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ORIGINAL RESEARCH

Clinical Presentation of Uterine Leiomyoma and the Outcome of Surgical Management Options in a Nigerian Tertiary Health Facility

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Abstract

Background: Effective treatment intervention for uterine leiomyoma is essential to prevent morbidities and associated potential mortalities.
Objective: To determine the prevalence, clinical presentation of uterine leiomyoma and the outcome of surgical management options at the Lagos State University Teaching Hospital (LASUTH), Ikeja, Lagos, Nigeria.
Methods: This was a descriptive retrospective study of cases of uterine leiomyoma from 01 January 2012 to 31 December 2016. The medical records of all patients with the diagnosis of leiomyoma were retrieved. Information was obtained on socio-demographics, clinical presentation, types of surgical treatment and associated postoperative complications.
Results: Three hundred and thirty-five cases of leiomyoma were managed out of 1835 major gynaecological cases giving a period prevalence of 18.3%. However, only 134 case folders were available for analysis. The mean age of the women was 38.5±6.7 years. Only 21 (15.7%) cases presented within a year of the onset of symptoms. The surgical interventions used included myomectomy and hysterectomy but the former was the commonest with a frequency of 73.4%. There were no significant differences in the prevalence of postoperative complications between patients who had myomectomy and hysterectomy ($p>0.05$ in each case).
Conclusion: Uterine leiomyoma is a common gynaecological condition. There is a need to create awareness of the need to present early to the hospital so that less invasive treatment options can be explored.

Keywords: Clinical presentation, Fibroids, Fibromyomas, Uterine leiomyoma, Surgical management.

Introduction

Uterine leiomyoma is a benign monoclonal tumour of the smooth muscle cells of the myometrium.[1] It is also variously called myomas, fibroids, fibromyomas and leiomyofibromas.[2] It is the commonest benign tumour of the female genital tract.[1, 2] According to the World Health Organization (WHO) reports, 20 to 25% of women of reproductive age are affected by uterine leiomyoma and thus, represent 6.6% of

women's world population which had been estimated to be about 235 million women.[2]
The prevalence of leiomyoma varies depending on the study population.[1] In the United States, the incidence of leiomyoma by 35 years of age was 60% among African-Americans, increasing to a value greater than 80% by age 50. In contrast, Caucasian women showed an incidence of 40% by age 35 and almost 70% by age 50. [3] However, leiomyoma is less prevalent in the European population. [4] In a study involving five Western European countries, the prevalence of uterine leiomyoma ranged from 11.7% to 23.6%. [6] The striking increased prevalence of leiomyoma among African-American women is suggestive of a higher incidence of leiomyoma in African populations, even though there is a lack of population-based studies in Africa to attest to this fact. [4]

In Nigeria, leiomyoma is one of the commonest reasons for gynaecological consultations among women of reproductive age in most Nigerian hospitals. [5-7] In a tertiary health facility at the Federal Capital Territory, Nigeria, leiomyoma accounted for 6.4% of all gynaecological admissions and 21. 3% of all major gynaecological surgeries. [5] In a tertiary health facility in Kano, Northern Nigeria, uterine leiomyoma accounted for 21.4% of all gynaecological admissions. [6] In contrast, in a tertiary health facility in Lagos, southwestern Nigeria, leiomyoma accounted for 30.7% of all gynaecological cases at the outpatient clinic. [7]

Uterine leiomyoma can cause significant discomfort and may lead to complications such as anaemia, painful defaecation, backache, urinary frequency or retention, infertility and miscarriage. [1, 2] Therefore, an effective treatment intervention is essential to prevent these morbidities and associated potential mortalities. The management options for uterine leiomyoma range from conservative medical management to definitive surgery. [8] Traditionally, the standard treatment for symptomatic uterine fibroids has always been surgical, either by hysterectomy or myomectomy, in women who wish to preserve their fertility. [8] As a result of technological advances, newer surgical options such as endoscopic surgeries, intra-vaginal and bilateral uterine artery ligation, MRI-directed tumour lysis, and fluoroscopy bilateral uterine embolisation have been developed. [8] Each of these surgical options is associated with appreciably different morbidity rates. [8] In a study in Lagos, Nigeria, Akinola *et al*.[9] reported that trans-vaginal bilateral uterine ligation is a safe and effective method for treating symptomatic leiomyomas, especially in areas where access to high-level medical technology is restricted. [9] Another study in Lagos, Nigeria, reported a relatively low complication rate and short mean duration of hospital stay among infertile women who had a laparoscopic myomectomy. [10]
It is known that several factors, such as age, parity and the time of presentation, influence the management modalities of leiomyomas and the outcome of treatment. The clinical presentation of leiomyoma is variable, with most cases in low-resource countries presenting very late to the hospital. Few studies in Nigeria report the various surgical management options for leiomyomas and the outcomes. Therefore, this study aimed to assess the prevalence, clinical presentation and surgical management of uterine leiomyoma and compare the outcome of surgical interventions at the Lagos State University Teaching Hospital, Ikeja, Lagos, Nigeria.

Methods

Setting
This was a descriptive, retrospective study of cases of uterine leiomyoma managed at the Department of Obstetrics and Gynaecology, Lagos State University Teaching Hospital (LASUTH), Ikeja, Lagos, Nigeria, between January 2012 and December 2016. LASUTH is a government-owned tertiary Hospital in Lagos

which serves as a referral centre for other hospitals in Lagos State and neighbouring states. The Department of Obstetrics and Gynaecology has five units. Gynaecological clinics run five times weekly, where new cases are seen and old ones are followed up. Patients with uterine leiomyoma are usually seen for the first time in the outpatient clinic or in the emergency ward. Preoperative evaluation is done to optimise patients appropriately and ensure that they are fit for the surgery. As a protocol in the department, all patients scheduled for surgery are admitted 48 hours before the surgery. About thirty minutes before the induction of anaesthesia, all patients are commenced on intravenous Amoxicillin/Clavulanate 1.2g every 12 hours for 48 hours. This is thereafter, changed to oral Amoxicillin/Clavulanate for five days. The diagnosis of uterine leiomyoma is initially clinical, while a sample of the removed leiomyoma is sent for histology to confirm the diagnosis.

Ethical consideration

Ethical approval for the study was obtained from the Research and Ethics Committee of the Lagos State University Teaching Hospital.

Data collection

The patients' identification data were retrieved from the gynaecological ward admission and discharge record books and the operation register in the theatre. Case notes were retrieved from the Medical Records Department of the hospital, and data were extracted using a data capture form specifically designed for the study. Information retrieved included socio-demographic parameters, weight, height, clinical presentation, type of surgical treatment, intraoperative findings and immediate postoperative complications. Body Mass Index was calculated from the body weight and height.

Data analysis

The data obtained were entered analysed using the Statistical Package for Social Science (SPSS) version 22. The means and standard deviations were calculated for continuous variables, while proportions were calculated for categorical variables. The Chi-Squared test of proportion was used to assess the association between surgical management options and outcomes. A p-value of less than 0.05 was accepted as statistically significant.

Results

During the study period, 335 cases of leiomyoma were managed in LASUTH out of 1835 major gynaecological cases, with a prevalence of 18.3%. However, only 134 case folders (40.0%) were retrieved from the Medical Records Department.

The socio-demographic characteristics of the subjects are shown in Table I. The age of the patients ranged from 25 to 56 years, with a mean age of 38.5±6.7 years. The highest prevalence of uterine leiomyoma occurred in the age group 30-49 years, making up 85.4% of the total cases of uterine leiomyoma. The parity of patients ranged from 0-7 with a mean of 1.1 ± 1.7. Most of the women were nulliparous (61.9%) and had a tertiary level of education (73.9%).

The clinical characteristics of the study subjects are shown in Table II. The commonest presenting complaint was menorrhagia, with a frequency of 71.6%. This was followed by abdominal swelling (52.2%), infertility (38%), abdominal pain (37.3%) and dysmenorrhea (29.9%). Other less common presenting complaints among the subjects were vaginal discharge (7.5%), dyspareunia (3%), swollen legs (0.7%) and backache (0.7%). Among these patients, only 21 (15.7%) cases presented within a year of the onset of symptoms, while 71 (53.0%) presented between 1–5 years of the onset of symptoms. Others presented at 6–10 years (20.1%) and more than ten years (11.2%). About a third (32.3%) of the women were overweight or obese (28.3%). Only 5 (5.1%) women were underweight.

Table I: Socio-demographic characteristics of study subjects

Characteristics	*Frequency*	*Percentage*
Age in years (n=130)		
20-29	12	9.2
30-39	62	47.7
40-49	49	37.7
50-59	7	5.4
Parity (n=134)		
0	83	61.9
1	10	7.5
2	10	7.5
≥ 3	31	23.1
Level of education (n=119)		
No formal education	1	8.0
Primary	6	5.0
Secondary	24	20.2
Tertiary	88	73.9

Figure 1 shows the types of surgical treatment offered to patients during the study period. Myomectomy was the commonest surgical treatment option, with a frequency of 73.4%. This was followed by abdominal hysterectomy (23.8%) and vaginal hysterectomy (0.7%). Among the 32 women with abdominal hysterectomy, 31 (96.9%) had Total Abdominal Hysterectomy (TAH) and bilateral salpingo-oophorectomy, while one had TAH and unilateral salpingo-oophorectomy.

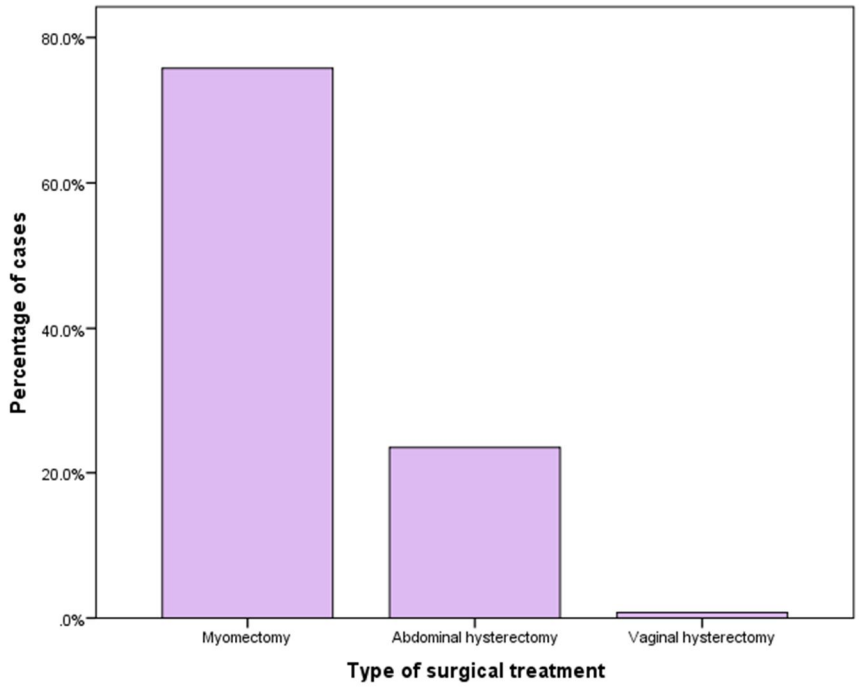

Figure 1: Types of surgical intervention

Table III shows the postoperative complications. The commonest postoperative complication was anaemia (56.0%). This was followed by bladder injury (10.4%), pyrexia (9.7%) and wound infections (9.0%). About half (44.0%) of the women had blood transfusions.

Table IV shows the association between age, parity and choice of surgical treatment option. All the patients in the 20–29-years age group had myomectomies, while all the women in the 50-59 years age group had hysterectomies. Women aged 30-39 years and 40-49 years had a higher prevalence of myomectomy than hysterectomy. These differences were statistically significant (χ^2 = 48.1, p <0.001). Women with low parity had a statistically significantly higher chance of having a myomectomy than a hysterectomy (χ^2 = 86.3, p <0.001).

Table V shows the association between surgical treatment options and the outcome. The prevalence rates of anaemia and pyrexia were higher in women with myomectomy than in hysterectomy. However, there was no statistically significant difference in the frequency of occurrence of all postoperative complications between women who had a myomectomy and those who had a hysterectomy.

About half (52.2%) of the women were discharged within 7 days. There was prolonged hospital stay in 47.8% of the women but there was no statistically significant difference in the duration of hospital stay between women who had myomectomy and hysterectomy (χ^2 = 0.92, p = 0.631). The majority (98.5%) of the women were discharged from the hospital alive.

Table II: Clinical characteristics of study subjects

Parameters	*Frequency*	*Percentage*
Presenting complaints (n=134)		
Menorrhagia	96	71.6
Abdominal swelling	70	52.2
Lower abdominal pain	50	37.3
Dysmenorrhoea	40	29.9
Primary infertility	14	10.4
Secondary infertility	37	27.6
Others	35	26.1
Duration of illness (n=134)		
Less than 1 year	21	15.7
1-5 years	71	53.0
6-10 years	27	20.1
Greater than 10 years	15	11.2
Body Mass Index (Kg/m^2) (n=99)		
Underweight (< 18.0)	5	5.1
Normal (18.0-24.9)	234	34.3
Overweight (25.0-29.9)	32	32.3
Obese ($\geq$ 30.0)	28	28.3

Others- vaginal discharge, dyspareunia, swollen legs and backache.

There was no recorded case of mortality. Two (1.5%) women with hysterectomies were discharged against medical advice compared to none with a myomectomy. This difference was statistically significant (χ^2 = 6.5, p = 0.011). Leiomyoma re-occurred in 19 women after surgical treatment giving a reoccurrence rate of 14.2%.

Discussion

The true prevalence of leiomyoma is challenging to determine because most cases are asymptomatic and therefore, do not present in the hospital. In this hospital-based study, the period prevalence of leiomyoma was 18.3%. This is similar to the prevalence of 21.4% and 16.3% reported from similar settings by Garba *et al*. and Okogbo *et al*., respectively, and 12.3% found among pregnant women referred for a prenatal abdominal ultrasound at a tertiary hospital in Eastern Nigeria. [6, 11, 12] It is also similar to the prevalence of 11.7 to 23.6% found in a population-based study in Europe. [4] However, it is lower than 30.7% reported from a tertiary health facility in Lagos, [7] 24.7% in Kano, [13] and 29.3% from Okolobiri, Nigeria. [14] The high prevalence of leiomyoma in the present study suggests that it is a common female reproductive tract tumour in our environment.

Table III: Postoperative complications

Postoperative complications	*Frequency (n=134)*	*Percentage*
Anaemia	75	56.0
Pyrexia	13	9.7
Urinary tract infection	6	4.5
Wound infection	12	9.0
Blood transfusion	59	44.0
Bladder injury	14	10.4
Ureteric injury	3	2.2
Others (paralytic ileus, transected fallopian tube)	10	7.5

Some patients had multiple complications.
Anaemia- packed cell volume less than 30%; Pyrexia- body temperature greater than 37.5^{0}C.
Wound infection- the invasion of the organism through tissue leading to hyperaemia, induration, discharge from the wound and breakdown of the wound.
Bladder injury – inadvertent laceration of the bladder.
Ureteric injury- inadvertent laceration, transection, ligation or thermal burn of the ureter.

Table IV: Association between age, parity and choice of surgical treatment option

Parameters	*Myomectomy*	*Hysterectomy*	*p-value*
Age groups (years)			
20-29	12 (100.0)	0 (0.0)	<0.001
30-39	58 (93.5)	4 (6.5)	
40-49	27 (55.1)	22 (44.9)	
50-59	0 (0.0	7 (100.0)	
Parity			
0	80 (96.4)	3 (3.6)	<0.001
1	10 (100.0)	0 (0.0)	
2	2 (20.0)	8 (80.0)	
≥ 3	7 (22.6)	24 (77.4)	

In this study, uterine leiomyoma occurred most commonly in the third and fourth decades of life and less frequently before 30 and after 50 years. This agrees with the findings of other studies conducted in various parts of the world. [7, 15, 16] The reason for the high prevalence of leiomyoma from the third decade of life has been attributed to the effect of the female sex hormones, particularly stimulation by oestrogen that is unbalanced by progesterone. [1, 17]

The majority of the women in this study were nulliparous, and this is consistent with findings

from other studies. [5 - 7] The causal relationship between nulliparity and leiomyoma is pronounced in this study as about 62% of the women were nulliparous compared to 6.7% reported from Northern Nigeria, [13] and 31% reported from South-southern part of Nigeria. [14] Similar to the effect of age, it is believed that persistent and prolonged effect of oestrogen on the uterine smooth muscle that fails to carry the baby will lead to leiomyoma. [1, 17]

Table V: Association between surgical treatment option and outcome

Parameter	*Total Number (n=134)*	*Myomectomy (n=101)*	*Hysterectomy (n=33)*	*p-value*
Postoperative complications				
Anaemia	75 (56.0)	61 (60.4)	14 (42.4)	0.106
Pyrexia	13 (9.7)	10 (9.9)	3 (9.1)	0.945
Urinary tract infections	6 (4.5)	4 (3.9)	2 (6.1)	0.577
Wound infection	12 (9.0)	7 (6.9)	5 (15.2)	0.128
Blood transfusion	59 (44.0)	44 (43.6)	15 (45.5)	0.700
Bladder injury	14 (10.4)	3 (3.0)	1 (3.0)	0.940
Ureteric injury	3 (2.2)	2 (2.0)	1 (3.0)	0.682
Others	10 (7.5)	6 (5.9)	4 (12.1)	0.150
Duration of hospital stay (days)				
≤ 7	70 (52.2)	53 (52.5)	17 (51.5)	0.631
8-14	52 (38.8)	40 (39.6)	12 (36.4)	
> 14	12 (9.0)	8(8.0)	4 (12.1)	
Outcome of treatment				
Alive	132 (98.5)	101 (100.0)	31 (93.9)	0.011
Discharge against medical advice	2 (1.5)	0 (0.0)	2 (6.1)	
Reoccurrence of fibroid				
Yes	17 (12.7)	17 (16.8)	0 (0.0)	0.150

Anaemia- packed cell volume less than 30%; Pyrexia- body temperature greater than 37.5^{0}C.
Wound infection- the invasion of the organism through tissue leading to hyperaemia, induration, discharge from the wound and breakdown of the wound.
Bladder injury – inadvertent laceration of the bladder.
Ureteric injury- inadvertent laceration, transection, ligation or thermal burn of the ureter.

The commonest presenting symptom in these women with confirmed uterine fibroid was menorrhagia followed by abdominal mass. The incidence of menorrhagia of 71.6% in this study was higher than 38.4% obtained in Abuja [5] and 47.7% in Ile-Ife, [11] but lower than 95.7% from Okolobiri, Bayelsa State, Nigeria. [14] These differences in the frequency of menorrhagia may be related to the health-seeking behaviour and accessibility of health care in the community. It is well known and recognised that fibroid could cause infertility, and a woman with infertility has a higher risk of developing fibroid. [9, 14, 18] However, the actual contribution of fibroid to infertility remains controversial because many of the studies examining the relationship between fibroid and infertility are retrospective and non-randomised. [9] In this study, 38% of the women presented as a result of infertility and this is similar to the earlier report of about 32% by Okogbo *et al*. [11] Current evidence suggests that submucosal fibroids that distort the uterine cavity can impair *in-vitro* fertilisation attempts. [18] The impact of intramural and subserosal fibroids that do not distort the intrauterine cavity is unclear. Despite the lack of clear evidence of their role in preventing conception, submucosal fibroid, intramural fibroids that distort the uterine cavity, fibroids larger than 5cm, and multiple fibroids are often treated in patients with otherwise unexplained infertility.

Most of the women (84.3%) in the present study presented in the hospital after a year of the onset of symptoms for treatment. This is similar to the findings in Okolobiri, where 77.7% of the women presented after two years of symptoms with huge fibroids. [14] This is probably because symptomatic women initially prefer to seek treatment from unorthodox healthcare practitioners and only seek orthodox care when previous attempts fail.

There were two main surgical modalities offered to patients during the study period. These included myomectomy and hysterectomy. Myomectomy was the commonest surgical intervention, consistent with findings in most Nigerian setting. [11, 13, 14] In this study, the type of surgical option adopted was significantly determined by the age of women and parity. Myomectomy is usually the preferred surgical option for women with low parity and those who wish to preserve their reproductive function, while hysterectomy is performed for women with symptomatic fibroid and had completed their family size. The commonest postoperative complications observed among these women were anaemia, pyrexia and wound infection, which agrees with the findings in other studies. [11,13, 14] Although, the frequency of anaemia in the present study was higher among women that had myomectomy compared to those that had a hysterectomy (60.4% vs 42.4%), it lacked statistical significance, unlike the study in Aminu Kano Teaching Hospital, Kano, Nigeria[11] where there was a significantly higher prevalence of anaemia among women that had a myomectomy. Therefore, it is safer to ensure haemostasis during myomectomy by making a single myometrial incision when possible, applying a tourniquet during myomectomy and obliterating all dead spaces during surgery. These methods were claimed to be responsible for a lower prevalence of anaemia of 10.4% and a blood transfusion rate of 12.8% in a bi-centre study involving Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife and Havana Specialist Hospital, Lagos. [9]

Only about half of the women in this study were discharged home within seven days of admission, and this is contrary to some other studies in Nigeria, where the majority of the women were discharged within seven days. [9] The longer duration of stay in this study may be due to associated postoperative morbidities in most women, unlike the study by Okogbo *et al.*, where most of the patients did not have complications. [13] The complications from surgery and the associated prolonged hospital admission may also explain why two women with hysterectomies discharged themselves against medical advice.

Generally, myomectomy is associated with a higher prevalence of morbidity than hysterectomy. [13] However, most of the other postoperative complications in this study occurred at about the same rates in myomectomy and hysterectomy. Therefore it is instructive for health facilities to make available to patients newer techniques, such as minimal access surgical techniques and embolisation of uterine leiomyoma, which are claimed to be associated with reduced morbidities.

Limitations

This study has some limitations. Many of the case files were missing, and this is likely to have influenced the findings. The study design was also retrospective, cross-sectional and information such as the cadre of the surgeons and duration of surgery, which could affect the outcome of surgery, were not obtained. It is attractive to propose prospective research with improved record-keeping and archiving to investigate a series of factors that affect the outcome of surgical management options for uterine leiomyoma.

Conclusion

Uterine leiomyoma is a common gynaecological condition in Lagos State University Teaching Hospital, Ikeja, Lagos. It is common among women in their third and fourth decades, with low parity and high body mass index. The commonest clinical presentations were menorrhagia and abdominal swelling. The surgical interventions used in LASUTH to treat leiomyoma were myomectomy and hysterectomy. There is a need to create awareness on the need to present early to the hospital so that diagnosis can be made early and less invasive treatment options can be deployed. Newer and advanced surgical techniques may also be introduced as they are associated with fewer post-surgical morbidities, thereby improving the patients' quality of life.

Authors' Contributions: SOC conceived the study, designed the study, collected data, analysed, interpreted the data and drafted the manuscript. OTA and AFM participated in the design of the study, supervised data collection and participated in data interpretation and manuscript drafting. OYA, RKA and AAA substantially revised the manuscript for sound intellectual content. All the authors read and approved the final version of the manuscript.
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