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EFFECTIVENESS OF CONSERVATIVE MYOMECTOMY FOR PRESERVATION OF WOMEN'S REPRODUCTIVE CAPACITY

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ABSTRACT

Over the past few years, the population of Ukraine has faced a number of traumatic events. These events have a negative impact on the life of all Ukrainians and cause an increase in the frequency and severity of stress disorders. However, the biggest shock was the beginning of the active phase of the war in February 2022 in Ukraine. Women develop post-traumatic stress disorder (PTSD) under the influence of super-extreme situations. Amidst stress and PTSD, women experience changes in hormonal levels, immune status, and reproductive health issues.According to current data, about 30% of people exposed to traumatic events will have PTSD and need help. As for the female population, about 10% of adult women and 7% of girls are diagnosed with PTSD in their lifetime. It is also known that women experience PTSD almost 1.5 times more often than men. The prevalence of mental disorders is particularly high among internally displaced persons. In particular, in this cohort, 22% of men and 36% of women develop and are diagnosed with PTSD.According to WHO, the problem of uterine tumour processes is one of the most important areas of modern medicine. According to the International Classification of Diseases, 10th Revision (ICD-10: D25.0-D25.9), uterine leiomyoma (UGC), as one of the most common tumours of the female reproductive system, ranks among the top gynaecological diseases (GD) and is combined with extragenital (EGD) and genital (GC) pathologies. Studies conducted in recent years have shown that the incidence of LM has shown an upward trend in recent decades and is 35-45% in women over the age of 30. According to scientists, the true incidence of breast cancer is as high as 77%. The incidence of recurrent LM after reconstructive surgery ranges from 2.6 to 50 % of cases. Studies have shown that in 18.0% of patients of early reproductive age, after myomectomy, newly emerging myomatous nodes were detected. The analysis of the results allowed us to conclude that myoma recurrence is 1.2 times more likely to occur in a subgroup of patients with PTSD. It was also found that myoma recurrence occurs mainly in the first two years after surgery.

KEYWORDS

Female Reproductive System, Myoma, Hysteroscopy, PTSD, Laparoscopy

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Introduction.

Over the past few years, the population of Ukraine has faced a number of traumatic events. These events have a negative impact on the life of all Ukrainians and cause an increase in the frequency and severity of stress disorders. However, the biggest shock was the beginning of the active phase of the war in February 2022 in Ukraine. Women develop post-traumatic stress disorder (PTSD) under the influence of super-extreme situations. Amidst stress and PTSD, women experience changes in hormonal levels, immune status, and reproductive health issues.

According to current data, about 30% of people exposed to traumatic events will have PTSD and need help. As for the female population, about 10% of adult women and 7% of girls are diagnosed with PTSD in their lifetime. It is also known that women experience PTSD almost 1.5 times more often than men. The prevalence of mental disorders is particularly high among internally displaced persons. In particular, in this cohort, 22% of men and 36% of women develop and are diagnosed with PTSD.

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Objective of the study: to identify and evaluate the effectiveness of various reconstructive organ-preserving surgical approaches in the treatment of leiomyomas with submucosal location and intramural location with a tendency to submucosal growth.

Materials and methods of the study

The study was conducted at the Department of Obstetrics, Gynaecology and Reproductive Sciences of the Shupyk National Health University of Ukraine. It is retrospective in design (2022-2023). The text of the article and the data entered into Microsoft Excel 2016 spreadsheets were reviewed and approved by the Ethics Committee of the Shupyk National Healthcare University of Ukraine (Protocol No. 3 of 03.04.2023).

A retrospective analysis of 390 case histories of patients of reproductive age with intramural, intramural-submucosal and submucosal node location and PTSD, operated on as part of conservative myomectomy using a standard endoscopic approach in gynaecological departments for the period from 2022 to 2023, was conducted. This cohort of women was divided into two groups: the first group included 150 women of reproductive age with PTSD who underwent laparoscopic and hysteroscopic surgery for conservative myomectomy. The second group consisted of 240 women of reproductive age with PTSD operated on by hysteroscopic access in the scope of conservative myomectomy. The results of myomectomy were determined depending on the use of surgical access - laparoscopic, hysteroscopic or mixed (Ls+Gs), on the location of leiomyomatous nodes and the onset of pregnancy. Based on the data of the retrospective study, a differentiated approach to organ-preserving surgical treatment of uterine leiomyoma in women of reproductive age with PTSD was proposed.

All patients received a consultation at the Department of Psychiatry, Psychotherapy and Medical Psychology of the P.L. Shupyk National Medical University of Ukraine.

The diagnosis was made by a psychiatrist in accordance with the Unified Clinical Protocol for Primary, Secondary (Specialised) and Tertiary (Highly Specialised) Medical Care. 'Reaction to severe stress and adaptation disorders. Post-traumatic stress disorder' [6]. Patients involved in the study received a questionnaire for self-assessment of the presence and level of stress. The PCL is a self-assessment scale based on DSM-IV criteria and contains 17 items - signs of PTSD [20, 27]. The PCL-C questionnaire (civilian version) was used for screening for PTSD, and the scores obtained are shown in the table.

Using clinical and anamnestic methods, the gynaecological, reproductive, somatic, surgical and infectious anamnesis of all women was studied in detail. Body weight, height and body mass index (BMI) were determined in all women. Depending on the value of BMI, all women were divided into constitutional physique: asthenic physique - BMI $\leq$ 18 kg/m2; normosthenic physique - 18 kg/m2 < BMI < 25 kg/m2; hypersthenic physique - BMI $\geq$ 25 kg/m2. All women were fully examined in accordance with the current clinical guidelines of the Ministry of Health.

All patients underwent examination with 2D and 3D transvaginal ultrasound on days 5-7 of the MC using a TOSHIBA APLIO MX ultrasound scanner (Japan) with a volumetric image function and directional Doppler with transabdominal and transvaginal convection sensors with a frequency of 4.0-7.0 MHz and 5.6-8.0 MHz. Spectral Doppler automatically obtained the maximum blood flow velocity (Vmax) in the uterine arteries, in the uterine veins, in the arteries and veins of the nodes, and the resistance index (IR) in the branches of the uterine arteries and in the arteries of the nodes. After colour mapping, determination of the number of colour pixels per 1 cm2 and 2D spectral Doppler, the three-dimensional reconstruction of the uterus was performed using the energy mapping function. The vascularisation index (VI), blood flow index (FI) and vascularisation-flow index (VFI) (perfusion index) were determined using the VOCALTM (Virtual Organ

Computer-aided AnaLysis) software, which were automatically calculated during the construction of histograms.

Morphological assessment of the sections was performed by hematoxylin and eosin staining and van Gieson's stain. Images were taken using an Olympus BX51 microscope with a DP70 digital camera (Olympus, Japan).

Statistical processing of the material was carried out using the Excel computer program and methods of analytical and variation statistics (A. P. Mintzer, 2010).

Results and Discussion

In a retrospective analysis of 390 case histories of patients of reproductive age, operated on in the scope of conservative myomectomy using the standard method of endoscopic access. It was found that in the first group of patients (N-150), 30.0% were operated on using a combination of laparoscopic and hysteroscopic access, 70.0% - hysteroscopic access. In the second group of patients (N-190), 100.0% were operated on using a hysteroscopic approach. Women in the second group were 1.29 times less likely to complain of heavy menstruation (46.2 vs. 59.8%, $p<0.01$). They were characterized by a lower average number of removed nodes by 1.99 times (2.03±0.05 vs. 4.03±0.24, $p<0.01$) and a smaller average diameter of the largest node by 1.57 times (5.99±0.09 vs. 9.42±0.23 cm, $p<0.01$). The diameter of the largest node ≤ 5 cm was 4.08 times more common among women operated by a combination of laparoscopy and hysteroscopy than among patients whose nodes were removed by hysteroscopic access (24.5 vs. 6.0%, $p<0.01$); diameter from 5 to 10 cm - 1.45 (74.4 vs. 51.3%, $p<0.01$). In the HS group, only 1.1% of patients had nodes >10 cm, while in the LS+HS group - 42.7%, $p<0.01$.

In women of the LS+GS group, nodes along the posterior wall of the uterus were most often found (64.8%), in the HS group - in the area of the uterine floor (80.3%). In general, according to the localization of leiomyomatous nodes in the HS group, there was an increase in the number of cases of nodes in all compartments of the uterus - in the anterior wall of the uterus by 1.53 times (69.2 vs. 45.1%; $p<0.01$), in the posterior wall - in 1.19 (64.8 vs. 76.9%; $p<0.02$), in the bottom - in 1.42 (80.3 vs. 56.4%; $p<0.01$), in the isthmus - in 3.47 (20.5 vs. 5.9%; $p<0.01$), other localizations - in 26.86 (18.8 vs. 0.7%; $p<0.01$). All women undergoing hysteroscopic surgery had submucosal fibroids, while among women undergoing combined (laparoscopic and hysteroscopic) surgery, they were found in 78.0% of cases, which is 1.28 times less frequent ($p<0.01$). Type 3 fibroids were registered in patients of the LS+HS group 2.65 times more often (100 vs. 37.7%; $p<0.01$); type 4 - in 1.99 (84.6 vs. 42.5%; $p<0.01$); type 5 - in 1.39 (50.4 vs. 36.3%; $p<0.01$). Intraoperative penetration into the uterine cavity during node curettage was observed during hysteroscopy in 2.6% of cases, and in combination of laparoscopy and hysteroscopy 5.92 times more often (15.4%). Despite the fact that the time of surgical intervention in the combined (LS+HS) access was 1.44 times longer than in the hysteroscopic one (95.4±8.9 vs. 66.2±11.7 min, $p<0.01$), the volume of operated uteruses in the LS+GS group was 2.61 times less than that in the HS group (325.1±9.5 vs. 848.1±31.5 cm3, $p<0.01$), and after surgery it did not differ significantly.

As expected, short-term surgical outcomes, such as intraoperative blood loss and hospital stay, were lower in the second group compared to the first group - 109.8±12.4 vs. 137.2±7.6 ml ($p<0.01$) and 5.5±0.8 days vs. 6.8±1.1 days ($p<0.01$), respectively.

Among the patients studied, the location of the vulvae was submucosal in 181 patients and in 209 patients there was a combination of intramural and submucosal nodes. When removing the combination of intramural and submucosal nodes, the combined (LS + HS) access was used 2.02 times more often than hysteroscopic access, respectively - 66.9 vs. 33.1% ($p<0.01$).

The average number of removed nodes with intramural-submucosal location was 3.49±0.14 and was 2.88 times higher in group I (1.21±0.04) ($p<0.01$) compared to 2.88 times higher in group II (2.50±0.10) ($p<0.01$). The average diameter of the largest excised node was also the largest in group I and amounted to 8.01±0.17 cm, in group II it (5.39±0.19 cm) was 1.49 times smaller ($p<0.01$).

In group II, patients with nodule sizes ≤ 5 cm (57.0%) predominated, and in group I (72.7%) - with nodes from 5 to 10 cm. Nodes with a diameter of more than 10 cm were operated on in 24.9% of group I. In women, they were most often localized with a combination of intramural and submural nodes - along the posterior wall (81.8%) and in the bottom (80.9%) of the uterus. The volume of the uterus, as expected, was the largest in group I (575.6±25.5 cm3) and exceeded that in group II (367.3±25.6 cm3) by 3.79 times ($p<0.01$). After the surgery, the size of the uterus in the studied groups did not differ significantly. The onset of pregnancy

within a year after surgery occurred most often in group II - in 48.8% of women; and in group I it occurred less often - respectively, by 1.47 (20 (33.3%), $p<0.05$) times.

A total of 38.46% (150/390) of women became pregnant within a year after myomectomy. Pregnancy occurred in group II on average in 9.56±0.30 months, while in group PI pregnancy did not occur within a year after myomectomy. Groups I and II significantly differed in the average number of leiomyomatous nodes per woman by 1.29 times (2.24±0.10 vs. 2.88±0.18, $p<0.01$). The average diameter of the largest node in women who became pregnant was 1.35 times smaller (5.76±0.16 vs. 7.80±0.15 cm, $p<0.01$). Women in group II were distinguished by a 3.54-fold higher proportion of women with nodes with a diameter of the largest node ≤ 5 cm (34.0 vs. 9.6%, $p<0.01$); among those who did not become pregnant, the largest node was more common with a diameter of 5-10 cm (73.3 vs. 58.0%, $p<0.01$). Among women who became pregnant, myomatous nodes were most often located along the posterior wall of the uterus (74.7%), and among those who did not become pregnant - in the uterine floor (71.3%). In the group of patients who did not become pregnant after myomectomy, the localization of nodes in the uterine fundus was 1.39 times more common and in the isthmus region - 2.51 times more common ($p<0.01$).

Of the 150 women in group II who became pregnant after myomectomy, 15 were lost to follow-up. Therefore, the analysis of the course of pregnancy after myomectomy was performed in 135 women in labor, including 96 women in group II and 39 in group I. During pregnancy, anemia occurred in 44.4% of women, and its distribution in the groups was homogeneous. Also, one of the most common complications was the threat of pregnancy termination, which occurred in 43.0% of cases, while the threat of premature birth was 24.4%. In one in five subjects (21.5%), pregnancy occurred against the background of placental dysfunction. Fetal growth retardation was observed in 8.9% of pregnant women.

A threatening complication of pregnancy was uterine scar failure, which accounted for 24.4% of cases. Clinical signs of scar failure in the form of epigastric discomfort, nausea, vomiting, pain in the lower uterine segment, localized tenderness on palpation in the scar area, and painful fetal movement were detected in 12.6% of pregnant women. Of these, scar failure was confirmed during cesarean section in 70.6% of women. At the same time, out of 69 pregnant women delivered by cesarean section, 18.8% had scar failure in the absence of clinical manifestations. Thus, in 52.0% of women with uterine scar failure confirmed at surgery, it was asymptomatic.

Conclusions

In 38.46% of patients after myomectomy, pregnancy occurs within a year. These women are significantly distinguished by a smaller number of leiomyomatous nodes in one woman by 1.29 times (2.24±0.10 vs. 2.88±0.18); a smaller average diameter of the largest node by 1.35 times (5.76±0.16 vs. 7.80±0.15 cm); 3.54 times higher proportion of people with nodes with a diameter of the largest node ≤ 5 cm (34.0 vs. 9.6%); most common location of nodes along the posterior wall of the uterus (74.7%). Among patients who do not become pregnant after myomectomy, the location of nodes in the uterine fundus is 1.39 times more common and in the isthmus area - 2.51 times more common ($p<0.01$); the largest node with a diameter of 5-10 cm is more common (73.3%, $p<0.01$). Pregnant women with a history of myomectomy are at high risk of developing anemia (44.4%), threatened abortion (43.0%), uterine scar failure (24.4%), and placental dysfunction (21.5%). In the case of cesarean delivery after myomectomy in the pelvis, adhesions are recorded in 40.7% of cases. It is recommended to determine the endometrial receptivity of all women with a history of conservative myomectomy for the purpose of pregnancy planning.

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