ASSESSING THE PROBABILITY OF FORMATION OF "NICHE" SYMPTOM

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Abstract. *With the increase in the frequency of cesarean sections, as well as with the improvement in the quality and spread of ultrasound diagnostics, the quality of uterine scar examination has steadily increased from year to year. In recent years, in the literature and at gynecological conferences of the highest level, more and more attention has been paid to such a concept as "niches" in the area of the cesarean section scar. The defect appears as a fluid-filled abnormality in the anterior wall of the uterus at the site of a previous cesarean section. The niche most often has the shape of a triangle, sometimes a "bag" until the scar becomes incompetent, when the entire thickness of the uterine wall has separated and the "niche" is covered by the vesicouterine fold.*

Key words: *"Niche" symptom, cesarean section, thinning of the myometrium, uterine, scar, ultrasound examination, hysteroscopy, binary logistic regression.*

Relevance. «Niche» syndrome is a thinning (defect) of the muscular layer of the uterus in the area of the scar after a cesarean section. Since myometrial cells are damaged during surgery, vessels and nerve endings, increasingly Quality issues are becoming increasingly important repair of the suture on the uterus after CS, as well as complications associated with violations of this process. One of these complications is local thinning of the myometrium with the formation scar niches, the symptoms of which appear in the late postoperative period. Cesarean section operation is included in surgical operation of moderate or severe level. According to information from various sources, complications after caesarean section surgery are 7-19.5%. These complications are explained by obstetric and extragenital pathologies. Thus, according to Russian authors, the frequency of endometritis after caesarean section is 10-20% and after spontaneous childbirth is 3-5%. According to the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists, endometritis develops in approximately 60% of women who undergo medically-directed caesarean section and 24% after elective caesarean section.

The most unpleasant and relatively frequent (up to 38%) intraoperative complications in caesarean section include pathological and massive bleeding. The average volume of blood loss during a planned caesarean section operation is 800 ml, in an emergency - 1000-1200 ml, the volume of blood loss in an extended operation in the form of a hysterectomy can reach 1500-3000 ml. Bleeding related to uterine contractile dysfunction (hypotonic, atonic) can be observed during surgery (21%) and during vaginal delivery (22%). According to some scientific articles, caesarean section, complicated by a lot of blood loss, contributes to the suppression of many protective mechanisms of the body and changes in immunological parameters. Therefore, when performing any surgical intervention on the uterus, obstetrician-gynecologists should try to reduce the amount

of blood loss, which affects the postoperative period and the general condition of the patient in the future.

The most common cause of uterine scar formation is cesarean section. Among the main factors in the formation of a niche are postoperative endometritis, complicated surgery (large blood loss, too much movement, urgency), and violation of the technique of suturing the uterus.

A distinctive feature of modern obstetrics is its focus on surgery. During the last decade, the frequency of caesarean section has increased by 25%-30% worldwide. Thus, caesarean section is performed in every fifth pregnant woman. "Niche" symptom is the appearance of an anexogenous cavity of 1 mm or more in the endometrium of the uterus.

Purpose of the study. Assessing the probability of formation of "niche" symptom.

Materials and methods of research. During the collection of anamneses, childhood diseases, the formation of menarche, living conditions were studied, the characteristics of the obstetric-gynecological and objective condition of each patient were analyzed. Particular attention was paid to the characteristics of the previous pregnancy, childbirth and their results for the mother and the fetus, as well as the changes that occurred after cesarean section. Research was performed on 30 women using Ultrasound, hysteroscopy and binary logistic regression.

Ultrasound was performed on 30 women using a Sonoscape-ay 1000 machine (South Korea) with a 3.5 MHz sensor. Attention was paid to the area of the scar, its thickness, signs of local thinning, layers of the uterus.

In our study, the probability of thinning of the myometrium with the formation of a "niche" in the area of the scar was evaluated by binary logistic regression (Nojinseva O.N. 2020, Akhmedov L.A. 2021, Manyakov R.R. et al. 2021). The probability of a scar having a "niche" ("shelf") was calculated according to the following formula (1):

$$P=1/(1+e^{-z}), (1)$$

where P is the probability of local thinning of the myometrium,

e is the base of the natural logarithm,

z – logit (function).

To find the logit, the regression equation was solved using formula (2):

$$Z=b_0+b_1 X_1+b_2 X_2+\cdots+b_x X_n, (2)$$

where b_0 is a constant,

b_1, b_2, b_x – regression coefficient,

X1, X2, X3 – value of independent variables.

The value of scar thickness was used as an independent variable (X1).

Evaluation of the probability of local thinning of the myometrium based on the thickness of the scar on ultrasound examination

The variables in Eq	Parameter estimation	standard error	p	odds ratio	95% confidence interval for the odds ratio	
					bottom	above
Myometrial thickness	-2,93	0,56	<0,001	0,053	0,018	0,16
Constanta	13,34	2,83	<0,001	622085,4		

Thus, the formula (3) for calculating the probability P of the presence of local thinning of the myometrium has the following form:

P = 1 / (1+2.72– (13.34 – 2.93*TR_ ultrasound)), (3)

where TR_ultrasound is the thickness of the scar according to the ultrasound result.

After entering the patient data and solving the equation, the probability of significant myometrial thinning is determined. If the value of P is less than 0.5, then it can be assumed that thinning does not occur (there is no possibility of a scar "niche"), otherwise it is assumed that local thinning occurs.

All women underwent transabdominal and transvaginal ultrasound with a Sonoscape-ay 1000 device (South Korea) with a 3.5 MHz frequency sensor. Uterus dimensions, topographic location, contours, endometrial and myometrial thickness and structure, echogenicity, scar area, and uterine cavity condition were evaluated.

The length, contours, structure of the walls of the cervix, the width and space of the cervical canal, and the thickness of the endocervix were also examined. At the same time, the size, outline and structure of the parenchyma of the ovaries, as well as the space of Douglas were evaluated.

Research results and discussion.

On average, the length of the uterus in women was 43.74±1.68 mm, the anterior-posterior dimension was 44.18±1.39 mm, and the width was 40.48±2.24 mm. Almost all women (83.3%) had flat uterine contours. The average thickness of the myometrium was 11.6±1.37 mm, changes in its composition were noted in 6.67%. The average thickness of the endometrium (ultrasound carried out on days 11-12 of menstruation) was 10.25±2.01 mm, hyperechoic in 60% of women, and echogenicity decreased in the rest. According to its structure, it was granular. The uterine cavity was enlarged in 23.3% of women.

When evaluating the scar area, changes were noted in 46.67% of the scar areas. Local changes, i.e. thinning, were clearly identified only in 26.7% of women.

The average size of the cervix was 23.4±1.45x15.8±0.78, x21.4±1.3 mm. The structure of the walls was the same. The cervical canal was not dilated and deformed in all women. Endocervical thickness was within normal limits.

The average size of ovaries was 32.2±1.84x19.64±2.65 mm. In 10% of women, their contours expanded, that is, the cyst changed. Parenchyma was not uniform in 26.7%. The average size of the dominant follicle was 16.2±1.66 mm, which was noted only in 43.3% of women. 23.3% of women had the largest follicles with an average size of 12.5±2.03 mm. In 33.3%, follicle maturation was not observed. Free fluid in Douglas cavity was not noted in any woman.
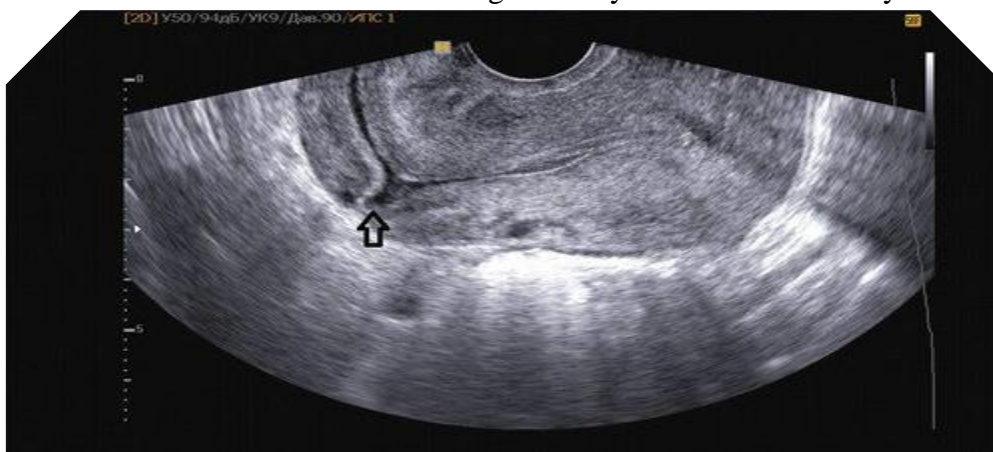

Figure 1. A "shelf" ("niche") symptom in ultrasound.

The formula:

$$P = 1 / (1+2.72-(13.34 - 2.93*TR\_ ultrasound))$$

was used to predict local thinning in the scar area. Here TR_ ultrasound is the thickness of the scar according to the ultrasound result. 18 of the women (60%) showed that local thinning in the area of the scar, i.e., a "shelf" symptom, may occur.

Table 1

Analysis of diagnoses made at ultrasound

Diagnosis	Abs (n=30)	%
Change in the scar area	14	46,67%
Local thinning in the scar area	8	26,7%
Chronic endometritis	12	40.0%
Chronic salpingo-oophoritis	5	16.67%
Ovarian cyst	5	16.67%
Uterine myoma	5	16.67%
Foreign body in the uterine cavity	19	63.3%
Varicose dilatation of small pelvic veins	3	10.0%
Chronic endocervicitis	7	23.33%
Polycystic change of ovaries	3	10.0%

In general, the following (table 3.7) diagnoses were made to women through

Hysteroscopy is performed on all women on the 9-10th day of the menstrual cycle under general anesthesia using special equipment (with the help of Karl Stors (Germany) apparatus and in accordance with the general rules) at the endogynecology department of the Perinatal Center of Samarkand region, as well as at the private clinic "Innova" under contract. was carried out. In aseptic conditions, the cervix is opened through speculums and clamped with the help of pullets. After the cervix is dilated, a hysteroscope is inserted. Cervical canal, uterine cavity, endometrial layer, endocervix, fallopian tubes were inspected. Special attention is paid to the scar after caesarean section.

According to the results of hysteroscopy, pathology of the uterine cavity and iodine body were detected in most women. In 22 of the studied women (73.3%), silk sutures were found inside the uterus and they were removed during hysteroscopy.

In addition, deformation of the scar area was observed in all studied women, local thinning of the scar, i.e. "niche" symptom was detected in 24 women (80%). According to its expression, these women can be divided into two groups. That is, women with clearly expressed signs of "niche" symptoms (8-33.3%) and women with signs of local thinning but not strongly expressed (16-67.7%).

In addition, during hysteroscopy, endometrial micropolyposis (56.67%), chronic endometritis (23.33%), placental polyp (3.33%), Asherman's syndrome (6.67%), ovuli Naboti (16.67%), endometriosis tumor pathologies such as ulcers (10%) were also detected.

Table 2

Analysis of diagnoses made in hysteroscopy practice

Diagnosis	Abs	%
Deformation in the scar area	30	100%
Local thinning ("shelf") in the scar area	24	80,0%
Chronic endometritis	7	23,33%
Foreign body in the uterine cavity (ligature)	22	73.3%
Endometrial micropolyposis	17	56,67%
ovuli Naboti	5	16,67%
foci of endometriosis	3	10%
Asherman syndrome	2	6,67%

Thus, using the binary logistic regression method, a mathematical model was obtained to estimate the probability of thinning of the myometrium with the formation of a "niche" of the scar. The level of significance of this model was $p<0.001$, sensitivity 85%, specificity 84%, accuracy 75%.

Calculations show that the optimal cut point for scar thickness in this model is 5.05 mm.

In summary, ultrasound was 26.7%, the binary logistic logarithm formula based on ultrasound data was 60%, and hysteroscopy was 80% in determining the "Nisha" symptom.

In general, the use of hysteroscopy for diagnosis and treatment is its biggest advantage. In addition, we can see from the results that it is more alternative than ultrasound in determining the deformation of the scar area and the "Nisha" symptom.

All women were sent to electrocardiography and spirography after appropriate instructions (in women with detected inflammation, etiopathogenetic therapy in women with dysbiosis and vaginitis) and preparation. According to their results, the indicators in all women were within normal limits, according to the conclusion of the therapist, the studied women were taken to the practice of hysteroscopy for diagnosis and treatment.

Conclusions. So, the need to improve the management of women after cesarean section is expressed in the identification of clinical signs and risk factors of the "niche" symptom that appears in them. According to the results of our study, secondary infertility occurred in all women, in addition, chronic inflammations and iodine inside the uterus can lead to defotation of the scar area and the formation of the "niche" symptom.

Ultrasound and hysteroscopy play an important role in the diagnosis of "Niche" symptom. In our study, 26.7% of women were diagnosed with the "Niche" symptom through ultrasound. According to the data of ultrasound, when the mathematical model was used, this indicator was 60%. In hysteroscopy, 80% of women have the "niche" symptom.

REFERENCES

1. Айламазян Э.К. и др. Морфофункциональная оценка нижнего сегмента матки в конце физиологической беременности и у беременных с рубцом // Журн. акушерства и женских болезней. - 2006. - Т. 55, №4. - С. 11-18.

2. Буянова С.Н., Щукина Н.А., Чечнева М.А., Мгелиашвили М.В., Титченко Ю.П., Пучкова Н.В., Барто Р.А. Современные методы диагностики несостоятельности швов или рубца на матке после кесарева сечения // Российский вестник акушера-гинеколога. – 2013. -№1. – С. 73-77.

3. Густоварова Т. А. Беременность и роды у женщин с рубцом на матке: клинико-морфологические и диагностические аспекты: автореф. дис. д-ра. мед. наук / Т. А. Густоварова. – М., 2007. – 49 с.

4. Густоварова Т. А., Иванян А. Н. Беременность и роды у женщин с рубцом на матке после кесарева сечения. — Смоленск, 2007. — 196 с.

5. Кулаков В.И., Чернуха Е. А., Комиссарова Л. М. [и др.] /Результаты кесарева сечения в зависимости от наложения шва на матку и шовного материала // Акушерство и гинекология. – 1997. – № 4. – С. 18-21.

6. Макухина Т.Б. Особенности ультразвуковой диагностики и лечебной тактики при ведении пациенток с беременностью в рубце после кесарева сечения / Т.Б. Макухина, А.В. Поморцев // Рос. электрон. журн. луч. диагностики. - 2012. - Т. 2, № 3. - С. 95-99.

7. Маркарян Н.М. Сравнительный анализ двух методик чревосечения // Вестник РУДН. Серия: Медицина.- 2016. -№ 2. – С. 146.

8. Милованов, А. П. Пути снижения акушерских потерь / А. П. Милованов, Е. Ю. Лебеденко, А. Ф. Михельсон // Акушерство и гинекология. - 2012. -№ 4-1. - С. 74—78.

9. Шопулотов Ш., Абсаматов Ш., Холдоров И. ГИПЕРАКТИВНОСТЬ ДЕТРУЗОРА: СОВРЕМЕННЫЕ ВОЗМОЖНОСТИ ТЕРАПИИ //Евразийский журнал медицинских и естественных наук. – 2022. – Т. 2. – №. 6. – С. 409-411.

10. Шопулотова З. А., Худоярова Д. Р. ХРОНИЧЕСКИЙ ПИЕЛОНЕФРИТ И БЕРЕМЕННОСТЬ: ВЛИЯНИЕ КОМОРБИДНОСТИ И ЕГО ПРОЯВЛЕНИЯ //ЖУРНАЛ РЕПРОДУКТИВНОГО ЗДОРОВЬЯ И УРО-НЕФРОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ. – 2023. – Т. 4. – №. 4.

11. Худоярова Д. Р., Уктамова Ю. У., Шопулотова З. А. ИННОВАЦИИ В КОМПЛЕКСНОМ ЛЕЧЕНИИ ХРОНИЧЕСКОГО ВОСПАЛЕНИЯ ПРИДАТКОВ МАТКИ //ЖУРНАЛ РЕПРОДУКТИВНОГО ЗДОРОВЬЯ И УРО-НЕФРОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ. – 2023. – Т. 4. – №. 4.

12. Akdemir A, Sahin C, Ari SA, Ergenoglu M, Ulukus M, Karadadas N. Determination of Isthmocele Using a Foley Catheter During Laparoscopic Repair of Cesarean Scar Defect. J Minim Invasive Gynecol. 2018 Jan;25(1):21-22. doi: 10.1016/j.jmig.2017.05.017. Epub 2017 Jun 8. PubMed PMID: 28602788.

13. An der Voet LF, Vervoort AJ, Veersema S, BijdeVaate AJ, Brölmann HA, Huirne JA. Minimally invasive therapy for gynaecological symptoms related to a niche in the caesarean scar: a systematic review. BJOG. 2014 Jan;121(2):145-56. doi: 10.1111/1471-0528.12537. Review. PubMed PMID: 24373589.

14. Burger NF, Darazs B, Boes EG. An echographic evaluation during the early puerperium of the uterine wound after caesarean section. J Clin Ultrasound. 1982 Jul-Aug;10(6):271-4. PubMed PMID: 6811618.

15. Cameron SJ. Gravid Uterus ruptured through the Scar of a Caesarean Section. Proc R Soc Med. 1911;4(Obstet Gynaecol Sect):147-9. PubMed PMID: 19975262; PubMed Central PMCID: PMC2005117.

16. Chan B.C.P., Lam H. S.W., Yuen J.H.F. et al. Conservative management of placenta previa with accreta // Hong Kong Med. J. — 2008. – Vol. 14 – P. 479–484.

17. Shopulotov S., Isroilov O. GIPERAKTIV QOVUQ SINDROMINI DAVOLASH BO'YICHA YANGI IMKONIYATLAR //Бюллетень студентов нового Узбекистана. – 2023. – Т. 1. – №. 6 Part 2. – С. 106-109.

18. Shopulotov S. et al. SIYDIK TUTOLMASLIK MUAMMOSI //Центральноазиатский журнал образования и инноваций. – 2023. – Т. 1. – №. 6 Part 6. – С. 44-48.

19. Shopulotova Z. COMPARATIVE ANALYSIS OF CLINICAL CASES OF EXACERBATION OF CHRONIC PYELONEPHRITIS IN PREGNANT WOMEN //International Bulletin of Medical Sciences and Clinical Research. – 2023. – Т. 3. – №. 8. – С. 22-25.

20. Shamatov I., Shopulotova Z. ADVANNAGES OF PALATE LASER THERAPY IN COMPLEX TREATMENT OF LARINGITIS //International Bulletin of Medical Sciences and Clinical Research. – 2023. – Т. 3. – №. 9. – С. 104-107.

21. Shernazarov Farrukh ORGANIZATION OF DIGITALIZED MEDICINE AND HEALTH ACADEMY AND ITS SIGNIFICANCE IN MEDICINE // SAI. 2023. №Special Issue 8. URL: https://cyberleninka.ru/article/n/organization-of-digitalized-medicine-and-health-academy-and-its-significance-in-medicine (дата обращения: 20.11.2023).