

SURGICAL TACTICS FOR MASSIVE OBSTETRIC BLEEDING

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Abstract. *This article describes in detail the technique of performing total hysterectomy and its optimized version. Thanks to the optimized version of total hysterectomy, interoperative blood loss decreased by an average of 340.0 ± 60.0 ml, the operation time was reduced by 32.0 ± 4.0 minutes, thereby improving the outcome of the operation in 78 patients with massive obstetric bleeding.*

Key words: *massive obstetric bleeding, placental abruption, uterine atony, total hysterectomy.*

Introduction. According to the World Health Organization in 2017, bleeding accounted for 30.0% of the causes of maternal mortality, and in Uzbekistan for 2016-2017 - 22.3% [1,3,4,6].

The main causes of bleeding are violations of the processes of separation of the placenta and discharge of the placenta, detachment of a normally located placenta, placenta previa, sepsis, obstetric embolism, traumatic injuries of the birth canal, rupture of the uterus, decreased contractile activity of the myometrium (atony of the uterus) and disorders in the hemocoagulation system, most of them accompanied by massive obstetric bleeding [2,5,7].

In our republic, according to the National Committee for Confidential Investigation of Maternal Mortality (MS) cases, in case of massive blood loss, inadequate treatment was carried out and in 34% of cases it was associated with a delay in the onset of surgical hemostasis and technical difficulties during hysterectomy [4].

Purpose of the study: development of an optimized version of total hysterectomy and infusion therapy for massive obstetric bleeding to improve the outcome of the operation.

Material and methods. Analysis and evaluation of the results of treatment of massive obstetric bleeding in a comparative aspect was carried out in the retrospective and prospective groups from 2014 to 2019. Collection of materials on the basis of the perinatal center in Urgench and in 3 maternity complexes of the Khorezm region.

The retrospective group included 72 pregnant women who underwent massive obstetric bleeding and total hysterectomy by the traditional method during childbirth and in the early postpartum period, in the period from 2014 to 2016.

The prospective group consisted of 78 pregnant women who also had massive obstetric bleeding, and in this group the optimized version of the total hysterectomy operation was used. In this group, scientific research was carried out in the period from 2017 to 2019.

Discussion of the results obtained.

In the retrospective group, within 3 years, from 2014 to 2016, 22896 births occurred, and of them 1419 (6.2%) cases were accompanied by pathological blood loss. The frequency of massive obstetric bleeding more than 1500.0 ml of all pathological bleeding was 72 (5.0%) cases, and 0.3% of all deliveries. Of the 8 cases of maternal mortality during this period, committed in the above clinics, directly related to massive obstetric bleeding, there were 5 (62.5%) cases.

In the prospective group, the number of deliveries in the above-mentioned maternity complexes increased by 2618 deliveries, also in three years compared with the retrospective group, and amounted to 25,510 cases. In the prospective group, pathological bleeding was observed by 0.4%, more than in the retrospective group - in 1,683 (6.6%) cases. However, thanks to timely therapy of bleeding, developing and adhering to protocols for the management of pregnant women and women in labor with a high risk of bleeding, we were able to reduce the frequency of massive obstetric bleeding (MAC) by 1.3 times than in retrospective, and it was 78 (4.6%) cases, but in relation to the total number of births 0.3% ($p < 0.05$).

Thanks to the improved technique of total hysterectomy developed by us, during the operation it was possible to reduce the amount of interoperative blood loss, improve the outcome of the operation, and also against the background of the correction of the quantitative and qualitative composition of infusion transfusion therapy, it was possible to reduce the incidence of maternal mortality by 1.9 times, from 5 (62.5%) cases in retrospective up to 3 (42.8%) ($p < 0.05$) in the prospective group are directly associated with massive obstetric bleeding.

Of 72 patients with massive obstetric bleeding in the retrospective group, 64 (88.8%) underwent total hysterectomy, and 8 (11.1%) had subtotal hysterectomy. Those who underwent subtotal hysterectomy first underwent organ-preserving surgeries, such as "ligation of the three great vessels" in 5 (6.9%) cases and "hemostatic sutures on the B-Lynch's uterus" in 3 (4.1%) cases. However, due to the lack of clinical effect for more than 30 minutes, the scope of the operation was expanded to subtotal hysterectomy in all 8 patients. During the operation of total hysterectomy, in 41 (64.0%) cases, the internal iliac artery was ligated on both sides against the background of the generalized form of DIC syndrome.

Indications for total hysterectomy in the retrospective group were: abruption of a normally located placenta of severe degree - 31 (48.4%) cases with manifestations of pronounced imbibition with DIC syndrome, early postpartum atonic bleeding - 24 (37.5%), central placenta previa - 6 (9.3%), amniotic fluid embolism - 2 (3.1%) and uterine rupture - 1 (1.5%). During the caesarean section, the scope of the operation to total hysterectomy was expanded in 42 (65.6%) cases, the causes were impaired contractility and placental accreta. It should be noted that the amount of blood loss in all these patients during the caesarean section was more than 25 ml / kg /

body weight, and in most cases it was accompanied by the addition of a generic form of DIC syndrome.

The technique of performing the operation of total hysterectomy in the classic version of the retrospective group is shown in Fig. 1. Around the world, total hysterectomy is performed in the same way: laparotomy, revision of the pelvic organs, the uterus is fixed with Muzo forceps and is removed from the abdominal cavity through the wound. A mirror is inserted into the abdominal cavity and placed in the suprapubic region. The abdominal cavity is fenced off with napkins, then 2 long strong Kocher clips are applied to the wide and round ligaments along the edge of the uterus. Then two Kocher clips are applied to the round ligament and the funnel-pelvic ligament. Both ligaments are transected and vicryl hemostatic sutures are placed on the distal ends instead of clamps. The vesicouterine ligament is transected, the bladder is separated from the uterus to the anterior wall of the vagina. The uterine arteries are clamped at the level of the internal os of the cervix, on both sides by applying two Kocher forceps.



Figure: 1. Technique of total hysterectomy traditional method (From our own practice 2017) (Interoperation 2019)



Fig.2. Optimized overlay option "hemostatic suture"

The first - the 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 to the bosom of the sacro-uterine ligaments, separating the rectum from them from the sides, Mikulich's clamps are applied to the ligaments, on top of which the ligaments are cut with scissors. After crossing the ligaments on both sides, the uterus is easily pulled above the pubic joint. The transected sacro-uterine ligaments are tied with vicryl sutures. The front wall of the vagina is captured with a Kocher clamp, opened with scissors in the transverse direction, the vagina is cut off circularly and peritonization is performed.

On average, interoperative blood loss is associated with surgical intervention, i.e. in the classic version of the retrospective group with total hysterectomy it was 860 ± 110.0 ml ($p > 0.05$) and the duration of the operation was on average 103.0 ± 5.0 min ($p > 0.03$). In this group,

the qualitative and quantitative composition of infusion therapy was as follows: saline sodium chloride solution averaged 3350.50 ± 1050.40 , the volume of hydroxyethyl starch (HES) solution 6: hecatone up to 800.0 ± 200.0 ; refortan 400.0 ± 100.0 ; rheosorbilact 400.0 ± 100.0 ; FFP was transfused in volumes of 1450.20 ± 150.0 ; erm of mass 1260.0 ± 80.0 ($p > 0.05$). The dose of tranexamic acid (hemotran) administered was up to 8-10 mg / kg of body weight, repeating every 6-8 hours until complete hemostasis, however, in 43 (59.7%) cases, the efficacy was insufficient, therefore the dose of this drug in the prospective group was increased up to 15 mg / kg body weight.

In the prospective group, all 78 (100%) patients with MAC underwent surgical hemostasis using an optimized version of total hysterectomy (Fig. 3 and 4). The optimized version of total hysterectomy in 41 (52.5%) cases was accompanied by ligation of the internal iliac artery, due to severe disseminated intravascular coagulation, in the stage of hypocoagulation. During the operation of extirpation of the uterus, in 6 (7.6%) cases, both appendages were removed due to hemorrhage and ovarian necrosis and in 11 (14.1%) cases of some of the appendages.

The technique of the total hysterectomy operation of the optimized version is shown in Figs. 3 and 4.

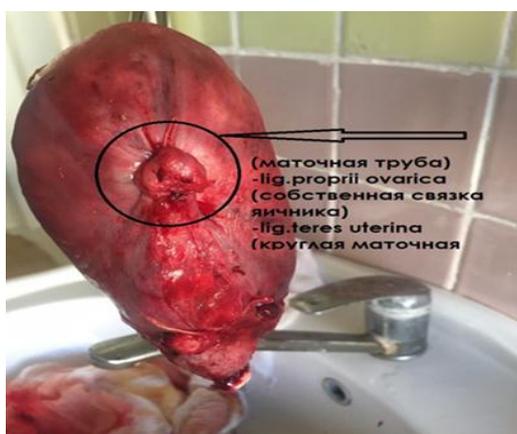


Fig 3. (From my own practice 2019)



Fig 4. (From our own practice 2020)

An optimized version of total hysterectomy for massive obstetric bleeding, characterized in that two clamps are applied along the ribs of the uterus at a distance of 1.5 cm from the body of the uterus, capturing all the appendages (fallopian tubes, own ovarian ligament, round ligament). The clamps close to the uterus are applied at a distance of 1.5 cm from the body of the uterus, and the second clamp at a distance of 0.5 cm from the first, between the clamps they dissect and impose one "hemostatic suture" on all three formations, first in the distal regions, then in the proximal and remove the hemostatic clamps (Figure 3).

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 uterine vessels

(uterine arteries), 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 applied to the ascending part of the uterine vessels (uterine arteries) by 0.5 cm higher and up to 1.0 cm deeper from the ascending clamp, then the clamps are removed (Fig. 4). Thus, "hemostatic sutures" are applied to the proximal and distal parts of the uterus and a.uterinae.

With the optimized version of the total hysterectomy operation, due to the removal of all clamps from the operating field, after the application of "hemostatic sutures", the visualization of the operating field, technical access improved, tissue trauma decreased, and all this contributed to an improvement in the performance of the operation technique and its quality. If the amount of interoperative blood loss in the classical variant of total hysterectomy averaged 860 ± 110.0 ml ($p > 0.05$), then with the optimized variant it 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 min ($p > 0.03$) than with the classic variant of total hysterectomy and averaged 71.0 ± 3.0 min ($p > 0.03$).

In this prospective group, the amount of sodium chloride administration was reduced by 1.4 times than in the retrospective group, and on average to 2250.50 ± 200.0 ; the volume of plasma-substituting drugs of reosorbilact was doubled to 800.0 ± 100.0 ; heloplasma and gelofusin were added to the treatment, 400.0 ml each; the number of FFPs averaged 1550.50 ± 200.0 ; erm of mass 1150.0 ± 100.0 ($p > 0.05$). The dose of tranexamic acid (hemotran) administered was increased to 15 mg / kg body weight and the effect of administration was observed after the first dose was administered 15 minutes later in all 78 (100%) patients. Tranexamic acid (hemotran) is a synthetic amino acid that competitively inhibits plasminogen; its efficiency is 15-20 times higher than aminocaproic acid (8). The action of tranexamic acid is carried out by inhibiting the lysine-binding sites of plasminogen, due to which this proenzyme does not convert to plasmin and cannot bind to fibrin. Also, tranexamic acid (hemotran) inhibits the production of kinins and other active peptides, which provides antiallergic and anti-inflammatory effect of this drug (9).

Conclusion. Thus, thanks to the optimized technique of total hysterectomy in the retrospective group, it was possible to reduce the amount of interoperative blood loss by more than $340.0 \text{ ml} \pm 50.0 \text{ ml}$ ($p < 0.05$), reduce the duration of the operation by 32 ± 4.0 min ($p > 0.03$), improving the outcome of the operation managed to reduce the incidence of maternal mortality 1.9 times than in the retrospective group. An important role in this was played by the correction of infusion therapy and an increase in the dose of tranexamic acid (hemotran) to 15 mg / kg of body weight in the study group.

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