

CONSERVATIVE MYOMECTOMY AND ITS EFFECTS ON THE SUCCEEDING PREGNANCY AND PARTURITION

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ABSTRACT

Background: Although we know much about pregnancy among women with myoma, there's lack of knowledge about pregnancy in women with history of myomectomy. This article presents our results from the comparison of pregnancy and parturition data between women who have undergone myomectomy and women with past medical history (PMH) of cesarean section. **Methods:** We conducted a retrospective analysis on 92 birth medical files using data from the 6th Minsk Municipal Clinical Hospital for the years 2010-2012. Our population was organized into Four clinical groups based on the material we received: I. conservative myomectomy group (CME) – 26 gravidae who had undergone CME before; II. hysteromyoma group(M) – 20 gravidae on the background of hysteromyoma, III Cesarean Section group (CS) – 26 patients with PMH of cesarean section (once), IV Control group (C) – 20 gravidae with insignificant medical history natural childbirth. total of 19 male Wistar rats weighing 200-220 g were included in this study. All rats were divided into 2 groups depending on the motor activity: active (prognostically resistant to ES) – 9, animals predisposed to ES (passive) – 10. CSF samples were collected twice by puncture of the cisterna magna of the brain before and after stress in the interval of 10 days. CfDNA was detected by phenol method. Statistical data analysis was performed with SPSS 16 for Windows. **Results:** In the aforementioned groups the pregnancy was complicated with abortion, preeclampsia, chronicl uteroplacental insufficiency in contrast with the control group. There is a correlation between the age of CME cicatrix and the abortion risk followed by a different force, depending on the time interval between the operation and ensuing pregnancy, as well as the presence of a previously established diagnosis of infertility. tendency to higher level of cfDNA in active rats compared with other groups has been found in our experiments. All animals statistically significant were divided into two groups: with high and low concentration of cfDNA in CSF. 70% animals with high level of cfDNA in CSF were active rats and 30% - passive. After stress the concentration of cfDNA in active animals demonstrated a tendency to decrease, while the passive - on the contrary, to increase after ES. Furthermore, the inverse correlation between the change of cfDNA and volume of CSF aliquot was identified. **Conclusion:** It is necessary to leave a two years gap between CME and a future pregnancy. Pregnant women with PMH of CME should be observed for the risk of abortion, fetoplacental insufficiency, preeclampsia and take specific courses of preventive treatment. Particular attention should be paid to the category of postoperative patients, previously diagnosed with.

KEYWORDS

Fibroid Uterus, Uterine Myomectomy, Cesarean Section, Cicatrix, Correlation of Data

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INTRODUCTION

Uterine fibroids are noncancerous growths of the uterus that often appear during childbearing years. This tumor is among the most frequent pathology of the female genital organs, only surpassed in the list by conceding to inflammatory disease [1]. Uterine fibroids are often (in 65% of cases) detected in the age of 40-50 when clinical manifestations urge women to seek medical help [2, 3]. In recent years, there is a “rejuvenation” of this disease: the prevalence of this disease among the fertile women increased from 25

to 32% [2, 4].

Also called leiomyomas or myomas, uterine fibroids aren't associated with an increased risk of uterine cancer and almost never develop into cancer: frequency of leiomyoma's malignancy is below 0,5% and doesn't exceed frequency of normal myometrium's malignancy [3, 5, 6]. Despite a relatively safe process of the disease, the presence of uterine fibroids have an adverse effect on young womens' health, increasing the risk of abortion and other complications during pregnancy and parturition, as well as it is responsible for pathological conditions of the newborn [7, 8]. Leiomyomas of women aged from 21 to 36 is conjoined with infertility (21%), miscarriage (27%), ovarian dysfunction (29%) [6,

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7,10]. The following type of leiomyomas treatment methods are implemented: surgical, micro-invasive and non-invasive [11,12]. Choosing treatment method and its efficiency are determined by the patient's age, hereditary data, obstetric and gynaecological PMH, tumor's characteristics, clinical manifestations of the disease and any complication. Nowadays, one of the most applicable operations is the conservative myomectomy (CME); it is an organ saving micro-invasive method, which is considered to be the method of choice for surgical treatment of uterine myomas in patients reproductive period and the recovery of fertility [13,14]. Needless to say that it is not the presence of leiomyoma but the complications and the patient's state are indications for CME. Recovery of fertility after CME, according to different authors, is very unstable and amounts from 25 to 79% [15,16].

Strictly speaking about leiomyoma and its influence to the pregnancy and parturition, we have had many unanswered questions – fertility safety among women with leiomyoma, tactics of obstetric management during pregnancy and parturition, including those who had eliminated leiomyoma before pregnancy [13,17,18]. Moreover, there is not a unanimous opinion for the problem on how to plan pregnancy for these women diagnosed with leiomyoma and what is the optimal period for CME.

The purpose of the present study was to analyze pregnancy and parturition of patients with uterine cicatrix after CME; after cesarean section (CS); pregnant with leiomyoma and to compare with each other.

METHODS

We conducted a retrospective analysis of 92 medical histories of parturitions in the 6th Minsk Municipal Clinical Hospital occurred during the years 2010-2012. Four clinical groups were formed based on the medical files: I CME group – 26 gravidae who underwent conservative myomectomy (CME) before, II M group – 20 gravidae with PMH of hysteromyoma, III CS group – 26 gravidae PMH of cesarean section (once), IV C group – control group of 20 gravidae with insignificant medical and ob/gyn history.

Among the groups there are no differences in subjects' age (mean± SD is 31,68±1,68). The Kolmogorov-Smirnov test showed the received sample has no normal distribution that's why methods of

nonparametric statistics were chosen for further work.

Comparison of quantitative data in the population is conducted with Mann-Whitney U-test and Kruskal-Wallis test (ANOVA) in some cases. The association between analyzed parameters was done with Spearman correlation analysis and results were considered to be statistically significant if P values were under 0,05.

RESULTS

Pregnancy complications are shown in Fig. 1. Pregnancy was more often complicated with abortion risk, preeclampsia, chronic fetoplacental insufficiency in contrary with the control group. Needless to say the frequency of abortion and hydramnios case, intrauterine growth retardation (IUGR), gestational pyelonephritis (GPN) are significantly higher in the I (CME) group.

Regarding the distribution of abortion risk to trimesters (Fig. 2), there are significant differences between I and IV, II and IV groups in II and III trimester. 4 out of 5 cases of Chronic Fetoplacental Insufficiency in I group were combined with abortion threat in I trimester.

Also in the I group we took into consideration the association between CME and an ensuing pregnancy (mean± SD 2,0±0,3 years). 8 patients had past medical history of infertility.

Relapse of uterine fibroids were observed in 7 patients, 3 out of them with multiple fibroids. 3 more women were operated with conservative myomectomy during parturition by operation of cesarean section.

The spearman correlation analyzes the association between the age of CME cicatrix and the abortion risk; With regards on time interval between the operation and the following pregnancy as well as PMH of infertility the observed force between the two variables changed (Fig. 3).

No significant differences in average pregnancy duration were determined in the samples (mean 273,4± 1,8). In group II there was one case of premature birth (247 days).

As figure 4 shows, patients of the I group had significantly more often cesarean section than patients II group, delivery of patients of III group almost characterize by cesarean section, delivery of

the patients of 4 group were elected with the model of the researching.

Patients groups	Abortion threats	Anemia	Preeclampsia	ChFPI	Hypam-nion	Hydramnios	IUGR	GPN	Gestational diabetes
I (CME)	16 (61.54%)*	4 (15.38%)	2 (7.69%)*	5 (19.23%)*	0	1 (3.85%)	1 (3.85%)	1 (3.85%)	1 (3.85%)
II (M)	10 (50%)*	4 (20%)	2 (10%)*	4 (20%)*	0	0	0	0	0
III (CS)	8 (30.77%)*	5 (19.23%)	2 (7.9%)*	1 (3.85%)*	0	0	0	0	0
IV (C)	8 (40%)	8 (40%)	1 (5%)	0	1 (5%)	0	0	0	0

Fig.1. Determined complications of pregnancy in researched samples
Footnote: * - significations for $p < 0,05$

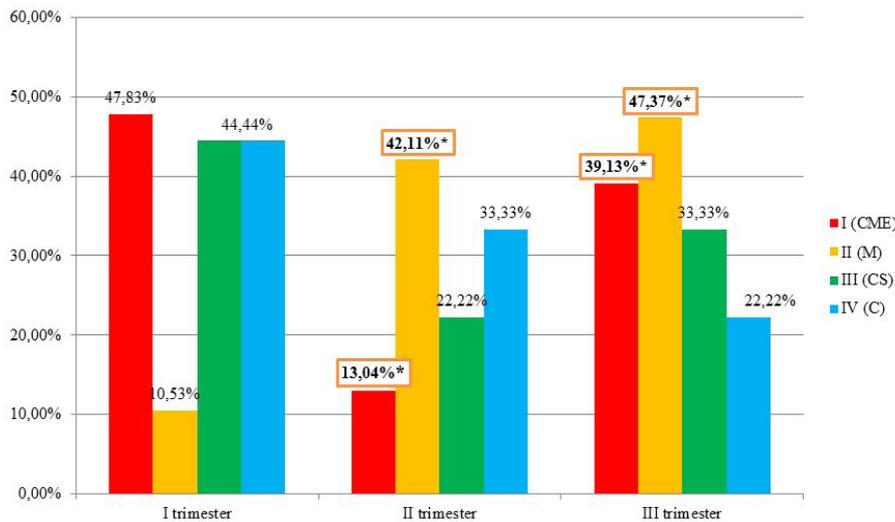


Fig.2. Distribution of abortion risk to trimesters

Researching sample	Spearman coefficient (R)	Characteristic of determined force
Patients of I (CME) group	0.2613	Positive low-force link
Patients of I (CME) group with diagnosed infertility in anamnesis	0.4418	Positive average -force link
Patients of I (CME) group - the age of CME cicatrix:	0-1,9 years	Positive average -force link
	2-2,9 years	Positive low-force link
	3-8 years	Positive high -force link

Fig.3. Table 2. –Spearman correlation analyzes the association between the age of CME cicatrix and the abortion risk.

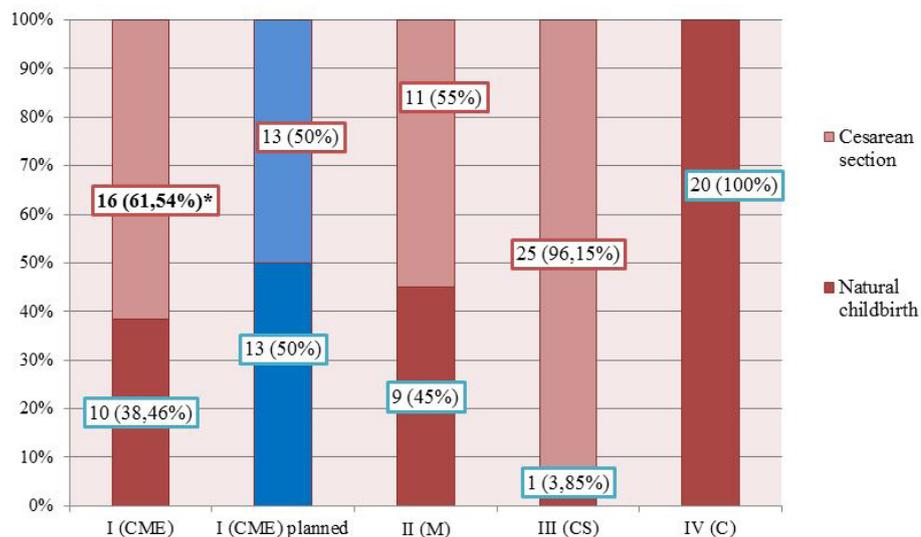


Fig. 4. The distribution of delivery in the researching samples.

* statistically significant for $p < 0,05$

3 patients of the I groups who had planned with natural childbirth, were delivered with cesarean section as they developed secondary uterine inertia and inefficiency of non-medicament methods of labour induction.

Fig. 5 presents complications of patients who delivered with natural childbirth. Premature rupture of membranes (PROM) more often occurred among patients of I group than the others.

It was revealed as a result of the study, that the patients who delivered with cesarean section, had PROM, inconsistency of uterine cicatrix, secondary uterine inertia (Fig. 6). The latter has significantly higher frequency in the I group, not any other differences were detected.

Natural childbirth of all patients has indifferences in volume of blood loss (Fig. 7). But there are significantly larger volume of blood loss in the I group at the contrary of each other.

Researching groups	Injuries of birth canal	PROM
I (CME)	4 (40%)	4 (40%)*
II (M)	4 (44,44%)	3 (33,33%)
III (CS)	1 (100%)	0
IV (C)	7 (35%)	4 (20,0%)

Fig. 5. Complications of those patients who delivered with natural childbirth.

* statistically significant for $p < 0,05$

Researching groups	Uterine inertia	Inconsistency of uterine cicatrix	PROM
I (CME)	3 (18,75%)*	1 (6,25%)	5 (31,25%)
II (M)	0	0	3 (27,27%)
III (CS)	0	2 (8%)	7 (28%)

Fig. 6. Complications of patients who delivered with cesarean section.

* statistically significant for $p < 0,05$

Researching groups	Volume of blood loss (natural childbirth), ml	Volume of blood loss (cesarean section), ml
I (CME)	250	693,75*
II (M)	238,9	677,3
III (CS)	230	618
IV (C)	252,5	-

Fig. 7. Volume of blood loss

* statistically significant for $p < 0,05$

Researching groups	Weight, g	Growth, cm	Apgar score at 1 minute after birth	Apgar score at 5 minute after birth
I (CME)	3384	50,54	8	8,5
II (M)	3461,5	51,5	8	8,8
III (CS)	3441,7	51,77	8,04	8,92
IV (C)	3343,6	51,35	8	8,75

Fig. 8. Main parameters of children's state

According to results of our study (Fig. 8), state of newborns in the researching samples do not differ significantly.

DISCUSSION AND CONCLUSION

We observed that the time interval between CME and an ensuing pregnancy is 2 years. The explanation lies in the morphological processes of cicatrix formation. The first two years, granulomatous tissue maturation is supervised; after three years cicatrix's tissue is replaced by a sclerosis process and becomes applied to weakness.

Pregnant women with CME before should be observed for the risk of abortion, fetoplacental insufficiency, preeclampsia and should take courses of preventive treatment. Particular attention should be paid to the category of postoperative patients, who had previously been diagnosed with infertility. Optimal tactic to manage gravidae with CME in pmh, aforicated remedies and prevention can help to avoid hospitalization during pregnancy, improve the parturition process, and decrease the number of newborns requiring expensive equipment for resuscitation assistance and hospital stay.

Patients with CME in pmh should be delivered with cesarean section because the risk for developing secondary uterine inertia combined with limited usage of labour induction is significantly higher. Intraoperative prophylaxis among patients with high

risk of massive blood loss during cesarean section may help to avoid uterine hysterotomy while maintaining patient's fertility. Advanced and rational planning for delivering patients with pmh of CME might contribute in favor of labour and post-partum thereby lowering the workload in the hospital.

As a result of comparing pregnancy and labour in patients with operated and non-operated leiomyoma, it can be claimed that there is non unanimous answer as for when to plan pregnancy for patients diagnosed with leiomyoma, because there is significantly higher risk of abortion during the third trimester. Moreover, patients with pmh of CME underwent more often cesarean section leading to higher blood loss in contrast with pregnancy with non-operated uterine fibroids.

In our opinion, diagnosed infertility is an absolute indication for holding CME [19]. Also this operation can be recommended with leaning on morphological characteristics of tumor (sizes more than 12-weeks-pregnancy or diameter more than 4 cm, atypical localization of tumor, necrosis of nodes), clinical manifestation and complications (acyclic menarche, anemia, high pace of nodes' growing, signs of compression of the pelvic organs) [15,20,21].

In the present study, we completed all of our aims. Our study made possible not only to reveal features of pregnancy and parturitions among patients with uterine cicatrix after CME but also indicate which

of them related to cicatrix-presence, state after leiomyoma and directly state after CME. Needless to say, there were no researches that compare features of these categories among patients.

We are planning to continue by studying the ratio between the features of pregnancy and labour in patients after CME with clinical and morphological characteristics of previously flowed uterine fibroids disease, surgical treatment and postoperative period.

CONFLICT OF INTEREST

The author confirms that this article content has no conflicts of interest.

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