

# Pregnancy and birth related incidents associated with a history of uterine fibromatosis

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## Abstract

The main aim of this study was to evaluate the main causes of pregnancy and birth-related incidents, in patients with a history of uterine fibromatosis. Retrospective study, performed on 275 women, admitted in an Emergency Hospital from Bucharest. A number of 70 pregnancies (36.27%) presented different types of incidents during pregnancy. The occurrence of incidents during pregnancy has not been associated with the presence of a history of pain-related symptoms. Obesity and hypertension were strongly associated with the presence of pregnancy incidents. Birth-related incidents have been identified in a total of 39 cases (20.2% of all supervised births). In the vast majority of cases, the presence of birth incidents was associated with pain-related symptoms and especially the presence of painful uterine contractions. People who have accused birth-related incidents have significantly more frequently reported a history of repeated bleeding. In general, the surgical method used for the treatment of uterine fibroids was not statistically associated with the presence of birth events, although subgroup analysis identified a series of associations, which should be checked by further analysis before being clinically validated. The presence of incidents during pregnancy significantly lowers the risk of incidents during childbirth.

**Keywords:** uterine fibromatosis, birth-related incidents, pregnancy related incidents

## Introduction

Uterine fibromatosis is a very frequent pathology in women. For example, a study performed in the United States showed this disorder to occur, until 35 years old, in 60% of African-American women, and in 40% or Caucasian women; the percentage increased up to 80% and 79% respectively at the age of 49<sup>(1)</sup>. This condition is found in around 3-12% of all pregnancies, and could alter its outcome by distorting the uterine cavity, and therefore potentially leading to infertility; it has also been associated with spontaneous abortion, placenta previa, preterm birth, increase usage of cesarean section, or fetal malpresentation<sup>(2)</sup>. The main aim of this study was to evaluate the main causes of pregnancy and birth-related incidents, in patients with a history of uterine fibromatosis.

## Methods

The study was performed on 275 women, admitted in an Emergency Hospital in Bucharest. Each patient gave her informed consent for the inclusion in the study, for the analysis of her medical data, while respecting the confidentiality of the medical information. Medical data were included in an Excel database; qualitative variables were computed semi-quantitatively using the SPSS v20 software. We used descriptive statistics (i.e. mean, median, standard deviation), non-parametric tests (Chi<sup>2</sup>, Fisher) – for testing associations between qualitative variables, and ANOVA – to test the presence

of statistically significant differences of the mean on two or more subgroups. Not all the charts included complete data; therefore, some of the statistical analyses were made on a smaller number of patients. All statistical analyses were performed using the SPSS v20 software. A p value below 0.05 was considered statistically significant.

## Results

The average age of the patients included in the study group was 35.59 years, with a relatively equal distribution around the mean, and with a standard deviation of 6.2 years.

In most cases in which the patients had a diagnosis of uterine fibroma, they had given birth through cesarean section (50 cases, 29.7%). In six cases was needed a surgical intervention, one patient gave birth through a small cesarean section, and nine gave birth naturally.

A number of 70 pregnancies (36.27%) had various types of incidents during pregnancy. The mean age of persons who had them was 33.74 years, while the mean age of the persons not having incidents was 35.25; the difference was not statistically significant (ANOVA, F=3.7, p=0.55).

The identification of pregnancy-related incidents was not associated with the presence of a previous history of pain (Pearson Chi<sup>2</sup>=4.8, p=0.186). However, a subgroup analysis found painful uterine contractions to be significantly more frequent in persons with pregnancy-related incidents. See Table 2 for details.

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**Table 1** Mean age of patients with pregnancy related incidents

Pregnancy related incidents	Mean	No	Dev. Std.
No	33.738	122	4.9239
Yes	35.257	70	5.7677
<b>Total</b>	<b>34.292</b>	<b>192</b>	<b>5.2834</b>

**Table 2** Association between pregnancy related incidents and pain. Between *a* and *b* there is a statistically significant difference, at a p value below 0.05

		Pain				Total
		No	Yes	Unspecified	Painful uterine contractions	
Pregnancy related incidents	No	42 <sub>a</sub>	37 <sub>a,b</sub>	5 <sub>a,b</sub>	39 <sub>b</sub>	123
	Yes	17 <sub>a</sub>	17 <sub>a,b</sub>	3 <sub>a,b</sub>	33 <sub>b</sub>	70
<b>Total</b>		<b>59</b>	<b>54</b>	<b>8</b>	<b>72</b>	<b>193</b>

**Table 3** Association between pregnancy related incidents and obesity. Between *a* and *b* there is a statistically significant difference, at a p value below 0.05

		Obesity		Total
		No	Yes	
Pregnancy related incidents	No	119 <sub>a</sub>	4 <sub>b</sub>	123
	Yes	59 <sub>a</sub>	11 <sub>b</sub>	70
<b>Total</b>		<b>178</b>	<b>15</b>	<b>193</b>

**Table 4** Association between pregnancy related incidents and arterial hypertension. Between *a* and *b* there is a statistically significant difference, at a p value below 0.05

		Arterial hypertension		Total
		No	Yes	
Pregnancy related incidents	No	121 <sub>a</sub>	2 <sub>b</sub>	123
	Yes	61 <sub>a</sub>	9 <sub>b</sub>	70
<b>Total</b>		<b>182</b>	<b>11</b>	<b>193</b>

**Table 5** Association between pregnancy related incidents and endometriosis. Between *a* and *b* there is a statistically significant difference, at a p value below 0.05

		Endometriosis		Total
		No	Yes	
Pregnancy related incidents	No	111 <sub>a</sub>	12 <sub>b</sub>	123
	Yes	69 <sub>a</sub>	1 <sub>b</sub>	70
<b>Total</b>		<b>180</b>	<b>13</b>	<b>193</b>

**Table 6** Mean age at patients having birth-related incidents

Birth-related incidents	Mean age	No	Dev. Std
No	32.778	81	4.6690
Yes	34.385	39	4.1966
<b>Total</b>	<b>33.300</b>	<b>120</b>	<b>4.5662</b>

**Table 7** Association between birth-related incidents and repeated bleeding. Between *a* and *b* there is a statistically significant difference, at a p value below 0.05

		Repeated bleeding			Total
		No	Yes	Unspecified	
Birth related incidents	Yes	57 <sub>a</sub>	17 <sub>a,b</sub>	7 <sub>b</sub>	81
	No	35 <sub>a</sub>	4 <sub>a,b</sub>	0 <sub>b</sub>	39
<b>Total</b>		<b>110</b>	<b>21</b>	<b>7</b>	<b>120</b>

Obesity was strongly associated with pregnancy related incidents (Pearson Chi2=9.7, p=0.002). See Table 3 for details.

Arterial hypertension was strongly correlated with pregnancy-related incidents, with a Pearson Chi2 value of 10.5, p=0.001.

The presence of endometriosis was associated negatively with the presence of pregnancy related incidents (Pearson Chi2=4.9, p=0.026). See Table 5 for details.

### Birth-related incidents

Birth-related incidents were identified in 39 cases (20.2% of all surveilled pregnancies). If we are to exclude the cases in which the presence of birth-related incidents were not specifically noted in charts (73

cases, 38%), we found their actual incidence to be around one third. Therefore, a correct identification of the clinical and laboratory characteristics associated with them is paramount for taking active preventive measures.

The mean age of the persons who had birth-related incidents was around 1.5 years greater compared to the one of those who had not these type of incidents; however, the difference was not statistically significant (ANOVA, F=3.3, p=0.07). See Table 6 for details.

In most cases, the presence of birth-related incidents was associated either with pain, or with painful uterine contractions. In a single case out of 39, the patient did not have pain as a symptom before birth and had birth-related complications (Pearson Chi2=23, p<0.001).

**Table 8** Association between birth-related incidents and signs of inflammation

Birth-related incidents		Signs of inflammation			Total
		No	Yes	Unspecified	
	No	73 <sub>a</sub>	5 <sub>a</sub>	3 <sub>a</sub>	81
	Yes	37 <sub>a</sub>	2 <sub>a</sub>	0 <sub>a</sub>	39
<b>Total</b>		<b>110</b>	<b>7</b>	<b>3</b>	<b>120</b>

**Table 9** Association between birth-related incidents and the surgical method used to treat uterine fibromatosis. Between *a* and *b* there is a statistically significant difference, at a p value below 0.05

		Birth-related incidents		Total
		No	Yes	
Surgical method	No	39 <sub>a,b</sub>	16 <sub>a,b</sub>	55
	Laparoscopy	5 <sub>b</sub>	0 <sub>b</sub>	5
	Classical	36 <sub>a,b</sub>	21 <sub>a,b</sub>	57
	Vaginal	0 <sub>a</sub>	1 <sub>a</sub>	1
	Hysteroscopy	0 <sub>a</sub>	1 <sub>a</sub>	1
	Embolisation	1 <sub>a,b</sub>	0 <sub>a,b</sub>	1
<b>Total</b>		<b>81</b>	<b>39</b>	<b>120</b>

Repeated bleeding were identified significantly more frequent in persons who accused birth-related incidents (Pearson Chi2=6.4, p=0.04). See Table 7 for details.

The presence of inflammation signs was not associated with the presence of birth-related incidents (Pearson Chi2=1.56, p=0.46). See Table 8 for details.

In general the surgical method used for the treatment of uterine fibromatosis was not associated with the presence of birth-related incidents (Pearson Chi2=7.8, p=0.17). However, a subgroup analysis reveals significant associations between some surgical methods. See Table 9 for details.

The presence of pregnancy-related incidents decreases significantly the risk for birth related incidents (Pearson Chi2=5.6, p=0.018). It is possible that this association to be generated by a more attentive following of the pregnancy and birth if various conditions/incidents were identified during pregnancy, therefore decreasing birth-related complications.

## Discussion

It is known that during pregnancy there is a hypersecretion of gonadotropic pituitary, estrogen and progesterone hormones, which, associated with an increased uterine blood flow, could in theory increase the size of the uterine fibromas. However, most recent studies have rejected this hypothesis, although some have shown a positive relationship<sup>(3)</sup>.

It was classically considered that people with uterine fibromatosis are at increased risk of complications associated with pregnancy<sup>(4)</sup>. More recent studies have not been able to highlight, beyond any suspicion, this association<sup>(5)</sup>. However, complications associated with uterine fibromatosis such as degeneration and torsion of the fibroma during pregnancy, abortion (especially for submucosal fibroids), pre-term birth, antepartum bleeding, abruptio placentae, fetal abnormalities, premature rupture of membranes, placenta previa, intra-uterine growth restriction, preeclampsia, or increased cesarean delivery have been reported in

the scientific literature<sup>(6)</sup>. In order to minimize these risks, a miomectomy before or during the delivery can be performed. The main indications of intrapartum myomectomy or during the delivery are: increased risk of complications (bleeding, uterine rupture, abortion, premature delivery), or if the procedure cannot be delayed due to an increased risk for the mother<sup>(7)</sup>.

Until recently, the only treatment useful for patients believed to have an increased risk of infertility caused by uterine fibromatosis, or at increased risk for complications due to this condition, was myomectomy, either abdominal or hysteroscopic. A recent meta-analysis has shown that the likelihood of becoming pregnant is much greater when surgery was performed for the treatment of fibromatosis compared to the instances in which it is not performed, the pregnancy index rising from 0.30 to 1.72<sup>(8)</sup>. Although significantly increases the fertility, myomectomy has been shown to also increase significantly the need for cesarean section, which have been performed, according to most studies, in more than 50% of cases.

In our group, from 71 cases, in 65 cases a cesarean section was recommended, a much higher percentage than the one cited in the literature, one of the reasons being some laxity in the provision of caesarean indication in Romania.

According to the literature, the most common complications of uterine fibroids include:

- Local haemorrhage, occurring in about 60% of patients with fibroma, and only 37% of those who did not have this disease<sup>(9)</sup>.
- Pain. Individuals with uterine fibroids experience more painful bouts such as bladder and/or intraabdominal pressure (i.e. 32% and 15%, respectively), pain at various times of the menstrual cycle, painful sexual activity. However, there were no statistically significant differences in menstrual cramps or premenstrual abdominal pain between groups of patients with and without uterine fibromatosis<sup>(9)</sup>.

Although the study group did not include an exceptionally large number of patients (275), a significant number of results could be obtained through an appropriate analytical approach that may be important in the gynecological clinic.

Within our study group, almost 40% of subjects had pain-related symptoms, a value similar to that reported in the above mentioned literature. Bleeding was reported by about 40% of patients, a much lower value than the one reported in the literature, a possible cause being the lower age of the subjects included in our study group.

The patients included in the study group presented a series of comorbidities, such as hypertension, diabetes, obesity, endocrine disorders, etc. However, with few exceptions, the presence of these comorbidities did not significantly influence the evolution of the patients or their reproductive status.

A number of 70 pregnancies (36.27%) presented different types of incidents during pregnancy. The

occurrence of incidents during pregnancy has not been associated with the presence of a history of pain-related symptoms.

Obesity and hypertension were strongly associated with the presence of pregnancy incidents. Obesity is known as an independent risk factor for the development of pregnancy complications. For example, Sebire et al., on a batch of 176923 normophoral subjects, 79015 moderately obese individuals and 31276 very obese individuals, showed that obese people had an increased risk (compared to normal, with a confidence interval of 99%), to have: gestational diabetes (1.68 (1.53-1.84), 3.6 (3.25-3.98)); proteinuria preeclampsia (1.44 (1.28-1.62), 2.14 (1.85-2.47)); induction of pregnancy (2.14 (1.85-2.47), 1.70 (1.64-1.76)); cesarean delivery (1.30 (1.25-1.34), 1.83 (1.74-1.93)); hemorrhage postpartum (1.16 (1.12-1.21), 1.39 (1.32-1.46)); genital infections (1.24 (1.09-1.41), 1.30 (1.07-1.56)); urinary tract infections (1.17 (1.04-1.33), 1.39 (1.18-1.63)); wound infection (1.27 (1.09-1.48), 2.24 (1.91-2.64)); weight of the newborn over percentile 90 (1.57 (1.50-1.64), 2.36 (2.23-2.50)), intrauterine death (1.10 (0.94-1.28), 1.40 (1.14-1.71))<sup>(10)</sup>.

Birth-related incidents have been identified in a total of 39 cases (20.2% of all supervised births). However, if we exclude cases where it was not explicitly stated the occurrence of birth incidents (73 cases, respectively 38% of the total number of supervised pregnancies), it results that about one third of the pregnancies presented birth incidents, which makes identification of the clinical and laboratory characteristics associated with them, essential for the development of active preventive measures. In the vast majority of cases, the presence of birth incidents was associated with pain-related symptoms and especially the presence of painful uterine contractions. In only one case of 39, the patient did not show pain during pregnancy and presented complications at birth. People who have accused birth-related incidents have significantly more frequently reported a history of repeated bleeding.

## Conclusions

In conclusion, the surgical method used for the treatment of uterine fibroids was not statistically associated with the presence of birth events, although subgroup analysis identified a series of associations, which should be checked by further analysis before being clinically validated.

Interestingly, the presence of incidents during pregnancy significantly lowers the risk of incidents during childbirth. It is possible that this association is generated by a more careful follow-up of pregnancy and childbirth if medical problems are identified during pregnancy that requires more careful patient supervision. ■

**Conflict of interests:** The authors declare no conflict of interests.

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