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RISK FACTORS FOR PLACENTA PREVIA IN PREGNANT WOMEN WITH A UTERINE SCAR: A RETROSPECTIVE COMPARATIVE STUDY

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ABSTRACT

Objective. To investigate clinical and anamnestic risk factors for placenta previa in pregnant women with a uterine scar.

Materials and Methods. A retrospective comparative study included 80 pregnant women with a uterine scar. The control group consisted of 50 women with normal placental location, while the study group included 30 women with placenta previa. Socio-demographic characteristics, obstetric and gynecological history, menstrual function, extragenital diseases, and gynecological pathology were analyzed.

Results. Women with placenta previa were characterized by a higher parity, a greater frequency of third and subsequent deliveries, a history of induced abortions, and the presence of two or more uterine scars. Chronic arterial hypertension was significantly more common in the study group (p=0.031). No significant differences were found in menstrual function parameters. Most types of extragenital and gynecological pathology showed no statistically significant association with placenta previa.

Conclusion. The most significant risk factors for placenta previa in pregnant women with a uterine scar are multiple uterine scars, high parity, induced abortions in medical history, and chronic arterial hypertension. These findings may contribute to the identification of high-risk patients and improve early diagnosis of abnormal placentation.

Keywords: placenta previa, uterine scar, cesarean section, risk factors, abnormal placentation, pregnancy.

ФАКТОРЫ РИСКА ПРЕДЛЕЖАНИЯ ПЛАЦЕНТЫ У БЕРЕМЕННЫХ ЖЕНЩИН С РУБЦОМ МАТКЕ: РЕТРОСПЕКТИВНОЕ СРАВНИТЕЛЬНОЕ ИССЛЕДОВАНИЕ

Цель исследования — изучить клинико-анамнестические факторы риска предлежания плаценты у беременных с рубцом на матке.

Материалы и методы. Проведено ретроспективное сравнительное исследование, включившее 80 беременных женщин с рубцом на матке. В контрольную группу вошли 50 пациенток с нормальным расположением плаценты, в основную группу — 30 пациенток с предлежанием плаценты. Выполнен анализ социально-демографических характеристик,

акушерско-гинекологического анамнеза, менструальной функции, экстрагенитальной и гинекологической патологии.

Результаты. Установлено, что пациентки с предлежанием плаценты чаще имели вы сокий паритет, третьи и последующие роды, артифициальные аборты в анамнезе, а также два и более рубца на матке. Хроническая артериальная гипертензия достоверно чаще встречалась в основной группе (p=0,031). Показатели менструальной функции статистически значимо не различались между группами. Существенных различий по большинству видов экстрагенитальной и гинекологической патологии не выявлено.

Заключение. Наиболее значимыми факторами риска предлежания плаценты у беременных с рубцом на матке являются наличие двух и более рубцов на матке, высокий паритет, артифициальные аборты в анамнезе и хроническая артериальная гипертензия. Полученные данные могут быть использованы для формирования групп высокого риска и совершенствования методов ранней диагностики патологической плацентации.

Ключевые слова: предлежание плаценты, рубец на матке, кесарево сечение, факторы риска, патологическая плацентация, беременность.

Placental presentation remains one of the pressing issues in modern obstetrics due to the high risk of massive obstetric hemorrhages, premature births, and maternal and perinatal morbidity [1,2]. In recent decades, there has been an increase in the incidence of this pathology, which is largely linked to the increasing frequency of cesarean sections and the number of women with uterine scars [3,4].

The presence of a scar on the uterus is considered one of the leading risk factors for the disruption of implantation and placental processes [5,6]. Damage to the endometrium and myometrium after surgical interventions can contribute to the abnormal attachment of the placenta and the development of its anteriority [7]. In addition, the pregnant woman's age, high parity, the presence of artificial abortions, and concomitant somatic pathology are of significant importance [8,9].

Despite a significant number of studies dedicated to this issue, the role of individual clinical and anamnesic risk factors in pregnant women with uterine cicatrices requires further study [10].

The presented observational comparative study was conducted between 2022 and 2025. To address the set tasks, the stratification of patients with a high risk of placenta previa (placenta prolapse, suspicion of prolapse according to ultrasound data) who were delivered at the 2nd Maternity Complex of Tashkent State Medical University was performed.

To clarify the risk factors for the development of placental prolapse, the birth histories of 997 patients with uterine scar were retrospectively studied, including 50 women with uterine scar and normal placental attachment (control group) and 30 women with uterine scar and placenta previa (main group).

Clinical and statistical analysis of anamestic data and the characteristics of pregnancy and childbirth were conducted based on specially developed maps and filled in by determining the studied parameters from individual maps, birth histories, and medical history collection. The subjects were aged 18 to 44 years.

The exclusion criteria were as follows: decompensated extragenital pathology, multiple pregnancy.

Table 1 - Retrospective analysis of the age of the examined pregnant women

Age	Groups of subjects				Total n=80	
	Control group, with a scar on the uterus without placenta previa n=50		Comparison group, with a scar on the uterus with placenta previa n=30			
	Abs.	%	Abs.	%	Abs.	%
18-20	2.	4.0	0	0.0	2.	2.5
21–25	17	34.0	4	13.3	21	26.3
26-30	23	46.0	5	16.7	28	35.0
31–35	4	8.0	10	33.3	14	17.5
36-40	4	8.0	9	30.0	13	16.3
>40	0	0.0	2.	6.7	2.	2.5

Analysis of the age structure of the examined women showed that reproductive-age patients aged 21–30 predominated in both groups. The most numerous age category was 26–30 years, accounting for 28 (35.0%) observations, of which 23 patients were in the control group and 5 patients in the comparison group. In the comparison group, a higher proportion of women of older reproductive age (31-35 years) and 36-40 years was noted compared to the control group. Patients over 40 years of age were found only in the comparison group (2 cases). The obtained data indicate a trend toward an older age composition of women with placental prolapse and prolapse.

Table 2 - Education Level in the Study Groups

education	Groups of subjects				p
	Control group, with a scar on the uterus without placenta previa n=50		Comparison group, with a scar on the uterus with placenta previa n=30		
	Abs.	%	Abs.	%	
higher education	26	52.0	7	23.3	
Secondary specialized education	14	28.0	11	36.7	
Medium	10	20.0	12	40.0	
p					**0.033**

Analysis of the education level showed statistically significant differences between the compared groups (p=0.033). In the control group, women with higher education predominated—26 (52.0%) patients—while in the group with non-adjoining placenta, their share was significantly

lower, amounting to 7 (23.3%). Conversely, secondary education was more frequent in Group I—12 (40.0%) women compared to 10 (20.0%) in the control group. 14 (28.0%) patients in the control group and 11 (36.7%) women in Group I had secondary specialized education. The data obtained indicate a lower level of education among patients with placental presentation compared to women in the control group (Table 2).

According to N.A. Arkhangelsky (2019), women's educational status is an important factor influencing not only the average number of children born but also a woman's reproductive behavior. The results generally confirm a global trend: women with a high educational status have an average of fewer children than women with a lower level of education; the former also have a higher average age of the mother when the first child was born and larger intergenetic intervals.

The number of births across groups was distributed as follows (Table 3).

Table 3 - Parity and number of pregnancies by groups

parity	Groups of subjects				
	Control group, with a scar on the uterus without placenta previa n=50		Comparison group, with a scar on the uterus with placenta previa n=30		R
	Abs.	%	Abs.	%	
First births	17	34.0	4	13.3	0.065
Second births	20	40.0	9	30.0	
Third births	10	20.0	13	43.3	0.040
Fourth and more births	3.	6.0	4	13.3	0.416
History of induced abortion	15	30.0	24	80.0	<0.001
History of spontaneous abortion	5	10.0	6	20.0	0.315
Non-developing pregnancy	3.	6.0	4	13.3	0.416

P-statistical significance of differences between the control group and Group I.

Parity analysis showed that among women in the control group, repeat births with second births were more frequent (20 (40.0%) cases), while in the group with placental prolapse without prolapse, patients with third births predominated (13 (43.3%). The frequency of third births was statistically significantly higher in Group I compared to the control group (43.3% vs. 20.0%; p=0.040). The proportion of women with first births was lower in Group I (13.3%) compared to the control group (34.0%), but the differences did not reach statistical significance (p=0.065).

Upon analysis of the reproductive history, it was established that artificial abortions occurred significantly more frequently in Group I patients—24 (80.0%) women compared to 15 (30.0%) in the control group (p<0.001). The frequency of spontaneous abortions and non-developing

pregnancy was also higher in Group I, but no statistically significant differences were found between the groups (p>0.05). The results obtained indicate a correlation between high parity and the presence of artificial abortions in the anamnesis and the development of placental presentation in women with uterine cicatrices.

Table 4 - Number of uterine scars in the examined patients

Number of scars in the uterus	Groups of subjects			
	Control group, with a scar on the uterus without placenta previa n=50		Comparison group, with a scar on the uterus with placenta previa n=30	
	Abs.	%	Abs.	%
1 uterine scar	18	36.0	3.	10.0
2 uterine cicatrices	21	42.0	19	63.3
3 uterine cicatrices	11	22.0	8	26.7

Analysis of the number of scars in the uterus showed differences in the structure of patients in the study groups. In the control group, women with two scars on the uterus were most frequently observed — 21 (42.0%) cases, while in the group with placental prolapse without prolapse, their proportion was significantly higher and amounted to 19 (63.3%). One uterine scar was noted in 18 (36.0%) patients of the control group and only in 3 (10.0%) women of Group I. Three uterine scars were identified in 11 (22.0%) patients of the control group and in 8 (26.7%) patients of Group I. The obtained data indicate that in women with placental presentation, two or more uterine scars are more common, allowing for the consideration of repeated surgical deliveries as one of the likely risk factors for the development of this pathology.

Thus, the number of scars in the uterus should be considered a significant prognostic factor for the development of abnormal placentation in pregnant women. (Table 4).

Table 5 - Menstrual function in the examined patients

Menstrual function index	Groups of subjects		
	Control group, with a scar on the uterus without placenta previa n=50	Comparison group, with a scar on the uterus with placenta previa n=30	R
Menarche age	13.5 [13,2:13,9]	13.2 [12,9:13,6]	p=0.284
Age of onset of sexual life	17.8 [16,8:18,1]	17.8 [17.4:18.3]	p=0.917
Duration of menstrual cycle	29.4 [22,4;34,3	28.2 [22,1;33,3]	p=0.438
Duration of menstrual bleeding	3.4 [2.9; 5.6]	3.8 [3,2;4,6]	p=0.512

P-statistical significance of differences between the control group and group I

Analysis of menstrual function indicators revealed no statistically significant differences between the examined groups. The average age of the menarche was 13.5 [13.2–13.9] years in the control group and 13.2 [12.9–13.6] years in the group with placental anteriority without prolapse (p=0.284). The age of onset of sexual life in both groups was practically the same and was 17.8 years (p=0.917).

The duration of the menstrual cycle also did not differ significantly between groups, amounting to 29.4 [22.4-34.3] days in the control group and 28.2 [22.1-33.3] days in Group I (p=0.438). The duration of menstrual bleeding was comparable and amounted to 3.4 [2.9–5.6] and 3.8 [3.2–4.6] days, respectively (p=0.512).

Thus, menstrual function indicators in patients of both groups were homogeneous, and the identified differences did not reach statistical significance, indicating the absence of influence from the characteristics of menstrual function formation and nature on the development of placental presentation in women with uterine cicatrices.

Table 6 - Extragenital pathology in the subjects

Indicators of extragenital pathology	Groups of subjects				Total n=80		P
	Control group, with a scar on the uterus without placenta previa n=50		Comparison group, with a scar on the uterus with placenta previa n=30				
	Abs.	%	Abs.	%	Abs.	%	
Diseases of the urinary system	5	10.0	5	16.7	10	12.5	0.842
Respiratory diseases	4	8.0	4	13.3	8	10.0	0.917
Myopia	6	12.0	7	23.3	13	16.3	0.648
Type 1 and 2 diabetes mellitus	2.	4.0	1	3.3	3.	3.8	0.733
Gestational diabetes mellitus	2.	4.0	1	3.3	3.	3.8	0.733
Chronic arterial hypertension	2.	4.0	7	23.3	9	11.3	0.031
obesity	7	14.0	5	16.7	12	15.0	0.521

* - statistical significance of differences between groups I and II.

Analysis of the structure of extragenital pathology showed that most comorbidities occurred in both groups with a comparable frequency. Urinary system diseases were identified in 10.0% of patients in the control group and 16.7% of women in Group I (p=0.842), while respiratory system diseases were identified in 8.0% and 13.3% of patients, respectively (p=0.917). The incidence of myopia also did not differ significantly between groups and was 12.0% and 23.3%, respectively (p=0.648). Type 1 and 2 diabetes mellitus, as well as gestational diabetes mellitus, were rare and had no statistically significant intergroup differences (p=0.733). Obesity was noted in 14.0% of

patients in the control group and in 16.7% of women in Group I (p=0.521).

A statistically significant difference was identified only regarding chronic arterial hypertension, which was significantly more frequent in patients with placental anteriority without prolapse — 7 (23.3%) women versus 2 (4.0%) in the control group (p=0.031). The obtained data allow for the consideration of chronic arterial hypertension as one of the possible factors associated with the development of placental presentation in women with uterine cicatrices.

Table 7 - Structure of gynecological pathology in patients of the studied groups

Indicators of gynecological pathology	Groups of subjects				R
	Control group, with a scar on the uterus without placenta previa n=50		Comparison group, with a scar on the uterus with placenta previa n=30		
	Abs.	%	Abs.	%	
Abnormal uterine bleeding	4	8.0	7	23.3	0.214
Inflammatory diseases of pelvic organs	6	12.0	8	26.7	0.287
Benign ovarian tumors	3.	6.0	4	13.3	0.451
Uterine myoma	1	2.0	3.	10.0	0.196
Endometriosis	1	2.0	1	3.3	0.874
Infertility	4	8.0	2.	6.7	0.628

P-statistical significance of differences between the control group and group I,

Analysis of the structure of gynecological pathology showed no statistically significant differences between the study groups across all studied indicators (p>0.05). At the same time, patients with placental anteriority without prolapse exhibited a higher incidence of several gynecological diseases.

Abnormal uterine bleeding was observed in 23.3% of women in Group I, compared to 8.0% in the control group (p=0.214). Inflammatory diseases of the pelvic organs were also more frequently recorded in Group I patients at 26.7% compared to 12.0% in the control group (p=0.287). Benign ovarian tumors were identified in 13.3% of patients in Group I and 6.0% of women in the control group (p=0.451), and uterine fibroids in 10.0% and 2.0%, respectively (p=0.196).

The incidence of endometriosis was low and practically identical in both groups (2.0% and 3.3%; p=0.874). Anamnestic infertility was noted in 8.0% of patients in the control group and 6.7% of women in Group I (p=0.628).

Thus, despite the higher prevalence of individual gynecological diseases in patients with placental presentation, no statistically significant relationship has been established between the studied forms of gynecological pathology and the development of placental presentation in women with uterine cicatrices (Table 7).

At the same time, in the vast majority of observations, the surgery performed was a cesarean section (Table 8).

Table 8 - Number of surgical interventions performed in patients of the clinical groups

	Groups of subjects	R

Transferred operations	Control group, with a scar on the uterus without placenta previa n=50		Comparison group, with a scar on the uterus with placenta previa n=30		
	Abs.	%	Abs.	%	
Caesarean section	50	100.0	30	100.0	
Conservative myomectomy	2.	4.0	1	3.3	p=0.733
Ectopic pregnancy	2.	4.0	3.	10.0	p=0.521
Appendectomy	1	2.0	2.	6.7	p=0.387
Operations on the uterine appendages	3.	6.0	3.	10.0	p=0.914

P-statistical significance of differences between the control group and group I

Analysis of the surgical interventions performed showed that all patients in both groups had a cesarean section in the anamnesis, which was determined by the inclusion criterion in the study. The frequency of other surgical interventions did not differ statistically significantly between the groups (p>0.05).

Conservative myomectomy was performed on 2 (4.0%) patients in the control group and 1 (3.3%) in Group I (p=0.733). Ectopic pregnancy in the anamnesis was noted in 2 (4.0%) patients of the control group and in 3 (10.0%) women of Group I (p=0.521). Appendectomy was performed in 1 (2.0%) patient in the control group and in 2 (6.7%) patients in Group I (p=0.387). Operations on the uterine appendages occurred in 6.0% and 10.0% of women, respectively (p=0.914).

Thus, no significant differences were identified in the structure of surgical interventions performed between the groups. The results obtained indicate that the studied surgical interventions, with the exception of cesarean section as a general factor, did not have a significant impact on the development of placental presentation in women with uterine cicatrices.

Thus, the presence of surgical interventions on the uterus should be considered one of the leading risk factors for the development of placental prolapse in pregnant women, which once again confirms the known link between previously performed cesarean section and placental attachment pathology [2,6,9].

Conclusion. The conducted retrospective analysis showed that the development of placental presentation in pregnant women with uterine cicatrices is associated with high parity, the presence of third and subsequent births, artificial abortions in the anamnesis, and two or more uterine cicatrices. In patients with placental presentation, chronic arterial hypertension was significantly more frequently identified. Menstrual function indicators did not exhibit significant intergroup differences. A higher prevalence of pelvic inflammatory diseases, uterine fibroids, and abnormal uterine bleeding was noted in the main group of patients, but these differences did not reach statistical significance. The results obtained confirm the multifactorial nature of placental presentation formation and can be used to identify high-risk groups for early diagnosis and prevention of pregnancy complications.

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