Original Article

Contributions of uterine fibroids to infertility at Ile-Ife, South-Western Nigeria

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ABSTRACT

Background: Uterine fibroid is the most common tumor of the female genital tract. The benign tumors often grow into large sizes and assume unsightly shapes with concomitant symptoms and signs. Being a predominantly reproductive age disease, concurrent infertility and symptomatic uterine fibroids pose management challenges. Individualization of the patient is thus essential to the success of the reproductive outcome.

Objectives: This study determined the prevalence, trend, management modalities, pregnancy outcome, and exposition of factors affecting pregnancy outcome among patients presenting with uterine fibroids and infertility at the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC).

Materials and Methods: This is a retrospective study of case records of 106 women managed for uterine fibroids and infertility over a 5-year period (January 1, 2012, to December 31, 2016) at the OAUTHC. The outcome measure is the pregnancy rate among those who had a myomectomy.

Results: About a quarter of women with infertility had symptomatic uterine fibroids and this represents about 35%–40% of the overall number of women presenting as uterine fibroid within the study. About 84.9% had uterine size >12 weeks at presentation. Two-third of the patients had open myomectomy alone with 43.9% achieving conception thereafter. Conception rate for myomectomy with tuboplasty was 31.3% whereas myomectomy with subsequent *in vitro* fertilization (IVF) was 50%. Pregnancy rate decreased with increasing size of the uterus before myomectomy.

Conclusion: Symptomatic fibroid was significantly prevalent among women with infertility. Myomectomy improves fertility potential and success rate of IVF. Uterine fibroid has both direct and indirect effect on infertility and pregnancy rate in this group of the patient can be improved through routine screening for uterine fibroids and early removal of the fibroids before they grow into giants size.

Key words: Infertility; myomectomy; pregnancy outcome; uterine fibroids.

Introduction

Uterine fibroids are the most common tumors of the uterus and female pelvis.[1-3] The true incidence of fibroids is unknown in our environment as many affected women are asymptomatic. They are estimated to occur in 20%–50% of women with increased frequency during the later

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reproductive years causing significant morbidity and reproductive ill-health. In fact, they are said to be present in as many as 70% of uteri removed at hysterectomy while some ultrasound studies have indicated the presence of at least one small myoma in 51% of women.[3,4] Previously documented prevalence of uterine fibroids in Nigeria were hospital based with varying denominators thereby not reflecting the true prevalence of uterine fibroids in the country. Prevalence of 9.8% (Lokoja), 7.8% (Ilesa), 8.3% (Zaria), and 6.58% from Ile-Ife in various studies have been reported.[4-11]

Uterine fibroids are 3–9 times more common among black women of African descent than in Caucasians which indicates a strong association between race and ethnicity.[1,2] They are very common among the nulliparous or those having one-child or infertility and are associated with increased incidence of pregnancy loss.[12,13] The clinical presentation of fibroids are variable and this depends on the size and number of fibroids and the location of the fibroids within the uterus. However, majority are incidental findings during a clinical or ultrasound examination and hence asymptomatic. Most symptomatic patients present with abdominal swelling, abdominal discomfort, abnormal uterine bleeding, infertility, and pressure symptoms and they grow to very large sizes in Negroid women than their Caucasian counterparts.[4-6,11]

A significant number of patients with uterine fibroids have infertility component in their presentations.[5-7,10,11] Symptomatic uterine fibroid with infertility poses management challenges, particularly in the young women of reproductive age group. Management strategies are usually individualized based on the associated symptoms other than the difficulty in getting pregnant, size and location of the fibroids, co-existing pelvic pathology, patient's age and the socio-economic status of many of these patients.

This study audits the contribution and pregnancy outcome of patients with uterine fibroids among the infertile women attending the gynecological clinic of the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC) with a view to determining prevalence, trend, management, pregnancy outcome, and exposition of factors limiting pregnancy outcome among patients presenting with uterine fibroids and infertility over a 5-year period.

Materials and Methods

All cases of uterine fibroids with infertility diagnosed in OAUTHC Ile-Ife gynecological clinic medical record register from January 1, 2012, to December 31, 2016, were reviewed. The case notes of 106 of these patients were available for analysis from the computerized records of the medical records department. The case notes were studied, and data related to the patient's age, parity, occupation, clinical features, mode of treatment, and pregnancy outcome were collected and analyzed. The total number of patients presenting with fibroids and infertile women presenting yearly from 2012 to 2016 were also retrieved. All the 106 patients who constituted the focus of the study over the years reviewed were admitted after obtaining full history, physical examination, relevant investigations to identify the other factors of infertility before surgery. The data so obtained were stored, retrieved, and analyzed using Statistical Package for Social Science Version 20; (Chicago Il, USA).

Results

There were 420 cases of infertility seen during the 5-year study while those who were diagnosed with fibroid with infertility were 106. This represents 25.2% of all cases of infertility [Table 1]. The medical record register revealed a total of 268 cases of uterine fibroids seen during the period, but those who presented themselves for further treatment were 193. Of these 193 actively managed fibroid cases were 106 patients diagnosed with fibroid with infertility representing 54.9% of cases of uterine fibroids managed from 2012 to 2016.

Table 2 shows that uterine fibroids occur more in low-parity women and can attain very big sizes and apart from infertility, there are varied concomitant symptoms that may be associated with infertility.

Forty-two pregnancies were recorded among the 106 patients giving an overall pregnancy rate of 39.6%.

Table 4 shows that the prognosis for pregnancy outcome decreases with increasing size of the uterus containing the fibroids. Better pregnancy rates are observed when

Table 1: Trends of the number of women with infertility, uterine fibroids and patients with uterine fibroid and infertility between 2012 and 2016 in Ife State Hospital

	2012	2013	2014	2015	2016	Total
Total number of women with infertility	68	84	84	90	94	420
Total number of women with fibroid seen at the clinic	48	53	49	56	62	268
Total number of women treated for fibroid	30	38	35	43	47	193
Total number of women treated with fibroid and infertility	17	20	22	23	24	106
Percentage of women with fibroid and infertility to the overall infertility	25	23.8	26.2	25.6	25.3	25.2
Percentage of women with fibroid and infertility to the overall number of uterine fibroids seen	35.4	37.7	44.9	41.1	38.7	39.6

Table 2: Age, parity, uterine size, and symptomatology among 106 patients with fibroids and associated infertility (2012-2016) in Ile-Ife

	Number of cases (%)
Age (years)	
<20	0
20-29	9 (8.5)
30-39	62 (58.7)
40-49	28 (26.2)
50-59	7 (6.6)
Total	106 (100)
Parity	
P0	62 (58.5)
P1	23 (21.7)
P2	9 (8.5)
P3	7 (7.5)
≥P4	5 (4.2)
Total	106 (100)
Uterine size (weeks) at physical examination	
<12	8 (7.5)
12-20	59 (55.7)
21-29	31 (29.2)
≥30	8 (7.5)
Total	106 (100)
Mode of presentation	
Menstruation abnormalities	72 (67.9)
Menorrhagia	32
Irregular menses	10
Oligomenorrhea	5
Dysmenorrhea	16
Amenorrhea	9
Abdominal swelling	57 (53.8)
Abdominal pains	21 (19.8)
Recurrent abortion	12 (11.3)
Hypertension	10 (9.4)
Menopausal symptoms	6 (5.7)
Hemoconcentration	8 (7.5)
Leg swelling	5 (4.7)
Others (dyspareunia, constipation, urinary obstruction, etc.,)	10 (9.4)

Table 3: The treatment offered and pregnancy outcome among 106 patients with fibroid and associated infertility in Ile-Ife, 2012-2016

Treatment offered	*n* (%)	Pregnancy outcome (%)
Abdominal myomectomy	66 (62.3)	29 (43.9)
Myomectomy + tuboplasty (salpingolysis)	16 (15.1)	5 (31.3)
Myomectomy + ovarian cystectomy	7 (6.6)	2 (28.6)
Myomectomy + excision of endometriosis	2 (1.9)	0
Laparoscopic-assisted myomectomy	3 (2.8)	1 (33.3)
Myomectomy + IVF-ET	10 (9.4)	5 (50.0)
Total abdominal hysterectomy	2 (1.9)	-
Total	106 (100)	42 (39.6)

IVF-ET, *In vitro* fertilization-embryo transfer

the uterine size is <20 weeks pregnant uterus and this is statistically significant ($P < 0.002$).

Discussion

Uterine fibroid was prevalent among patients with infertility in this review as about a quarter of them (25.2%) had uterine fibroids that warranted active management. This figure is higher than 10% reported by Cook *et al*.[14] and the reason for this may be due to the lower incidence of fibroids in the population. The relationship between uterine fibroids and infertility has been theorized to either be causal or casual.[15] The discourse on fibroid negatively affecting fertility or pregnancy being a protective factor against the occurrence of uterine fibroids remains an important area of research. There was an increasing trend in the number of women seen with uterine fibroids and infertility in successive years over the study period [Table 1]. This may not be unconnected to different presentations of major and minor symptoms exhibited by these subsets in Table 2 and which have been long documented in other studies.[4-11]

Majority of the patients were within the age range of 30–49 years. This is in agreement with similar studies in Nigeria.[16-19] Three out of every five of the women with fibroid and infertility were nulliparous. This finding is higher than that reported by Ekine *et al*., in their review of the clinical presentation of uterine fibroids and the effect of therapeutic intervention on fertility.[20] The effect of prolonged estrogen exposure, as exemplified in nulliparous women, on uterine fibroid occurrence and growth is well established.[6] Estrogen enhances tissue response to progesterone while progesterone causes immortalization of the smooth muscle cells resulting in the development and growth of fibroid.

Notably, giant fibroids of ≥30 week size were found in 7.5% of the patients. Distorted and inaccurate health information among the populace may contribute to late presentation when complications have set in or the fibroids become huge.[21] Menstrual abnormalities and abdominal swelling remained the leading presenting complaints as found in 67.9% and 58.3% of the patients. This is consistent with findings from several studies on the symptomatology of uterine fibroids.[6,16,18,20,22] Menorrhagia may result from the increased endometrial surface area, vascular congestion causing increased uterine bleeding, prostaglandin imbalance in favor of vasodilators, and poor myometrial contractility. Menorrhagia leading to anemia, infection, weakness, and poor health together with abdominal pains and abdominal distention cause profound morbidity in fibroids which also worsens the outcome of infertility in those having the combined tragedy [Tables 2-4].

Table 4: Uterine size in weeks and pregnancy outcome among 106 women with fibroids associated with infertility in Ile-Ife. (2012-2016)

Uterine size (weeks)	*n*	Pregnancy outcome	Pregnancy rate (%)
<12	8	6	75
12-20	59	26	44.1
21-29	31	8	25.8
≥30	8	2	25
Total	106	42	$P<0.002$

Open myomectomy was offered to two-third of the patients, and of these patients, 43.9% had achieved conception as at the time of this report. This is comparable to 49% reported by Donnez and Jadoul[23] but lower than postsurgical pregnancy rate of 57% reported by Somigliana *et al*.[24] Despite the attendant myometrial trauma and risk of adhesion formation following myomectomy, it is generally believed that fertility improves following the removal of uterine fibroids. Bulletti *et al*., conducted a study to evaluate the effect of myomectomy on fertility using three groups of patients numbering 106 in each group-a set of patients who had laparoscopic myomectomy, another set with fibroid that was not removed and the third group with unexplained infertility without coexisting fibroid. After 9 months of follow-up, pregnancy and favorable outcome were significantly recorded among the treatment group.[25] In the absence of other causes of infertility, myomectomy is advised in patients with infertility and coexisting symptomatic myoma.

The pregnancy rate of 31% following myomectomy and tuboplasty which is lower than the 50% recorded following *in vitro* fertilization (IVF) may further reinforce the relatively limited benefit of tubal surgeries in patients with infertility. However, tubal reconstruction surgeries may still have a place in our society where the financial implication of IVF may make it unaffordable for many couples. Improved outcome of IVF after myomectomy has been researched and established. The presence of uterine fibroid, especially, submucous fibroid prevents apposition of the developing embryo to the endometrium, hampers its adhesion and limits the invasion of trophoblasts in the tightly-regulated period regarded as the "window of implantation." Thus without myomectomy, embryo transfer is unlikely to result in eventual pregnancy.[26]

The pregnancy rate decreased with increasing size of the uterine fibroid, such that the chance of conception for uterus that is not palpable par abdomen is three times that of the uterine size of 30 weeks or more. This highlights the importance of seeking care as soon as possible before huge fibroids develop. Fibroid, especially when huge, could contribute to subfertility by endometrial cavity distortion, elongation of distance to be traveled by the spermatozoa to reach the site of fertilization, suboptimal endometrial vascularization and incoordinate uterine muscle action culminating in poor gamete transfer. Cervical fibroid and degenerative changes may limit the frequency of coitus due to dyspareunia and mechanical blockage of tubal ostium at the cornu by fibroids in the body or fundus of the uterus may block gamete transfer.[25]

Conclusion and Recommendations

Uterine fibroid is thus a common finding among patients with infertility and quite a majority of them have poor pregnancy rate following myomectomy (60.4%). While it is preponderant in the active reproductive age, nulliparity remains an important risk factor. Late presentation with very huge uterine fibroids is still found in our environment. Surgical treatment offers improvement in reproductive outcome and enhances the success rate of IVF. Impalpable fibroids offer a better prognosis in reproductive outcome than those that are palpable par abdomen. It is therefore imperative to screen for uterine fibroids early and treat among the cohorts of infertile woman to improve fertility potential and pregnancy outcome. All women in the reproductive age group need a pelvic scan to detect submucous, cornual, and intraligamentous fibroid that can compromise the reproductive outcome in the Nigerian/African environment where the prevalence of uterine fibroid is highest.

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Conflicts of interest

There are no conflicts of interest.

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