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## Laparoscopic myomectomy in infertility treatment

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### ABSTRACT

Leiomyomas (fibroids or myomas) are benign uterine tumors of unknown etiology. Fibroids are most common in women aged between 30 and 40 years, but they can occur at any age. At present, laparoscopic myomectomy is the most appropriate surgical technique for patients with fertility disturbances. We conducted a prospective study, in which a number of 72 patients diagnosed with uterine fibromatosis and infertility were investigated for the impact of laparoscopic myomectomy (i.e. intramural and subserosal fibroids), the fertility rate and the average time for the appearance of pregnancy. The patients were randomly divided into 2 groups: Group 1, consisted of 36 patients with infertility and uterine fibroids associated in which laparoscopic myomectomy it was practiced, and Group 2, consisted of 36 patients, having the same diagnosis who refused surgical ablation. From the 36 patients which were operated, 11 had intramural fibroids and 25 had presented one or more subserosal fibroids (Group 1). The fertility rate was 25% for patients with no surgery (Group 2) comparing with 86.5% for patients with laparoscopic myomectomy (Group 1, 54.5% for patients with intramural fibroids and 32% for

patients with subserosal fibroids). The average time of the appearance of the pregnancy was 23 months for the patients which were not operated (Group 2), and 35.2 months for patients with laparoscopic myomectomy (Group 1, 19.2 months for the patients with intramural fibroids and 16 months for the patients with subserosal fibroids).

Our study shows that laparoscopic myomectomy improves the fertility rate compared to non-surgical treatment in the case of patients with uterine fibroids and infertility.

Keywords: leiomyomas, infertility, myomectomy, laparoscopy.

### Introduction

Uterine fibroid is a benign tumor that appears very frequently in women of reproductive age. The general prevalence of fibromatosis is between 20 and 40%. This varies with age and it is higher in the end of fertile period. Approximately 35-40% of women with the age over 40 have uterine fibroids (fibroleiomyomas). On the other hand, women’s current trend of delaying pregnancy beyond the age of 30 years but also increasingly frequent disturbances of

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fertility have led to the need for uterine leiomyomas analysis in relation to the gestation [1]. The relationship between the uterine fibroid and infertility, except in evident cases (i.e. bulky fibroids that distorts uterine cavity, intracavitary fibroids or fibroids which can produce tubal obstruction) is not yet fully established. Mechanisms through which fibroids prevents pregnancy are complex and not just mechanical. Disorders of microvascularisation in endometrium, and the influences on the gestational implantation stages are still not fully revealed. Uterine leiomyoma is present in approximately 10% of the cases on patients with infertility [1, 2]. If it is demonstrated a causal link between the uterine fibroids and infertility, than surgical treatment should be indicated [2]. Laparoscopic myomectomy was described for the first time in 1979 only for subserous fibroid. Since the beginning of the 1990's, the procedure has begun to be carried out for intramyometrial leiomyomas. At present, laparoscopic myomectomy is one of the most used surgical techniques for patients with infertility [3].

In the present study conducted on 72 women diagnosed with infertility and uterine fibroids associated, we aimed to follow the uterine myoma excision and to obtain a satisfactory cure of the uterine wall with fertility preservation, the postoperative surveillance of patients, and further pregnancy carried without any complications until term showing the role of laparoscopic myomectomy in infertility treatment.

## Materials and Methods

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A prospective study over a period of 4 years, between 2010 - 2014 in the Department of Obstetrics and Gynecology in the Emergency Clinical Hospital 'Sf. Pantelimon' in collaboration with 'Regina Maria' Hospital from Bucharest was carried out. The study included 72 patients at reproductive age, diagnosed with infertility and uterine fibromatosis, designed by case control type. Patients have been divided into two groups: Group 1, consisted of 36 patients with

infertility and uterine fibroid associated (subserosal or intramural fibroids) to which it was practiced laparoscopic myomectomy, and Group 2, consisted of 36 patients diagnosed with infertility and uterine fibroids who refused surgical ablation.

The criteria of inclusion were: (1) patients who given consent for surgical intervention or for participation into the study; (2) patients with diagnosis of primary or secondary infertility and uterine fibroids associated with single or multiple/subserous or intramural, with or without symptomatology (i.e. chronic pelvic pain, dysmenorrhoea, excessive menstrual bleeding or intermenstrual bleeding); and (3) dimensions of fibroid <6 cm.

The exclusion criteria were: (1) patients with infertility of another cause (i.e. ovarian, tubar, etc.) showed by different tests; (2) patients with previous uterine surgical operation (except caesarean section); and (3) patients with pediculate or intraligamentar uterine myoma, in which they were considered to be outside of myometrium.

Diagnosis was established on clinical and imagistic analysis, including the investigations recommended protocols, and excluding other causes of infertility. Uterine fibroids were confirmed (by analyzing the sizes, number, position, form and vascularization or for the performance of an exactly differential diagnosis) by transvaginal ultrasound. Data obtained from ultrasonography have been stored for comparative assessment postoperative.

Surgical intervention was made after a standardized technique [4] which involved incision of peritoneum, hysterotomy (Figure 1) and then the incision of capsule, dissection and extracting of myoma (Figure 2). Myometrium has been vertically incised usually using monopolar cautery. Fundal fibroids and those located subserosal, were easier to tackle from a technical point of view.

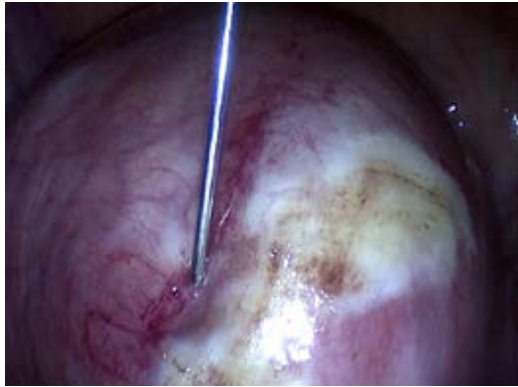


Figure 1- Peritoneum incision.

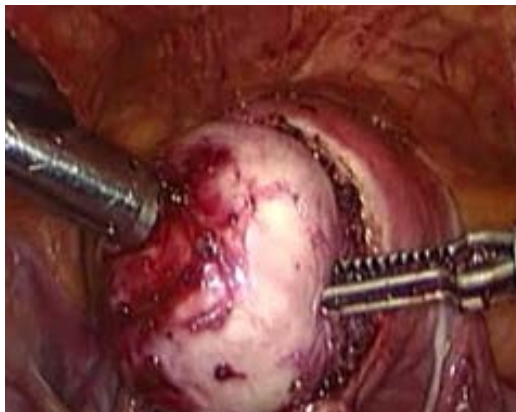


Figure 2 - Excision of uterine fibroid.

The length and the depth of uterine incision were determined by the diameter and position of fibroids. After enucleation of fibroids, the reconstruction of uterine wall have been established through suturing with distinct resorbable sutures, monolayer or two layers, in the case of intramural fibroids (Figure 3).



Figure 3- Restoring uterine wall with separated resorbable wires.

## Results and Discussion

From the total number of patients which were submitted to laparoscopic myomectomy 11 had intramural fibroids (subgroup A) and 25 had presented one or more subserosal fibroids (subgroup B). During the study the pregnancy was obtained in 9 cases (25%) in the 2nd Group (Figure 4) and in 14 cases (39%) in the Group of operated patients (Group 1, Figure 5), including 6 gestations from the subgroup A and 8 gestations from the subgroup B.

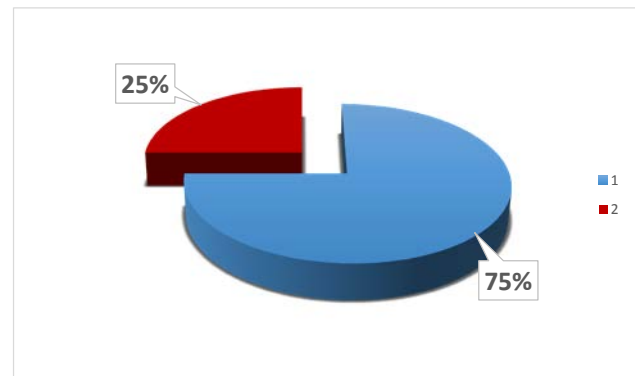


Figure- 4. Patients without operation, Group 2. (1) patients which have not obtained pregnancy spontaneously; (2) pregnancies which have arisen spontaneously pregnancy.

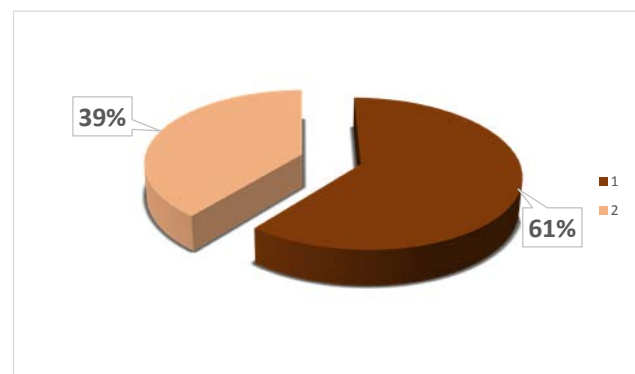


Figure 5- Patients with laparoscopic myomectomy, Group 1. (1) patients with no pregnancy; (2) patients with pregnancy obtained.

Usually, fertility is a populational indicator calculated by reporting total number of deliveries to women population of childbearing age, expressed at 1000 inhabitants. In our study we used another indicator like specific rate of fertility. Specific rate of fertility (Figure 6) was 25% for patients with no surgery compared with 54.5 % in operated patients with intramural fibroid, and 32% in operated patients with subserosal fibroid. Stands out a rate of fertility was much higher for operated patients with intramural fibroid (subgroup A).

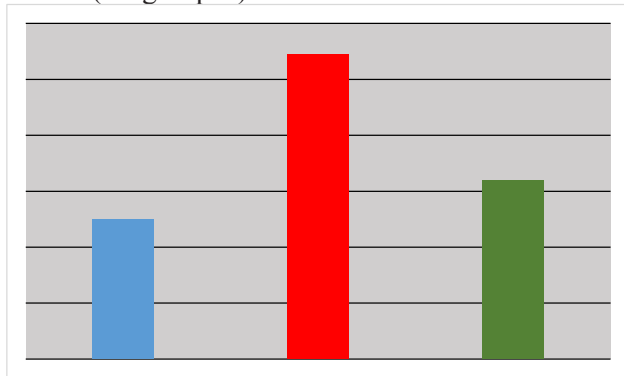


Figure 6 - Specific rate of fertility.

On operated patients the average time of hospitalization was almost identical in the two subgroups. Immediate complications rate or late (under gestation or labor) was less than 1% in both subgroups (Table I).

Table I - Complications and monitoring immediately.

Monitoring 48-72 h/ Complications	Subserous myomas	Intra-myometrial myomas	p value
Average duration of operation	94 min	110 min	0.05
Average duration of hospitalization	2.7 days	2.8 days	0.05
Intraoperative bleeding	140 ml	160 ml	0.05
Intermenstrual bleeding	2 cases	3 cases	0.05
Pelvic drainage	120 ml	135 ml	0.05

The average time of the appearance of the pregnancy was 23 months for patients without surgery, 19.2 months for the patients with intramural fibroids and 16 months for the patients with subserosal fibroids (Table II).

Table II - Complications and long time monitoring.

Long term monitoring	Patients whithout surgery	Subserous myomas	Intra-myometrial myomas
Number of pregnancy obtained	9	8	6
Average duration of the appearance of the pregnancy	23 month	16 month	19.2 month
Spontaneous abortion	1	0	1
Bleeding in first trimester	2	1	1
Uterine contractions	2	3	2
Premature birth	1	2	1
Normal birth	4	2	2
Caesarean section	5	6	4
Uterine rupture	0	0	0

The 23 deliveries were completed as follows: 8 vaginal and 15 by requiring caesarean section. From the group of patients with laparoscopic myomectomy (Group 1), 4 were given birth naturally (28.5%) and 10 by requiring cesarean operations (71.4%) (Table II). There has been no case of uterine rupture [5], only a single patient necessitated subsequent laparoscopic checking for the control of hemostasis. There was also no need for the conversion by laparotomy in any case. In our study, vaginal birth is possible, however in most cases it is preferred caesarean section for the prophylaxis of uterine ruptures [6-8].

Although in our study the patients with intramural fibroids was showed to be in a small

number, surgical removal it seems to correlate statistical more strongly with improvement fertility than excision of subserosal fibroids [9-11]. More extensive and randomized studies are required, to show further the epidemiological role of laparoscopic myomectomy in the management of the fertility disorders [12-15].

## Conclusions

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Laparoscopic myomectomy was showed to improve the fertility rate as compared to non-surgical treatment in the patients with uterine fibromatosis and infertility. The post-operation pain and complications rate is very low and the time of hospitalization and postoperative recovery are reduced.

## References

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1. Benecke, C., Kruger, T.F., Siebert, T.I., Van der Merwe, J.P. & Steyn, D.W. (2005). Effect of fibroids on fertility in patients undergoing assisted reproduction. A structured literature review. *Gynecol Obstet Invest.* 59, 225-230
2. Donnez, J. & Jadoul, P. (2002). What are the implications of myomas on fertility? A need for a debate? *Hum Reprod.* 17, 1424-1430
3. Manyonda, I., Sinthamoney, E. & Belli, A.M. (2004). Controversies and challenges in the modern management of uterine fibroids. *BJOG.* 111, 95-102
4. Dubuisson, J.B., Lecuru, F., Foulot, H., Mandelbrot, L., Aubriot, F.X. & Mouly, M. (1991). Myomectomy by laparoscopy: A preliminary report of 43 cases. *Fertil Steril.* 56, 827-830
5. Abbas, A. & Irvine, L. (1997). Uterine rupture during labour after hysteroscopic myomectomy. *Gynaecol Endosc.* 6, 245-246
6. Babaknia, A., Rock, J.A. & Jones, H.W.J. (1978). Pregnancy success following abdominal myomectomy for infertility. *Fertil Steril.* 30, 644-647
7. Eldar-Geva, T., Meagher, S. & Healy, D.L. et al. (1998). Effect of intramural, subserosal, and submucosal uterine fibroids on the outcome of assisted reproductive technology treatment. *Fertil Steril.* 70, 687-691
8. Friedmann, W., Maier, R.F. & Luttkus, A. et al. (1996). Uterine rupture after laparoscopic myomectomy. *Acta Obstet Gynecol Scand.* 75, 683-684
9. Parazzini, F., Negri, E. & La Vecchia, C. et al. (1996). Reproductive risk factors and risk of uterine fibroids. *Epidemiology.* 7, 440-442
10. 10.Novak, E.R. & Woodruff, J.D. (1979). In *Gynecologic and Obstetric Pathology.* 8th ed. Philadelphia, USA: W.B. Saunders. Myoma and other benign tumors of the uterus; pp. 260-278
11. Malzoni, M., Rotond, M., Perone, C., Labriola, D., Ammaturo, F. & Izzo, A., et al. (2003). Fertility after laparoscopic myomectomy of large uterine myomas: Operative technique and preliminary results. *Eur J Gynaecol Oncol.* 24, 79-82
12. Holub, Z. (2007). Laparoscopic myomectomy: Indications and limits. *Ceska Gynekol.* 72, 64-68
13. Seracchioli, R., Manuzzi, L. & Vianello, F., et al. (2006). Obstetric and delivery outcome of pregnancies achieved after laparoscopic myomectomy. *Fertil Steril.* 86(1), 159-165
14. Soriano, D., Dessolle, L. & Poncelet, C. et al. (2003). Pregnancy outcome after laparoscopic and laparoconverted myomectomy. *Eur J Obstet Gynecol Reprod Biol.* 108(2), 194-198