality of perinatal and obstetr ic care. Analysis of the level of the MS structure is the basis for develo ping a strategy for the development of obstetric services and identifying reserves for its improvement. According to WHO recommendations, " maternal mortality" is defined as all deaths of women caused by pregna ncy, regardless of its duration and location, occurring during pregnancy or after its completion within 42 days from a condition associated with pregnancy, aggravated by it, as well as its management , except in cases of accident or accidental occurrence.

Having analyzed the dynamics of maternal mortality from 2000 to 2017, we identified the following facts: the maternal mortality rate worldwide decreased by 38%, and in Uzbekistan by 33.3%; The maternal mortality ratio in developing countries was 239 per 100,000 live births in 2015, compared with 12 per 100,000 in developed countries. In our republic in 2017, the MS rate was 19.3 per 100,000 live births. There are significant differences in rates between countries. The main reasons for the tragic statistics in many countries of the world, according to the authors of the report, are primarily due to poverty and inequality. On February 27, 2020, the President of the Republic of Uzbekistan Shavkat Mirziyoyev for the first time announced that, according to preliminary calculations, 12-15%, or 4-5 million of the population of our country, is in a state of poverty, and identified poverty reduction as a priority task, for which the Ministry of Support was created mahallas and families. Our republic, together with the UN, the World Bank and other international organizations, is developing a medium- and long-term strategy to combat poverty. There are also large disparities within countries between high- and low-income women and between rural and urban women.

As mentioned above, according to WHO (2012), obstetric hemorrhage consistently maintains a leading position in the structure of maternal morbidity and mortality. Every year, about 14 million postpartum hemorrhages occur in the world, of which 120–140 thousand result in death (50% in the first 24 hours) and about 20 million result in maternal morbidity and disability; In the world, seven women die from

MOB per day. There is convincing evidence that the level of MOB increases in industrial districts and the risk of mortality from the above pathology is 1:100 thousand births in the UK and 1:1000 in the USA. In the structure of MS in the USA, blood loss is 12%, of which 73% of cases are preventable, the UK ranks 3rd in the structure of MS, 53% of cases are preventable, in Africa blood loss reaches 35–60%, in Russia 18% in the structure of MS, 62 % of cases.

In our republic, from 2013 to 2015, 2,064,279 live births were registered; in 376 cases, pregnancy and childbirth resulted in maternal mortality, of which 97 (25.8%) were directly related to MOB. From 2016 to 2017 cases of MS from MOB decreased slightly and amounted to 55 (22.2%) cases. In the structure of MS, direct causes directly related to obstetric complications accounted for 80%, indirect causes accounted for 20%. In our republic, the first place among the causes of MS, as throughout the world, is bleeding, which accounts for one third of the direct causes of maternal mortality. In second place is preeclampsia, in third place is somatic pathology, and then genital sepsis. The direct causes of MS are manageable; the quality of medical care should be improved and all reserves should be included to reduce maternal mortality. Most causes of massive blood loss and hemorrhagic shock in obstetrics are preventable in nature, therefore it is extremely important to follow the protocol for providing emergency care to this category of patients, since the time for carrying out all diagnostic and therapeutic measures is very limited [39, p. 8–12].

Thus, there is a downward trend in maternal mortality, but most experts in this field emphasize that this is not enough to achieve sustainable development goals according to UN forecasts. The global target for ending preventable maternal deaths is to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by 2030. A joint statement from UN agencies participating in the Inter-Agency Group on Maternal Mortality Assessment calls on all countries around the world to step up efforts to save women and children. Planned research work to optimize the technique of subtotal and total hysterectomy is aimed at improving the outcome of the operation and reducing maternal mortality from massive bleeding.

§1.2. Modern view on the causes of postpartum hemorrhage

More than 80% of the structure of obstetric hemorrhages is occupied by postpartum hemorrhages. The causes of PPH associated

with hypo- and atony of the uterus in the postpartum period are in first place, followed by PONRP and disorders of the separation and release of the placenta [102, p. 98–108].

The classification of PPH is currently being discussed. The International Federation of Obstetricians and Gynecologists (FIGO) recommends classifying postpartum hemorrhage into early (primary)occurring in the first 24 hours after birth, and late (secondary), occurring between 24 hours and 6 weeks after birth [88, p. 108–111; 113, p. 12–21].

The American College of Obstetricians and Gynecologists (2015) definition extends the period of late postpartum hemorrhage to 12 weeks. According to WHO, postpartum hemorrhage is blood loss ≥ 500 ml during vaginal delivery and ≥ 1000 ml during CS or any clinically significant amount of blood loss (leading to hemodynamic instability) occurring within 42 days (6 weeks) after birth of the fetus [73, p. 168 – 186]. The definition of PPH also includes a distinction between severe PPH (1000 to 1500 mL) and massive PPH (more than 1500 mL). A more convenient definition seems to be the following: postpartum hemorrhage is any blood loss that causes physiological changes that can threaten a woman's life [55, p. 242–-289]. So, in anemic women blood loss of 250 ml can cause the same clinical consequences as large blood loss in women withnormal hemoglobin.

According to A.V. Kulikova, E.M. Shifman (2016), in the Russian Federation, approximately 70% of all bleeding in obstetrics refers to postpartum atonic bleeding, late postpartum bleeding accounts for 0.2 to 3% of observations. Late (secondary) postpartum hemorrhage (PPH) occurs, as a rule, no earlier than two days of the postpartum period and is associated with subinvolution of the placental bed against the background of an infectious process, retention of inflammatory detritus or placental tissue with the formation of placental polyps. However, it is difficult to accurately determine the true frequency of bleeding in the late postpartum period, since statistics only record cases of severe blood loss. Among the causes leading to late postpartum hemorrhage are the remains of placental tissue in the uterine cavity, which more often occurs during spontaneous labor than during delivery by cesarean section. Violation of the separation of the placenta may be due to the place of its attachment: in the lower uterine segment, corner or on the side wall of the uterus, abov

e the myomatous node, where the muscles of the uterus are underdevelo ped, or changes in the mucous membrane of the uterus, characteristics o f the chorion. According to G.N. Karimova (2017), delayed uterine invo lution is one of the main reasons for the development of late postpartum hemorrhage; this factor is a risk for the development of hematometra a nd postpartum endometritis. According to a number of publications, the development of bleeding with delayed uterine involution occurs mainly in the 2nd week of the postpartum period.

According to the Uzbek and Moscow protocols for bleeding, the main causes of bleeding are determined according to the "4 T" rule: T (tone) – impaired uterine contraction (hypo- or atony); T (tissue) – retention of parts of the placenta or blood clots in the uterine cavity; T (trauma) – injury to the birth canal, uterine rupture; T (thrombin) – disorders of the blood coagulation system.

There are a lot of factors contributing to the development of PPH, but there is no single factor that would 100% cause it a serious complication, usually a combination of several factors leads to the development of bleeding. An interesting study was conducted abroad, which examined only risk factors with an adjusted odds ratio (OR) >2.0; multiple pregnancy (2.3–4.7); history of PPH (>3.3); pregnancy-induced hypertension (1.9–2.5); chorioamnionitis (>2.5); episiotomy (1.4–2.2); history of cesarean section (1.3–2.3); caesarean section during labor (1.7–3.6); macrosomia (1.7–3.5); forceps or vacuum extraction (> 2.3) [95, p. 1–7].

In our region, anemia in pregnant women, especially moderate ID A in the third trimester, is one of the main risk factors for the developm ent of PPH, so the hemoglobin of parturients should be determined at th e beginning of labor, unless recent hemoglobin is available and there are no risk factors for the occurrence of PPH. IDA may be exacerbated by altered homeostasis and decreased erythropoietin secretion and action in women with a higher postpartum inflammatory response, especially after cesarean section. Therefore, every effort should be made to treat anemia before delivery and recommend that women with severe anemia or at high risk of bleeding only deliver in perinatal centers where a multidisciplinary approach is available for the management of high-risk PPH. Mild postpartum anemia is defined as hemoglobin 90–110 g/L in the 24–48 hours before the 1st week postpartum, and after

8 weeks it should be at least <12 g/L. The prevalence of anemia in Uzb ekistan is about 49%, but we do not have information on postpartum an emia, but it is approximately 50% in Europe and 50–80%
in developing countries. Severe postpartum anemia is considered when hemoglobin is <7 g/l.

An important role in the development of postpartum hemorrhage is played by disturbances in the hemostatic system, and this applies to both massive bleeding and moderate blood loss, in particular the development of hypofibrinogenemia, congenital and acquired coagulopathies (in particular, von Willebrand disease, vitamin K deficiency, liver disease, drug-induced -induced coagulopathy). To date, it has been proven that an imbalance of the thrombin-plasmin system plays a major role in the development of obstetric hemorrhages of the type of coagulopathies. Studies have revealed hereditary bleeding disorders; in women with von Willebrand disease, the risk of developing PPH is 1.5-fold and the risk of blood transfusion is 5-fold. Carriers of hemophilia are more likely to develop primary PPH if their plasma coagulation factors are below normal. The risk of developing secondary PPH in carriers of hemophilia also increases when clotting factor levels slowly return to normal during the postpartum period. There is also information about an increased risk of developing PPH in women with rare hereditary disorders, such as congenital hypofibrinogenemia, deficiency of factor VII, fa ctor X, factor XI and factor XII, Glanzmann thrombasthenia or Be rnard-Soulier syndrome.

According to A.D. Makatsaria (2018), disruption of the hemostatic system and decreased contractility of the uterus often complement each other, the lack of intense retraction of the muscle fibers of the uterus di srupts the contraction processes of spiral arteries, and disruption of the t hrombus formation process increases the risk of developing massive PP H with the development of hemorrhagic shock.

Hemorrhagic shock that occurs against the background of bleeding leads to the development of disseminated intravascular coagulation syn drome, which occurs with amniotic fluid embolism, placental abruption, infections, preeclampsia, HELLP syndrome, which plays a critical role in the pathogenesis of massive obstetric hemorrhage. Postpartum hemor rhage of any etiology, leading to hemorrhagic shock, can become, as we have indicated, a trigger for DIC syndrome. However, with such severe liver pathology as acute fatty hepatosis of pregnancy, against the backg

round of severe liver dysfunction, in some situations, DIC syndrome fir st develops and subsequently hemorrhagic shock; such bleeding was ob served in about 43.6% of cases. Systemic hypoperfusion, acidosis, and hypoxia cause systemic release of cytokines that activate the coagulatio n cascade and inhibit the anticoagulant and fibrinolytic systems. Proinfl ammatory cytokines initiate the development of SIRS, which in turn continues to stimulate disseminated intravascular coagulation, which fur ther leads to multiple organ failure syndrome.

Often acute hemorrhagic shock leads to disseminated intravascular coagulation, profuse bleeding is accompanied by diffuse, systemic bleeding from the wound after cesarean section, from the site of intrave nous catheters, urinary, gastrointestinal, respiratory tract, skin, which leads to the development of a “near miss” condition.

In the foreign literature there are isolated publications indicating diseases such as malformations or pseudoaneurysms of the uterine arteri es, which are the causes of severe bleeding in the late postpartum period. Such bleeding occurs in about 1–2% of cases, and the lack of data on maternal mortality from them determines the lack of due attention from doctors to this problem and the development of an algorithm for its treatment.

Thus, there are many factors contributing to the development of bleeding, but the main, common causes of PPH are disturbances in the processes of separation of the placenta and discharge of the placenta, traumatic damage to the birth canal, uterine rupture, decreased contractile activity of the myometrium (uterine atony) and disorders in the hemocoagulation system, the majority of them is accompanied by massive obstetric bleeding, the development of hemorrhagic shock, disseminated intravascular coagulation syndrome, and sometimes lead to MS against the background of multiple organ failure of an irreversibl e nature.

§1.3. Diagnostic methods and assessment of blood loss during massive obstetric hemorrhage.

This section reflects the state of the blood coagulation system and homeostasis during physiological pregnancy, massive obstetric hemorrhage and diagnostic methods. During physiological pregnancy, BCC in the 3rd trimester increases by 45% and ranges from 85 to 100 ml/kg. At the end of physiological pregnancy, the level of

fibrinogen increases by more than 25%, the activity of blood coagulation factors that make up the internal pathway of hemostasis activation increases significantly - VIII, IX, X, XI, XII, however, the number of factors that make up the external pathway of bloodcoagulation activation increases moderately , as evidenced by an increase in PTI on average to 110%. Apart from factor XI, all other clotting factors, especially fibrinogen, increase during pregnancy, protecting them from excessive blood loss during placental separation.

Before birth, the level of soluble fibrin-monomer complexes on average increases slightly more than 1.5 times compared to the norm, and their number remains 40–50% high from the initial value. In the postpartum period, the level of RFMC remains stable and begins to decrease on the 6th day of the postpartum period. During pregnancy, due to the high rate of fibrinogen metabolism in the body, an increase in early PDPs is observed, but the D-dimer test is negative against the background of normal plasminogen concentrations, against the background of moderate activation of fibrinolysis. Although during physiological pregnancy the activity of the main procoagulants increases, pathological activation of hemostasis is not detected. This is achieved as a result of the balanced and compensated work of all parts of the hemostasis system, which is a unique ability of a pregnant woman. By the end of pregnancy, the content of erythrocyte mass (about 30%) and bcc (about 40%) in the pregnant woman's body increases, factors I, VII, VIII, IX, X increase, II, V, XI, XII do not change and plasminogen activators decrease.

An obvious criterion for early diagnosis of pathological blood loss is the amount of external bleeding. However, pathological blood loss is not always synonymous with external blood loss. Thus, in case of traumatic injury to the uterus with the formation of a retroperitoneal hematoma, external bleeding is insignificant and early diagnosis of pathological blood loss is difficult. In cases of undiagnosed retention of part of the placenta or uterine trauma, including rupture of the cervix with good contractile activity, the amount of external bleeding may not be pronounced; pathological blood loss is diagnosed later, as a rule, during external massage of the uterus before transferring the postpartum woman to the postpartum department. To accurately determine the severity of PPH, it is necessary to determine the amount of blood loss;

unfortunately, when an emergency situation occurs in obstetric practice, it is often difficult to estimate the amount of blood loss.

In addition to determining the amount of blood loss, it is necessary to monitor changes in hemodynamic parameters from the cardiovascular system, which will help doctors quickly and accurately determine the s everity of PPH. Recent studies have confirmed greater volume variability blood loss, ranging from less than 150 ml to almost 700 ml for uncomplicated vaginal delivery, calling into question the clinical significance of a specific blood loss threshold [78].

To determine the state of the cardiovascular system of a woman in labor with MOB, the shock index (IS) is used, which is calculated by dividing the heart rate (HR) by systolic blood pressure (SBP) and can improve the ability of individual clinical signs to predict the volume of blood loss, thereby helping in the early identification of women in labor. at risk of hypovolemia as a result of PPH. Thus, the shock index is a nearly marker of hemodynamic disorders and is better than other parameters in identifying women at risk of adverse outcomes. Normal shock index values after childbirth are 0.7–
0.9. When IOC is >1.0, the shock index can be used to assess blood loss and predict the need for transfusion of blood products.

The speed of blood flow in the uterine artery in non-pregnant women is 10–15 ml/min, increasing towards the end of pregnancy, i.e. during a full-term pregnancy, the average is 600–800 ml/min and theoretically, if one uterine artery is damaged, the woman in labor can lose all of her blood volume in less than 10 minutes.

If the patient's condition allows, diagnosing IOC requires collecting anamnesis, complaints and a physical examination - measuring blood pressure, pulse, examining the skin, mucous membranes and birth canal. To identify the source of bleeding (from the cervix, the uterus itself, from the walls of the vagina or from the perineum), in most cases a vaginal examination, examination of the cervix and often manual examination of the uterine cavity are required to clarify the underlying cause of the bleeding.

Of all the existing diagnostic and clinical laboratory criteria for determining blood loss during IOC, the determination of hemoglobin and hematocrit before and after birth is used. It should be noted that massive (more than 20% of the bcc) bleeding is easy to diagnose, but it is difficult to determine the volume of blood loss, since there are no

reliable methods for assessing blood loss.

Methods for assessing blood loss that are used in the CIS and Uzbekistan are as follows: visual method (medical tray 700 ml + 20–30%); gravimetric method: blood loss = (weight of napkins 15%)/2 (for blood loss >1 l adjustment 30%); according to the level of drop in hemoglobin, calculated using the formula OK =

2V Hb1 – Hb2 Hb1 + Hb2, where OK is the volume of blood loss, V is the normal volume of circulating blood before blood loss, Hb1 is the initial hemoglobin indicator, Hb2 is the final hemoglobin indicator.

In most scientific and practical recommendations, laboratory diagn ostics for postpartum hemorrhage urgently determines the blood type an d Rh factor; general blood analysis; hemoglobin, hematocrit, platelets; blood coagulation indicators, bedside clotting time, fibrinogen, PTI, APTT, PDF, if possible - TEG. Assessment of the volume and severity of blood loss is carried out by visual determination of blood loss, gravimetric method and assessment of clinical symptoms using ultrasound.

Recently, the WHO has adopted the term “near miss” to assess critical illness associated with MOB. “Near miss” are patients with organ dysfunction, requiring intensive care and transfer to the intensive care unit, who would die if appropriate treatment were not provided. Near-death cases are defined as cases of women who come close to death due to complications during pregnancy, childbirth, or within 42 days of childbirth, but survive. In different countries of the world, an audit of “near miss” cases revealed that almost half of them were due to PPH.

However, the WHO fact sheet dated September 19, 2019 states that in near miss cases of MOB, visual determination of the amount of blood is often erroneous and underestimated due to contamination of the abdominal cavity during cesarean section with amniotic or ascitic fluid. Determination of MOB based on
hemodynamic parameters is not useful for diagnosis, since physiological changes associated with pregnancy mask the clinical picture of hypovolemia, leading to a delay in recognizing blood loss and initiating treatment. Careful clinical surveillance and a high index of suspicion are essential for early detection and eventual treatment of MOB. Poor outcomes after MOB have been attributed to treatment delays, unavailability of blood and blood products, inaccurate assessme

nt of blood loss, lack of treatment protocols, poor communication between treatment teams, and inadequate organizational support.
A systematic review of the literature on cases of "nearly dying" women allowed us to identify criteria for identifying severe maternal morbidity – SAMM (severe acute maternal morbidity). SAMM criteria are 1) the patient has severe preeclampsia or bleeding; 2) treatment in an intensive care unit, hysterectomy or massive blood tr ansfusion; 3) organ dysfunction. It is important to develop standardized criteria for identifying cases of "near miss" to improve the quality of obstetric care provided.

Early diagnosis of DIC and assessment of severity is very importa nt in MOB. One of the assessment markers of DIC syndrome is D-dimer. An increase in the level of D-dimer in combination with an increase in clotting time, APTT, and prothrombin time indicates a decompensated form of DIC and i ncreases the risk of bleeding. An increase in D-dimer is not only a kind of consequence of hemostasiological changes, but is also a factor that directly disrupts the coagulation process. Thus, it has been demonstrated that D-dimer inhibits platelet function, thrombin activity, fibrin polymerization, and contractile activity of the myometrium, thus directly participating in the pathogenesis of massive obstetric hemorrhage and multiple organ failure. Paradoxical hypotonic bleeding is a process secondary to DIC-associated coagulopathy.

Thus, in the modern literature there is a lot of conflicting information about massive obstetric hemorrhage, diagnostic methods and assessment of blood loss. The most important thing is not to waste time, use all opportunities, assess the patient's condition, create an interdisciplinary team and begin treatment for MAC in three directions: briefly stop the bleeding by possibly pressing the abdominal artery, ITT and, if necessary, use a surgical method to stop the bleeding to save the woman's life.

§1.4. Conservative and surgical treatment of massive obstetric hemorrhage, total hysterectomy technique

Active management of labor, including prophylactic uterotonics, early cord clamping, and controlled cord traction in the third stage of labor, reduces the risk of severe postpartum hemorrhage, especially in the setting of uterine atony. Prophylactic oxytocin is superior to ergot alkaloids in preventing blood loss >500 mL (RR 0.76; 95% CI: 0.61–

0.94), but has no benefit when combining prophylactic oxytocin and ergot alkaloids for the prevention of PPH. Oxytocin dosage and route of administration remain a matter of debate because desensitization occurs due to receptor internalization. Intraveno us oxytocin during the third stage of labor was found to be associated with a reduction in the incidence of severe PPH and transfusion compared with intramuscular administration without an increase in side effects.

Oxytocin can be given after delivery or after placental expulsion, but administration before or after expulsion of the placenta did not have a significant effect on many clinically important outcomes, such as the incidence of PPH, the rate of retained placenta, and the duration of the third stage of labor. A dose of 5 or 10 IU of oxytocin can be given intra venously or intramuscularly. For intravenous administration, slow injection (lasting approximately 30 to 60 seconds) is preferred, although there is no data against intravenous bolus injection (rapid intravenous injection over 1 to 2 seconds) in women without cardiovascular risk fact ors. It should be remembered that exposure to oxytocin during labor is an independent risk factor for the development of severe PPH secondar y to uterine atony and requires blood transfusion. In women at cardiova scular risk, very slow (over 5 minutes) intravenous administration is recommended to limit hemodynamic effects.

Carbetocin can be used as an alternative. In a recent randomized controlled trial (RCT) of 29,645 women following vaginal delivery, the heat-stable oxytocin analogue carbetocin was noninferior to oxytocin in the prevention of PPH (blood loss ≥500 mL) or the use of additional uterotonic agents. Carbetocin reduces the risk of PPH, but in the absence of an inferiority study, oxytocin remains the gold standard for the prevention of PPH after cesarean section. If the placenta does not separate, manual removal is recommended 30 to 60 m inutes after delivery if there is no bleeding, and sooner if bleeding continues. Follow-up manual examination of the uterus is not recommended after vaginal delivery in women with a previous cesarean section. In summary, guidelines developed by the World Health Organization include the following recommendations for the prevention of PPH. The use of uterotonics to prevent PPH in the third stage of labor is recommended for all deliveries. Oxytocin (10 IU) is the recommended uterotonic drug for the prevention of PPH. In settin

gs where oxytocin is not available, the use of other injectable uterotonics (if necessary, ergometrine/methylergometrine or a fixed-dose combination of oxytocin and ergometrine) or oral misoprostol (600 mcg) is recommended.

One of the causes of MOB is trauma to the birth canal; after identi fication, a thorough visual examination of the birth canal and manual examination of the uterine cavity, it is imperative to eliminate the true cause of the bleeding. Suturing ruptures of the vaginal wall, cervix, ruptures of the uterine body and threatening conditions urgently requires transfer to the operating room to provide surgical care.

In cases of massive PPH, noninvasive cardiovascular monitoring should be performed promptly to identify signs of hypovolemia. Initial monitoring includes continuous recording of heart rate (HR), blood pressure (BP) every 15 minutes, respiratory rate and peripheral blood oxygen saturation. If severe PPH develops, monitoring should be intensified with BP every 3 to 5 minutes and electrocardio-graphy (ECG). Invasive monitoring with arterial line (continuous invasive BP), central line (central venous pressure and saturation), and noninvasive or minimally invasive c ardiac output monitoring may be considered depending on the severity of PPH and availability. Fluid therapy with either crystalloids or colloids has never been compared in the context of PPH. Compared with crystalloids, hemodynamic stabilization with iso-oncotic colloids such as human albumin and hydroxyethyl starch (HES) causes less tissue edema. However, one RCT including women undergoing elective caesarean section found no difference in hemodynamic stability between crystalloids and colloids.

In critically ill patients, systematic reviews have not found any benefit in using colloids over crystalloids; In addition, the question of increased mortality of some colloids has been raised. Colloid infusion in patients with severe bleeding may worsen dilutional coagulopathy thr ough the additive effects of fibrin polymerization and platelet aggregati on. European guidelines for the treatment of major bleeding and coagulopathy after trauma recommend the initial use of crystalloids to treat the patient with hypotensive bleeding trauma. One RCT of severe PPH found a very low incidence of fibrinogen depletion and coagulopathy when patients with estimated blood loss in the range of 1400–2000 ml were resuscitated with crystalloids (replacing 1 ml

crystalloid for 1 ml blood loss).

Some RCTs and systematic reviews outside of PPH support a strat egy of restrictive red blood cell transfusion for non-major or controlled bleeding, that is, transfusing most patients with red blood cells only when the hemoglobin concentration is below 7 g/L. A hemoglobin trigger of 7 g/L has been shown to be safe and improve survival at 45 days. If massive PPH develops, it is important to switch to a local protocol for massive transfusion of blood substitutes and blood. Please be aware that due to the use of protocols

restrictive transfusion, once the bleeding episode is controlled, the mother will experience moderate to severe anemia. Anemia is associated with important maternal morbidities, including depression, fatigue and impaired cognition. These adverse events can negatively impact the mother-infant bond and the mother's ability to care for her newborn baby. Therefore, these patients should be given pharmacological treatment for anemia.

There are very few data on the use of fresh frozen plasma (FFP) transfusion in non-massive PPH, but this therapy is very important in massive PPH. Several guidelines suggest that FFP transfusi on should be considered in cases of massive ongoing PPH when coagul opathy is clinically suspected and laboratory tests are abnormal. If labor atory results are not available and bleeding continues after administratio n of 4 units. red blood cells, then FFP can be transfused at least in a rati o of 1:2 to packed red blood cells until the results of the hemostatic test are known. Early transfusion of FFP could be considered for placental a bruption, amniotic fluid embolism, or delayed bleeding. It is recommen ded to transfuse a standard (15–20 ml/kg) dose of plasma for severe PPH, guided by deviations in coagulation tests 1.5 times long er than normal.

Platelet transfusion is part of transfusion therapy for severe PPH, but there is very little evidence on when to use platelets in severe PPH. Thrombocytopenia occurs in women with low platelet counts before del ivery (preeclampsia/eclampsia or hereditary/immune/gestational thromb ocytopenia), bleeding secondary to placental abruption or amniotic fluid embolism, severe or severe bleeding, but this may very much depend o n the resuscitation strategy. Platelets should be transfused when the plat elet count is less than 75 thousand or when platelet function is impaired , with the goal of maintaining the level greater than 50 thousand, and a

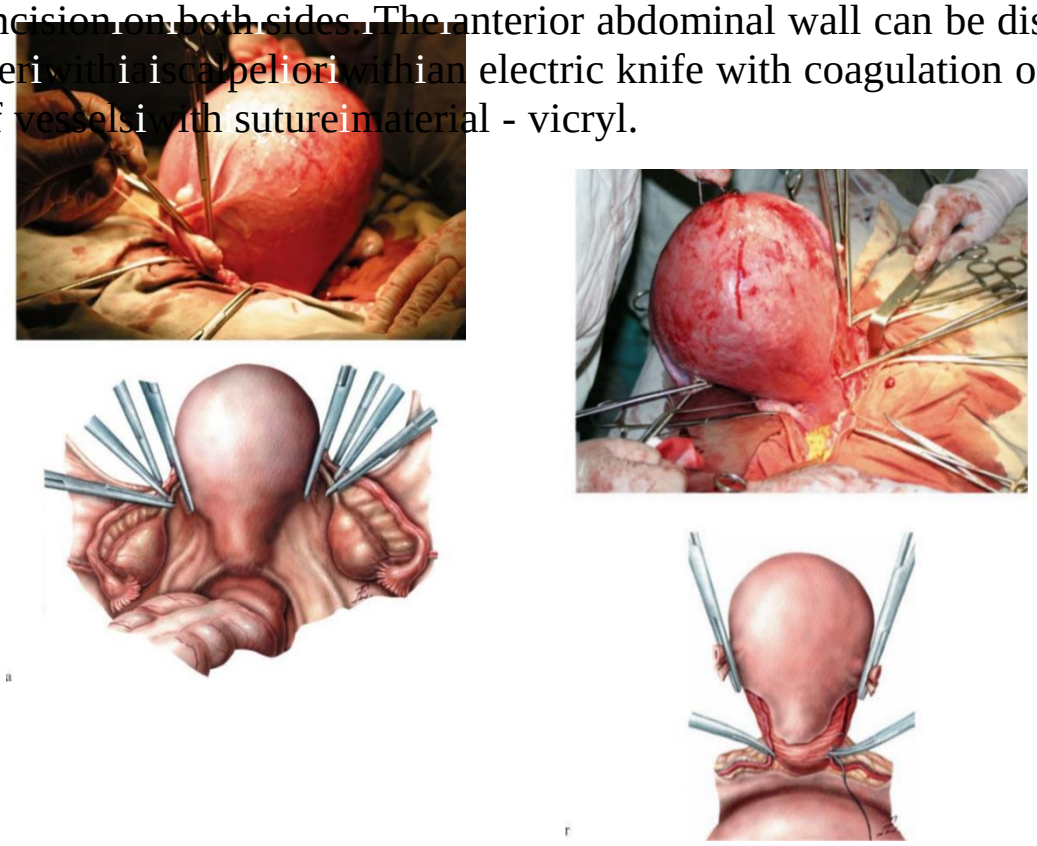
standard dose of platelets (5-
10 ml/kg) should be transfused for severe ongoing PPH.

Thus, in case of massive postpartum hemorrhage, ITT is one of th e important stages; thanks to proper correction, the lives of many patien ts can be saved.

Technique of total hysterectomy surgery (hysterectomy)

Surgical interventions on the internal genital organs can be perfor med using both laparotomy and laparoscopic approaches.

Before the operation, the surgical field (the entire anterior abdomi nal wall) is treated with antiseptic solutions and limited with sheets, lea ving the incision site free. With laparotomy access for surgical intervent ion on the pelvic organs, it is necessary to open the anterior abdominal wall. The most appropriate for MAC is a longitudinal incision from the pubis (upper edge) to the navel, the length of the incision is usually 10–12 cm. The aponeurosis is opened;
when opening the peritoneum, it is important to lift it with soft tweezers and carefully dissect it (in the middle between the pubis and the navel) so that do not damage the intestinal loops and bladder under the womb. The peritoneum is fixed with clamps to napkins, which are placed along the incision on both sides. The anterior abdominal wall can be dissecte d either with a scalpel or with an electric knife with coagulation or ligat ion of vessels with suture material - vicryl.



Rice. 1. Laparotomy of the uterus (a–d): Kocher clamps are

applied to the round, proper ligament of the ovary and the isthmus of the fallopian tube (data from A.V. Evseev)

After dissection of the anterior abdominal wall, it is necessary to visually and palpate with a hand inserted into the abdominal cavity, inspect the abdominal organs, carefully move the intestinal loops with a napkin into the upper parts of the abdominal cavity. Afterwards, the uterus is brought out to the wound and a total hysterectomy is performed without appendages, with removal of the uterine appendages on one side, on both sides, with the fallopian tubes, with removal of the fallopian tube on one side.

In this operation, both the body and the cervix are removed. Before applying hemostatic clamps to the vessels, it is necessary to open the peritoneum of the vesicouterine fold and separate the bladder below the cervix. From behind the uterus, the posterior leaf of the broad uterine ligament is opened to the level of the external os of the cervix.

Hemostatic clamps are applied to the uterine vessels parallel to the uterine rib and close to it (Fig. 1).

The vessels are crossed and sutured in the distal section. After applying the clamps, the uterosacral ligaments are ligated and crossed, and the uterorectal fold of the peritoneum is opened between them, which should also be lowered below the cervix. After mobilization of the cervix, the vagina is opened, preferably in front, below the cervix, controlling the location of the bladder and ureters (they must be deflated). The cervix is cut off from the vaginal fornix with scissors, the vaginal walls are fixed with clamps and, if necessary, additional hemostasis is performed. The uterus is removed from the abdominal cavity, the vaginal walls (anterior and posterior) are sewn together with separate sutures.

Peritonization is carried out with a continuous suture using the peritoneum of the broad uterine ligaments and the vesicouterine fold. Control hemostasis. The abdominal cavity is sutured tightly in layers or a drainage tube is left: a continuous vicryl suture is placed on the peritoneum, muscles and aponeurosis, and separate interrupted sutures or a subcutaneous cosmetic suture are placed on the skin.

Thus, this technique is accepted worldwide, but there has been a need to optimize it in MOB due to the disadvantages described below.

§1.5. Unsolved problems of surgical and conservative

treatment of massive obstetric hemorrhage.

The main goal of our literature review is to get an idea of the main reasons for the development of obstetric hemorrhage, as an ongoing threat to maternal health and life, and modern approaches to their prevention, to identify unresolved problems in the surgical and conservative treatment of massive obstetric hemorrhage currently used in the world and in Uzbekistan.

One of the unresolved problems of surgical massive obstetric hemorrhage or the disadvantage of traditional total hysterectomy is the technical difficulty during the operation and the duration (about or more than 2 hours). Large (more than 1000 ml) volume of blood loss, risk of injury to neighboring organs, lack of full access to the surgical field due to multiple clamps, often slipping of hemostatic clamps from the place of application and lack of complete hemostasis during operation MOB.

Our scientific work is aimed at solving the above problem, improving the technique of total hysterectomy to reduce interoperative blood loss, surgical trauma, reducing operation time, providing technical access to the surgical field and improving its visualization.

Thus, ongoing scientific work to optimize the technique of total hysterectomy for massive obstetric hemorrhage reduces blood loss and improves the outcome of the operation, and timely correction of the quality and infusion - transfusion therapy reduces maternal mortality.

CHAPTER II. GENERAL CHARACTERISTICS OF CLINICAL MATERIAL, METHODS OF RESEARCH AND TREATMENT

§2.1. General characteristics of observations.

Study design Analysis and evaluation of the results of treatment of massive obstetric hemorrhages in a comparative a spect were carried out from 2015 to 2020. on the basis of the perinatal center of Urgench, Khorezm region in a retrosp ective (72 women who suffered massive obstetric hemorrhage with subtotal and total hysterectomy using the traditional method) and prospective (78 women who suffered massive obstetric hemorrhage with subtotal and total hysterectomy with the imposition of a “hemostatic suture” on the proximal

department of the uterine appendages and the ascending part of the a.uterine) group.

The control group consisted of 30 women with a physiological course of pregnancy and childbirth without pathological blood loss, to compare clinical and laboratory data.

The study was carried out in two stages. The first sta ge is research and study of a retrospective group. With the consent of the heads of the indicated maternity complexes, birth histories, clinical and laboratory data, hemostasiogram, pr escription sheet and anesthesia card were studied for all pati ents in the retrospective group. During the period 2015–2017 (over 3 years) in the retrospective group, 22,896 births occ urred, of which 1,419 (6.2%) cases were accompanied by pa thological blood loss. Of the 1,419 patients with pathological bleeding, 72 (5.0%) had MOB with blood loss of more th an 1500.0 ml; all of them underwent subtotal and total hyst erectomy using the traditional method.

The second stage of the study was carried out in a prospective group of 78 pregnant women, parturients and post partum women who also suffered massive obstetric hemorrhage; in this group, an optimized version of the operation of total hysterectomy and conservative therapy was used in the period 2017–2020.2.1.1.

Clinical characteristics of patients

According to the clinical course, all pregnant women with MOB we supervised were divided into two groups: the first retrospective group consisted of 72 pregnant women, the second prospective group included 78 pregnant women with bleeding.

Various somatic and gynecological diseases were observed in patients with MOB. All observed patients underwent a complete clinical and laboratory examination in the specified medical institution. The diagnosis of bleeding was made based on visual examination, changes in hemodynamic parameters and assessment of blood loss.

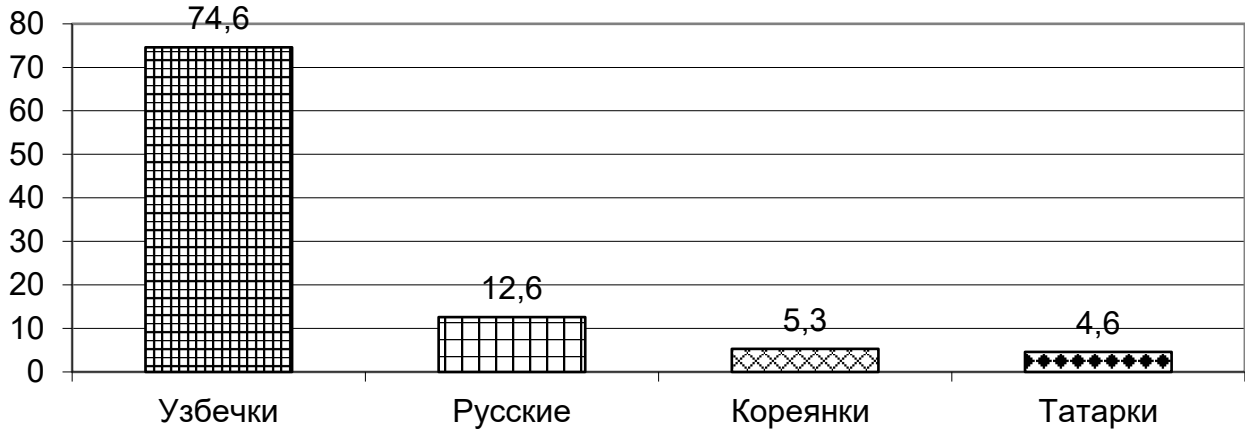
Table 2.1
Distribution of pregnant women with MOB by age

Age	Group			
	retrospective (n=72)		Prospective (n=78)	
	абс.	%	абс.	%
17–20	7	9,7	9	11,5
21–30	33	45,8	36	46,1*
31–35	17	23,6*	21	26,9
36–40	13	18,0	11	14,1
41–45	2	2,7*	1	1,2*
Middle age	23,9±1,5		24,7±1,9	

Note. Reliability* p<0.05

Mainly, MOB occurred from 17 to 30 years of age in the retrospective group in 40 (55.5%) patients, in the prospective group in 44 (57.6%) and, respectively, 32 (44.4%) and 34 (43.5%)) after 30 years. In terms of age, no significant differences were found between the groups; the average age was 23.9±1.5 and 24.3±1.7 years, p<0.05. It should be noted that childbirth accompanied by MAC is undesirable in terms of age after 40 years.

By nationality, patients with MOB were Uzbeks - 112 (74.6%), Russians - 11 (12.6%), Koreans - 8 (5.3%), Tatars - 7 (4.6%), Kazakhs - 6 (4.0%), other nationalities – 6 (4.0%), i.e. Pregnant women of local nationality mainly predominated (Fig. 2.1).



Rice. 2.1. Distribution of patients with MOB by nationality

Table 2.2

Occupation of pregnant women with massive obstetric hemorrhage

Age	Group			
	Retrospective (n=72)		Prospective (n=78)	
	абс.	%	абс.	%
Housewife	43	59,7	49	62,8
Employees	10	13,8	11	14,1
Workers	13	18,0	15	19,2
Students	4	5,5*	2	2,5*
Medical workers	2	2,7*	1	1,2*

Note. Significance* p<0.05.

As can be seen from table. 2.2, among pregnant women with MOB, 61.3% were housewives, 14.0% were office workers, 16.6% were workers, 4.0% were students and 2.0% were medical workers, p<0.05. The analysis shows that the MOB does not depend on the professional affiliation of women.

Among pregnant women with MOB in the retrospective and prospective groups, repeat pregnant women predominated, mainly with their third and fourth pregnancies. However, unfortunately, bleeding also occurred in primigravidas, in 6 (8.3%) patients in the retrospective group, and in 8 (10.2%) in the prospective group. In total, there were 17 pregnant women in the retrospective group with five pregnancies, 8 of them (47.0%), and the sixth pregnancy of 9 of them, 5 (55.5%) had MOB. In the prospective group with five pregnancies, there were 15 women, of which 7 (46.6%) had MOB, and during the sixth pregnancy, 7 of them (4 (57.1%)) hadv. It should be noted that the interval between births in multiparous women, regardless of the group, was approximately the same and ranged on average from 2.1 to 3.4 years. The data obtained show the dependence of the development of MOB on parity; a detailed description is given in the third and fourth chapters of this work.

§2.2. Research methods

2.2.1. General clinical research methods

In the examination of pregnant women, general clinical research methods were used, including the collection of a general somatic and obstetric-gynecological history, the onset and duration of diseases suffered in the past, present extragenital diseases, the course of previous pregnancies, childbirth, their outcomes for the mother and fetus, the course of this pregnancy, nature of childbirth, course of the postpartum period; conducting a general examination, studying the condition of organs and systems, special external and internal obstetric examination. All pregnant women had their body temperature, pulse, blood pressure measured, the nature and frequency of breathing, the color of the mucous membranes and skin, hourly diuresis, and, if necessary, liver size according to Kurlov, auscultation of the pulmonary and cardiac systems determined.

2.2.2. Laboratory research methods

In most cases, laboratory diagnostics for postpartum hemorrhage are performed on an emergency basis: determination of blood type, Rh factor (if not previously determined); complete blood count (CBC) (hemoglobin level, hematocrit, red blood cells, platelets); blood coagulation indicators: determination of blood clotting time at the patient's bedside ("bedside test" - a modification of the Lee-White method), hemostasiogram (fibrinogen concentration, PTI, APTT, PDF, INR). Some biochemical parameters of peripheral blood were also determined: total protein, ALT, AST, urea, creatinine, ECG, echocardiogram, and, if necessary, MRI of the pelvic organs.

Methods for assessing blood loss: 1) visual method + 30%; 2) gravimetric method: blood loss = (weight of napkins • 15%)/2 (for blood loss >1 l correction 30%) [5, p. 11–21; 27, p. 34–41].

Determination of blood clotting time using the Lee-White method [19]. The normal value for pregnant women was 7.6 minutes.

Determination of plasma recalcification time using a unified method (1974). Normal value is 92 s.

Determination of prothrombin index (PTI) using the Quick method. Normal value is 88%.

Determination of fibrinogen by the Rutberg method (1961). Normal value is 3.6 g/l.

Determination of thrombin time. The principle is to determine the clotting time of blood. Normal value is 15 s. The second method of determining thrombin time was carried out using in vitro thrombotest in the diagnosis of end-stage coagulation disorders. The principle of the method was to determine the clotting time of blood under the influence of thrombin of standard activity. The kit contains: thrombin (lyophile-dried, 6-8 NIH units per bottle), control plasma (normal freeze-dried), 0.5 ml - 1 bottle. The linearity of thrombin time determination is in the range of 11–120 s.

Determination of thrombotest according to the method of Fuente Ita (1958). Normal value is IV–V degree.

Determination of the number of platelets in 1 µl of blood. The platelet count was determined by counting a blood smear. The normal value for pregnant women is 226 thousand.

Assessment of hemoglobin and hematocrit levels was carried out in emergency cases during surgery, 6–8 hours after surgery and over a period of up to 3–5 days, in the laboratory of the perinatal center in Urgench using flow cytofluorimetry using a Siemens ADVIA 2120 apparatus.

§2.3. Carrying out ultrasound and Doppler examinations

Ultrasound scanning was carried out on Siemens Sonoline SI-500 and Siemens Versa Pro devices (Japan), operating in real time using a convex sensor with a frequency of 3.5 MHz and a linear sensor with a frequency of 5 MHz.

An ultrasound examination was performed to assess the condition of the fetus. At the same time, the BDP of the head, the length of the femur, the abdominal circumference, the presence of a fetal heartbeat, and the rhythm of cardiac activity during pregnancy were measured to determine the condition of the reproductive organs. For a more in-depth analysis of the nature of blood flow in the pelvic vessels and to identify thrombosis before and after surgical treatment, according to indications, Doppler measurements of the vessels of the uterine artery and venous vessels of the lower extremities were performed.

§2.4. An optimized version of the technique of subtotal and total hysterectomy for massive obstetric hemorrhage

After appropriate preparation of the surgical field under aseptic conditions under endotrehal anesthesia, the anterior abdominal wall is opened layer by layer using a longitudinal

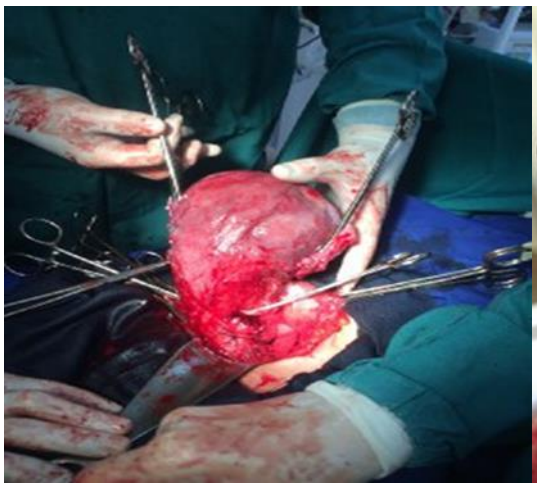
incision up to 15 cm along the white line of the abdomen or a suprapubic transverse incision. After opening the abdominal cavity, an inspection of the organs is performed, the fundus of the postpartum uterus is grasped using bullet forceps or a provisional ligature, and the uterus is removed from the abdominal cavity through the wound.

In contrast to the traditional method, two clamps are applied to the fallopian tubes, the ovarian ligament and round ligament along the ribs of the uterus at a distance of 1.5 cm from the body of the uterus, capturing all appendages (fallopian tubes, ovarian ligament, round ligament), and close to the uterus, the first clamp is applied at a distance of 1.5 cm from the body of the uterus, and the second at a distance of 0.5 cm from the first (Fig. 1). Between the clamps, one hemostatic suture is cut and applied to all three formations, first on the distal part, suturing under the clamp with a vicryl thread, then ligating (without suturing) the proximal ones with a vicryl suture, then the clamps are removed (Fig. 2–3).

Then the peritoneum is dissected in the area of the posterior leaves of the broad ligaments and in a horizontal direction along the posterior surface of the uterus above the uterosacral ligaments and in front above the bladder. The appendages on both sides descend down and expose the lateral surfaces of the uterus with vascular bundles. Additionally, the bladder is carefully lowered to the anterior vaginal fornix (below the vaginal part of the cervix).

The vascular uterine bundles are exposed, clamped, dissected and ligated alternately on the right and left. In this case, the uterus is retracted in the direction opposite to the vascular ligation. The isolated uterine artery is grasped closer to the rib of the cervix (without capturing its tissue) where it divides into ascending and descending branches.

Along with the artery, the veins accompanying it are also captured, and the main clamp is applied in a perpendicular direction to the uterus, and the second clamp is applied from above, above and below “hemostatic sutures” on the uterine artery, then the clamps are removed (Fig. 4).



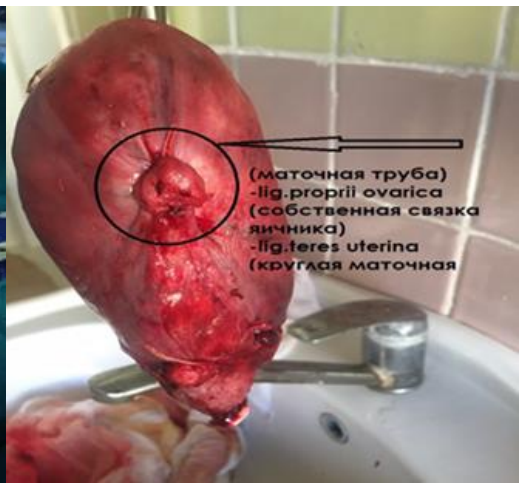


Fig. 1. Application of hemostatic clamp on all appendages on the right and left of the "hemostatic suture" on all appendages on the right and left

Fig. 2. Overlay of the "hemostatic suture" on all appendages on the right and left

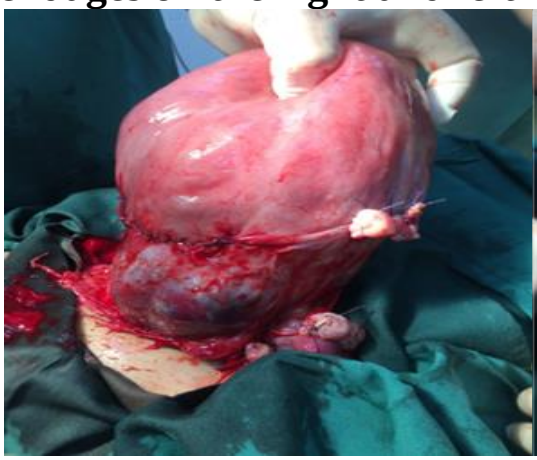


Fig. 3. Application of hemostatic suture" to the ascending and descending

Fig. 4. Application of "hemostatic suture" to all appendages on the right and left of the

interoperative variant of a.uterine cases

Next, the uterus is separated from the uterosacral ligaments, then the posterior layer of the peritoneum of the ligament is separated. The clamps are applied in a direction perpendicular to them, i.e., closer to the horizontal position. After cutting off the uterosacral ligaments, the clamps are replaced with ligatures. Next, the cervix is isolated from the paracervical tissue. To do this, clamps are applied directly to the sides of the neck, which, after dissecting the tissue, are replaced with ligatures.

In front and on the sides of the cervix, between the clamps, the cardinal ligaments are cut, the clamps are replaced with ligatures and the cervix is completely isolated. Two clamps are applied to the upper third

of the vagina, the uterus is cut off above them, then the vaginal stump is sutured with continuous captive vicryl sutures.

Peritonization begins with a purse-string vicryl suture in the area of the appendage stumps and round ligament of the uterus, then the leaves of the broad ligament are sutured, pulling them onto the applied clamps. After this, the posterior and anterior layers of the peritoneum are sutured, picking up the sutured vaginal stump. The abdominal cavity is sanitized and, after careful control of hemostasis, the anterior abdominal wall is tightly sutured in layers. An aseptic bandage is applied to the skin.

The optimized method of total hysterectomy allows 1) to reduce interoperative blood loss of more than 1000 ml (according to the prototype) to 600–700 ml by applying one hemostatic suture to all three formations, first distal, then proximal parts of the uterine appendages; 2) reduce the time of surgical intervention from 90–120 minutes (according to the prototype) to 60–80 minutes; 3) remove all clamps from the surgical field, improve visualization of the surgical field, technical access, reduce trauma, thereby improving the technique of performing the operation and its quality; 4) against the background of improving the outcome of the operation, reduce the postoperative period in the hospital from 9-10 days (according to the prototype) to 6-8 days.

§2.5. Statistical processing of results

The obtained data were subjected to statistical processing using a package of application programs for statistical analysis on a Pentium-VI computer with the calculation of the arithmetic mean (M), standard deviation (sigma), standard error (m), relative values (frequency, %), the statistical significance of the obtained measurements at comparison of average values was determined using Student's t-test. A significance level of $p < 0.05$ was taken as statistically significant changes, taking into account existing guidelines for statistical processing of data from clinical and laboratory studies.

CHAPTER III. ASSESSMENT OF THE EFFECTIVENESS OF SUBTOTALE AND TOTAL HYSTERECTOMY USING THE TRADITIONAL METHOD IN A RETROSPECTIVE GROUP

§3.1. Frequency and risk factors for the development of massive obstetric hemorrhage in a retrospective group

To identify the incidence of MOB, we studied statistical data obtained in the perinatal center of Urgench, where the material was collected (detailed data are given in Chapter II). The incidence of MOB in the perinatal center of Urgench is shown in Table. 3.1.

Table 3.1

Frequency of occurrence of MOB in the perinatal center of Urgench

Years	**Amount of labor**		**Pathological obstetric bleeding**		**Massive obstetric bleeding**	
	абс.	%	абс.	%	абс.	%
2015	8173	35,6	542	6,6	28	0,34*
2016	7795	34,0	476	6,1*	23	0,29*
2017	6928	30,2	401	5,7	21	0,30*
All	22896	100	1419	6,2%*	72	0,31*

Note. *statistical significance $p<0.05$

Thus, analysis of the data in table. Table 3.1 shows that in the perinatal center of Urgench (the medical institution is level III), out of 22,896 births, 1,419 (6.2%) were complicated by pathological obstetric bleeding. Due to the lack of effect from conservative therapy, all 72 (0.3%) patients with MOB underwent surgical bleeding control, i.e. hysterectomy, of which 64 (88.8%) were total and 8 (11.1%) subtotal, statistical significance $p<0.05$. We could not judge the prevalence of MOB among pregnant women and postpartum women in the republic due to the lack of clear data in the report cards of the statistical department of the Ministry of Health of the Republic of Uzbekistan. Of the 8 cases of maternal mortality during this period that occurred in these maternity complexes, 5 (62.5%) cases were directly related to massive obstetric hemorrhage.

Thus, the frequency of occurrence of MOB in the studied retrospective group in the structure of pathological blood losses was 5.0%, and in relation to childbirth, 0.3% of cases; in the structure of maternal

mortality directly related to massive obstetric hemorrhage, unfortunately there were 5 (62, 5%) cases, despite surgical hemostasis performed using the traditional method and infusion-transfusion therapy.

In a retrospective analysis of 72 histories of births with MAC, the following data were taken into account: age, social factors (place of residence, marital status, education, area of employment); the presence of EHZ and gynecological pathologies, features of the course of pregnancy, childbirth and the postpartum period, what obstetric situations led to the development of MOB, including PPH, interoperative and postoperative results of total and subtotal hysterectomy using the traditional method, and data fromcl inical, laboratory and instrumental methods of examining women.

We analyzed somatic diseases outside of pregnancy according to the outpatient card and during pregnancy, which played a role in the development of MOB. It should be noted that various somatic diseases were observed in all 72 (100%) women outside pregnancy, 32 (44.4%) had a combination of 2 to 4 somatic pathologies.

An analysis of the history of pregnancy and childbirth in a retrospective group allowed us to identify somatic diseases in pregnant women (SDP) as the most significant risk factors contributing to the development of MOB. The presence of GBS during pregnancy in women with MOB in the retrospective group is shown in Fig. 3.1. These data indicate that the most common somatic diseases in pregnant women with MOB in this region were anemia - in 61 (84.7%), mild in 49 (68.0%), moderate in 9 (12). .5%) and severely in 2 (2.7%), diseases of the urinary system – in 29 (40.2%), endemic goiter – in 18 (25.0%), chronic hepatitis B – in 12 (16 .6%), obesity I-II degree - in 11 (15.2%), chronic viral hepatitis C - in 6 (8.3%), varicose veins of the lower limb - in 6 (8.3%), peptic ulcer Gastrointestinal tract – in 2 (2.7%) and a decrease in body mass index less than 18 – in 2 (2.7%), statistical significance is $p<0.05$. Anemia contributes to an increase in the frequency of pregnancy complications; due to a decrease in the gas transport function of the blood, the processes of fetoplacental dysfunction are aggravated, which adversely affects the hemostasis system, in particular the aggregative state of blood in the microcirculation system, the metabolism of the vascular endothelium, and leads to such an obstetric complication as MOB. Diseases of the urinary system were identified in 29 (40.2%) and manifested as

asymptomatic bacteriuria, cystitis and its recurrent form, chronic pyelonephritis and urolithiasis. It should be noted that in the study group, extragenital diseases as risk factors for the development of MOB were quite common, accounting for 1.9 units per pregnant woman. EHZ.

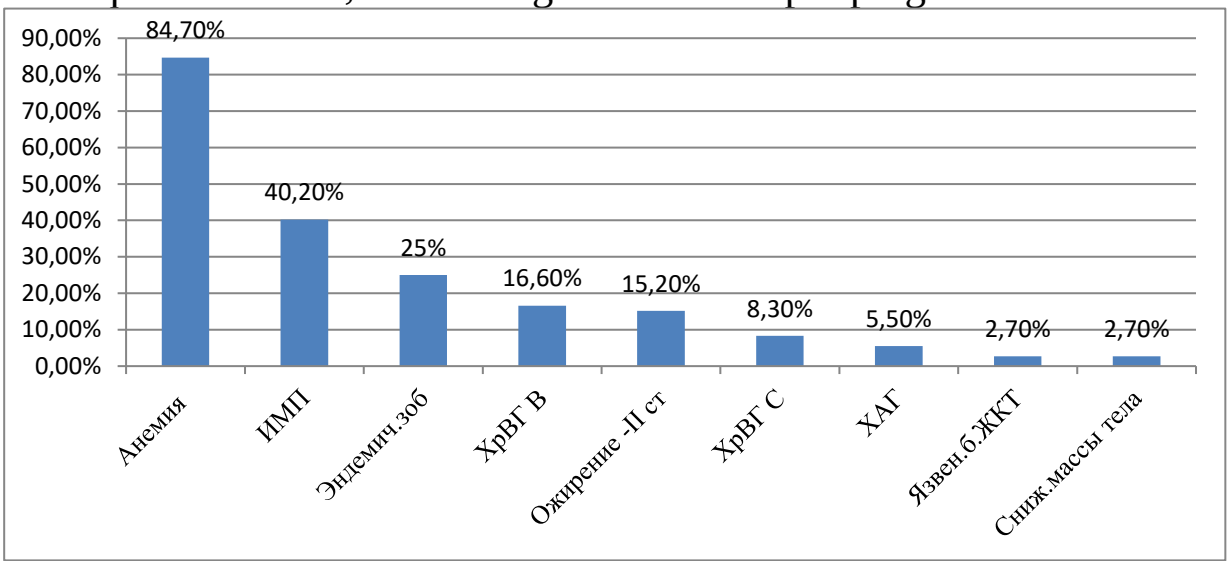


Fig. 3.1. FBS during pregnancy in women of the retrospective group

The most dangerous were moderate anemia, gastrointestinal diseases and Werlhof's disease. Considering the ecologically unfavorable region, we consider such high frequencies of occurrence of EHS to be justified. In the majority of women with MAC, pregnancy occurred against the background of a combination of EGG and chronic genital diseases.

Table 3.2

Frequency of gynecological pathology among women who underwent MOB in a retrospective group, reflected in the histories of primary care or childbirth

Gynecologic pathology	Women, n=72	
	абс.	%
Bacterial vaginosis	12	16,6
Vaginitis	8	11,1
Ectopy	2	2,7
Unilateral salpingitis	3	4,1
Chronic uterine infectious	2	2,7
Sytomegalovirus	13	18,0*
Chlomidia	4	5,5*
TORCH infectious	7	9,7

Endometroid cysts in right ovary	1	1,3**
Nodal myoma in uterus	3	4,1*
All of these	55	76,3

Note. * statistical significance p<0.05; ** p<0.001;

From those presented in table. 3.2 of the data, it is easy to notice that diseases such as bacterial vaginosis, vaginitis, CMV and combined TORCH infection dominated in pregnant women of the retrospective group studied. Bacterial and viral infections prevailed among them; all women during pregnancy received outpatient and inpatient treatment to eliminate the inflammatory disease.

Thus, the presence of such somatic diseases as anemia, neuroendocrine pathology (obesity), inflammatory diseases of the urinary system, coupled with gynecological diseases, especially the presence of nodular uterine fibroids, which may impair the contractility of the myometrium, mainly indirectly affect the occurrence of MOB.

§3.2. Features of the course of pregnancy, childbirth and the postpartum period in women of the retrospective group

The timing of pregnancy upon admission to the hospital in women with MAC in the retrospective group is shown in Fig. 2.4. Basically, 55 (76.3%) pregnant women were admitted to the maternity complex at full-term pregnancy, but 12 (16.6%) cases with preeclampsia, central presentation and placental abruption were admitted before 37 weeks of pregnancy. These data confirm the severe and complicated course of pregnancy in this group.

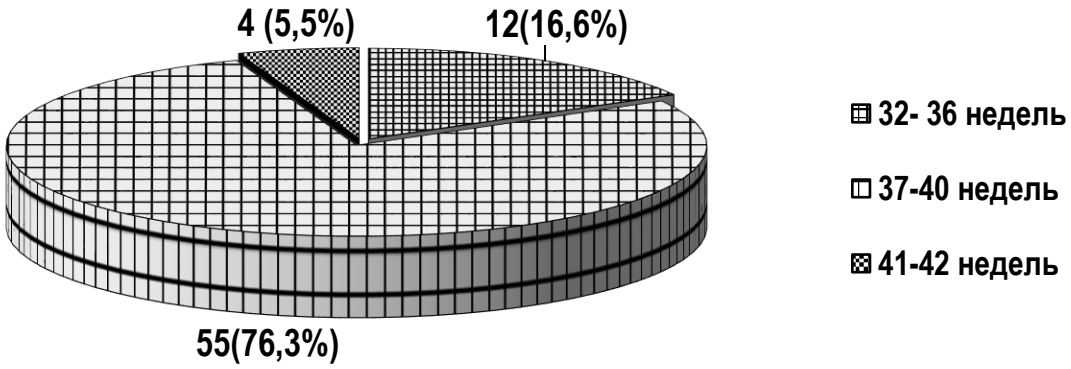


Fig . 2.4. Pregnancy periods upon admission of pregnant women with MOB

Pregnancy complicated by MOB, including PPH, was extremely

unfavorable for both the mother and the fetus. The most common complications of pregnancy in the retrospective group were early toxicoses. Early toxicosis of moderate severity was noted in 38 (52.7%) women in labor, of which 35 (48.2%) had moderate severity, 3 (4.1%) had severe toxicosis; Moderate pregnancy edema – in 6 (8.3%), mild preeclampsia – in 27 (37.5%), severe preeclampsia – in 9 (12.5%), chronic arterial hypertension – in 4 (5.5%) , gestational hypertension – in 5 (6.9%), impaired utero-fetal placental circulation of varying degrees in 12 (16.6%), ORP – in 13 (18.0%) and preeclampsia – in 2 (3.3%) pregnant women, $p<0.05$. Complications of pregnancy in women of the retrospective group are reflected in Table. 3.3.

Table 3.3

Complications of pregnancy in women of the retrospective group

Complications	Women , n=72	
	абс.	%
Early moderate toxicosis	35	48,2
Early severe toxicosis	3	4,1
Moderate edema in pregnancy	6	8,2
Moderate preeclampsia	27	37,5
Severe preeclampsia	9	12,5
Chronic arterial hypertension	4	5,5*
Gestational hypertension	5	6,9*
SORP	13	18,0
Violation of MPC Ib degree	8	11,1**
Violation of MPC II degree	4	5,5**
Central placenta previa	6	8,3
Severe PONRP	31	43,0
Antenatal fetal death	3	41,6‰
All	154	208%

Note. Significance * $p<0.05$; ** $p<0.01$

From the data in table. Table 3.3 shows that the most severe complications during pregnancy in the retrospective group were a hypertensive state, PONRP, placenta previa and BMD disorders of varying degrees, as well as antenatal fetal death 55.5‰.

Thus, summarizing the data obtained on the course of pregnancy in women with MOB in a retrospective group, we came to the conclusion that almost all of them had serious complications. Thus, the examined group of pregnant women accounted for 154 complications, i.e. 2.08 complications for each patient, and among the complications the greatest threat was preeclampsia, PONRP, placenta previa and antenatal fetal death.

We studied the features of the course of labor in a retrospective group. Complications during labor and the postpartum period in women of this group are reflected in Table. 3.4.

Table 3.4

Complications	**Women , n=72**	
	абс.	**%**
Premature birth	12	16,6
Urgent birth	58	80,5
Delayed birth	2	2,7*
Surgical delivery	47	65,2
Atonic bleeding during cesarean section	45	62,5
Atonic bleeding after vaginal delivery	24	33,3
Amniotic fluid embolism	2	2,7*
Early neonatal mortality	4	55,5‰ **
Antenatal fetal death	3	41,6**
Uterine rupture	1	1,3*
Subtotal hysterectomy	8	11,1
Total hysterectomy	64	88,8
Ligation of the internal iliac	41	56,9

artery		

Note. Statistical significance *p<0.05, **p<0.001

From the table Table 3.4 shows that in this group of patients, 12 (16.65) premature surgical births occurred against the background of severe preeclampsia and severe PONRP. Due to the development of disseminated intravascular coagulation syndrome, against the background of detachment and atonic bleeding, the scope of the operation was expanded to a total hysterectomy. In case of premature birth, antenatal fetal death was observed in 3 (41.6‰) cases (p<0.001) and early neonatal mortality in 4 (55.5‰) (p<0.001). The frequency of such high perinatal mortality is explained by severe obstetric pathology and premature birth.

Of 58 (80.5%) urgent vaginal births, 24 (33.3%) developed postpartum atonic hemorrhage due to a large fetus, i.e. the birth of a fetus weighing more than 4,000, 0 g was registered in 7 (9.7 %) cases, as well as impaired contractility due to histopathic changes in 14 (19.4%). In this category of women in labor, active conservative treatment was carried out based on protocols, intravenous administration of oxytocin 10 units. repeated after 15–20 minutes No. 3, in 18 (12.9%) cases, oxytocin was administered with methylergometrine and appropriate infusion-transfusion therapy; in the absence of effect from conservative therapy, it was decided to perform surgical hemostasis.

Thus, summarizing the data obtained on the course of labor and the postpartum period in women of the retrospective group, it should be noted that the main complications that led to the development of MOB were atonic bleeding, which developed during cesarean section and in the early postpartum period. Due to the lack of effect from the conservative therapy, surgical hemostasis was performed based on the protocols, in most 21 (29.1%) cases with a delay of 2 to 3 hours.

§3.3. Analysis and evaluation of the effectiveness of subtotal and total hysterectomy using the traditional method in a retrospective group

Of the 72 (100%) patients with massive obstetric hemorrhage in the retrospective group, 64 (88.8%) underwent total hyster ectomy, 8 (11.1%) underwent subtotal hysterectomy. Before subtotal hysterectomy, organ-preserving operations were first performed, such as “ligation of three great vessels” in 5 (6.

9%) cases and “hemostatic sutures on the B - Lynch uterus” in 3 (4.1%) cases. However, due to the lack of clinical eff ect for more than 30–40 minutes, the scope of the operation was expanded to subtotal hysterectomy in all 8 patients. During the hysterectomy operation, in 13 (18.1%) cases, both appendages were removed due to hemorrhage and necrosis of the ovaries, and in 15 (20.9%) ($p < 0.05$) cases, only appendages were removed.

Indications for total hysterectomy in the retrospective gro up were severe abruption of a normally located placenta in 31 (43.0%) cases with manifestations of severe imbibition wit h DIC syndrome, early postpartum atonic bleeding in 24 (33 .3%) patients, central placenta previa in 6 (8.3%), amniotic f luid embolism in 2 (2.7%) and uterine rupture in 1 (1.3%). During cesarean section, the scope of the operation was ex panded to total hysterectomy in 45 (62.5%) cases, the reason s for which were impaired contractility and placenta accreta.

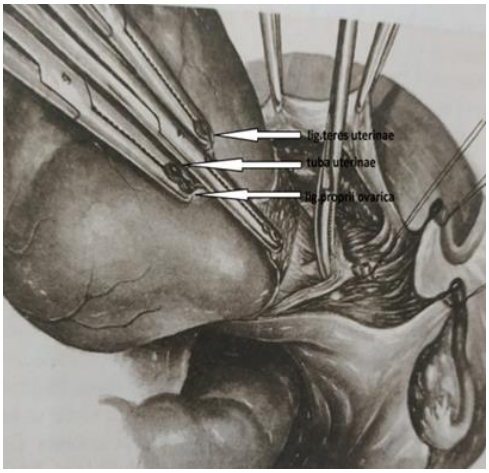
The volume of bleeding in the retrospective group against the background of uterine atony in the early postpartum period through the natural birth canal averaged 1850.0±120.0 in 24 (33.3%) cases, ranging from 1550.0±90.0 to 2040.0 ml±110.0 ($p > 0.05$). Against the background of severe abruption of a normally located placenta in 31 (43.0%) cases, the volume of blood loss averaged 1890.0±150.0 ($p > 0.05$) and against the background of central placenta previa in 6 (8.3%) cases patients – on average 2450.0±200.0 ($p > 0.05$). In two women who underwent hysterectomy due to amniotic fluid embolism, and in one case with complete uterine rupture, the volume of blood loss was significantly greater and amounted to 3550.0±200.0 ml ($p > 0.05$).

Thus, the volume of blood loss varied from 1550.0 to 3550.0 ml depending on the obstetric pathology. If in the postpartum period from uterine atony the average total blood loss without subtotal or total hysterectomy was 1850.0±120.0 ml, then against the background of severe PONRP, against the background of central placenta previa, EOV and complete uterine rupture the average was 2410.45 ±520.55 ml. It should be noted that the amount of blood loss in all

these patients during cesarean section was more than 30 ml/kg/ body weight and in almost all cases it was accompanied by the addition of a generalized form of DIC syndrome. Massive blood loss led to the development of hemorrhagic shock, disseminated intravascular coagulation syndrome, severe multiple organ failure and five cases of maternal mortality.

The technique of performing total hysterectomy in the classic version of the retrospective group is shown in Fig. 1, 2. All over the world, total hysterectomy is performed in the same way: laparotomy, revision of the pelvic organs, the uterus is fixed with Museau forceps and removed from the abdominal cavity through a wound. A speculum is inserted into the abdominal cavity and placed in the suprapubic region. The abdominal cavity is fenced off with napkins, the n 2 long strong Kocher clamps are applied to the broad an d round ligaments along the rib of the uterus. Then apply 2 Kocher clamps to the round ligament and the infundibulopelv ic ligament. Both ligaments are divided and, instead of clamps, Vicryl hemostatic sutures are placed at the distal ends. The vesicouterine ligament is crossed, the bladder is separated from the uterus to the anterior wall of the vagina. The uterine arteries are clamped at the level of the interna l os of the cervix on both sides by applying 2 Kocher clamps. The first lower clamps at the level of the internal os of the cervix are applied with a sliding action from the uterine tissue, and the second upper ones are also applied with a sliding action from the uterine tissue, but 1.5 cm higher from the first lower clamp. Between them, hemostatic sutures are cut and placed on the descending uterine vessels. The uterus is pulled up and towards the womb of the uterosacral ligaments, separating the rectum from them from the sides, Mikulicz clamps are applied to the ligaments, over which the ligaments are crossed with scissors. After crossing the ligaments on both sides, the uterus is easily pulled above

the symphysis pubis. The transected sacrouterine ligaments are ligated with vicryl sutures. The anterior wall of the vagina is grabbed with a Kocher clamp, opened with scissors in the transverse direction, the vagina is cut off circularly and peritonization is performed.



Rice. 1. Total hysterectomy technique

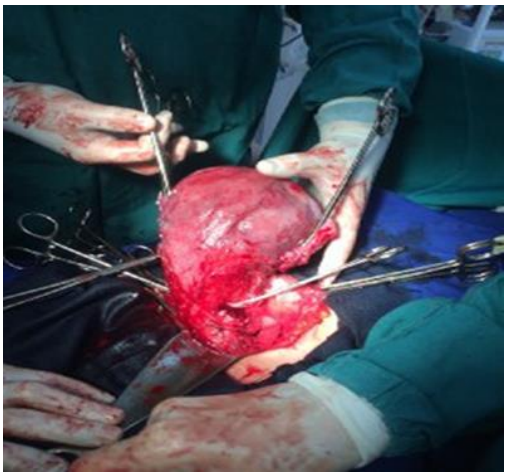


Fig.2. Total hysterectomy technique (H.A. Hirsch et al.) Operative gynecology" 2007

(From my own practice, 2017)

On average, interoperative blood loss associated with surgery, i.e., with the classic version of total hysterectomy, was 860±110.0 ml ($p>0.05$), the average duration of the operation was 93.0±5.0 minutes ($p>0.03$). In the postoperative period, of the 67 surviving women, 7 (9.2%) were transferred to a dialysis center due to acute renal failure for a therapeutic course of hemodialysis. In the postoperative period, 26 (36.1%) women were discharged on days 9–10, 29 (40.2%) – on days 12–14, and 1 (1.3%) after relaparotomy was transferred to the gynecological department for further treatment and discharged on the 21st day. Only 4 (5.5%) postpartum women who lost their children were discharged on the 5th–6th day for further rehabilitation in primary care. The average number of bed days in the retrospective group was 9.1±1.2 days.

According to the calculations of the accountant of the perinatal

center in Urgench, the average cost per operation in the retrospective group was 846,565 thousand soums, the daily cost for the treatment of one patient in the retrospective group was 1,284,520 soums. The total cost of treatment per patient amounted to an average of 11,689,132 soums.

Analyzing the data obtained on surgical interventions in a retrospective group during a total hysterectomy, in 41 (56.9%) cases the internal iliac artery was ligated on both sides against the background of a generalized form of disseminated intravascular coagulation syndrome. A relaparotomy operation due to the lack of complete hemostasis or septic complications was performed in 8 (11.1%) cases, of which in 6 (8.3%) cases a relaparotomy was performed within the next 24 hours after the first operation due to the progression of disseminated intravascular coagulation syndrome. against the background of no effect of plasma transfusion, er. weight, protease inhibitors, tranexamic acid, in 1 (1.3%) patient - 18 hours 45 minutes after the second operation and in 1 (1.3%) on the 6th day due to purulent-septic complications, t e. with an abscess in the pouch of Douglas.

During the operation of total hysterectomy using the traditional method, ligation of the internal iliac artery on both sides was done in 41 (56.9%) cases, of which in 5 (6.9%) cases during re-operation during relaparotomy. It is quite obvious that total hysterectomy, relaparotomy and rerelaparotomy were operations of “desperation” and were performed solely to save the patient’s life.

Despite conservative and surgical treatment for patients with MAC, in this group, in 5 (6.9%) cases, pregnancy and childbirth ended in maternal mortality. When analyzing these 5 cases, it was found that only 4 (80.0%) were registered with an obstetrician-gynecologist, and 1 (20.0%) patient was not registered with primary care. Of those registered, three were diagnosed with somatic diseases - UTI (chronic pyelonephritis), hepatitis, ARVI and iron deficiency anemia of moderate severity.

4 (80.0%) of the deceased had a pregnancy of 37–40 weeks, 1 (20.0%) had a gestational age of 35 weeks, she died from central placenta previa, accompanied by MOB, hemorrhagic shock, disseminated intravascular coagulation syndrome and multiple organ failure , incompatible with life. The pregnant woman was admitted to the hospital in extremely serious

condition, with blood loss of more than 2000.0 ml, and at the final stage of the total hysterectomy operation she died on the operating table, blood loss was estimated to be more than 3000.0 ml. In the structure of maternal mortality, 2 (40.0%) had a severe abruption of a normally located placenta with an operational blood loss of 1000±110.0 ml; during a cesarean section, a retroplacental hematoma of about 500.0 g was discovered in both, the blood loss was estimated at more than 2500.0 ml. In one case, MS occurred from uterine rupture and amniotic fluid embolism against the background of large blood loss (more than 3000±200.0 ml). It should be noted that the patient who died from amniotic fluid embolism was not registered in primary care, since she was abroad (in Russia) and came home after 34 weeks of pregnancy. Maternal mortality in 1 (1.3%) case occurred interoperatively; in the postoperative period, 3 (4.1%) died within 1 day and 1 (1.3%) died on the 7th day from septic complications.

Thus, the immediate cause of maternal death in 4 (80.0%) out of 5 was massive (more than 2500–3000.0 ml), intractable, coagulopathic bleeding; mortality occurred against the background of severe and irreversible multiple organ failure.

We present data from a practical observation of maternal death due to MOB caused by PONRP from a retrospective group.

Example No. 1. Pregnant K. Kh. 29 years old. Birth history No. 5789. She was admitted to the perinatal center on 10/29/2017 at 03:50 with a diagnosis: Pregnancy IV, 35-36 weeks, labor I. Severe PONRP, severe uterine imbibition. Antenatal fetal death. Hemorrhagic shock I-II degree. DIC syndrome. OAGA (privy Post a review

Preserved OGA (recurrent miscarriage against the background of a non-developing pregnancy).

Pregnant, 29 years old, lived in a rural area. History: 2010 – medical abortion; 2012 – non-developing pregnancy at 7 weeks; 2013 – non-developing pregnancy at 8-9 weeks. In 2015, she was registered in primary care at 10–11 weeks of pregnancy, the total number of appearances was 7. An ultrasound examination showed the placenta along the posterior wall. Single hospitalization in hospital with the diagnosis: "Pregnancy IV, 14–15 weeks. Isthmic-cervical insufficiency. Threatening spontaneous

miscarriage." Surgical correction – a "P" suture was placed on the cervix on May 22, 2017.

Upon admission to the maternity complex on October 29, 2017, complaints of pain in the lower abdomen and heavy bleeding from the genital tract. The patient was taken to the maternity hospital by her own transport; during transportation, blood loss was about 500–600 ml. She was admitted to the hospital in serious condition at night at 03:50 on October 29. Diagnosis on admission: "Pregnancy IV, 35–36 weeks. Childbirth 1. Severe degree of abruption of a normally located placenta. Massive obstetric hemorrhage. Stage II-III hemorrhagic shock, disseminated intravascular coagulation syndrome." OAGA. Antenatal fetal death. Longitudinal position, cephalic presentation. Consciousness is confused, blood pressure is 70/39, pulse is 130/min, hemoglobin is 43 g/l. Another 300 ml of blood was immediately released from the genital tract in the emergency room, the total blood loss was about 1000 ml. However, the clinical picture and laboratory test results correspond to stage III hemorrhagic shock, which corresponds to blood loss of 1500–2000 ml. At 04:05 – generalized convulsions.

The pregnant woman had an emergency delivery due to PONRP, massive obstetric hemorrhage, and antenatal fetal death. During a cesarean section, a dead female fetus weighing 3100 g and 50 cm long was removed. The placenta was freely in the uterine cavity with liquid blood (1000±200 ml) and blood clots (500±100 ml). During the operation, the patient suffered cardiac arrest (04:27), and effective cardiopulmonary resuscitation was performed for 10 minutes. Total blood loss: 600 ml before delivery, in the hospital - 300 ml, in the uterus 1100 ml and 500 g of clots, caesarean section - 400 ml, total 2900±200 ml.

At 04:40 – blood pressure 140/93, hemoglobin – 31 g/l. The scope of the operation was expanded to total hysterectomy of the uterus without appendages. The internal iliac arteries were ligated on both sides; the amount of total blood loss averaged 3700.0±300.0 ml. The volume of infusion-transfusion therapy was: crystalloid solutions 3000 ml, HES – 1000 ml, fresh frozen plasma – 1300 ml, packed red blood cells – 1050 ml, i.e. only 6,350 ml. In the postoperative period, mechanical ventilation was

continued. At 18:00–18:50 clinical signs of pulmonary edema developed, blood pressure 128/79–130/82. At 19:30, bleeding appeared in the places where the catheters were placed, from 16:00 - anuria; at 22:00 – blood pressure 121/93, heart rate 144/min, fever up to 39.1, azotemia; at 00:00 – blood pressure 98/67–89/57, heart rate 160/min, anuria. At 01:00 on October 30, 2015, the blood pressure could not be accurately determined; the pulse was bradycardia of very weak filling, anuria. As multiple organ failure progressed, clinical death occurred. Cardiopulmonary resuscitation was ineffective. Biological death has occurred.

Final clinical diagnosis: acute premature abruption of a normally located placenta of severe severity during pregnancy 35–36 weeks. Pregnancy IV, 35–36 weeks, Childbirth 1. OGA (recurrent miscarriage against the background of a non-developing pregnancy). Premature surgical delivery of a stillborn female premature baby. The following operations were performed: caesarean section; ligation of the iliac arteries on both sides; total hysterectomy of the uterus without appendages (Fig. 1, 2).

Rice. 1. Severe PONRP (a case from my own practice, 2017)

Fig. 2. Severe PONRP (a case from my own practice, 2017)

The following complications appeared: massive obstetric hemorrhage (3700.0±300.0 ml); hemorrhagic shock stage III; clinical death; multiple organ failure syndrome: acute respiratory failure; RDS (respiratory distress syndrome), acute renal

failure; acute cardiovascular failure; cerebral insufficiency due to cerebral edema); DIC syndrome, generalized stage; uterine atony; antenatal fetal death. Resuscitation measures and medical procedures: plasma-hemotransfusion; cardiopulmonary resuscitation was ineffective.

A forensic medical examination was carried out. At autopsy, the skin and serous membranes of the pleura, peric ardium, and peritoneum showed multiple small-spotted hemorrhages. The brain weight was 1188 g, and there was a strangulation groove on the cerebellar tonsils. The weight of the right kidney was 220 g, the left 206 g,on the section the cortex was pale, the medulla was full-blooded. Histological examination: plethora, foci of microhemor rhages; the glomeruli are enlarged, the lumens of the capillaries, interstitial arteries with blood clots, proliferation of mesangiocytes, glomerular endothelial cells; the lumen of the Shumlyansky-Bowman capsule contains a pink secretion, the epithelial cells of the proximal tubules are in a state ofnecrosis. The right adrenal gland is leaf-shaped with preservation of differentiation of the cortex and medulla, the medulla is full-blooded; in the left there is a hematoma.

Histological examination: in the medulla of the right adrenal gland there are foci of hemorrhages; in the left adrenalgland - necrosis with hemorrhage. The dimensions of the uterus were 18.5x13.5x6.5 cm, wall thickness 3 cm; the wall of the uterus is homogeneous gray. Histological examination: placentalsite - ascular thrombosis, the decidual layer is thin, infiltrated with lymphocytes, macrophages, multinucleated trophoblastic cells; in the vessels -leukostasis, a small amount of extravillous cytotrophoblast; in the myometrium: plethora, spiral arteries with narrowed lumens. Placenta: 428 g, 18x14x2 cm, in the central part of the placenta there is a crater-shaped depression of 10x8 cm without a hematoma. Histological conclusion: chronic placental insufficiency, variant of dissociated maturation of cotyledons, decompensated. Excessive fibrinoid deposition. Thrombosis of the venous sinuses of

the edge of the placenta, intervillous space. In the area of detachment there are hemorrhages, preserved red blood cells, thin strands of fibrin.

The development of DIC syndrome, accompanied by hemorrhages in the parenchyma of internal organs, in the adrenal glands (in the left - with the formation of a hematoma) led to the syndrome of multiple organ failure, acute adrenal insufficiency, a hypoxic state, destructive progressive edema and swelling of the brain substance with wedging of the stem part into the greater occipital hole which was the immediate cause of death.

Thus, the presented observation of maternal death caused by PONRP and complicated by massive uterine bleeding and hemorrhagic shock demonstrates the importance of the clinical and anatomical approach when conducting thanatological analysis. To clarify thanatogenesis in case of premature placental abruption, it is informative to study areas of the placenta in the area of abruption, which will determine its duration and the sequence of development of pathological processes leading to death. By describing this case, we wanted to ensure that such mistakes were no longer made.

Analyzing 72 histories of births accompanied by MOB in the period from 2014 to 2017 in the regional perinatal center of Urgench and 3 maternity hospitals we came to the following conclusions.

1. The incidence of MAC in the retrospective group studied in the structure of pathological bleeding was 5.0%, and in relation to the total number of births - 0.3%.

2. The main factors contributing to the development and leading to the occurrence of MOB during pregnancy were moderate anemia, diseases of the hepatobiliary system and Werlhof's disease.

3. Obstetric complications such as preeclampsia, severe PONRP, placenta previa and antenatal fetal death in the retrospective group posed the greatest threat to the development of MOB. In the study group, such serious complications

accounted for 154 cases, i.e., 2.08 complications for each pregnant woman.

4. During childbirth, the main causes of MOB were cesarean section 47 (65.2%) due to severe PONRP, severe preeclampsia, EOV and central placenta previa. Against the background of severe PONRP, central placenta previa, EOV and complete uterine rupture, the total blood loss averaged 2410.45±520.55 ml with a range from 1550.0 to 3550.0 ml ($p>0.05$).

5. Uterine atony in the postpartum period occurred in 24 (33.3%). The average amount of blood lost was 1850.0±120, varying from 1550.0±90.0 to 2040.0 ml ± 110.0. On average, interoperative blood loss associated with surgery in the classic version of total hysterectomy was 860±110.0 ml ($p>0.05$), the average duration of the operation was 93.0 ±5.0 minutes ($p>0.03$).

6. In the structure of maternal mortality directly related to MOB, 5 (62.5%) cases were noted, despite surgical hemostasis and traditional treatment methods.

CHAPTER IV. EVALUATION OF THE EFFECTIVENESS OF SUBTOTALE AND TOTAL HYSTERECTOMY USING AN OPTIMIZED METHOD IN A PROSPECTIVE GROUP

§4.1. The main causes of MOB in the prospective group and the incidence of this pathology

This scientific study was conducted in a prospective group of the perinatal center of Urgench, where over 3 years (2018–2020) 24,784 births were registered, of which PAC more than 500.0 ml was observed in 1,396 (5.6%) postpartum women, i.e. 1 case in 17.7 births, from 500 ml to 1000 ml – in 992 (71%), from 1000 to 1500 ml – in 326 (23.3%) and more than 1500 ml – in 78 (5.5%) postpartum women . In relation to the total number of births, MOB was 0.31%, $p<0.05$, i.e. 1 case in 317 births. The incidence of MOB in the perinatal center of Urgench is shown in Table. 4.1.

Table 4.1

Frequency of occurrence of MOB in the perinatal center of Urgench

Years	Amount of labor	Pathological obstetric	Massive obstetric

			bleeding		bleeding	
	абс.	**%**	**абс.**	**%**	**абс.**	**%**
2018	9734	39,2	556	5,7	31	0,31*
2019	8000	32,2*	529	6,6*	24	0,30*
2020	7050	28,4*	311	4,4*	23	0,32
all	24784	100	1396	5,6	78	0,31

Note:* p<0.05 statistical significance

The high incidence of MAC is explained by the fact that pregnant women and women in labor with severe somatic and obstetric pathologies were admitted to the perinatal center of the region, and, since mid-2020, with COVID-19 and its complications. The main reasons for the increase in the frequency of MAC are somatic and obstetric pathologies. In a prospective group of 78 pregnant and postpartum women with MOB, an optimized version of total hysterectomy was performed in 74 (94.8%) and subtotal in 4 (5.1%), statistical significance p < 0.05. Over the past 3 years, maternal mortality in the prospective group increased to 9, i.e. 1.1 times more than in the retrospective group, due to somatic, coronavirus infections and pneumonia. However, in the structure of maternal mortality, MOB was 2 (22.2%), i.e., it decreased in the prospective group by 2.8 times due to timely obstetric tactics, optimization of surgical and conservative therapy.

Thus, there is an increase in the incidence of MOB in the prospective group to 78 (5.5%) in the structure of pathological bleeding, but in terms of labor it remained stable and amounted to 0.3% of cases. Thanks to the optimization of the surgical method of total hysterectomy and infusion-transfusion therapy, maternal mortality was reduced to 2 (22.2%) versus 5 (62.5%) cases in the retrospective group.

An analysis of somatic diseases showed that in adolescence, outside of pregnancy, 41 (52.5%) women suffered from acute respiratory infections, including acute respiratory viral infections, tonsillitis, 74 (94.8%) - measles and rubella, 11 (14.1%) suffered from viral hepatitis A %). 2 (2.5%) underwent appedectomy and 1 (1.2%) underwent removal of an endometriotic cyst of the right ovary. During

pregnancy, 23 (29.4%) patients suffered from acute respiratory infections in the first trimester and 14 (17.9%) patients in the second trimester. Of the 78 pregnant women in the prospective group, 5 (6.4%) had COVID-19 and 2 (2.5%) had complications after pneumonia with lung damage up to 15–20% (in one patient) and 30% (in another). In addition, diseases of the urinary system were identified in 33 (42.3%), which were manifested mainly by asymptomatic bacteruria, cystitis, chronic pyelonephritis and its recurrence and urolithiasis, which is associated with the ecology of the region.

From the cardiovascular system, vegetative-vascular dystonia was detected in 2 (2.5%), chronic arterial hypertension in 22.5%), varicose veins of the lower extremities in 11 (14.1%). One of the severe complications (IDA) occurred in 54 (69.2%), of which mild in 43 (55.1%), moderate in 7 (8.9%) and severe in 4 (5.1%) . Morbid obesity of I–II degree occurred in 9 (11.5%) patients; the body mass index was more than 31, which is one of the risk factors for bleeding. A decrease in body mass index less than 18 was found in 4 patients (5.1%). A pathology of the thyroid gland was revealed - endemic goiter in 15 (19.2%) women. Gastrointestinal diseases also occurred: gastritis and gastrointestinal ulcer in 5 (6.4%), chronic hepatitis B in 16 (20.5%), chronic viral hepatitis C in 3 (3.8%) pregnant women. It should be noted that in the study group, extragenital diseases as a risk factor for the development of MOB were quite common, accounting for 1.8 units per pregnant woman. EHZ. The presence of somatic diseases in women with MOB in the prospective group is shown in Fig. 4.1.

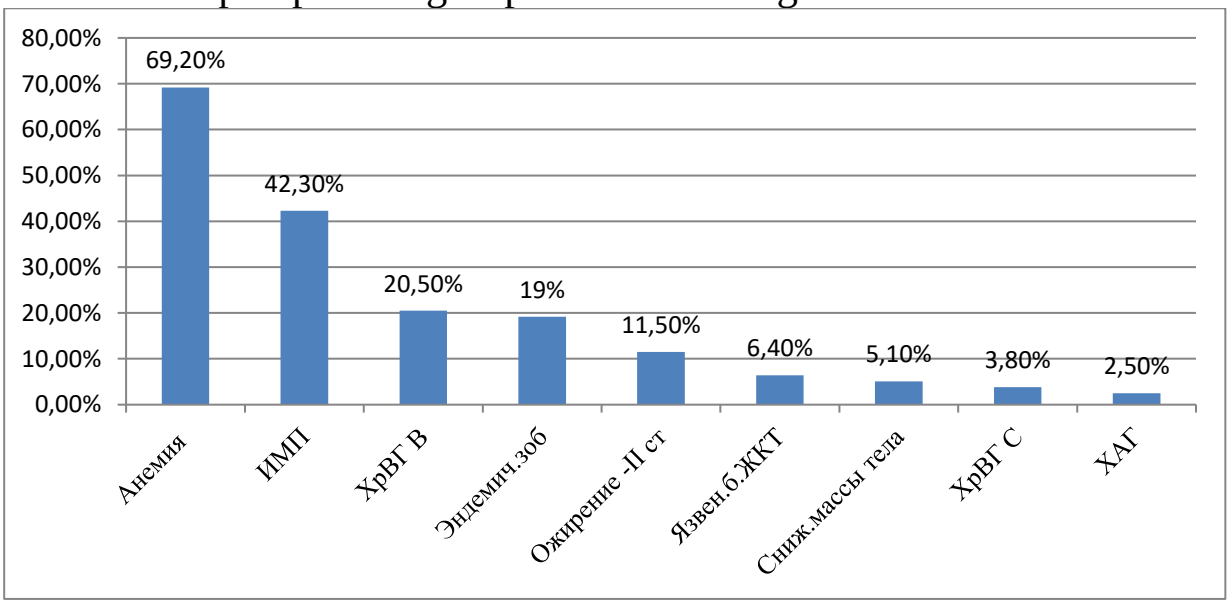


Fig. 4.1

In the majority of patients in the prospective group, pregnancy occurred against the background of chronic genital diseases, which is reflected in Table. 4.2. Among them, inflammatory diseases, bacterial and viral infections and bacterial vaginosis prevailed. All women in the prospective group (64, 82.0%) with gynecological inflammatory diseases received out patient and inpatient treatment during pregnancy for threatened miscarriage in early pregnancy.

Table 4.2

Frequency of gynecological pathology among women in a prospective group who underwent MOB

Pathology in gynecology	women, n=78	
	абс.	%
Bacterial vaginosis	21	26,9*
Vaginitis	5	6,4
Ectopy	1	1,2**
Unilateral salpingitis	5	6,4
Chronic infectious in uterus	3	3,8
SMV	17	21,8*
Chlomidia	2	2,5
TORCH infectious	9	11,5
Nodal myoma in uterus	1	1,2**
All	64	82,0

Note. Significance *p<0.05; **p<0.01

Thus, the presence of previous somatic diseases in adolescence, the presence of inflammatory diseases of the urinary and gynecological systems, diseases of the cardiovascular and endocrine systems contributed to the occurrence of MOB in women of the prospective group.

§4.2. Features of the course of pregnancy, childbirth and the postpartum period in women of the prospective group

The distribution of pregnant women in the prospective group depending on parity is presented in Table. 4.3.

Table 4.3

Parity	Women , n=78	
	абс.	%
I pregnancy	8	10,2*
II pregnancy	14	17,9
III pregnancy	22	28,2
IV pregnancy	21	26,9
V pregnancy	7	8,9*
VI pregnancy	4	5,1*

Among pregnant women with MOB, 8 (10.2%) were primigravida (Table 4.3), 59 (75.6%) were multipregnant, of which 13 (16.8%) had one birth, 20 (26.6%) had two %), three – in 19 (24.3%), four – in 16 (20.5%) and five – in 7 (8.9%). It should be noted that the interval between births for multiparous women ranged on average from 1.9 to 3.4 years.

The history of pregnant women with MOB in the prospective group was dominated by artificial abortions in 8 (10.2%), of which there was one in 5 (6.4%), two in 3 (3.8%) and spontaneous miscarriages in 2 (2.5%). Endometrial scraping, i.e. the uterine cavity, gives a negative result during subsequent pregnancies and childbirth. Features of the course of pregnancy and childbirth in the anamnesis of pregnant women in the prospective group are given in Table. 4.4.

Table 4.4

Parity	Women , n=78	
	абс.	%
Artificial abortion	8	24,3
Spontaneous miscarriage	2	17,9
Non-developing pregnancy	1	28,2
Early toxicosis	44	56,4*
Mild preeclampsia	21	26,9
Severe preeclampsia	3	3,8*
Urgent birth	72	92,3

Premature birth	6	7,6
Surgical delivery	3	3,8

Note. Significance *p<0.05;

The duration of pregnancy upon admission to the hospital of women in the prospective group with MAC is shown in Fig. 4.2. From the data presented, it is easy to notice that in the absolute majority of cases (56 women, 71.7%), pregnant women with MAC were admitted to obstetric institutions at full term, however, with severe preeclampsia and placental abruption, 19 (24.3%) were admitted before 37. week's pregnancy. These data once again confirm the severe and complicated course of pregnancy in this group.

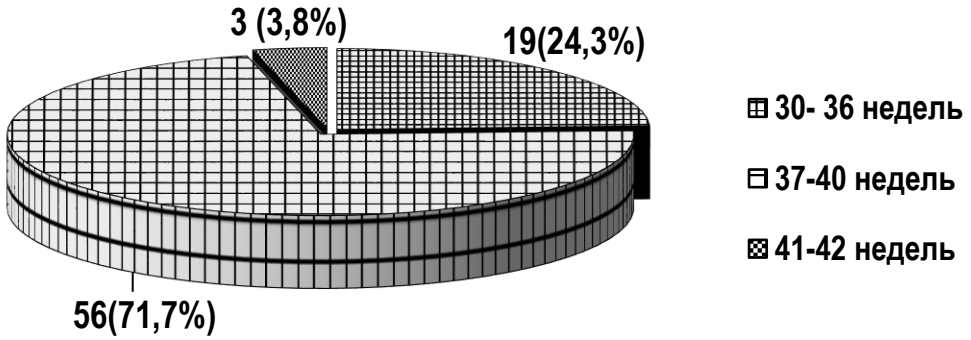


Fig. 4.2. Pregnancy periods upon admission of pregnant women in the prospective group with MOB

The most common complications of pregnancy in the prospective group were also early toxicoses. In this group, early toxicosis occurred in 53 (67.9%), of which 35 (61.5%) had moderate toxicosis, 5 (6.4%) had severe toxicosis; Moderate edema was noted in 4 (5.1%), mild preeclampsia – in 32 (41.0%), severe preeclampsia – in 13 (16.6%), chronic arterial hypertension – in 2 (2.5%), gestational hypertension – in 8 (10.2%), impaired utero-fetal placental circulation of varying degrees in 17 (21.9%), ORP – in 17 (21.9%) pregnant women, p <0.05.

The development and progression of DIC syndrome in pregnant women with severe preeclampsia are associated with impaired production of factors involved in blood coagulation synthesized in the liver, as well as with the supply of tissue thromboplastin, bacterial endo- and exotoxins, the presence of hemolyzed erythrocytes, proteolytic enzymes, and antigen–exotoxin complexes. antibody, hypoxia, increased

blood free fatty acids and metabolic acidosis. Most authors associate the occurrence of DIC with impaired liver function, decreased production of fibrinogen, proconvertin, PTI, proaccelerin (factor V) [7, p. 224–296]. Complications of pregnancy in women of the prospective group are reflected in Table. 4.5.

Table 4.5

Complications of pregnancy in a prospective group

Complications	**Women , n=78**	
	абс.	**%**
Early moderate toxicosis	48	61,5
Early severe toxicosis	5	6,4
Moderate edema in pregnant women	4	5,12
Mild preeclampsia	32	41,0
Severe preeclampsia	13	16,6
Chronic arterial hypertension	2	2,5*
Gestational hypertension	8	10,2*
SORP	17	21,9
Violation of MPC Ib degree	11	11,1**
Violation of MPC II degree	6	5,5**
Central placenta previa	4	5,1
Severe PONRP	36	46,1
Antenatal fetal death	4	51,2‰
Total	190	243

Note. Significance * $p<0.05$; ** $p<0.01$

From the table Table 4.3 shows that the most severe complications of pregnancy in the prospective group were hypertension in 55 (70.5%), PONRP in 36 (46.1%) p <0.05, placenta previa and BMD disorders of varying degrees, as well as antenatal fetal death 51.2‰. All these complications played a big role in the development of obstetric tactics and management of childbirth.

Thus, in the prospective group, the incidence of complications associated with pregnancy was 190, and there were 2.08 complications per pregnant woman; the greatest threat was posed by hypertensive conditions, PONRP and placenta previa, which became the direct causes of bleeding.

We studied the characteristics of the course of labor in a prospective group. Complications during labor and the postpartum period in women of this group are reflected in Table. 4.6.

Table 4.6

Complications of labor and the postpartum period in women of the prospective group

Complications	**Women , n=78**	
	абс.	**%**
Premature birth	19	24,3
Urgent birth	56	71,9
Delayed birth	3	3,8
Surgical delivery	53	67,9
Atonic bleeding during cesarean section	53	67,9
Atonic bleeding after vaginal delivery	25	32,0

Amniotic fluid embolism	1	1,2*
Complete uterine rupture	1	1,2*
Early neonatal mortality	5	64,1‰**
Antenatal fetal death	4	51,2‰**
Subtotal hysterectomy	4	5,1
Total hysterectomy	74	94,8
Ligation of the internal iliac artery	4	5,1

Note. Static significance * p<0.05, ** p<0.001

From the table Figure 4.6 shows that in the postpartum period, a severe complication developed in the natural birth canal atonic bleeding; due to the lack of effect from conservative therapy, it was decided to perform surgical hemostasis using an optimized version of total hysterectomy in 25 (32.0%) women. Features of the course of labor in the prospective group were noted in 78 (100%) women with MOB, of whom term birth occurred in 56 (71.9%), premature birth in 19 (24.3%) and delayed birth in 3 (3 .8%), p<0.05. Premature surgical delivery in this group of patients occurred against the background of severe preeclampsia in 13 (16.6%) and severe PONRP in 6 (7.7%) p <0.05, and urgent surgical delivery occurred in 53 (67.9 %) against the background of severepreeclampsia and severe PONRP. Due to the development of disseminated intravascular coagulation syndrome against the backgroundof detachment and atonic bleeding, the scope of the operation wasexpanded to a total hysterectomy in an optimized version. In the prospective group, antenatal fetal death occurred 1.2 times more than in the retrospective group,and early neonatal mortality was 1.5 times less. The reduction in the incidence of perinatal mortality is

explained by the optimized option, total hysterectomy, infusion-transfusion therapy and early surgery.

Thus, summarizing the data obtained on the course of labor and the postpartum period in women of the prospective group, it is necessary to note the main complications that led to the development of MOB: atonic bleeding that developed during cesarean section and in the early postpartum period. Due to the lack of effect from conservative therapy, an optimized version of total hysterectomy was performed in 74 (94.8%) women and subtotal in 4 (5.1%) to save the life of the mother

§4.3. Analysis and evaluation of the effectiveness of subtotal and total hysterectomy with an optimized option in a prospective group

Over three years in the prospective group, the number of births in the above maternity complexes increased by 188 8 births and amounted to 24,784 cases. In the prospective group, thanks to timely treatment of bleeding, developing and following protocols for the management of pregnant and parturient women at high risk of bleeding, we were able to reduce the incidence of pathological postpartum bleeding by 0.6% compared with the retrospective group, and it occurred in 1396 (5.6%) women in labor. Unfortunately, in the prospective group, MOB against the background of severe detachment and atonic bleeding, somatic diseases increased by 0.5% and amounted to 78 (5.5%) cases, but in relation to the total number of births it remained stable and amounted to 0.3% ($p<0.05$).

All 78 (100%) patients with MOB underwent surgical hemostasis using an optimized version of total hysterectomy in 74 (94.8%) and subtotal hysterectomy in 4 (5.1%). The beginning of surgical hemostasis was, in addition to the lack of effect from conservative therapy, the total amount of blood lost, assessed by visual and gravimetric methods. With continued bleeding of more than 21±0.5 ml/kg per body weight, surgical hemostasis was started. First, organ-preserving operations were performed, such as “ligation of three great vessels” in 3 (3.9%) cases and “hemostatic sutures on the uterus according to B-Lynch” in 1 (1.3%) case. However, due to the lack of clinical effect for more than 25 minutes, the scope of the operation was expanded

to subtotal hysterectomy in all 4 patients. The volume of bleeding in the prospective group against the background of uterine atony in the early postpartum period through natural routes averaged 1880.0±80.0 in 25 (32.0%) parturients, ranging from 1680.0±100.0 to 1950.0 ml ±110.0 (p>0.05).

In addition to postpartum uterine atony, the indications for total hysterectomy in the optimized option in the prospective group were severe PONRP in 36 (46.1%) women with a combination of atony, severe imbibition, and disseminated intravascular coagulation syndrome. The amount of blood loss in this group of patients averaged 25±3.0 ml/kg per body weight. The volume of bleeding in the prospective group, recorded against the background of severe abruption of a normally located placenta, against the background of uterine atony was 1930.0±200.0
(p>0.05) and against the background of central placenta previa in 4 (5.1%) patients , on average 2360.0±200.0 (p>0. 05). During the hysterectomy operation, in 6 (7.7%) cases, both appendages were removed due to hemorrhage and necrosis of the ovaries, and in 11 (14.1%) cases, only the appendages were removed. The most massive blood loss was in women who underwent hysterectomy; in one case, with amniotic fluid embolism (Fig. 1) and complete uterine rupture (Fig. 2), the volume of blood loss was significantly greater and amounted to 3120.0 ± 200.0 ml (p>0.05).

Fig 1. EOV (a case from my own practice 2020)

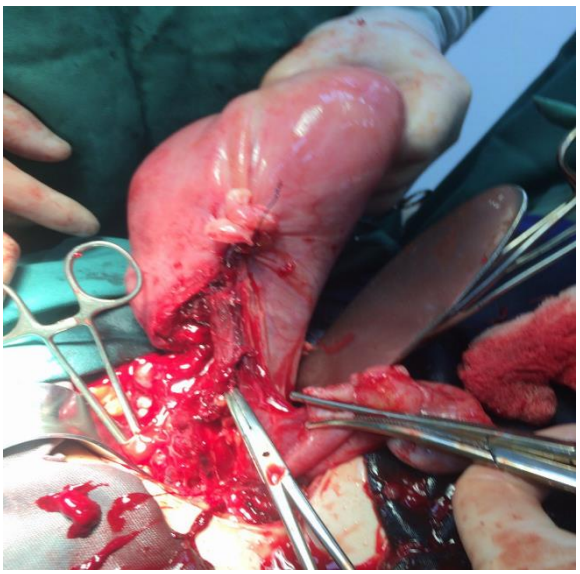


Fig. 2. Uterine rupture (a case from my own practice 2020)

Analyzing the timeliness of surgical intervention for massive obstetric hemorrhage in the prospective group, it should be noted that only in 63 (80.7%) cases was surgical intervention performed on time, in 12 (15.3%) surgical assistance was started one hour late, in 3 (3.8%) – by two due to conservative therapy and attempts at organ-saving surgery.

Thus, the volume of blood loss in the prospective group varied from 1680.0 to 3120.0 ml depending on the obstetric pathology. Against the background of uterine atony in the early postpartum period through natural routes, it averaged 1880.0±80.0 in 36 (46.1%) parturient women with a range from 1680.0±100.0 to 1950.0±110.0 ml ($p>0.05$). Against the background of severe PONRP, central placenta previa, EOV and complete uterine rupture, the average volume was 2250.45±200.0 ml. In all cases, MOB in the prospective group was accompanied by HS and DIC syndrome.

The optimized technique for performing total hysterectomy is shown in Fig. 3, 4. The optimized version of total hysterectomy for massive obstetric hemorrhage differs in that two clamps are applied along the ribs of the uterus at a distance of 1.5 cm from its body, capturing all appendages

(fallopian tubes, proper ovarian ligament, round ligament). Clamps close to the uterus are applied at a distance of 1.5 cm from its body, and a second clamp is placed at a distance of 0.5 cm from the first; between the clamps, one “hemostatic suture” is cut and applied to all three formations, first in the distal sections, then in the proximal ones. and remove the hemostatic clamps (Fig. 3).

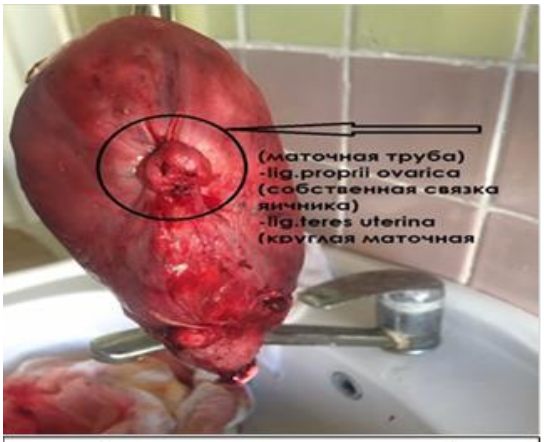


Рис 3. (Из собственной практики 2019г)


Рис 4. (Из собственной практики 2020г)

Clamping of the uterine vessels (uterine artery) at the level of the internal os of the cervix, dissection and application of vicryl hemostatic sutures to the descending ut erine vessels (uterine arteries) is carried out 0.5 cm below and up to 1.0 cm deeper under the clamp located below. This method differs from the previous method in that a vicryl “hemostatic suture” is placed on the ascending section of the uterine vessels (uterine arteries) 0.5 cm higher and up to 1.0 cm deeper from the ascending clamp (Fig. 4). Thus, “hemostatic sutures” are applied to both the proxi mal and distal parts of the uterine appendages and auterinae.

With an optimized version of the total hysterectomy operation, thanks to the removal of all clamps from the surgical field, after applying “hemostatic sutures,” visualization of the surgical field and technical access were improved, tissue trauma was reduced, and all this contributed to the improvement of the surgical technique and its quality. If the amount of interoperative blood loss with the classic version of total hysterectomy averaged 860±110.0 ml ($p>0.05$) and

the duration of the operation averaged 103.0±5.0 minutes (p>0.03), then with the optimized version blood loss decreased by more than 340.0±50.0 ml and averaged 520±50.0 ml (p>0.05). The duration of the operation was reduced by 32 ±4.0 minutes (p>0.03) than with the classic version of total hysterectomy, and averaged 71.0±3.0 minutes (p>0.03).

In the postoperative period, 5 (6.4%) women in labor were transferred to a dialysis center due to acute renal failure for a therapeutic course of hemodialysis. In the prospective group, during total hysterectomy using an optimized method, ligation of the internal iliac artery on both sides was performed in 52 (66.6%) cases against the background of a generalized form of disseminated intravascular coagulation syndrome. Relaparotomy was performed in 1 (1.2%) case due to a hematoma of the anterior abdominal wall. In the postoperative period, 16 (20.5%) women were discharged on the 6th day, 51 (65.3%) on the 7–9th day and 6 (7.6%) on the 10–12th day. The average number of bed days in the prospective group was 7.3 ± 0.9 days.

According to the calculations of the accountant of the perinatal center in Urgench, the average cost per operation in the retrospective group was 846,565 thousand soums, in the prospective group - 624,330 thousand soums, i.e. the difference was 222,235 thousand soums. Daily expenses for the treatment of one patient in the retrospective group amounted to 1,284,520 soums, in the prospective group 963,390 soums. The total cost of treatment for one patient averaged 11,689,132 soums, and for the prospective group - 8,766,849 soums, the difference was 2,922,283 soums. Thus, 25% economic efficiency of our method has been proven.

Clinical example of an optimized version of total hysterectomy

Ibodullaeva Malokhat, born in 1985, Case No. 1731/1187 Date: October 1, 2019, start of operation - 16 hours 50 minutes, end - 18 hours 10 minutes, operation time - 1 hour 20 minutes. Main diagnosis: Pregnancy III, 39 weeks + 5 days. Childbirth II. Childbirth is independent. Massive postpartum atonic bleeding. Hemorrhagic shock of moderate severity. DIC syndrome in the hypocoagulation stage. Concomitant diagnosis: Posthemorrhagic anemia of moderate severity.

On October 1, 2019, at 15:20, the patient gave birth to a live male

child, weight 4860.0 g, height 59 cm. The postpartum period was complicated by hypotonic bleeding, conservative treatment was performed, including infusion-transfusion, uterotonics, red blood cell mass, internal massage on the fist. Despite treatment for 1.5 hours, bleeding continued and amounted to about 1500.0 ml, so it was decided to perform surgical hemostasis - total hysterectomy using the proposed method**. Progress of the operation:** after appropriate treatment of the surgical field under aseptic conditions under endotracheal anesthesia, the anterior abdominal wall was opened layer by layer along the white line of the abdomen using a longitudinal incision up to 15 cm long. After opening the abdominal cavity during an inspection of the pelvic organs, a postpartum uterus the size of about a 20-week pregnancy, doughy consistency, and bluish color was discovered; Grabbing the bottom with bullet forceps, the uterus was removed from the abdominal cavity through the wound.

Interoperative diagnosis: postpartum atonic bleeding.

Immediately on the fallopian tubes, own ovarian ligament s and round ligament along the ribs of the uterus at a distance of 1.5 cm from the body of the uterus, 2 clamps were applied, capturing all appendages (fallopian tubes, own ovarian ligament, round ligament), and near the uterus the clamps were applied at a distance 1.5 cm from her body, and the second clamp at a distance of 0.5 cm from the first. Between the clamps they cut and immediately applied one hemostatic suture to all three formations in the distal section, stitching under the clamp with a vicryl thread, then in the proximal section, ligating (without suturing) with vicryl sutures, and the clamps were removed. Next, the perit oneum was dissected in the area of the posterior leaves of the broad ligaments and in a horizon tal direction along the posterior surface of the uterus above the uterosacral ligaments and in front above the bladder. The appendages on both sides were pulled down and expose d the lateral surfaces of the uterus with vascular bundles. The bladder was lowered about 6 cm to the anterior vagina l fornix. Then two Kocher forceps were applied on both sides at the level of the internal os closer to the cervix, the uterine vessels were clamped and crossed. The

descending section of the uterine vessels was securely ligated using a vicryl suture, and the ascending section of the uterine vessels was ligated with a Kocher clamp. Then, parallel to the cervix, 2 clamps were applied to the descending, i.e., vaginal, part of the uterine artery. In this case, the uterus was slightly retracted in the direction opposite to the vascular ligation. After dissection of the cervical tissue, the side clamps were replaced with vicryl sutures. Then 2 clamps were applied to the upper third of the vagina and the uterus was cut off above them. After treating the vaginal stump with 96% ethyl alcohol, it was sutured with continuous captive vicryl sutures. Peritonization was carried out with purse-string vicryl sutures, starting from the stump of the appendages and round ligament of the uterus, the leaves of the broad ligament, the posterior andanterior layers of the peritoneum were sutured, tightening, and the stump of the sutured vagina was fixed. The abdominal cavity was sanitized and, after careful control of hemostasis, the anterior abdominal wall was sutured tightlyin layers. An aseptic dressing was applied to the skin.

Urine released by catheter, 230 ml, light. The vaginal tampon is removed and the vagina is cleaned. Blood loss during surgery was 750 ml. Blood test before surgery: HB (hemoglobin) – 85 g/l, L (leukocytes) – 7.4 x 10/6 g/l. Blood test after surgery: NV –2 g/l, L – 10.6 x 10/6 g/l. Indicators of the blood coagulation system before and after surgery in the hypocoagulation stage. In the postoperative period, she received antianemic treatment, antibiotics, blood and plasma transfusions, and the patient was discharged home in satisfactory condition on the 10th day after surgery.

The economic efficiency of our method, according to the calculations of the accountant of the perinatal center in Urgench, the average cost per operation in the retrospective group was 846, 565 thousand soums, in the prospective group - 624,330 thousand soums, i.e. the difference was 222,235 thousand soums . Daily expenses for the treatment of one patient in the retrospective group amounted to 1,284,520 soums, in the prospective group 963,390 soums. The total cost of treatment for

one patient averaged 11,689,132 soums, and for the prospective group - 8,766,849 soums, the difference was 2,922,283 soums. Thus, the economic efficiency of our method has been proven to be 25 %.

Analysis of maternal deaths in a prospective cohort. Thanks to conservative therapy and improved surgical care for patients with MOB in the prospective group, maternal mortality decreased by 2.8 times - from 5 (62.5%) cases to 2 (22.2%) p < 0.05. Analysis of these 2 cases of MS showed that they were registeredwith an obstetrician-gynecologist in primary care. All have been diagnosed with somatic diseases -moderate iron deficiency anemia, UTI, chronic disease. hepatitis, SHRV and moderate iron deficiency anemia.

The gestational age of all the deceased was 37–40 weeks. The cause of death in 1 case was MOB due to central placenta previa, accompanied by hemorrhagic shock, disseminated intravascular coagulation syndrome and multiple organ failure incompatible with life. The pregnant woman was admitted to the hospital in extremely serious condition, with blood loss of more than 2000.0 ml; there was a short-term cardiac arrest in the ambulance. 2 hours after the operation, the postpartum mother experienced cardiac arrest and biological death. In one case, MS was caused by amniotic fluid embolism against the background of large blood loss - more than 3000 ml. Maternal mortality occurred in the postoperative period after 2 hours in 1 (1.2%) case and after 1 day in 1 (1.2%) woman in labor from cardiopulmonary failure.

Thus, the direct cause of maternal mortality in 2 cases was massive obstetric hemorrhage (more than 3000.0 ml), hemorrhage and disseminated intravascular coagulation syndrome led to irreversible changes in organs and systems.

As a result of a scientific and practical study of women in a prospective group, we came to the following conclusions.

1. In the prospective group studied, the incidence of MOB was 78 (5.5%) cases, in relation to the total number of births 0.3%, i.e. 1 case in 317 births p<0.05.

2. Severe preeclampsia, severe PONRP, placenta previa and a ntenatal fetal death during pregnancy were the main causes of M AC in the prospective group. Such serious complications occurred in 190 cases, i.e. 2.43 $p<0.05$ complications for each pregnant wo man.

3. During childbirth, the main reasons for MOB were cesarea n section in 53 (67.9%) for severe PONRP, severe preeclampsia, EOV and central placenta previa. Against the background of seve re PONRP, central placenta previa, EOV and complete uterinerupt ure, the total blood loss averaged 2250.45±200.0 ml $p<0.05$.

4. Uterine atony in the postpartum period occurred in 25 (32 .0%) women in labor. The amount of blood lost averaged 1880.0± 80.0 ml, ranging from 1680.0±100.0 to 1950.0 ml±110.0 ($p>0.05$).

5. With the optimized version of the total hysterectomy ope ration, interoperative blood loss decreased by more than 340.0±50. 0 ml and averaged 520±50.0 ml ($p>0.05$). The duration of the o peration was reduced by 22±4.0 minutes ($p>0.03$) and averaged 71 .0±3.0 minutes.

6. Thanks to improved conservative therapy and subtotal and total hysterectomy, mothers with MOB in the prospective group managed to reduce maternal mortality from 5 (62.5%) cases to 2 (22.2%), i.e. 2.8 times, by improving the outcome of the operation.

CHAPTER V. COMPARATIVE CHARACTERISTICS OF CLINICAL AND LABORATORY INDICATORS AND CONSERVATIVE THERAPY OF PURTHER WOMEN USING TRADITIONAL AND IMPROVED METHOD OF SURGICAL INTERVENTION FOR MASSIVE OBSTETRIC BLEEDINGS

§5.1. Comparative characteristics of clinical and laboratory parameters in postpartum women of the retrospective and prospective groups with massive obstetric hemorrhage

Features of clinical and laboratory parameters are the leading factors in making a diagnosis and the determining point in further tactics for managing pregnancy, childbirth and treatment of MAC.

In the retrospective group, anemia was diagnosed in 61 (84.7%) women during pregnancy, of which mild anemia was detected in 49 (68.0%), moderate anemia in 9 (12.5%) and severe anemia in 2 (2.7%) patients.

In the prospective group, the frequency of anemia during pregnancy decreased by 1.3 times and amounted to 54 (69.2%), of which 43 (55.1%) had mild degrees, 7 (8.9%) had moderate degrees and severe – in 4 (5.1%).

Against the background of massive obstetric hemorrhage, a deterioration of the condition followed; the hemoglobin level in the retrospective group decreased from 39.2±1.5 g/l to 53.5±2.5 g/l, with an average of 46.1±2.5 g/l l. In the prospective group, the hemoglobin level decreased to an average of 52.1±2.5 g/l with a range from 48.4±1.0 g/l to 56.5±2.0 g/l ($p<0.05$) during the operation.

Against the background of blood transfusion with red blood cells and anti-anemic therapy, hemoglobin remained at a low level in the retrospective group; only by the 7th day of the postoperative period did it recover to moderate severity. Indicators of hemoglobin, red blood cells, and color index gradually recovered over 10–14 days in the postoperative period and at discharge averaged 93.1 ± 1.1 g/l, but all postpartum women were recommended to continue rehabilitation treatment in primary care (Table 5.1) Table 5.1

Changes in complete blood count intraoperatively and after total hysterectomy in a retrospective group (n=72)

Indicators	И/оп ер.	Day 1	Day 2	Day 3	Day 7	Extract

Hemoglobin, г/л	46,1±2,5	58,2±2,2●	77,9±1,8●	86,8±1,7●	90,1±1,7	93,1±1,1
Red blood cells , 10^{12}	2,11±0,08	2,41±0,05●	2,62±0,07●	2,91±0,07●	3,21±0,06	3,50±0,06
Color indicators	Неопр.	0,83±0,02	0,82±0,01●	0,81±0,01●	0,81±0,01●	0,86±0,01
White blood cells , $\times 10^3$	9,6±0,2	11,1±0,4	10,5±0,4●	8,2±0,2●	7,4±0,2●	7,0±0,2●
Stick-core %	Неопр.	5,68±0,38	4,31±0,37●	3,23±0,43●	2,51±0,32●	1,44±0,20●
Segmento nuclear , %	Неопр.	68,7±1,6	64,9±1,8●	60,8±1,7●	58,9±1,6●	55,3±1,5●
eosinophill , %	Неопр.	0,83±0,13●	0,84±0,10●	1,32±0,13●	1,65±0,09●	2,05±0,11●
Lymphocyte , %	Неопр.	17,9±0,5	19,1±0,4	20,1±0,6●	24,9±0,6●	26,5±0,3●
Monocytes , %	Неопр.	2,00±0,13	2,13±0,12	2,74±0,10●	3,00±0,18●	3,50±0,14●
myeolocytes, %	Неопр.	1,09±0,12	0,68±0,11●	0,39±0,09●	0,06±0,04●	0

Note. □ Significant compared with data from day 1 ($p<0.05$)

In the prospective group, hemoglobin, erythrocyte, and color indicators recovered more quickly in the postoperative period against the background of blood transfusion and intensive care. Hemoglobin levels on the third day averaged 90.6±1.5 g/l, and at discharge 99.1±1.4 g/l (Table 5.2).

Table 5.2

Changes in complete blood count intraoperatively and after total hysterectomy in a prospective group (n=78)

Показатель	**In oper.**	**Day 1**	**Day 2**	**Day 3**	**Day 7**	**Extract**
Hemoglobin, г/л	52,1±2,0	61,2±2,1●	81,9±1,8●	90,6±1,5●	94,1±1,5	99,1±1,4
Red blood	2,11±0,	2,41±0,	2,62±0	2,91±0,	3,21±0,	3,50±0,

cells , 10^{12}	08	05❶	,07❶	07❶	06	06
Color indicators	Неопр.	0,82±0,02	0,83±0,01❶	0,81±0,01❶	0,82±0,01❶	0,85±0,01
White blood cells , $\times 10^3$	8,6±0,5	10,1±0,5	10,9±0,4❶	9,2±0,3❶	8,4±0,2❶	7,6±0,2❶
Stick-core %	Неопр.	5,44±0,38	4,51±0,37❶	3,34±0,43❶	2,61±0,32❶	1,55±0,20❶
Segmentonuclear , %	Неопр.	66,5±1,6	63,8±1,8❶	61,6±1,7❶	57,9±1,6❶	53,3±1,6❶
eosinophill, %	Неопр.	0,81±0,13❶	0,89±0,10❶	1,54±0,13❶	1,55±0,09❶	2,15±0,11❶
Lymphocyte , %	Неопр.	21,7±0,5	23,1±0,4	24,1±0,6❶	24,6±0,6❶	29,2±0,3❶
Monocytes , %	Неопр.	2,05±0,13	2,23±0,12	2,84±0,10❶	3,10±0,18❶	3,70±0,14❶
myeolocytes, %	Неопр.	1,19±0,12	0,78±0,11❶	0,44±0,09❶	0,16±0,04❶	0

Note. Significant compared with data from day 1 ($p<0.05$)

From the table Table 5.1 shows that in the postoperative period, the majority of postpartum women in the retrospective group had leukocytosis, from 12 thousand to 14 thousand in 2 (2.6%), from 10 thousand to 12 thousand in 21 (29.1%), up to 10.0 thousand - in 31 (43.0%), on average on the day the diagnosis was clarified, it was 11.1 ± 0.4 thousand. In 19 (26.3%) cases, leukocytes remained within normal values or even were slightly reduced. In the prospective group, leukocytosis developed with severe intoxication in the postoperative period, and was also accompanied by surgical aggression and inflammatory diseases in the body of the operated patient.

Indicators characterizing hemostasis have also undergone significant changes. Their initial values clearly indicated hypocoagulation, thrombocytopenia, and the presence of disseminated intravascular coagulation with or without clinical manifestation. The dynamics of changes in CVS parameters during and after total hysterectomy using the traditional method are shown in Table. 5.3.

Table 5.3

Dynamics of changes in CV indicators during and after total

hysterectomy in a retrospective group (n=72)

Indicators	In oper	Day 1	Day 2	Day 3	Day 7	Extract
Fibrinogen, g/l	1,65±0,07	1,90±0,05	2,0±0,06	2,64±0,05*	3,38±0,07*	3,89±0,08*
Thrombotest, s	2,25±0,10	2,13±0,12	2,21±0,11	2,83±0,12	3,84±0,07*	4,25±0,07*
Plasma recalcification time, s	172,2±5,0	150,1±5,3*	146,6±4,4*	132,4±4,4*	124,5±4,1*	117,5±3,3*
Plasma tolerance to heparin, s	300,0±2,3	279,9±4,6*	268,9±6,8*	248,5±7,4*	223,6±4,0*	205,8±4,3*
PTI	58,9±2,6*	61,5±2,1	60,8±2,3	65,2±0,8*	68,2±0,8*	79,5±1,1*
APTT, s	80,6±2,7	87,0±2,4*	74,5±3,4	48,3±2,6*	32,8±1,9*	28,8±1,2*
Ht, vol. %	27,9±1,4	29,1±1,5	32,2±2,4	35,5±2,4	38,7±2,2	39,8±2,4
Platelets, 103	144,1±2,2	147,8±1,9	177,6±2,1*	209,3±1,6*	262,7±1,8*	296,1±3,6*
Time St. according to Lee-White, min.	17,6±0,4	17,5±0,4	14,3±0,4*	11,9±0,7*	9,3±0,2*	7,7±0,3*

Note. * Significant compared with data from day 1 (P<0.05)

From the table 5.3 shows serious changes in the blood coagulation system of postpartum women during and in the postoperative period. The level of fibrinogen sharply decreased, and the more severe the course of the disease, the greater the blood loss. The fibrinogen indicator intraoperatively was 1.65±0.07 g/l, the fibrinogen level was restored in the retrospective and prospective groups (Table 5.4) starting from the 3rd day after surgery, which we associate with the cessation of exposure of the SSC to toxic substances coming from uterus and obstetric tissue

after removal of the uterus, as well as the positive effect of infusion therapy containing blood components and restoration of the protein-synthesizing function of the liver. Thrombocytopenia was quite characteristic of MOB. The study of platelet hemostasis revealed a significant decrease in the initial platelet count in the retro- and prospective groups.

Data from numerous studies indicate that primary hemostasis in MOB is carried out mainly by platelets. The leading role in the implementation of primary hemostasis belongs to the adhesive-aggregation function of platelets. The maximum decrease in platelets was observed during the operation, up to 144.1±2.2 thousand, and remained stable for two days at the level of 147.8–177.6 thousand. Only on the 3rd day after the operation was their increase to 2 .83±0.12 thousand, a similar picture was observed in the prospective group. Thrombocytopenia often appeared before the onset of clinical symptoms of MOB, especially in pregnant women with preeclampsia, and the rate of platelet recovery depended on the severity of blood loss and infusion and transfusion therapy.

Hypocoagulation is also indicated by a decrease in plasma tolerance to heparin, a significant increase in thrombin time, recalcification time and coagulation of whole blood. The above changes were persistent and long-lasting in the first days after surgery and required monitoring of these indicators at least 2-3 times a day in the first days after total hysterectomy using the traditional method. The dynamics of changes in SBS parameters during and after total hysterectomy in the prospective group are shown in Table. 5.4. Thus, the analysis of the data obtained indicates that in all postpartum women with MOB after hysterectomy using the traditional method in the retrospective group and the optimized version in the prospective group, there was a significant decrease in plasma and cellular blood coagulation factors due to bleeding and the addition of generalized DIC syndrome.

Changes in blood coagulation parameters over time have become one of the main diagnostic laboratory criteria for MOB in retrospective and prospective groups.

Table 5.4

Dynamics of changes in CV indicators during and after total hysterectomy in a prospective group (n=78)

Indicators	In oper	Day 1	Day 2	Day 3	Day 7	Extract
Fibrinogen, g/l	1,80±0,11*	1,81±0,16	2,01±0,14	3,1±0,07*	3,5±0,07*	3,9±0,06*
Thrombotest, St	1,66±0,11	1,94±0,12*	2,45±0,12*	3,31±0,08*	3,41±0,14*	3,82±0,11*
Recalcification time plasma, sec	177,0±8,7*	186,9±9,0	190,7±10,5	143,2±3,4*	123,5±3,7*	105,3±2,9*
Plasma tolerance to heparin, sec	339,0±9,6*	323±11,4*	312±14,1*	265,9±7,5*	204,1±7,7*	201±10,1*
PTI,%	60,9±2,6*	64,5±2,1	62,8±2,3	73,2±0,8*	78,2±0,8*	84,5±1,1*
APTT, sec	137,6±7,4	93,9±7,8*	78,0±7,8*	57,8±3,5*	29,6±1,6*	20,8±0,7*
Ht, vol.%	23,9±0,5	24,4±0,9	25,6±0,7	27,6±0,5*	30,0±0,6*	33,8±0,7*
10^3 platelets,	148,6±6,0*	146,4±6,7	154,3±4,5	175,2±3,6	214,1±3,4*	227,4±3,2*
Vr. St. according to Lee-White, min.	17,9±0,4	15,3±0,4*	14,4±0,5*	10,4±0,3*	8,6±0,3*	8,0±0,3*

Note. * Significant compared with data from day 1 (P<0.05)

§5.2. Features and errors in the treatment of massive obstetric hemorrhage in retrospective and prospective groups

In a retrospective group, 72 patients with MOB received intensive therapy: infusion-transfusion, plasma and blood transfusions with correction of DIC syndrome, i.e. multicomponent correction. Analysis of the volumes and qualitative composition of infusion and transfusion therapy in the treatment of MOB showed that the volume of crystalloid solutions (0.9% sodium chloride) averaged 3350.50±1050.40 ml (from 2000 to 5000 ml), the volume of hydroxyethyl starch solution (HES) 6% refortan, hecatone averaged 1800.0±150.0 ml. The composition of the administered infusion media should be balanced and close to that of blood plasma, however, the parameters required for infusion media are not applicable to a 0.9% aqueous solution of sodium chloride. These studies showed that due to the 1.5 times higher chloride content in saline compared to blood plasma, massive volemic support by this medium leads to hyperchloremia, associated with a twofold increase in mortality. With timely (in the first 10–30 minutes) adequate intensive therapy, the outcome in hemorrhagic shock is usually favorable [62, p. 253–259; 73, p. 168–186]. However, in the retrospective group, in 34 (47.2%) patients, qualitative, quantitative infusion-transfusion therapy in accordance with the protocols was carried out with a delay of 55.4 ± 10.6 minutes. Infusion therapy with crystalloids (0.9% sodium chloride) was carried out in 71 (98.6%), 2.5 times more than prescribed. The quantitative volume of a 6% solution of hydroxyethyl starch (refortan, hecatone or volustin) averaged 1800.0±150.0 ml. The amount of injected liquid solution of sodium chloride and hydro

xyethyl starch was 2–
2.5 times more than prescribed (Table 5.5).

In MOB, the volume of bleeding is significant, and the re is a rapid consumption of coagulation and anticoagulation factors. If the volume of blood loss is more than 30–
35% of the bcc, rapid administration of donor fresh frozen plasma (FFP) in a volume of at least 20 ml/kg per body weight should be started [60, p. 7–10; 78, p. 604–
611; 100, p. 488–
521]. In the retrospective group, on average, FFP was transf used in volumes of 1650.17±384.83 ($p>0.05$) on the first da y, on the second day 950.12±150.20 ($p>0.05$) until complete correction of DIC syndrome . Due to an organizational issu e (lack of plasma or location of the blood circulation at a distant distance), sometimes expectant management was late with plasma transfusion by 87.5±0.2 minutes in 37 (51.3%) patients, $p<0.05$.

Thirty-
eight (52.7%) patients with MOB in the retrospective group were administered up to 15 mg/kg per body weight of trane xamic acid (Hemotran) before and during surgery, repeated ev ery 6–
8 hours until complete hemostasis. However, 26 (36.1%) pati ents were administered this drug in an insufficient dose - 500 mg once (8-
10 mg/kg per body weight) per day, and in 8 (11.1%) ($p<$ 0. 05) were not used at all due to the lack of this drug.

To achieve the maximum effect of tranexamic acid (He motran), it is necessary to select the appropriate dose of the drug. This antifibrinolytic is administered immediately before the incision on the anterior abdominal wall at a dose of 15–
20 mg/kg per body weight intravenously, drip, quickly, in s aline solution (20–30 ml) [54, p. 34–103; 115, p. 303–316].

In a retrospective group, 57 (79.1%) patients were adm

inistered insufficient proteolysis inhibitors, 100–
150 thousand (although the evidence base is insufficient), m ainly aprotinin (contrical) and 3 (4.1%) patients were adminis tered rFVIIa (coagil) at the rate of 90 mcg/kg with the d evelopment of severe hypocoagulation, refractory to therapy c arried out with FFP and fibrinolysis inhibitors [116, p. 202–212]. After administration of rFVIIa (Coagil), these patients showed a significant decrease in the rate and volume of bl eeding, which allowed them to undergo a total hysterectomy with ligation of the internal iliac artery.

When discussing blood transfusion, it should be noted that transfusion of erythrocyte-
containing blood components helps restore globular volume in MOB [118, 112, p. 323–
333]. In the study group, transfusion of donor red blood c ells was performed in all 72 patients with MOB, however, only 34 (47.2%) patients were transfused in a timely mann er and in sufficient volume, and 38 (52.7%) this procedure was performed with a delay of 1 to 5 hours and in insuff icient quantities. 1 (1.3%) had a post-
transfusion complication and required resuscitation. A compara tive assessment of the effectiveness of treatment of massive obstetric hemorrhage in retro-
and prospective groups is shown in Table. 5.5.

Table 5.5

Comparative assessment of the effectiveness of treatment of massive obstetric hemorrhage in retro- and prospective groups

Indicators	**Retrospectiv e group (n=72)**	**Prospevtive group (n=78)**	**Difference**	**Statistic al reliabilit y**
Total bleeding	2450,0±220,0	2250,0±100, 0	200,0±30, 0	(p<0,05)
Interoper. blood, ml	860,0±110,0	520,0±50,0	340,0±60, 0	(p<0,05)
Phys. solution,	4350,0±350,0	2450,0±250,	1900,0±10	(p<0,001

ml		0	0	)
GEK, ml	1800,0±150,0	400,0 ±50,0	1200,0±75,0	(p<0,001)
Heloplasma (INN)	500,0±100,0	1000,0±100,0	500,0±100,0	(p<0,001)
Gelofusin, ml	-	500,0±80,0	500,0±80,0	(p<0,001)
Reosorbilact, ml	400,0±50,0	800,0±70,0	400,0±50,0	(p<0,001)
FFP, ml	1650,0±110,0	1420,0±80,0	230,0±890,0	(p<0,001)
Kontrikal,	100–150 тыс.	250-300 тыс.	100–150тыс	(p<0,001)
MC in the group MS in the structure	5 (6,9%) 5 (62,5%)	2 (2,5%) 2 (22,2%)	2,7 раза 2,8 раза	(p<0,05) (p<0,05)

forms of hypocoagulation, refractory to therapy carried out with FFP and fibrinolysis inhibitors [31, p. 186–194; 45, p. 23–31; 81, p. 216–246]. After the introduction of Octaplex, the rate and volume of bleeding in these patients significantly decreased, which made it possible to perform a total hysterectomy with ligation of the internal iliac artery.

Thus, the analysis of the data obtained in this chapter indicates:Note. Statistical significance (p<0.05); (p<0.001)

In the prospective group, i.e., with the optimized version of total hysterectomy, the quality and quantity of infusion-transfusion therapy was reflected. The amount of physiological sodium chloride solution was sharply reduced by 1900.0 ml, HES by 1200.0 due to the side effects of these drugs. The volume of administered crystalloid solutions in the prospective group averaged 2450.0±250.0 ml, ranging from 2000.0 to 4500.0 ml; a 6% solution of hydroxyethyl starch (refortan, hecatone or volustin) was administered on average 1200.0± 100.0 ml. The amount of administered liquid solution of sodium chloride and hydroxyethyl starch was 2–2.5 times more than prescribed.

In a prospective group of 78 patients, 66 (84.6%) received timely replenishment of fresh frozen plasma at a dose of 20

ml/kg/body weight, on average 1420.0±80.0 ml. Only 12 (15.3%) plasma transfusions were started with a delay of 32.5±4.5 minutes (p>0.02) due to the lack of plasma in the maternity unit. Recently, a major positive role has been played by the procedure of hardware intraoperative reinfusion of autoerythrocytes, which allows minimizing the use of donor erythrocytes, and in some cases completely eliminating them, preventing possible blood transfusion complications and improving the outcome of surgery for MAC [51, p. 246–288]. A complete, timely and sufficient volume of red blood cell transfusion was performed in 65 (83.3%), and in 13 (16.6%) patients this procedure was performed with a delay of up to 2 hours and in insufficient quantities.

Antifibrinolytics tranexamic acid (hemotran) were administ ered before and during surgery, full infusion therapy was car ried out with the introduction of 15–
20 mg/kg per body weight, repeated every 6–
8 hours until complete hemostasis in 63 (80.7%) patients wit h MAC in a prospective study. group. Tranexamic acid is a synthetic amino acid that competitively inhibits plasminogen; its effectiveness is 15–
20 times higher than aminocaproic acid [54, p. 34–
103; 115, p. 303–
316]. The action of tranexamic acid is due to the inhibition of lysine-
binding sites of plasminogen, due to which this proenzyme i s not converted into plasmin and cannot contact fibrin. Also, tranexamic acid suppresses the production of kinins and oth er active peptides, which provides the antiallergic and anti-
inflammatory effect of this drug [115, p. 303–
316]. When using tranexamic acid, no increase in the risk o f thrombotic complications was noted, however, in 12 (15.3%) patients this drug was administered in an insufficient dose, 10–
12 mg/kg per body weight due to its insufficient amount at the time of drug administration.

In a prospective group, patients were administered 250–
300 thousand proteolysis inhibitors, mainly aprotinin (contrical),

subsequently reducing the dose by half until complete hemo stasis. The use of aprotinin for the treatment of MOB in o ur study group gave a positive result, suppressing the fibrino lytic activity of the blood due to the inhibitory effect of fi brinolysis, improved clinical and laboratory manifestations and thereby prevented the progression of intravascular coagulation [45, p. 23–31; 81, p. 216–246;111, p. 83–93].

In this group, 13 (7.3%) patients were administered Oct aplex at an average rate of 1 ml/kg per body weight, depe nding on INR values, with the development of severe

1) in all postpartum women with MOB in the retro- and prospective groups, a significant decrease in plasma and cellular blood coagulation factors was revealed, due to moderate anemia, bleeding, hemorrhagic shock and the addition of generalized disseminated intravascular coagulation syndrome. The identified changes in blood coagulation parameters over time have become one of the main diagnostic laboratory criteria that determine the severity of MOB;

1) in the retrospective group, in 71 (98.6%) patients, quantitative and qualitative infusion and transfusion therapy were carried out incorrectly, and in 37 (51.3%) to 57 (79.1%) patients, the CVS indicators were not corrected in a timely manner;

In the prospective group, 12 (15.3%) patients received incorrect quantitative and qualitative infusion and transfusion therapy; 66 (84.6%) patients, after carrying out and optimizing conservative, infusion-transfusion therapy and correction of CVS, achieved a good postoperative outcome. Thanks to optimization of the technique of total and subtotal hysterectomy and conservative therapy, maternal mortality was reduced by 2.8 times.

CONCLUSION

Massive obstetric hemorrhage, accompanied by hemorrhagic shock, disseminated intravascular coagulation syndrome and multiple organ failure, is the main cause of maternal mortality in the world and accounts for up to 25% of its structure [2, p. 16–19]. According to literature data, about 62–65% of births passing through the natural birth canal are accompanied by physiological blood loss, 1/3 of the patients lose from 500 to 1000 ml of blood, and in 3–8% of cases the volume of blood loss can exceed 1.5% of the mass body of the woman in labor and is considered massive, requiring transfusion of red blood cells and often removal of the uterus [32, p. 10–15; 116, p. 202–212].

However, to date there is no consensus on the precise definition of MOB in the postpartum period; in most medical institutions it is defined as a blood loss of more than 1500 ml or more than 30% of the total volume and when the need for blood transfusion arises [78, p. 604–611].

One of the international criteria that defines the term "massive obstetric hemorrhage" is blood loss of more than 1500 ml, a decrease in hemoglobin level of less than 4 g/dl, and the need for emergency transfusion of more than 4 units. volumes of erythrocyte mass[103, p. 2165–2171]. According to WHO (2019), 14 million women develop massive bleeding every year in the world and the prevalence of postpartum hemorrhage (more than 500 ml) in the world ranges from 6 to 11% of all pregnancies, and severe postpartum hemorrhage (more than 1000 ml) ranges from 1 to 11% of all pregnancies. 3% [118, 82, p. 1541–1544]. Thus, the incidence of MOB varies around the world.

The most important thing for a practitioner is early and comprehensive treatment of obstetric hemorrhage. According to our national obstetric standards, surgical hemostasis should begin when the volume of blood loss is 1500 ml, but doctors delay laparotomy, using different surgical methods to stop bleeding. The effectiveness of treatment of a critical condition associated with MOB can only be ensured by the coordinated work of obstetricians-gynecologists and the resuscitation team, timely identification of the etiology of disorders and its elimination [54, p. 34–58].

Many authors (Radzinsky, 2015; Pakhomova, 2016; Kurtser, 2017;

Ishchenko, 2018; Manuel Munoz, 2019; Yusupbaev, 2019; Abdullaeva, 2021) prefer organ-saving operations and, if measures to stop uterine bleeding are ineffective and the mother is in threatening conditions, recommend the use hysterectomy to save the mother's life. Only complex treatment, including a combination of infusion therapy, blood replacement therapy and surgical bleeding control, can bring successful therapy.

Based on these data, the purpose of this study was to improve the technique of performing subtotal and total hysterectomy for massive obstetric hemorrhage to improve the outcome of the operation and reduce maternal mortality from hemorrhage.

To achieve the intended goal, the following tasks were set: to study the incidence of massive obstetric hemorrhage in the study group and the reasons for its occurrence; analyze and evaluate the effectiveness of subtotal and total hysterectomy using the traditional method in a retrospective group; to identify the advantage of an improved method of subtotal and total hysterectomy for massive obstetric hemorrhage in a prospective group; to study in a comparative aspect clinical and laboratory parameters with the traditional and improved method of surgical intervention for massive obstetric hemorrhage; propose an improved method of subtotal and total hysterectomy for massive obstetric hemorrhage to improve the outcome of the operation and reduce maternal mortality. This study was conducted among pregnant women, women in labor, and postpartum women who had suffered massive obstetric hemorrhage, mainly in the postpartum period, and subtotal and total hysterectomy. Analysis and evaluation of the results of treatment of massive obstetric hemorrhage in a comparative aspect were carried out in retrospective and prospective groups from 2015 to 2020. All patients were divided into two groups depending on the method of subtotal and total hysterectomy.

Group 1 (retrospective, control) – 72 women who underwent massive obstetric hemorrhage with subtotal and total hysterectomy using the traditional method and traditional infusion-transfusion therapy from 2015 to 2017.

Group 2 (prospective, main) – 78 women who underwent massive obstetric hemorrhage with subtotal and total hysterectomy in an optimized version, i.e. with the application of a “hemostatic suture” to the proximal part of the uterine appendages and the ascending part of the

a.uterine in the period 2018–2020, as well as an optimized version of infusion-transfusion therapy. All pregnant women in the study group underwent traditional clinical and laboratory studies. Clinical, biochemical analyzes and special research methods were carried out over time. The results obtained were statistically processed.

The incidence of MOB was determined using statistical data from the perinatal center in Urgench, where the material was collected. Over 3 years (2015–2017), 22,896 births were registered, of which pathological obstetric bleeding (POH) of more than 500.0 liters was detected during childbirth in 1,419 (6.2%) postpartum women, i.e. 1 case in 16 ,1st birth. Of these, blood loss from 500 to 1000 ml was observed in 964 (68.0%) and from 1000 to 1500 ml in 383 (26.9%) patients, $p < 0.05$. Of these 1419 (6.2%) pathological bleeding, MAC accounted for 72 (5.0%) cases, i.e., the volume of blood loss exceeded 1500 ml and the volume of blood volume was more than 30%, $p < 0.05$. If we take the total number of births, the MAC was 0.31%, i.e. 1 case per 318 births, $p < 0.001$.

In a prospective group of the same perinatal center, 24,784 births were registered over 3 years (2018–2020), of which PAC more than 500.0 ml was reported in 1,396 (5.6%) postpartum women, i.e. 1 case in 17.7 births , of which from 500 to 1000 ml in 992 (71%); from 1000 to 1500 ml – in 326 (23.3%) and more than 1500 ml – in 78 (5.5%) postpartum women. In relation to the total number of births, MAC was 0.31%, i.e. 1 case per 317 births, $p<0.05$.

Thus, the incidence of massive obstetric hemorrhage in the study group in relation to the total number of births was 0.31%, $p < 0.05$ in the perinatal center of Urgench, Khorezm region.

Comparison of our data with the world data showed a variety of data. Thus, in a WHO study in the Metro East region (Cape Town, South Africa) from November 2014 to November 2015, the incidence of the above condition was 3/1000 births, the results were obtained based on an analysis of 32,862 births that occurred during the study period time [75, p. 146–156]. In our country, MAC was 0.01% more common ($p<0.01\%$). According to Surina and Marochko (2016), in the Kemerovo region of the Russian Federation, MOB occurred on average in about 0.5% of births [59, p. 81–87]. In our study group, it was 1.6 times less

due to the implementation and compliance with the protocol for the treatment of obstetric hemorrhage by doctors of the perinatal center.

There are many possible causes of MOB associated with obstetric and somatic pathologies on the part of the mother. Obstetric causes include abruption of a normally located placenta, placenta previa, obstetric embolism, disturbances in the processes of separation of the placenta and its release, traumatic injuries to the birth canal, uterine rupture, decreased contractile activity of the myometrium (uterine atony), disturbances in the hemocoagulation system, cesarean section and septic complications [47, p. 12–16].

Quite often in the study group, extragenital diseases were encountered as a risk factor for the development of MAC: somatic disease accounted for 1.9 units per pregnant woman in the retrospective group. and in the prospective study – 1.8 units. Among them, IDA, which is an indirect cause of MOB occurred in 61 (84.7%) patients in the retrospective group and in 54 (69.2%) in the prospective group, $p < 0.05$. Anemia contributes to an increase in the frequency of pregnancy complications; due to a decrease in the gas transport function of the blood, the processes of fetoplacental dysfunction are aggravated, which adversely affects the hemostasis system, in particular the aggregative state of blood in the microcirculation system, the metabolism of the vascular endothelium, and leads to obstetric complications of MOB.

Diseases of the urinary system were identified in 29 (40.2%) women in labor in the retrospective group and in 33 (42.3%) in the prospective group, $p < 0.05$. Such a high frequency of UTIs in the studied groups is typical for this Aral region. It was accompanied by cystitis and its recurrent form, chronic pyelonephritis and urolithiasis. In addition, various somatic diseases were encountered in the study group, including morbid obesity and blood diseases.

Thus, analysis of somatic diseases outside and during pregnancy showed that they have an indirect significance for the occurrence of MAC in the study group. Analysis of literature data showed that somatic diseases leading to the development of

pathological obstetric bleeding include blood diseases (congenital and acquired thrombophilias) and hereditary disorders of hemostasis, severe extragenital pathology (chronic hypertension, pathology of the cardiovascular system, UTI, neuroendocrine pathology diabetes mellitus, metabolic disorder - obesity), increasing childbearing age and ecology [3, p. 144–212; 6, p. 16–18; 7, p. 224–296; 37, p. 5–9; 77, p. 561–568].

The most common complications of pregnancy in the retrospective and prospective groups were early toxicosis in the first half of pregnancy: in the retrospective group, early moderate-to-severe toxicosis occurred in 38 (52.7%), in the prospective group 1.2 times more often - in 53 (67.9%). Such a severe complication as a hypertensive state, which plays a large role in the development of MOB, was found in 45 (62.5%) in the retrospective group, of which mild preeclampsia - in 27 (37.5%), severe preeclampsia - in 9 (12, 5%), chronic arterial hypertension – in 4 (5.5%), gestational hypertension – in 5 (6.9%) cases. In this group, disturbances of uterine-fetal and placental circulation of varying degrees were observed in 12 (16.6%) and ORP - in 13 (18.0%) pregnant women, $p < 0.05$.

In the prospective group, the hypertensive condition was 10.0% more common than in the retrospective group and amounted to 55 (70.5%), of which mild preeclampsia - in 32 (41.0%), severe preeclampsia - in 13 (16.6%) , chronic arterial hypertension – in 2 (2.5%), gestational hypertension – in 8 (10.2%) cases, $p<0.05$. Severe preeclampsia, especially in its combined form, leads to severe hypoxia, ischemia with metabolic disorders, inhibition of the Krebs cycle, and decreased synthesis of protein fractions in the liver. The anaerobic type of oxidation, which occurs in pregnant women with severe forms of preeclampsia, leads to insufficient breakdown of fatty acids and disruption of factors involved in the synthesis of blood coagulation. Endogenous intoxication, hypoxia and acidosis contribute to the conversion of plasminogen into plasmin and the development of DIC syndrome in pregnant women with MOB.

If we take the immediate causes leading to the development of MOB, then severe PONRP occurred in 31 (43.0%), central placenta previa in 6 (8.3%) in the retrospective group and,

respectively, 36 (46.1%) and 4 (5.1%) in the prospective study, $p<0.05$.

The causes of obstetric hemorrhage and the factors contributing to this pathology are very diverse and are more common in blood diseases - anemia, vascular pathologies, autoimmune disorders (antiphospholipid syndrome) and metabolic syndrome, etc. Multiple pregnancies, antenatal fetal death, breech presentation are of great importance placenta, placental abruption, preeclampsia and, of course, the cesarean section itself, the frequency of which in Uzbekistan averages 18.1% [1, p. 285–291; 3, p. 144–212; 24, p. 19–28; 56, p. 9–14; 73, p. 168–186]. Our data confirm that the main factors contributing to the development of MAC were complications of gestation itself, occurring both in the first and second half of pregnancy in the form of early severe toxicosis, severe preeclampsia, severe PONRP, placenta previa and antenatal fetal death.

According to Karimova (2020), the main causes of MOB were impaired contractility of the uterus - uterine atony (68.6%), anomalies of placenta attachment (62.0%), PONRP (29.0%), delivery of a large fetus (28.1 %), severe preeclampsia (13.3%), the majority of patients developed iron deficiency anemia of varying severity after bleeding, the results of our studies confirm the above data [25, p. 14–19].

We studied the features of the course of labor in 72 (100%) women in labor with MOB in a retrospective group. Of these, 58 (80.5%) had urgent births, 12 (16.6%) had premature births and 2 (2.7%) had late births. In this group of patients, premature surgical birth occurred in 12 (16.6%) due to severe preeclampsia and severe PONRP. Due to the development of disseminated intravascular coagulation syndrome, against the background of detachment and hypoatonic bleeding, the scope of the operation was expanded to a total hysterectomy. In case of premature birth, antenatal fetal death was observed in 3 (4.1%) ($p<0.01$) cases and early neonatal mortality in 4 (5.5%) ($p<0.01$). In the prospective group, antenatal fetal death was 1.2 times more common, and early neonatal mortality was 1.5 times less than in the retrospective group. The decrease in the incidence of perinatal mortality is explained by timely proposed obstetric

tactics, i.e., an optimized version of total hysterectomy and infusion-transfusion therapy, and the provision of qualified neonatal care [7, p. 224–296].

In the prospective group, urgent births were observed in 56 (71.9%), premature births in 19 (24.3%) and delayed births in 3 (3.8%) women in labor, $p < 0.05$. Preterm surgical birth occurred 1.4 times more often than in the retrospective group; all these cases occurred against the background of severe preeclampsia in 13 (16.6%) and severe PONRP in 6 (7.7%) patients, p<0. 05, and in 53 (67.9%) women, operative delivery also occurred against the background of severe preeclampsia and severe PONRP.

The frequency of operative births in the study group is very high, 3.7 times higher than the world and average statistical data from the Ministry of Health of our republic. Although all cesarean sections are due to absolute indications, such as severe PONRP, preeclampsia and placenta previa, the Level III perinatal center provides care to pregnant women with severe pathology throughout the region. Around the world and according to the WHO, there is a debate about the ideal rate of caesarean section. Scientists from Harvard and Stanford assessed the relationship between 2012 maternal and neonatal mortality and caesarean section rates in 194 WHO member countries. The study covered 97.6% of all births in the world, that is, 22.9 million births. The safe rate of cesarean section is 19%. WHO experts conducted such a comprehensive analysis of the frequency of caesarean sections during the year for the first time. Scientists have found that increasing the cesarean section rate to 19% reduces maternal and infant mortality rates [16]; the caesarean section rate in Uzbekistan averages 18.1%, as indicated above [56, p. 9–14].

According to a statement from the World Health Organization in Geneva on April 10, 2015, the increase in surgical interventions during childbirth is based on the results of two studies in the field of population reproduction under the auspices of UNDP, UNFPA, WHO and the World Bank. A safe caesarean section rate should be around 10%. However, if the frequency of its implementation exceeds 10%, available data do not indicate an improvement in mortality rates. These findings highlight the importance of caesarean section for saving the lives

of mothers and newborns, as indicated in the report by Marlin Temmerman, Director of the WHO Department of Reproductive Health and Research [14], as well as surgery, conservative myomectomy during caesarean section, subtotal and total hysterectomy . Recently, the structure of pathological bleeding has undergone significant changes: the frequency of bleeding against the background of a large fetus, induced labor, abruption of a normally located placenta, placenta previa and true placenta accreta is increasing, but bleeding associated with impaired contractility of the uterus during childbirth and in the early postpartum period, i.e. due to uterine atony [65, p. 16; 58, p. 112–116].

In the early postpartum period, atonic bleeding developed in 24 (33.3%) parturient women in the retrospective group and in 25 (32%) in the prospective group due to impaired contractility against the background of histopathic changes. This category of parturients received active conservative treatment, including intravenous administration of oxytocin (10 units) repeated after 15–20 minutes, methylergometrine and appropriate infusion-transfusion therapy based on the protocols, however, due to the lack of effect from conservative therapy, it was decided to perform surgical hemostasis.

The effect of surgical hemostasis depended on the start of the operation: the earlier surgical delivery was performed, the more favorable the outcome. The starting point for surgical hemostasis, in addition to the lack of effect from conservative therapy, was the total amount of blood lost, assessed by visual and gravimetric methods. If bleeding continued to exceed 21±0.5 ml/kg per body weight, surgical hemostasis was started in the prospective group. First, organ-preserving operations were performed, such as “ligation of three great vessels” in 3 (3.9%) cases and “hemostatic sutures on the uterus according to B-Lynch” in 1 (1.3%) case. However, due to the lack of clinical effect for more than 25 minutes, the scope of the operation was expanded to subtotal hysterectomy in all 4 patients. The volume of bleeding in the prospective group against the background of uterine atony in the early postpartum period through natural routes averaged 1880.0±80.0 in 25 (32.0%) cases, ranging from

1680.0±100.0 to 1950.0 ml ±110.0 (p>0.05).

The volume of bleeding in the retrospective group against the background of uterine atony in the early postpartum period through natural routes averaged 1850.0±120.0 in 24 (33.3%) cases, ranging from 1550.0±90.0 to 2040.0 ml ±110.0 (p>0.05).

In addition to postpartum uterine atony, the indications for total hysterectomy in the optimized option in the prospective group were severe PONRP - in 36 (46.1%) with a combination of atony expressed by imbibition with DIC syndrome. The amount of blood loss in this group of patients averaged 27±3.0 ml/kg per body weight. The volume of bleeding in the prospective group recorded against the background of PONRP in combination with uterine atony during cesarean section was 1930.0±200.0 (p>0.05) and against the background of central placenta previa in 4 (5.1%) patients , on average 2360.0±200.0 (p>0.05). The most massive, voluminous blood loss was due to amniotic fluid embolism; with complete uterine rupture, the volume of blood loss was 3120.0±200.0 ml, the average blood loss in this group was 2250.45±200.0 ml (p>0.05).

In the retrospective group, the amount of blood loss due to severe PONRP, central placenta previa, EOV and complete uterine rupture averaged 2410.45±220.55 ml, p<0.05. It should be noted that the amount of blood loss in all these patients during cesarean section was more than 30 ml/kg per body weight and in almost all cases it was accompanied by the addition of a generalized form of DIC syndrome. Analysis of the timeliness of surgical intervention for massive obstetric hemorrhage in a prospective group showed that in 63 (80.7%) cases, surgical intervention was performed on time, including postpartum uterine atony in 10 (12.8%) women in labor. With a delay of more than one hour, surgical assistance was started in 12 (15.3%) with postpartum uterine atony, in 3 (3.8%) (p <0.05) - for two or more hours due to conservative therapy and attempts to organ-saving surgery. Analysis of the time factor in a retrospective group of parturients with atonic bleeding in the postpartum period showed that when performing enhanced ITT and in the absence of treatment effectiveness, 2 (2.7%) parturients were operated on within the first hour, 17 (23.6%) - from 1 to 2 hours and 4

(5.5%) ($p<0.05$) – from 3 to 5 hours. One (1.3%) woman underwent surgery with a delay of more than 10 hours. In addition, in the retrospective group, 48 (66.6%) women, mainly with severe PONRP, were operated on in the next 30 minutes; first, a cesarean section was performed, and when atonic bleeding developed, the consultation decided to expand the operation to a total hysterectomy.

Thus, in the retrospective group, 50 (69.4%) women in labor underwent surgical intervention on time, 17 (23.6%) - with a delay of 1 to 2 hours, 4 (5.5%) - from 3 to 5 hours, and 1 (1.3%) ($p <0.05$) for a woman – with a delay of more than 10 hours.

The proposed optimized version of total hysterectomy for massive obstetric hemorrhage differs in that 2 clamps are applied along the ribs of the uterus at a distance of 1.5 cm from its body, capturing all appendages (fallopian tubes, proper ovarian ligament, round ligament). A clamp close to the uterus is applied at a distance of 1.5 cm from the body of the uterus, and a second clamp is placed at a distance of 0.5 cm from the first; between the clamps, one “hemostatic suture” is cut and applied to all three formations, first in the distal parts, then in the proximal ones. and remove the hemostatic clamps. Clamping of the uterine vessels (uterine artery) at the level of the internal os of the cervix, dissection and placement of vicryl hemostatic sutures on the descending uterine vessels (uterine arteries) 0.5 cm lower and up to 1.0 cm deeper under the clamp located below. This method differs from the previous method in that a vicryl “hemostatic suture” is placed on the ascending section of the uterine vessels (uterine arteries) 0.5 cm above and up to 1.0 cm deeper from the ascending clamp, then the clamps are removed. Thus, “hemostatic sutures” are applied to the proximal and distal parts of the uterine appendages and a.uterinae.

With an optimized version of the total hysterectomy operation, due to the removal of all clamps from the surgical field after applying “hemostatic sutures,” visualization of the surgical field and technical access were improved, tissue trauma was reduced, which contributed to the improvement of the surgical technique and its quality. If the amount of interoperative

blood loss during the classic version of total hysterectomy in the retrospective group averaged 860±110.0 ml (p>0.05) and the duration of the operation averaged 93.0±5.0 minutes (p>0.03), then, with the optimized option, the amount of blood loss decreased by more than 340.0±50.0 ml and averaged 520±50.0 ml (p>0.05). The duration of the operation was reduced by 32±4.0 minutes (p>0.03) than with the classic version of total hysterectomy and averaged 71.0±3.0 minutes, ranging from 52±4.0 minutes to 81±4. 0 min (p>0.03).

Comparative characteristics of the main clinical and laboratory parameters in postpartum women of the retrospective and prospective groups with massive obstetric hemorrhage showed the following results. The frequency of anemia in the retrospective group during pregnancy was diagnosed in 61 (84.7%) women, of which severe degree - in 2 (2.7%) patients, in the prospective group - in 54 (69.2%), of which severe degree – in 4 (5.1%). Against the background of massive obstetric hemorrhage, the condition deteriorated and the hemoglobin level in the retrospective group decreased from 39.2±1.5 g/l to 53.5±2.5 g/l, on average 46.1±2.5 g/l . In the prospective group, the hemoglobin level decreased to an average of 52.1±2.5 g/l with a range from 48.4±1.0 g/l to 56.5±2.0 g/l (p<0.05) during the operation.

Our laboratory studies confirmed serious changes in the blood coagulation system of postpartum women during and in the early postoperative period. The level of fibrinogen sharply decreased to 1.65±0.07 g/l, platelet counts to 144.1±2.2 thousand in the retrospective group, respectively 1.80±0.11 g/l and 148.6±6, 0 thousand (p<0.001) in the prospective group. Thrombocytopenia often appeared before the onset of clinical symptoms of MAC, especially in pregnant women with preeclampsia, and the rate of platelet recovery depended on the severity of blood loss and infusion and transfusion therapy. Hypocoagulation is also indicated by a decrease in plasma tolerance to heparin, a significant increase in thrombin time, recalcification time and coagulation of whole blood. These changes were persistent, long-term and required monitoring of these indicators at least 2-3 times a day in the first days after total hysterectomy in both groups.

Thus, all postpartum women with MOB in the retro- and prospective groups showed a significant decrease in plasma and cellular blood coagulation factors due to moderate anemia, bleeding, hemorrhagic shock and the addition of generalized disseminated intravascular coagulation syndrome. The identified changes in blood coagulation parameters over time became one of the main diagnostic laboratory criteria that determine the severity of MOB.

In a retrospective group, 72 patients with MOB received intensive therapy: infusion-transfusion, plasma and blood transfusions with correction of DIC syndrome, i.e. multicomponent correction. Analysis of the volumes and qualitative composition of infusion and transfusion therapy in the treatment of MOB showed that the volume of crystalloid solutions (0.9% sodium chloride) averaged 3350.50±1050.40 ml (from 2000 to 5000 ml), the volume of hydroxyethyl starch solution (HES) – 6% refortan, hecatone – on average 1800.0±150.0 ml, $p<0.05$. The composition of the administered infusion media should be balanced and close to that of blood plasma, however, the parameters required for infusion media are not applicable to a 0.9% aqueous solution of sodium chloride. The study showed that due to the 1.5 times higher chloride content in saline compared to blood plasma, massive volemic support by this medium leads to hyperchloremia, associated with a twofold increase in mortality. With timely (in the first 10–30 minutes) adequate intensive therapy, the outcome in hemorrhagic shock is usually favorable [53, p. 29–33; 60, p. 7–10; 62, p. 253–259; 73, p. 168–186]. However, in the retrospective group, 34 (47.2%) patients received qualitative, quantitative, protocol-compliant infusion-transfusion therapy with a delay of 55.4 ± 10.6 minutes. Infusion therapy with crystalloids (0.9% sodium chloride) was administered to 71 (98.6%) patients 2.5 times more than prescribed. The quantitative volume of a 6% solution of hydroxyethyl starch (refortan, hecatone or volustin) averaged 1800.0±150.0 ml. The amount of injected liquid solution of sodium

chloride and hydroxyethyl starch was 2–
2.5 times more than prescribed.

The volume of bleeding in MOB is significant, and the re is a rapid consumption of coagulation and anticoagulation factors. If the volume of blood loss is more than 30–
35% of the bcc, rapid administration of donor fresh frozen plasma (FFP) in a volume of at least 20 ml/kg per body weight should be started [60, p. 7–10; 78, p. 604–
611; 100, p. 488–
521]. In the retrospective group, on average, FFP was transf used in volumes of 1650.17±384.83 ($p>0.05$) on the first da y, on the second day 950.12±150.20 ($p>0.05$) until complete correction of DIC-
syndrome. Due to an organizational issue (lack of plasma or location of the blood volume at a distant distance, somet imes wait-and-
see tactics), plasma transfusion was delayed by 87.5±10.2 mi nutes in 37 (51.3%) patients, $p<0.05$.

In a retrospective group, 38 (52.7%) patients with MOB wer e administered up to 15 mg/kg body weight of tranexamic acid (Hemotran) before and during surgery, repeated every 6–
8 hours until complete hemostasis. However, 26 (36.1%) pati ents were administered this drug in an insufficient dose - 500 mg once (8-
10 mg/kg/body weight) per day, and in 8 (11.1%) ($p<0. 05$) were not used at all due to lack. When discussing blood transfusion, it should be noted that transfusion of erythrocyt e-
containing blood components helps restore globular volume in MOB [118; 112, p. 323–
333]. In the study group, transfusion of donor red blood cel ls was performed in all 72 patients with MOB, but only 3 4 (47.2%) patients were transfused in a timely manner and in sufficient volume, and 38 (52.7%) this procedure was per formed with a delay of 1 to 5 hours and in insufficient q uantities. 1 (1.3%) woman in labor had a post-
transfusion complication and required resuscitation. In a prosp ective group, i.e. when performing an optimized version of t

otal hysterectomy, the amount of saline sodium chloride and HES was sharply reduced (by 1900.0 ml) by 1200.0 due to the side effects of these drugs. The volume of administered crystalloid solutions in the prospective group averaged 2450.0 ± 250.0 ml, ranging from 2000.0 to 4500.0 ml; a 6% solution of hydroxyethyl starch (refortan, hecatone or volustin) was administered on average 1200.0 ± 100.0 ml. The amount of administered liquid solution of sodium chloride and hydroxyethyl starch was 2–2.5 times more than prescribed.

In a prospective group of 78 patients, 66 (84.6%) received timely replacement with fresh frozen plasma at a dose of 20 ml/kg per body weight, on average 1420.0±80.0 ml. Only in 12 (15.3%) plasma transfusion was started with a delay of 32.5 ± 4.5 minutes ($p>0.02$) due to the lack of plasma in the maternity unit. A complete, timely and sufficient volume of red blood cell transfusion was performed in 65 (83.3%) patients, and in 13 (16.6%) this procedure was performed with a delay of up to 2 hours and in insufficient quantities.

Before and during surgery, antifibrinolytics tranexamic acid (Hemotran) were used, and full infusion therapy was administered with the introduction of 15–20 mg/kg per body weight, repeated every 6–8 hours, until complete hemostasis in 63 (80.7%) patients with MOB in prospective group. Tranexamic acid is a synthetic amino acid that competitively inhibits plasminogen; its effectiveness is 15–20 times higher than aminocaproic acid [54, p. 34–103; 115, p. 303–316.]. The action of tranexamic acid is due to the inhibition of lysine-binding sites of plasminogen, due to which this proenzyme is not converted into plasmin and cannot contact fibrin. Also, tranexamic acid suppresses the production of kinins and other active peptides, which provides the antiallergic and anti-inflammatory effect of this drug [115, p. 303–316]. When using tranexamic acid, there was no increase in the risk of thrombotic complications, however, in 12 (15.3%) patients, this drug was administered in an insufficient dose

(10–
12 mg/kg per body weight) due to its insufficient amount a t the time of drug administration.

In a prospective group, patients were administered 250–300 thousand proteolysis inhibitors, mainly aprotinin (contrical), followed by a halving of the dose until complete hemostas is. The use of aprotinin for the treatment of MOB in our study group gave a positive result, suppressing the fibrinolyti c activity of the blood due to the inhibitory effect of fibri nolysis, improved the clinical and laboratory manifestations an d thereby prevented the progression of intravascular coagulatio n [45, p. 23–31; 81, p. 216–246; 111, p. 83–93].

In this group, 13 (7.3%) patients were administered Octaplex at an average rate of 1 ml/kg per body weight, depending on INR values, with the development of severe hypocoagula tion, refractory to therapy carried out with FFP and fibrinoly sis inhibitors [31, With. 186–194; 45, p. 23–31; 81, p. 216–246]. After the introduction of Octaplex, these patients showe d a significant decrease in the rate and volume of bleeding, which made it possible to perform a total hysterectomy wi th ligation of the internal iliac artery for MOB.

In the postoperative period, 7 (9.2%) patients out of 67 survivors in the retrospective group were transferred to the nephrology center due to acute renal failure for a therapeutic course of hemodialysis, and 5 (6.4%) patients were transferred from the prospective group. In the postoperative period, 26 (36.1%) postpartum women in the retrospective group were discharged home on days 9-10, 29 (40.2%) on days 12-14. One patient (1.3%) after rerelaparotomy was transferred to the gynecological department for further treatment and discharged home on the 21st day. In the retrospective group, the number of average bed days was 9.1±1.2 days. Only 4 (5.5%) postpartum women who experienced early neonatal death of newborns were discharged home on a signature on the 5-6th day after surgery. All of them were recommended for further rehabilitation in primary care.

In the postoperative period in the prospective group, 16 (20.5%) postpartum women were discharged on the 6th day, 51

(65.3%) - on the 7-9th and 6 (7.6%) - on the 10-12th day, $p<0.05$. In the prospective group, the number of average bed days was 7.3±0.9 days, i.e. 1.8±0.4 days ($p<0.05$) less.

According to the calculations of the accountant of the perinatal center in Urgench, the average cost per operation in the retrospective group was 846,565 thousand soums, in the prospective group - 624,330 thousand soums, i.e. the difference was 222,235 thousand soums. Daily expenses for the treatment of one patient in the retrospective group amounted to 1,284,520 soums, in the prospective group 963,390 soums. The total cost of treatment for one patient averaged 11,689,132 soums, and for the prospective group - 8,766,849 soums, the difference was 2,922,283 soums. Thus, 25% economic efficiency of our method has been proven.

Massive blood loss led to the development of hemorrhagic shock and disseminated intravascular coagulation syndrome, as well as severe multiple organ failure and 5 (62.5%) cases of maternal mortality in the retrospective group.

In the retrospective group, maternal mortality was 2.8 times higher, which in two cases was explained by the patient's very late admission and major bleeding. Timely diagnosis, coordinated work of the resuscitation and surgical teams, complex intensive treatment and properly developed obstetric tactics help reduce MS from MAC [37, p. 5–9; 39, p. 8–12]. The advantage of hysterectomy for massive obstetric bleeding, especially atonic, is the rapid elimination of the source of bleeding (Aylamazyan, Repina, Kuzminykh, 2018) [8, p. 3–11].

The conducted scientific study showed that the developed and implemented optimized technique for subtotal and total hysterectomy for massive obstetric hemorrhage improved the outcome of the operation, reduced interoperative blood loss, and, thanks to the improvement of conservative therapy, reduced maternal mortality by 2.8 times in the perinatal center of Urgench.

CONCLUSIONS

As a result of the study of the Doctor of Philosophy (PhD) dissertation on the topic: “Optimization of the technique of subtotal and total hysterectomy for massive obstetric hemorrhage,” the following conclusions were formulated:

1. The incidence of massive obstetric hemorrhage in relation to the total number of births is 0.3%, i.e. 1 case in 317 births. Severe preeclampsia, severe premature abruption of a normally located placenta, placenta previa, antenatal fetal death and moderate anemia during pregnancy were the main reasons contributing to the development of massive obstetric hemorrhage in the prospective group. Such serious complications and somatic diseases accounted for 2.43 cases for each pregnant woman.

2. The main reasons contributing to the development of massive obstetric hemorrhage during childbirth were cesarean section - in 53 (67.9%) cases, performed for severe premature abruption of a normally located placenta, central placenta previa, severe preeclampsia, amniotic fluid embolism and complete uterine rupture, where the total amount of blood loss averaged 2250.45±200.0 ml ($p<0.05$) and uterine atony after vaginal delivery in 25 (32.0%) cases, where the amount of blood lost in the average was 1880.0±80.0 ml ($p>0.05$).

3. A comparative analysis of the effectiveness of subtotal and total hysterectomy in the classical version in a retrospective group showed that interoperative blood loss averaged 860±110.0 ml ($p>0.05$) and the duration of the operation was 93.0±5.0 minutes ($p>0.03$). With the optimized version of the operation of subtotal and total hysterectomy in the study group, interoperative blood loss decreased by more than 340.0±50.0 ml and averaged 520±50.0 ml ($p>0.05$); the duration of the operation was reduced by 22±4.0 minutes. ($p>0.03$) and averaged 71.0±3.0 minutes.

4. In all postpartum women with massive obstetric hemorrhage (in the retro- and prospective group), a significant decrease in plasma and cellular blood coagulation factors was revealed due to moderate anemia, bleeding, hemorrhagic shock and the addition of generalized coagulopathic bleeding. The identified changes in blood coagulation parameters over time have become one of the main diagnostic laboratory criteria that

determine the severity of massive obstetric hemorrhage and disseminated intravascular coagulation syndrome.

5. The developed and implemented optimized technique of total and subtotal hysterectomy for massive obstetric hemorrhage helped to reduce interoperative blood loss, reduce the duration of the operation, thereby improving the outcome of the operation and thereby reducing maternal mortality from 5 (6.9%) cases to 2 (2. 5%), i.e. 2.8 times.

PRACTICAL RECOMMENDATIONS

1. Patients with somatic diseases of the cardiovascular system, such as moderate iron deficiency anemia, chronic arterial hypertension, varicose veins of the lower extremities, endocrine pathology with metabolic disorders, body mass index more than 31 or less than 18, morbid I- II degree, disease of the gastrointestinal tract with peptic ulcer, chronic hepatitis B, C and urinary tract infection before and during pregnancy, should be classified as a possible risk of developing massive obstetric hemorrhage during pregnancy and childbirth.

2. Pregnant and postpartum women with severe preeclampsia, severe premature placental abruption, central placenta previa, antenatal fetal death, amniotic fluid embolism and complete uterine rupture should be classified as having immediate or underlying causes contributing to the development of massive obstetric hemorrhage.

3. In case of postpartum hemorrhage due to uterine atony, continue conservative hemostatic therapy up to a volume of 21±0.5 ml/kg per body weight; if bleeding continues, organ-preserving surgical hemostasis should be started “hemostatic sutures on the uterus along

B-Lynch", "ligation of three great vessels", if there is no effect from these methods (within 25 minutes) or an increase in the amount of blood loss in a volume of more than 27±3.0 ml/kg per body weight, start an optimized version of the operation of total and subtotal hysterectomy .

4. In all postpartum women with massive obstetric hemorrhage, it is recommended to determine clinical and biochemical laboratory parameters of plasma and cellular blood

coagulation factors over time, which is a determining criterion for the severity of massive obstetric hemorrhage.

5. In case of massive obstetric hemorrhage, to reduce interoperative blood loss, reduce the duration of the operation, improve the outcome of the operation and reduce maternal mortality, we recommend using the optimized version of the total and subtotal hysterectomy technique that we have developed and implemented.

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