

Fertility following myomectomy at Aba, Southeastern Nigeria

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Abstract

Background: While hysterectomy remains the gold standard treatment for fibroids, it is an unacceptable treatment option for women who wish to conserve their fertility. The actual effects of myomectomy on fertility remain uncertain though. **Objective:** The objective was to ascertain pregnancy and live birth rates among a small group of women undergoing abdominal myomectomy. **Methods:** The study population consisted of women of reproductive age intending to conceive soon after undergoing abdominal myomectomy. A total of 40 women who met the inclusion criteria were recruited for the study and followed-up for 4 years. Women who achieved pregnancy within the study period were analyzed in terms of their demographics and intra-operative findings. **Results:** The mean age of the women was 28 years (range 24–35) married for about 3 years. Majority of the women (50%) had more than 11 fibroid nodules, and the largest nodule was bigger than 5 cm in 35 women (87.5%). Cumulative pregnancy rate was 60% (24/40) while live birth rate was 22/40 (55%) following myomectomy and majority 19/22 achieved this within 2 years of myomectomy. **Conclusion:** Myomectomy for fibroid-associated infertility increase pregnancy rates such that approximately 60% of women undergoing the procedure subsequently conceive.

Key words: Fertility, fibroid, myomectomy

INTRODUCTION

While many women with fibroids conceive easily, some have problems conceiving. The role of fibroids as a possible cause of infertility has been the subject of considerable debate. For this reason, physicians who have patients with uterine fibroids who are trying to get pregnant face a clinical dilemma regarding the best management options. Indirect evidence suggests that the location of fibroids like large intramural, submucosal, and subserosal fibroids can affect the ability to conceive naturally and reduce the effectiveness of assisted reproduction cycles.^[1,2] But concerns remain about the potential adverse complications of

myomectomy such as adhesion formation and high recurrence rate.^[3,4] There are no published randomized controlled studies with sufficient power to support the theory that myomectomy improves fertility outcome. However, despite the lack of evidence from randomized studies, indirect evidence from observational studies suggests that surgical intervention for uterine fibroids does increase pregnancy rates.^[5]

The aim of this study was to review pregnancy and live birth rates among a small group of women undergoing abdominal myomectomy in a single health-care facility in Aba, Southeastern Nigeria. It is hoped that findings in this study would contribute further evidence on the impact of myomectomy on fertility and may be useful when counseling women considering myomectomy for fibroid-associated infertility in our locale.

METHODS

The study population consisted of 40 women of reproductive age intending to conceive soon after undergoing abdominal

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myomectomy (resection of large submucosal lesions with multiple intramural component or intramural lesions that impinge upon or distort the endometrial cavity) in a context of infertility.

Postoperation, these women were followed-up for 4 years. Questions were asked about subsequent fertility and outcome, and any assisted conception treatments. Information retrieved from hospital records included the indications for surgery, the location and size of the fibroids, and co-morbidities. Infertility was defined as the absence of pregnancy after 12 months attempt at pregnancy. For each patient operated in a context of infertility, a preoperative workup was made including age, duration of infertility (primary or secondary), and study of ovarian function (serial follicular tracking, serum follicle stimulating hormone; luteinizing hormone levels and prolactin), partner's semen analysis, and examination of the uterine cavity and fallopian tubes patency by hysterosalpingography.

Meticulous surgical techniques were used and included gentle tissue handling, constant irrigation of the tissue with a physiological saline solution and meticulous hemostasis with the aid of the uterine artery tourniquet. The fibroid capsule was identified, and then enucleation was carried out within the cleavage plane. As the fibroids were enucleated, the vessels surrounding the fibroid were carefully identified, clamped and tied. Depending on the depth and size of the fibroid, the uterine defect was closed in one or two layers with Vicryl 1–0 and the serosa was approximated with Vicryl 2–0. Afterward, copious abdominopelvic lavage was performed using warm normal saline solution and 600 mg of hydrocortisone acetate was instilled into the peritoneal cavity prior to abdominal closure with a view to reduce adhesion formation. Measurement of the weight of the fibroids was done, and histological examination performed at the Pathology Department of our center.

Ethical approval for the conduct of the study was obtained from the Abia State University Teaching Hospital IRB. Statistical analysis was with the aid of Epi Info version 7 (Centers for Disease Control and Prevention, Atlanta, Georgia (USA, 2012). Student's *t*-test was used to compare the mean values of two or more independent variables, and Chi-square analysis was used to compare categorical variables. The $P < 0.05$ were considered significant.

RESULTS

As illustrated in Table 1, the mean age of the women was 28 years (range 24–35) married for about 3 years. Thirty-two women (80%) had primary infertility whilst 20% had recurrent miscarriages. The male partners of 6 (10%) women had abnormal sperm parameters. Majority of the women (50%) had more than 11 fibroid nodules, and the largest nodule was bigger than 5 cm in 35 women (87.5%); Tables 2 and 3, Figures 1 and 2. Cumulative pregnancy rate was 60% (24/40) while live birth rate was 22/40 (55%) following myomectomy and majority 19/22 achieved this within 2 years of

Table 1: Characteristics of 40 women who underwent myomectomy and wished to conceive

	Number	Percentage
Age group in years		
24-28	16	40
29-33	15	37.5
34-38	9	22.5
Presenting complaints [#]		
Severe dysmenorrhea	9	22.5
Menorrhagia	15	37.5
Primary (unexplained) infertility	32	80
Recurrent miscarriage	8	20
Parity		
0	32	80
1	4	10
2	4	10

[#]Majority had more than one presenting complaint

Table 2: Pregnancies after myomectomy by age

	Pregnancies per women in group	
Age of patient in years		
24-28	12/16	NS
29-33	10/15	NS
34-38	2/9	NS

NS=Not significant

Table 3: Characteristics of fibroids in the 40 women

	n (%)	Pregnancy rate n (%)	
Number of fibroids			
1-5	8 (20)	6 (75)	NS
6-10	12 (30)	8 (67)	NS
11-20	13 (32.5)	8 (62)	NS
>20	7 (17.5)	2 (43)	NS
Size of largest fibroids			
<5 cm	5 (12.5)	3 (60)	NS
>5 cm	35 (87.5)	21 (60)	NS
Location of largest fibroid with respect to uterine wall			
Submucosal	9 (22.5)	4 (44.4)	NS
Intramural	25 (62.5)	16 (64)	NS
Subserosal	6 (15)	4 (66.7)	NS

NS=Not significant

Table 4: Fertility outcomes after myomectomy in the 40 women

Mean delay in conception (12.6±4.6 months) (5-24 months)	Number	Percentage
Total number of pregnancies	24/40	60
Number of spontaneous pregnancies	20/40	50
Number of induction of ovulation and intrauterine insemination	3/40	7.5
Number of <i>in vitro</i> fertilization pregnancies	1/40	2.5
Total live births	22/40	55
C-sections	18/22	81.8
Vaginal deliveries	4/22	18.2
Miscarriages	2/40	5

myomectomy [Table 4]. Pregnancy was by assisted reproduction in 4 women. Comorbidities were observed, and they included pelvic adhesions in 2 patients, ovarian cyst in 3 women.

DISCUSSION

When uterine myoma is discovered during the workup for



Figure 1: An example of the nature of fibroids in the majority of the women

infertility, myomectomy remains an alternative surgical treatment despite the controversies. Pregnancy rate after myomectomy was 60% in this study and age had no significant impact on the pregnancy rate [Table 5]. Majority of the women had multiple fibroids (numbering between 10 and 20), and the size of the fibroids was often more than 5 cm yet there was no significant difference in the pregnancy rates amongst the women with large or small fibroids. The characteristics of fibroids in this series differ from what has been reported by authors in western literature. African women usually have multiple and very large uterine fibroids.^[6] This might be due to delay in seeking medical attention or the cultural aversion of our women to surgery. Many of the women in our study delayed surgery for either fear of death or fear that myomectomy could shut out their hopes of getting pregnant.

A review of some studies^[7-22] on fertility outcomes following myomectomy reveal remarkable but inconsistent results as illustrated below:

A number of factors were reported to influence the reproductive outcome following myomectomy. This includes the presence of concomitant infertility factors. In a meta-analysis by Vercellini *et al.*,^[10] the conception rate following myomectomy in women with otherwise unexplained infertility (61%) was higher than in those with other infertility factors (38%). Other factors include size and number of the fibroid,^[7,8] age, and miscarriage history.^[7,8,10] It is observed that pregnancy rate is more in women with <5 fibroids compared to more than 5 fibroids.^[7-11] Age more than 30 years, infertility more than 3 years, and multiple fibroids also appeared to negatively affect pregnancy rate following myomectomy.^[16-21]

The focus of our study was not on the determinants of reproductive outcome following myomectomy. However, despite the giant nature of the fibroids in our series, pregnancy rate was comparable with observations elsewhere and maternal age had no significant impact on the pregnancy rate. This might be attributed to appropriate surgical care. Majority of the fibroids were removed through a single vertical anterior wall



Figure 2: The fibroid nodules were often >5 cm

Table 5: Pregnancy rates after myomectomy

Author	Number of subjects treated	n (%)	
		Pregnant	Live births
Machupalli <i>et al.</i> ^[7]	178	104 (58)	57 (32)
Li <i>et al.</i> ^[8]	51	29 (57)	25 (49)
Rossetti <i>et al.</i> ^[9]	29	19 (65.5)	12 (57)
Vercellini <i>et al.</i> ^[10]	138	76 (55)	
Garcia and Tureck ^[11]	15	8 (53)	6 (40)
Rosenfeld ^[12]	23	15 (65)	13 (57)
Starks ^[13]	24	14 (58)	
Kably Ambe <i>et al.</i> ^[14]	45	23 (51)	
Goldenberg <i>et al.</i> ^[15]	15	7 (47)	
Sudik <i>et al.</i> ^[16]	67	39 (58)	
Darai <i>et al.</i> ^[17]	29	14 (48)	
Berkeley <i>et al.</i> ^[18]	19	8 (42)	
Dubuisson and Chapron ^[19]	12	3 (25)	
Gatti <i>et al.</i> ^[20]	30	13 (43)	10 (33)
Gehlbach <i>et al.</i> ^[21]	28	13 (46)	9 (32)
Smith and Uhler ^[22]	32	16 (50)	12 (40)

incision on the uterus. Studies have shown that uterine incision during myomectomy influences adhesion formation with posterior uterine incisions causing more adnexal adhesions than anterior or fundal incisions.^[23] However, it is unclear if the pregnancy rate following myomectomy is influenced by the site of uterine incision.

The procedure of myomectomy whether performed abdominally, laparoscopically, hysteroscopically or vaginally is associated with risks such as intra-operative hemorrhage, the risk of converting to emergency hysterectomy with consequent loss of fertility, disfigurement of the uterine cavity and risk of uterine rupture in future pregnancy or labor.^[4] Myomectomy is also associated with the risk of postoperative adhesion formation,^[23] which may result in further compromise of reproductive capacity, intestinal obstruction, chronic pelvic pain, and increased risk of ectopic pregnancy if conception is achieved.^[4] Furthermore, myomas have the potential to recur such that 20–25% of women who undergo myomectomy require a secondary procedure.^[3,24] None of these complications were observed among the women enrolled in our study.

In our series of 22 live births following myomectomy, there were no cases of placental abruption, preterm rupture of membranes, premature labor, and intrauterine growth

restriction. There was also no case of uterine rupture. However, an apparently high proportion of babies were born by cesarean section possibly because of the need to optimize the chance of delivering a live infant.

CONCLUSION

It is concluded that abdominal myomectomy may improve pregnancy rates and reproductive outcome even in the presence of multiple and enlarged myomas. However, women should be counseled carefully before surgery regarding the determinants of outcome.

Limitations of the study

This study was a single-center prospective cohort study of a small sample of women undergoing abdominal myomectomy for fibroid associated infertility. There is a need for a multicenter population-based study in our locale.

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