

# Clinical and ultrasonographic implications of uterine leiomyomatosis in pregnancy

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*Summary: Objective:* To study the complications related to leiomyomatosis in pregnancy by clinical and ultrasonographic assessment.

*Design:* A retrospective study.

*Subjects:* All pregnancies admitted to the 2nd Institute of Gynecology and Obstetrics, Policlinico Umberto I, in the period between January 1992 to December 1993 were surveyed.

*Results:* Gestational age at the time of ultrasonographic neoplasm diagnosis was  $25.1 \pm 13.4$  weeks, we found no correlation between maternal age or parity affecting pregnancy outcome. Leiomyomatosis complicated pregnancy rate was 1.68%. Myomatosis was diagnosed clinically in 25 of 67 cases (37.3%). Regarding the location of the neoplasm, 59% was located in the corpus-uteri, 21% was considered a diffuse neoplasm and the 14% was located in the fundus. Threatened abortion was the most frequent complication (20%), abortion was the second (16.4%). We observed an increased abortion threat rate ( $p < 0.001$ ) in those cases where the leiomyoma was in relation with the placenta. We had a surgery rate of 76% in pregnancies complicated by myomatosis, and the indication for surgery was given either primarily or exclusively by the presence of myomatous formation in 19 cases (50%).

*Conclusions:* Our study suggests that location of the leiomyoma in relation to the placenta is a higher risk factor than its size, and that there is a higher risk for threats of abortion and abortion rates in pregnancies complicated by leiomyomatosis. We recommend that every pregnant woman with a suspected myoma should be ultrasonographically scanned.

*Key words:* Leiomyomatosis; Fibromatosis; Pregnancy; Ultrasonography.

## INTRODUCTION

The association between leiomyomatosis and pregnancy is of obstetric concern regarding the management at the time of

delivery, in those cases where pregnancy has not been interrupted spontaneously before term.

The frequency of myomatosis in pregnancy varies, depending on the author, from 0.3% to 2.6% (<sup>1-4</sup>).

Leiomyomas have been associated in pregnancy to premature labor, increased incidence of abortions, threatened abortions, ectopic pregnancy, disseminated intravascular coagulation, hemoperitoneum, abruptio placentae, malpresentation, labor dystocia, intrauterine growth retardation, pelvic pain and postpartum hemorrhage(<sup>5</sup>). Frequently, when neoplasms are of redu-

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ced diameter, they can be asymptomatic<sup>(6)</sup>, hence diagnosed by an ultrasonographic scan or at cesarean section. Even when the oocyte has implanted successfully in the uterine cavity, the pregnancy outcome is affected by the alterations in the implant plan (especially if nodes are submucous) and due to the blood vessel flow alterations<sup>(7)</sup>. Ultrasonographic assessment permits us to evaluate the myomatous formations accurately, from a volumetric point of view and in relation to its site, to its tendency to develop in the precint of the uterine wall or towards the interior or the exterior of the cavity and to its relation to the placenta<sup>(8)</sup>. Finally, decision problems are present for the physician in fibromatosis related to pregnancy, such as hysterectomy or myomectomy choice in women after 40 years wishing to have a baby<sup>(9)</sup> or adhesions after surgery<sup>(10)</sup>. The aim of the present article was to retrospectively analyse data concerning leiomyomatosis and pregnancy in our Department and to statistically associate different parameters for a better understanding of maternal or fetal complication rates from myomatous pathology.

## SUBJECTS AND METHODS

Our survey included a total of 5,053 pregnancies admitted to the 2nd Department of Obstetrics and Gynecology, Policlinico "Umberto I" in Rome, in the period from January 1992 to December 1993. Sixty-seven pregnancies were ultrasonographically positive for uterine mass indicating a leiomyoma and 18 were diagnosed at the time of delivery, thus making a total of 85 pregnancies complicated by leiomatosis, with a 1.68% leiomyomatosis complicated pregnancy rate. Clinical records were reviewed regarding to age, parity, gestational age at the time of leiomyoma diagnosis, mode of delivery, obstetrical complications present, previous pregnancy complications, pregnancy outcome, indication for cesarian section and puerperium complications. In the present study we included a research as to the location and diameters of the ultrasonographically evidenced leiomyoma, fulfilling the following criteria: 1) a mass greater than 3 cm in diameter, 2) the mass had to be relatively spherical, 3) the uterine contour had to be

distorted by the mass, 4) the mass had to be of different acoustical structure from the miometrium. The study group was divided into four separate groups on the basis of the diameter of the largest leiomyoma: 24 patients had diffuse leiomatosis, 31 had fibroids between 3 and 6 cm, 17 had fibroids between 6 and 10 cm, 13 had fibroids larger than 10 cm. Neither miomectomy nor hysterectomy in pregnancy were carried out in the present study group.

## STATISTICS

We performed the one way analysis of variance, unpaired t-test or  $\chi^2$  when necessary. If assumptions for the parametric test were violated, we performed a Mann-Whitney rank sum test or the Kruskal-Wallis one way ANOVA on ranks. We considered a  $p < 0.05$  a significant difference, valid parameter.

## RESULTS

### *Age, parity and patient's race*

The average age in our study group was 34.1 yrs, ranging from 23 to 46 yrs. There were 18 primigravidas (21%) and 67 multiparas (78%), considering 9 pregnancies with parity  $> 3$ .

Regarding the place of birth, 77 were Italian, 2 were from other European countries (one from Spain, another from England), and 6 were non-European women (two were from Zaire, two from Libia and the other to from Tunisia). Gestational age at the time of neoplasm diagnosis was  $25.1 \pm 13.4$  weeks. We found no correlation between maternal age and leiomatosis affected pregnancy outcome ( $p=0.91$ ) and between parity and pregnancy outcome ( $p=0.51$ ).

### *Clinical detection of uterine myomas during pregnancy.*

By reference of the physician, myomas or pathologies related to uterine myomas were diagnosed in 25 of 67 cases (37.3%), at clinical examination 8 cases were rela-

Table 1. – Location of uterine leiomyomatosis to ultrasonography.

Location	Cases	%
Corpus uteri	51	59%
Diffuse	18	21%
Fundus	12	14%
Isthmus	2	2%
Cornua	2	2%

ted to diffuse leiomatosis, 3 cases to 3 to 6 cm uterine leiomyoma and 3 cases to 6 to 10 cm uterine leiomyoma to ultrasonography. Clinical examination was significantly related to ultrasonographic detection ( $\chi^2=17.05$ ,  $p=0.02$ ).

#### Location of uterine leiomatosis to ultrasonography

Fifty-one of 85 patients had a myoma on the corpus-uteri (59%), the myoma was considered a diffuse neoplasm in 18 cases (21%), was on the fundus in 12 cases (14%), on the isthmus in 2 cases (2%) and on the cornua in 2 cases (2%) (Table 1). No significant change in myoma diameters was found during pregnancy examination. No statistical correlations were found when confronting location of the neoplasm with age, parity and pregnancy outcome.

#### Pregnancy complications

Table 2 shows the pregnancy complications correlated or simultaneous to leiomyomatosis. We found threatened abortion in 17 of 85 cases (20%), abortion in 14 cases (16.4%), and premature rupture of membranes in 7 cases (8.2%). We observed an increase of threatened abortion rate ( $p<0.001$ ) in those cases where the neoplasm was in relation to the placenta or lay outside the submucosa as compared with more internal presentation myomas (serous, subserous location). There were no statistical analysis varia-

tions between the abortive event and the diameter of the myomatous formation or the location with respect to the placenta.

#### Influence of myomas on mode of delivery

The cases considered are those surveyed up to the end of the pregnancy, of which the events related to delivery are known. The average gestational age at delivery in pregnant patients with leiomyomatosis was 38 weeks for cesarean section group ( $n=29$ ) and 39 weeks for vaginal delivery group ( $n=9$ ), not resulting in a statistically significant difference ( $t=161$ ,  $p=0.15$ ). This calls for a cesarean section rate of 76% for patients with leiomyomatosis in our department. Just one vaginal delivery was complicated with another non-leiomyomatosis pregnancy complication (premature rupture of membranes), on the other hand, 10 cesarean section deliveries were complicated by other pa-

Table 2. – Pregnancy complications in study group.

Complication *	Cases	%
Threatened abortion	17	20%
Abortion	14	16.4%
Premature rupture of membranes	7	8.2%
Pregnancy induced hypertension	5	5.8%
Chromosomic alterations	5	5.8%
Pelvic pain	4	4.7%
Diabetes	3	3.5%
IUGR	2	2.3%
Ectopic pregnancy	2	2.3%
Twin pregnancy	1	1.1%
Malpresentation	1	1.1%
Fever	1	1.1%
Threatened preterm delivery	1	1.1%
Abruptio placentae	1	1.1%
Placenta previa	1	1.1%

(\*) One single patient could have more than one complication.

Table 3. – *Influence of myomas on mode of delivery.*

Complication Mode of delivery	Myoma *	Diabetes **	PIH **	Previous placenta *	Threats of Premature preterm delivery **	Premature rupture of membranes**	Abruptio placentae *
Cesarean section	19	2	4	1	1	1	1
Spontaneous delivery	8					1	

(\*) Only myoma as indication for surgery.

(\*\*) Complication together with myoma as indication for surgery.

thologies (Table III), thus the indication for surgery was given either primarily or exclusively by the presence of myomatous formation in 19 cases (50%). The choice for cesarean section increases in our case series proportionally to the dimensions of the myomatosis.

## CONCLUSIONS

Undoubtedly myomatous pathology in pregnancy is a situation which carries an increased risk for maternal and fetal health. One accurate clinical examination could detect the leiomyoma before the ultrasonographic evaluation, in our study group 25 of 67 cases (37.3%), which is practically the same clinical detection rate as others (37.6 to 41%) which were diagnosed by the physician the higher pick-up rate (33%) being for those considered diffuse nodes to ultrasonography. And even ultrasonographic diagnosis of myomas could be difficult; in fact, in the first trimester they may be confused with a corpus luteum, cystic teratoma of the ovary, other benign or malignant tumors of the ovary, and more rarely, of the pregnant cornua of a bicornuate uterus<sup>(11)</sup>. Besides a homogeneous mass, isoechoic with the adjacent myometrium, without acoustic attenuation or with distortion of only the endometrial surface, could be a focal contraction<sup>(12, 13)</sup>.

Nevertheless, clinical examination in our department was significantly related to ultrasonographic evaluation at  $p=0.02$ .

There was a net tendency for cesarean in uterine myomatosis (76%), with the myomatous pathology as only indication for surgery in 50% of cases, and this related to an increased choice for surgery as the leiomyoma was of greater diameter. Regarding pregnancy complications, threatened abortion was by far the most frequent complication (20%), followed by abortion (16.4%) and rupture of membranes (8.2%). We found in our case series only one pregnancy with abruptio placentae and only one case of threats of preterm delivery, this despite other authors' findings<sup>(14)</sup>. We remarked an interesting abortion threats rate increase when the myoma was in relation to the placenta or lay outside the submucosa, and in fact, in cases in when myomatous formation the located in contact with the placental area, there appeared to be a higher pregnancy complication rate, especially with the threat of abortion and the threat of premature delivery<sup>(8)</sup>.

Our study suggests that the location of the myomatous formation in relation to the placenta, is a higher risk factor than the neoplasm size. Ultrasound evaluation has proved to be an accurate technology for recognition and monitoring of myomatous formations and complications during pregnancy and an useful tool for the decision of the mode of delivery and to eventual anticipations of itself, thus every pregnant woman with suspected myoma should be ultrasonographically scanned.

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