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Optimization of Organ-Saving Surgical Treatment of Uterine Fibroid During Pregnancy

Khusankhodzhaeva Malika Tursunkhodzhaevna, Azimova Feruza Abdimakhmudovna, Ismailova Feruza Tukhtaevna

Republican Research Center for Emergency Medicine, Uzbekistan

Abstract As a result of conservative myomectomy, it was possible to maintain the desired pregnancy in 24 out of 28 women. Pregnancy was terminated in 4 patients 12 - 22 days after surgery at 11 - 25 weeks. There were no serious complications during the operation or in the postoperative period. All 24 women with continued pregnancy carried it to full term, and all of them underwent surgical delivery.

Keywords Uterus, Pregnancy, Myomectomy

1. Introduction

In choosing the tactics of surgical treatment of MM among pregnant women, perhaps the most important thing is to introduce objective arguments on the most discussed issues: what is better, to terminate the pregnancy artificially or to perform a conservative myomectomy after some time and after that to allow the woman to become pregnant. The second option may be to perform a conservative myomectomy (CM) during pregnancy with a clinical focus on its preservation; and finally, the third is to use one or another tactic depending on the pathology model [5,6]. However, it requires the creation of comprehensively considered models of pathology, coordination and consensus on their content among leading domestic and foreign experts. Otherwise, the whole problem, as before, will be outside the protocol clinical strategy, which is the basis for the formation of the medical State Standard.

Purpose of the research. Research the feasibility, effectiveness, and safety of performing CM in order to maintain the desired pregnancy.

2. Material and Methods of Survey

We observed 779 patients with uterine fibroids from 2001 to 2007. Of this number, 86 (11.0%) women were pregnant at 4-32 weeks. In this group, special attention was paid to 28 (3.6%) pregnant women with a gestation period of 6 to 26 weeks. In all of them, the pregnancy was desired, and this criterion served as the main factor in the formation of this sample. In 18 out of 28, pregnancy occurred after long-term treatment of primary infertility. 22 out of 28 women knew about the presence of uterine fibroids before pregnancy; in the rest, it was first detected during this pregnancy. The age of pregnant women ranged from 24 to 32 years; the average was 26.7±2.1. All women were registered at the antenatal clinic and did not have severe extragenital pathology. There were 21 out of 28 primiparous, including multiparous, 7 multiparous, and no multiparous. All 28 patients were admitted with intramural and intramural-submucous myomatous nodes. Moreover, their size ranged from 4.0 cm to 18.0 cm in diameter, and the number - from 1 to 4. Pregnant women with subserous nodes on the stalk, small single asymptomatic fibroids, as well as with small-nodular diffuse lesions of the myometrium, as well as those admitted with irreversible forms of termination of pregnancy were not included in the development.

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3. Results of Research

Among all 28 women, growth of fibroids was noted during this pregnancy. However, in 11 out of 28 we characterized it as rapid growth for the following reasons. Of these 11 women, 8 knew about the presence of fibroids before pregnancy, and in 3 they were diagnosed for the first time during this pregnancy. The growth of fibroids, exceeding its original (before pregnancy) size by 2 times was noted in 4 of 8 patients, 3-4 times - in 2, 5 times - in 2. In 3 women with newly diagnosed fibroids during pregnancy, tumor growth, registered in the antenatal clinic was: 2 times - in 2, 3 times - in 1. At the same time, only 2 out of 11 showed growth of nodes with deformation of the uterine cavity. Nodes were located along the anterior wall and in the fundus of the uterine body in 7 out of 11, along the posterior wall - in 2, along the posterior and anterior wall of the uterine body - in 2 out of 11.

Malnutrition of myomatous nodes, registered clinically in 6 out of 28 patients, was verified by histological studies in all episodes without exception. In 5 out of 6 patients, the fibroid was mononodular, large in size (from 6 to 18 cm), in all of them it lay deep, affecting the vascular layer of the myometrium. In 1 out of 6, during a 9-week pregnancy, the size of the tumor in the fundus of the uterus reached 18 cm in diameter, exceeding the size initially established during pregnancy by 5 times. During the operation, the perimeter in the area of the outer pole of the tumor was with inflammatory changes and covered with a thin fibrin coating, fused to the lower pole of the greater omentum. In 5 others, during pregnancy of 15 - 26 weeks, rapid growth of a mononodular tumor was also noted, 3 and 4 times compared with the established size in the early stages of this pregnancy. During the operation, perimetry over the nodes in 3 of these 5 was cyanotic, but without fibrin plaque; obvious areas of softening, areas of hemorrhage, and swelling of the myomatous node were noted. In none of the 6 cases were their purulent complications of malnutrition of the myomatous nodes. In 4 of 6 episodes, myomatous nodes were located in the fundus and body along the anterior wall of the uterus, in 1 in the area of the uterine tube angle on the right, in 1 in the body of the uterus along the posterior wall. During the examination, in all cases there was a moderately pronounced leukocytosis up to 11.0 × 109 ml, noticeable irritation in the leukocyte formula, subfibrility, unevenness of echo density to echo-negative foci in myomatous nodes on ultrasound. In 5 out of 6 cases, myomatous nodes were palpated, demonstrating deformation of the surface of the pregnant uterus, and the most indicative symptom was local pain in the area where the myomatous node was located.

As a result of the surgical treatment, it was possible to maintain pregnancy to full term in 24 out of 28 women, and in 4 (14.3%) patients (2 with malnutrition of fibroids and 2 with a symptom of rapid growth) it terminated spontaneously 12 - 22 days after the procedure. CM in terms of 11 - 25 weeks. It should be noted that among these 4 women, the symptoms of threatened miscarriage gradually disappeared in the first 3-7 days after the operation, and they were discharged from the department under outpatient monitoring. However, later, at the above-mentioned time frame, for reasons unknown to us, signs of a threat of interruption developed again, which could not be stopped. All 4 patients were admitted to our clinic again due to spontaneous abortion in progress. The miscarriage occurred without signs of disruption of the integrity of the fresh suture on the uterus (clinical and ultrasound control). All of them underwent an instrumental examination of the uterine cavity after spontaneous abortion under ultrasound control, during which in all patients the suture area on the uterus was visualized without doubt about its consistency. The post-abortion period for all proceeded without significant complications.

In the remaining 24 patients, the dynamics of lysis of symptoms of threatened miscarriage (in the immediate postoperative period) were clinically no different from that observed among women with a terminated pregnancy. The level of blood loss, duration of intervention, and the nature of anesthesia (all women were operated on under endotracheal anesthesia) also did not differ significantly. At the same time, factors such as the size and number of myomatous nodes, the depth of the tumor in the uterine wall, as well as its proximity to the placenta, significantly distinguished the group of operated pregnant women with an interrupted pregnancy.

In 25 of 28 women, the operation began with a Pfannenstiel incision, and 3 – with a median laparotomy. Conservative myomectomy was performed by transverse section of the myometrium with electrocautery in the projection of the largest convexity of the tumor. In this case, not only the myometrium was dissected, but also the superficial part of the tumor, which was grasped with bullet forceps for external traction. Intracapsular enucleation of myomatous nodes was carefully, bluntly and sharply performed using bipolar coagulation hemostasis. They tried to suture the resulting niche in one layer, using only interrupted co-opting sutures according to Piterburg and our own methods, depending on the depth of the niche and the nature of the "excess" myometrial tissue that arose in some cases. Resection of these "excesses" was never performed. Long-lasting absorbable suture material (Vicryl, Dexon) was used on atraumatic needles. Intraoperative protection of gestation was carried out by administering antispasmodics (Baralgin, No-spa), intravenous infusion of 25.0%-20.0 magnesium sulfate against the background of basic therapy with tocolytics (Ginipral). At the initial stages of the operation, everyone without exception was given 1.0 g intravenously. Ceftriaxone prescription continued in the postoperative period. In one case out of 28, intraoperative plasma transfusion was performed; blood transfusion was not required in any case. The level of intraoperative blood loss depended on the mass of the removed myomatous nodes and the depth of their location, ranging from 150.0 to 600.0 ml., on average 340.0 ± 25.0 ml.

As our sample clinical material shows, the threat of miscarriage was the main symptom with which patients were admitted. The incidence of this syndrome among pregnant women with uterine fibroids varies significantly from 30 to 75% [3,4,5,6]. Probably, the frequency and severity of the threat of miscarriage is influenced by the location, size and number of myomatous nodes in the pregnant uterus. In our study, in a significant proportion of pregnant women (50%), the threat of miscarriage developed in the early stages of gestation. This was most clearly manifested in large (6-18 cm in diameter) myomatous nodes with intramural localization.

As noted in the results of our studies, among 4 women whose pregnancy was terminated 12-22 days after surgery, the symptoms of threatened miscarriage in the early postoperative period gradually disappeared, there were no visible complications, there was no bleeding, ultrasound showed no signs of abruption and expressed threat of interruption. However, their pregnancy was terminated within the above-mentioned period. According to our observations, the unfavorable outcome of pregnancy was influenced by: the depth of location, the number and size of myomatous nodes, as well as the rapid growth of the tumor with malnutrition.

It should be noted that the operation under the above conditions in the early stages of gestation (up to 10 weeks) probably also had a negative impact on the outcome of pregnancy. Most researchers recommend CM closer to 16 weeks, because during this period, the placenta has already formed and the level of progesterone increases significantly. However, in an urgent situation (malnutrition of fibroids), we were not always able to prolong pregnancy to the optimal period.

For obvious reasons, myomectomy during pregnancy differs from that in non-pregnant women. This dictates the need to comply with the following conditions during the operation: 1) minimal manipulation and surgical trauma to the pregnant uterus, as well as blood-saving techniques; 2) choosing a rational incision on the uterus; 3) selection of suture material that has strength, minimal allergenicity, and the ability to form a full-fledged scar [5]. In our opinion, a transverse section on the uterus is as relevant as when performing an operation among non-pregnant women - there is less blood loss. We used classic intrafascial myomectomy. The method of suturing the place of the myomatous node in one layer by applying an interrupted co-opting suture using long-absorbable suture material showed the development of a full-fledged postoperative scar during a subsequent cesarean section.

However, in some cases, when large myomatous nodes are removed, redundant myometrial flaps may be formed in the outer part of the uterus. It must not be resected under any circumstances. This consideration arose in the light of recent fundamental studies of myometrial morphology, which established minimal myocyte proliferation during pregnancy, and the growth of the pregnant uterus occurs mainly as a result of hypertrophy of myometrial cells. Therefore, resection of the resulting excess myometrium can significantly reduce its total mass, which will negatively affect the further course of pregnancy. This phenomenon was also noted in earlier studies, when after resection of “excess myometrium”, in the long term, the uterus significantly decreased in size, resembling an infantile organ [1,2]. At the same time, in such conditions, the submersible method of niche restoration can significantly deform the uterine cavity, cause an increase in pressure in the amnion cavity, rupture of the membranes, and abruption of the baby's place. Therefore, we proposed and implemented in our practice a method of restoring a niche with an overlap. In this case, one part of the excess flap is placed in the cavity of the niche, and the second is placed on top of it. Both flaps are sutured to the underlying tissues independently for better fixation, hemostasis and repair. Concerns due to the fact that one of the parts of the flap lies on the perimeter of the contralateral flap turned out to be in vain, because the subsequent course of pregnancy and the cesarean section showed completely normal retraction of the myometrial layers and reparation of the organ without significant deformation of the uterine wall.

4. Conclusions

Thus, as the practice of working with pregnant women with uterine fibroids has shown, there is a group of women among whom traditional conservative treatment to prolong the desired pregnancy is ineffective. Conducted researches demonstrate that CM, in such conditions, is quite effective in maintaining the desired pregnancy in most cases.

However, despite the very traumatic operation, there were no severe uncontrolled complications that could require urgent termination of pregnancy or hysterectomy. This is of utmost importance, since otherwise CM during pregnancy would lose all rational meaning.

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