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HISTOLOGICAL ANALYSIS OF THE STATE OF THE SCAR AFTER OPERATIONAL DELIVERY

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ABSTRACT

In recent years, there has been a trend towards an increase in the number of women of reproductive age with a scar on the uterus. According to literary sources, on average, their number is 30% of the total number of operative deliveries, which makes us, thinks about the state of the postoperative scar during the next birth and the method of delivery.

KEYWORDS: *Uterine Scar, Caesarean Section, Operative Delivery, Histology, Atrophy, Replacement By Connective Tissue.*

INTRODUCTION

Purpose–Histoanalysis of the postoperative scar on the uterus in women after surgical delivery;

Material and Methods: The study was conducted in the obstetric department of the clinic No. 1 of the Samarkand Medical University. The work is based on the analysis of the results of a comprehensive examination of 103 patients of reproductive age with one scar on the uterus, which were divided into 2 groups and 4 subgroups in the period from 2018-2020. Histological analysis was carried out at the Department of Pathological Anatomy.

Results: In subgroup 1, the thickness of the uterine wall in the area of the scar varied from 2 to 6 mm, the median value was 3.5 (3.0; 4.0) mm; in the comparison group, the wall thickness varied from 0 to 5.4 mm. In subgroup 1, 97.6% of patients had satisfactory scar vascularization, while 2.4% had poor scar vascularization. Histological analysis showed thinning of the scar due to replacement with connective tissue.

Conclusion: Thus, the thickness of the uterine wall in the area of the scar, measured by ultrasound and histological analysis, are quite significant diagnostic criteria for determining the usefulness of the scar on the uterus and choosing further tactics.

Relevance

One of the notable features of modern obstetrics is the liberalization of indications for CS and, accordingly, an increase in the proportion of abdominal delivery. The increase in the frequency of CS in recent years is due to the expansion of indications for this operation, among which relative ones in the interests of the fetus predominate. However, abdominal delivery in the interests of the fetus should be absolutely safe for the mother [4, 11, and 17]. Firstly, it concerns

the uncomplicated course of the operation itself, the early postoperative period, as well as subsequent pregnancies and childbirth. An analysis of the results of surgical delivery shows that an increase in the number of CSs does not solve the whole complex of various problems of maternal and child health, and an increase in the frequency of this operation drastically reduces obstetric professionalism.

Abdominal delivery is gentler for the fetus in a situation where it can suffer (premature placental abruption, placental insufficiency, etc.) [1,3,8]. Other factors that affect the incidence of CS include: relative safety of the operation, reduced risk to the fetus, absence of pelvic floor muscle injuries, convenience for the obstetrician, low incidence of intracranial hemorrhage, and, finally, the desire of the patient [2,7,13].

From a morphological point of view, the concept of "scar on the uterus" occurs when a pronounced proliferation of hyalinized or fibrous tissue is detected. According to morphological data, a full-fledged incision zone in its structural and functional properties is close to normal myometrial tissue. The muscular component significantly predominates over the connective tissue. The nature of the location of the vascular network is not changed. Inadequate regeneration of the myometrium, leading to the formation of an incompetent scar, in the vast majority of cases is characterized by excessive growth of connective tissue. Myocyte dystrophy, destructive changes in muscle tissue in the form of necrosis and necrobiosis, and circulatory disorders are detected. Sclerotic changes in blood vessels prevent the full regeneration of muscle tissue. These changes lead to metabolic disorders and local tissue hypoxia, which leads to the development of coarse connective tissue with hyalinosis [7, 9, and 11].

Purpose of Work: Histoanalysis of the postoperative scar on the uterus in women after surgical delivery.

MATERIAL AND METHODS

The study was conducted in the obstetric department of the clinic No. 1 of the Samarkand Medical University. The work is based on the analysis of the results of a comprehensive examination of 103 patients of reproductive age with one scar on the uterus, which were divided into 2 groups and 4 subgroups in the period from 2018-2020. The patients of the studied groups were comparable in age, the age of the patients was from 18 to 35 years, the average age was 24.5±4.1 years.

Group I included 63 women with a clinically "well-to-do" scar on the uterus, which, in turn, were divided into 2 subgroups: subgroup 1A included 42 pregnant women who, after a complete clinical and laboratory examination and the consent of the patients, were delivered through the natural birth canal; I The subgroup consisted of 22 pregnant women who, after a complete clinical and laboratory examination, refused to give birth through the natural birth canal.

Group II consisted of 37 patients who were admitted to the hospital on an emergency basis, were also divided into 2 subgroups: 2 A subgroup included 13 women admitted to the department in the second stage of labor and self-delivered through the natural birth canal; 2 The subgroup consisted of 24 women with clinical signs of insolvency of the scar on the uterus who underwent repeated operative delivery.

A study was made of the features of the anamnesis and data of ultrasound diagnostics in women with a scar on the uterus in order to identify risk factors for the formation of an inferior scar. A histological examination of the scar area was performed.

RESULTS

The patients of the studied prospective groups were comparable in age, which ranged from 18 to 35 years; the average age was 24.5±4.1 years. Indications for operative delivery according to the anamnesis were most often breech presentation of the fetus - in 25.3% of patients, in second place - fetal hypoxia and premature detachment of a normally located placenta - in 11.6%, in third place - clinically narrow pelvis - in 9.6 % of women. The reasons for surgical intervention were also weakness of labor activity - in 8.2% of patients and severe preeclampsia - in 8.9% of women in combination with other extragenital diseases. In subgroup 2, the most common cause of operative delivery was fetal hypoxia - in 14.6% of women, in second place were several reasons at once (9% each): clinically narrow pelvis, infertility, transverse position of the fetus, high myopia. The third place in terms of the frequency of causes (6.9%) was occupied by the weakness of labor activity.

It is noteworthy that 57.6% of patients from the 1st subgroup and 43.1% of the pregnant women of the 2nd subgroup were previously delivered surgically in hospitals of the first level without sufficient qualification and follow-up ($p = 0.025$), which can be a risk factor the formation of an inferior scar.

All women in the study were multiparous and multiparous. For the vast majority, this pregnancy was the second - in 41.7% of women; 3.8% of patients had a history of 5 pregnancies or more.

In subgroup 1, the thickness of the uterine wall in the area of the scar varied from 2 to 6 mm, the median value was 3.5 (3.0; 4.0) mm; in the comparison group, the wall thickness varied from 0 to 5.4 mm. In subgroup 1, 97.6% of patients had satisfactory scar vascularization, while 2.4% had poor scar vascularization. In the comparison group, satisfactory vascularization was found in 87.6% of patients, which is less than in the main group ($p = 0.0032$), scanty - in 2.9% of women, single vascular loci - in 7.6%, avascular zone of the scar - in 1.9% of patients.

In subgroup 1 A, the scar on the uterus was excised intraoperatively and subjected to histological examination. In the 2B subgroup, the inferiority of the scar on the uterus in all patients was confirmed histologically after the operation, when the material was taken for research.

In patients who were delivered naturally, a piece of material was taken after childbirth during the revision of the uterine cavity.

Staining with hematoxylin and eosin revealed obliteration of the arterial lumen; many newly formed thin-walled vessels, and a chaotic arrangement of individual muscle fibers (Figure 1).

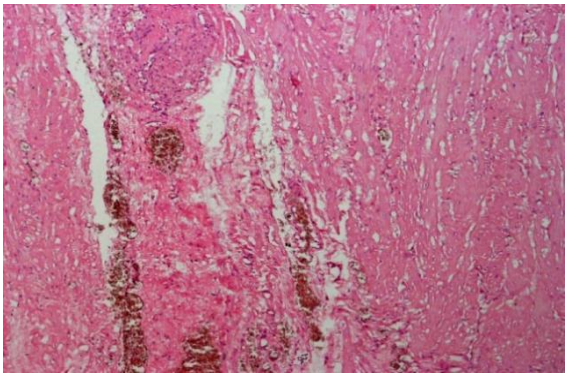

Figure 1 - The area of the excised scar on the uterus, formed after the previous caesarean section; x100, stained with hematoxylin and eosin

Van Gieson staining made it possible to detect areas of demuscularization, proliferation of connective tissue, and the presence of small newly formed vessels (Figure 2). Mallory staining revealed pronounced demuscularization, the presence of small newly formed vessels and the predominance of the connective tissue component over the muscle component (Figure 3).

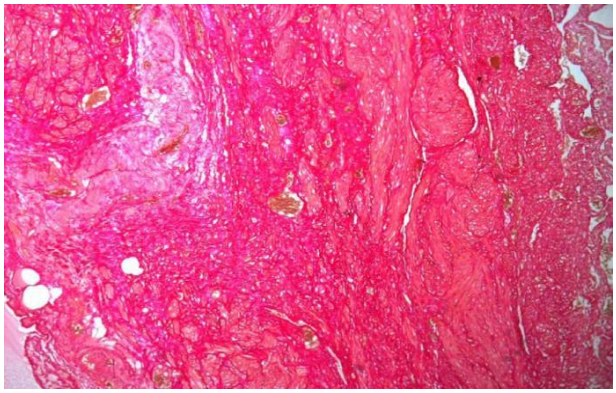

Figure2 - The area of the excised scar on the uterus, formed after the previous caesarean section; x100; staining according to the Van Gieson method

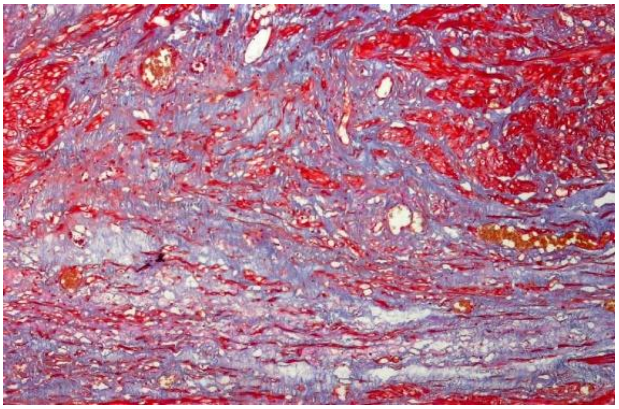

Figure 3 - The area of the excised scar on the uterus, formed after the previous caesarean section; x100; mallory staining

Weigert stain was used to identify elastic fibers in the area of the uterine scar (Figure 4). Areas of demuscularization, atrophy of muscle fibers, and the absence of an elastic framework in the area of growth of loose connective tissue were revealed.

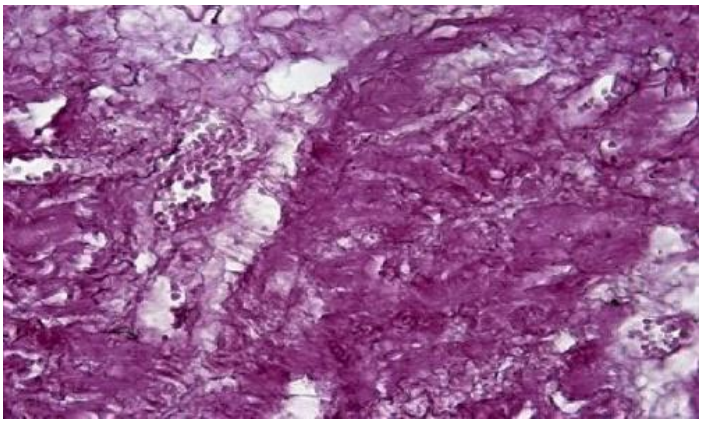

Figure 4 - The area of the excised scar on the uterus, formed after the previous caesarean section; x200; Weigert staining

Histological analysis in patients who delivered naturally, the presence of blood vessels and myometry in the area of the scar was determined, which led to the viability of the scar. In patients with operative delivery, the scar area was more often replaced by connective tissue, which made it less extensible. This fact could serve as the basis for the failure of the scar in the third trimester of pregnancy.

CONCLUSION

Thus, the thickness of the uterine wall in the area of the scar, measured by ultrasound, is a fairly significant diagnostic criterion for determining the usefulness of the scar on the uterus. But an accurate diagnosis can only be made by histological examination. Thinning of the myometrium in this area indicates the inferiority of the scar, thinning of the scar and its replacement with connective tissue is a threat of scar failure and has a risk of uterine rupture along the scar.

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