

The Prevalence and Post-Operative Complications of Uterine Leiomyomas in South-Western Nigeria and Northern Nigeria: A Comparative Review

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Abstract

Background: Uterine Leiomyoma are benign tumors which commonly affect women of reproductive age, however only a subset of women has their fibroids clinically detected, symptomatic or warrant surgical treatment. Its removal is associated with complications. To control the occurrence of this complication requires the understanding of the factors associated with the complications.

Methods: The study was carried at two large tertiary hospitals in South-western and Northern region of Nigeria. It was a descriptive cross-sectional study that was conducted among patients in these regions. Information such as sociodemographic characteristics was recorded in questionnaire including retrospective review of case records of all surgically managed cases of uterine leiomyoma (from one hundred and fifty-nine women) was obtained after formal consent from the hospital's ethics committee.

Results: In Both regions of Nigeria, the common presenting complaints from 36-40 years old patients were menstrual irregularities, Abdominal swelling, and infertility. The commonest anatomical position of the nodules were multiple positions and intramural.

The majority (79.9%) of the women in South-Western Nigeria presented with multiple leiomyomas. While the majority (48.8%) of the women in Northern Nigeria presented multiple leiomyomas which accounted for almost half of the patients diagnosed in that region. In the South-western region of Nigeria, post-operative complications occurred in 20.9 % of cases with post-operative pyrexia (13.5%), blood loss warranting transfusion (12.8%) and post-operative anemia (10.4%) been the most common complications. While in the Northern region of Nigeria no complications were recorded.

Conclusion: Uterine leiomyomas is common in Nigeria and usually presents with menorrhagia, pelvic pain, recurrent miscarriage, and infertility. The surgery may be complicated by post operative pyrexia, blood loss, wound infection and even death. Midline incision, closure of rectus sheath with chromic catgut and myomectomy were associated with postoperative complications in this review. To avoid postoperative morbidities associated with surgical management of fibroid, Pfannenstiel incision where feasible, use of non-absorbable or delayed absorbable sutures and hysterectomy in women who have completed family should be adopted in the Southwestern region of Nigeria. Whereas prevalence of uterine leiomyomas is generally prevalent in the Southwest, there are varying age prevalence's in the North and Southwest.

Keywords: Uterine Fibroids, Leiomyomata, South-Western Nigeria, Northern Nigeria, Sonographic Patterns.

1. Methods

Aim, Design and Setting of the Study: The objective of this study is to evaluate and give a comparative study of the sociodemographic, clinical characteristics and outcome of uterine leiomyoma management in two tertiary hospitals in Southwestern and Northern Nigeria.

To determine the prevalence of uterine leiomyomas among patients in Southwestern and Northern Nigeria.

This was a cross-sectional study that was conducted by evaluating the sociodemographic characteristics, clinical characteristics, and management outcomes through clinical case records to determine the prevalence and post-operative complications of uterine leiomyomas in the South-western region and Northern region of Nigeria. Due to cultural differences in the Southwestern and Northern regions of Nigeria, there was a disparity in population and age data obtained and used in this study.

This study was conducted at the radiology department of Aminu Kano Teaching Hospital, at the Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife, Nigeria and at the Havana specialist Hospital Lagos.

2. Materials

For obtaining quantitative results, case records were retrieved from the medical record library of these hospitals. Relevant information was extracted from the case records using a data capture form designed specifically for the study. Information extracted included sociodemographic, clinical presentation and findings.

For obtaining qualitative results, identical curvilinear probe and coupling gel was used in the suprapubic region. Mindray Digital Ultrasound Imaging System (Model DC6; Shenzhen Mindray Biomed Electronics, Shenzhen, China) was used using 3.5 MHz curvilinear transducer to scan the patients for generation of data. All the scans were done by the radiologist (principal investigator).

3. Methods

Thirteen thousand five hundred and thirty-seven (13,537) women were admitted into the gynecological ward for various gynecological conditions during the period under review in the Southwestern region. One thousand two hundred and fifty-nine thousand (9.3%) of the cases were cases of uterine leiomyoma managed surgically. Of the 1259 women with surgically managed fibroid, 92.2 % (1161) of case records retrieved had adequate information and thus used for the analysis.

Six hundred and ninety-four (694) female patients were admitted into the gynecological ward for various gynecological conditions during this period in the Northern region. The mean age was 36.6 ± 1.44 years. Eight-four female patients were diagnosed with uterine leiomyomas in the tertiary hospital in the north. The prevalence of fibroid was 12% in this region. A total of 55

(66.7%) cases were previously diagnosed, 55 by ultrasound a 1% by clinical examination. Three patients (3.57%) had undergone myomectomy prior to the examination. Four patients (4.8%) with uterine fibroids were incidentally found to be pregnant.

All patients were placed in supine position on the examination couch. Coupling gel was applied to the suprapubic region following patients' preparation and systematic scanning commenced by moving the transducer (identical curvilinear probe) over this region. All the images were obtained longitudinal and transverse planes (anteroposterior and widest transverse dimensions).

Ultrasonography using the transabdominal and transvaginal routes was employed most frequently, due to its accessibility and relatively low cost. Both transabdominal and transvaginal was performed. Transvaginal scans were more sensitive in the diagnosis of small fibroids. However, when the uterus was bulky or retroverted in obese patients, the uterine fundus lay outside of the field of view.

The transabdominal views were often of limited value in obese patients. The uterine leiomyomas were solid masses with well-defined and whorled appearances. Degenerate fibroids were presented to have a complex appearance, with areas of cystic change.

Transvaginal sonography was used initially in the detection of endometrial polyps, which appeared as hyperechoic masses surrounded by a hypoechoic endometrium. While MRI was used in differentiating leiomyomas from focal adenomyosis.

4. Demographic Characteristics

In the Southwestern region of Nigeria, the age of the patients ranged from 20 to 64 with a mean of 39.4 ± 7.3 years. Age group 30-39 has the highest proportion of cases accounting for 40.2% (467) of all cases seen during the period, with 85.0% (987) of cases aged 30 years and above. There was a rise in the prevalence from 0% below 20 years to a maximum of 40.3% at age group 30-39 and reduction in incidence thereafter from 32.9% (382) at the age range 40-49 to 0.42% (5) at the age group 60 and above. The prevalence at the age groups 20- 29 and 50-59 were 15.0 % (174) and 11.5% (133) respectively. The parity of the women ranged from 0 to 9, with a mean of 1.9 ± 2.1 . Majority (68.7%) 273 of the women were Para 2 or less. The prevalence of fibroid among the women decreased from 32.1% in nulliparous to 0.2% in women of Para 9.

While in the Northern region of Nigeria, the age range was from 18-50 years. The mean age was 36.6 ± 1.44 years. Eight-four female patients were diagnosed with uterine leiomyomas in the tertiary hospital in the north. The age group 36-40 years had the highest number of fibroid (29.8%). Age group with the least number of uterine leiomyomas in this region was 46-50 years (8.3%). 51.2% were nulliparous.

5. Clinical Symptoms

Menstrual symptoms	554(47.7)
Menorrhagia	355(30.6)
Dysmenorrhea	219(18.9)
Irregular menstrual period	199(17.1)
Abdominal swelling	454(39.1)
Infertility	370(31.9)
Abdominal pain/discomfort	281(24.2)
Weakness/dizziness especially after menstrual period	261(22.5)
Recurrent miscarriage	113(9.7)
Pressure symptoms	26(2.2)
Urinary urgency	15(1.3)
Recurrent urinary tract infection	9 (0.8)
Acute urinary retention	2(0.2)
Recurrent fibroid (Represented after previous myomectomy)	1(1.0)
Weight loss	19(0.8)
Bloody vaginal discharge	5(0.4)

Table 1: Distribution of presenting symptoms in 1161 uterine leiomyoma in Southwestern Nigeria

Menorrhagia	(30.6)
Irregular menstrual period	(39.1)
Abdominal swelling	(17.1)
Infertility	(18.9)
Recurrent miscarriage	(9.7)
Recurrent urinary tract infection	(0.8)

Table 2: Distribution of presenting symptoms in 84 uterine leiomyomas in Northern Nigeria

6. Operative Procedures

The surgery was performed by the consultant staffs in (61.2%) cases. The skin incision for the entry of the abdomen was Midline and Pfannenstiel in (65.9%) and (34.1%) respectively. Myomectomy was the commonest surgical procedure performed in six hundred and thirty-five (54.7%) cases in the northern region only. Myomectomy was also performed in six hundred and thirty-five cases in the Southwestern region of Nigeria. Other surgical procedures performed in the remaining five hundred and twenty-six cases were hysterectomy and polypectomy in (43.8%) and (1.5%) cases respectively. Among the 509 patients that had hysterectomy, 29(5.7%) had vaginal hysterectomy and the remaining 447 (87.8%) and 33 (6.4%) had total abdominal hysterectomy (TAH) and subtotal hysterectomy + bilateral salpingoopherectomy (BSO) respectively. Among the cases that had TAH, 234 (52.3%), 194(43.4%) and 12 (2.7%) had TAH alone, TAH + BSO and TAH + unilateral salpingoopherectomy respectively. Pelvic adhesiolysis was performed as an additional surgery in 254(21.9%) cases. The rectus sheet was closed with chromic catgut in 561(48.3%), nylon in 413(35.6%) and vicryl in 144(12.4%) cases. In 43(3.7%) cases the suture used for the closure was not documented. The duration of surgery ranged from 65 to 373 minutes with a mean of 127± 29. In the majority (63.0%) of cases the surgery lasted less than 3 hours. In 27(2.3%)

the duration of surgery was not documented.

1. Intraoperative Findings

To determine the anatomical location and number of uterine leiomyoma nodules, the intraoperative findings recorded in the operation notes were used in both regions. In the first half of the Southwestern case reports (79.9%) had multiple uterine leiomyoma nodules numbering 2 to 37 with a mean of 9.3±8.3 nodules, in the remaining half of the case reports, (20.1%) were single uterine leiomyoma. The sizes of the uterine nodules ranged from less than 0.5cm to 20.5cm with a mean of 5.3±4.1cm. The mean size of the leiomyoma nodule in cases with single leiomyoma (11.3±2.7 cm) was bigger than the average nodule size in cases of multiple leiomyomas (5.7±4.1cm). The difference was statistically significant ($p < 0.02$). The anatomical position of uterine leiomyoma were multiple positions in (60.9%) of cases. Other positions were intramural in (14.8%), sub-serous in (10.4%), sub-mucosa in (7.9%), cervical in (3.6%), polyp in (1.9%) and broad ligament in (0.4%) cases.

In the Northern region, more than one-third were located at the corpus (body) with 52% located in multiple locations within the age groups of 36-40 years. In addition, (8%) mixed types of fibroids within the same age group were identified. There were

more than two nodules in most common ultrasound findings in almost half of the participants. Large fibroid nodules (>5cm) were common in the case records of (48.8%) patients. Few were found to have calcified fibroid nodules. There was no statistically significant association between nodules and parity p.

2. Post-Operative Complications

In the Southwestern region of Nigeria, postoperative complications occurred in 20.9 % (243) of the women. The most common complications were postoperative pyrexia (13.5%), blood loss warranting transfusion (12.8%), postoperative anemia (10.4%), wound infection (8.7%), vault infection (5.1%) and prolonged hospital stay (4.2%). Other complications recorded were wound dehiscence (2.5%), vesicovaginal fistula (0.3%), ureteric injuries (0.3%), bladder injuries (0.6%), and death (0.2%). Myomectomy, multiple leiomyomas, uterine size greater than 20 weeks, duration of surgery, surgery by younger surgeons, midline incision and chromic catgut closure of Rectus sheet had significant association with postoperative complications. While in the Northern region of Nigeria, there was no post-operative complications after myomectomy and hysterectomy because although the size of the leiomyoma was >5cm, the surgery was performed by experienced gynecological surgeons using optimized techniques for better post-operative results.

3. Statistical Analysis

The data obtained were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20 (SPSS Inc., IL, Chicago, USA) and were presented using frequencies and percentages. Test of association was computed on the categorical variables using Fisher's exact test. $P < 0.05$ was considered significant.

4. Discussion

Uterine leiomyoma is the most common female reproductive tract tumor; however, majority of cases are asymptomatic BUTTRAN VCJR ET AL [1]. Several studies have documented an increased incidence of uterine leiomyoma in black women and women of African descent EVANS P, ET AL. [2]. In the Caucasians population uterine leiomyoma tend to occur around the age of 30years and commonly causes symptoms between ages 35 and 45 years BUTTRAN VCJR ET AL [1]. Women of Negroid origin tend to develop fibroid at a younger age despite having had children 6, 7. Compare to Caucasians, Negroid women are reported to have a 3-9 times increased incidence of uterine fibroid age for age. This has been attributed to genetic and racial factors EVANS P, ET AL [2].

In this review, the difference for the sociodemographic characteristics, cultural differences, and varying degrees in sample sizes of the two-study population might be responsible for the significant differences in these findings.

In the Southwestern region of Nigeria, majority, 837(72.1%) of the cases occurred in the third and fourth decades of life; in keeping with similar reports from our environment ANATE M [3]. The reasons for the high incidence of fibromyoma as from third decades is highly speculative, however female sex hormones have been implicated, particularly stimulation by

estrogen unbalanced by progesterone as a result of persistent anovulation EVANS P, ET AL [2]. Nulliparous and primiparous women accounted for 44.4% of cases in this review in keeping with observations that leiomyoma is common in the nulliparous or relatively infertile women ANATE M [3]. Attributing symptoms specifically to uterine fibroid is somewhat problematic because of its high incidence in the population, variable clinical presentation, and often asymptomatic nature. However, evidence largely drawn from uncontrolled studies, showed that uterine fibroid is commonly identified in women who have menorrhagia, pelvic pain, obstructive symptoms, infertility, or recurrent pregnancy loss EVANS P, ET AL [2]. Abnormal uterine bleeding was the commonest presenting symptoms in these women with confirmed uterine fibroid. While in the Northern region of Nigeria, the prevalence of uterine leiomyomas was estimated among asymptomatic women using ultrasound scan and was found to be 12.1%. this value is less compared to the Southwestern region of Nigeria. Symptoms observed in the Northern population was less complicated than the symptoms of women who had leiomyomas in the Southwestern region. Attributing symptoms specifically to uterine fibroid is somewhat problematic because of its high incidence in the population, variable clinical presentation, and often asymptomatic nature. However, evidence largely drawn from uncontrolled studies, showed that uterine fibroid is commonly identified in women who have menorrhagia, pelvic pain, obstructive symptoms, infertility, or recurrent pregnancy loss EVANS P, ET AL [2]. Abnormal uterine bleeding was the commonest presenting symptoms in these women with confirmed uterine fibroid. The cause of the increased uterine bleeding is not always clear but have variously been attributed to increase surface area and hyperplasia of endometrium, increased vascularity of the uterus, interstitial fibroid nodules that prevent myometrial contraction and functional ovaries often found in association with uterine fibroid VOLLENHOVEN BJ, ET AL [4]. However, a population-based study did not find any evidence relating general abnormalities in menstrual cycle length or heaviness to the presence of uterine fibroids EVANS P, ET AL [2]. The number of women in this study reporting infertility as a presenting symptom (31.9%) is higher in the Southwestern region much lower than 87.2% reported Northern Nigeria EMEMBOLU JO.

Myomectomy was the commonest surgery performed in this study for the Northern region while in the southwestern region, Myomectomy was performed accounting for 54.7% of cases. The remaining had hysterectomy (43.8%) or polypectomy alone (1.5%). With the large number of women of low parity, presenting with infertility and recurrent miscarriage in this review, myomectomy being the commoner surgical procedure is expected. Myomectomy was often done in patients with associated infertility to improve their fertility potential or when the fibroid is asymptomatic in women who have not completed their family size. Hysterectomy is usually performed in women who had symptomatic fibroids and had completed their family size. The decision to retain the ovaries often depends on how far or close a patient is to menopause ANATE M [3].

(3.57%) patients in the North had undergone myomectomy

(surgical removal of uterine leiomyomas) prior to the examination either due to fibroid regeneration or incomplete removal. This indicates that fibroids regenerate after surgical removal. It has been reported that fibroids have a 15% recurrence rates and 10% of women undergoing a myomectomy will require hysterectomy within 5-10 years. It was also reported that risk of recurrence is associated with age, preoperative number of fibroids, uterine size, associated disease, and childbirth after myomectomy. Calcified fibroid nodules were observed in up to 9.5% of these patients in the North, suggesting that some of the fibroids had undergone degenerative changes. Fibroids undergoing degenerative changes are not uncommon and have been reported by other workers.

The postoperative complication in the Southwestern region ranged from post operative pyrexia (13.5%), blood loss warranting blood transfusion (12.8%), postoperative anemia (10.4%), wound infection (8.7%), vault infection (5.1%) and prolonged hospital stay (4.2%). Wound dehiscence (2.5%), vesicovaginal fistula (0.3%), ureteric (0.3%) and bladder injuries (0.6%) were other complications recorded. Its heartwarming that majority of the patients did not have complications. Post operative pyrexia is a common feature of surgical practice in the tropics. This may be due to wound infection, malaria infection or because of oozing of blood into the myomectomy and peritoneal cavity ANATE M [3]. However in this study wound infection (8.7%) and vault infection (5.1%) contributed significantly to rate of postoperative pyrexia recorded. Post operative anemia occurred in 10.4% of cases. This may be related in part to blood loss during surgery and possibly preexisting anemia. The blood transfusion rate of 12.8% in this study was much lower than 59.8% reported in the Northern region of Nigeria ANATE M [3]. The lower transfusion rate in this study may be due to the use single myometrial incision when possible and routine application of tourniquet during myomectomy in our institutions. These two techniques have been shown to reduce blood loss during myomectomy BUTTRAN VCJR ET AL [1]. Majority of the patients were discharged home within seven days; however, 4.2% stayed beyond seven days. But in the northern region the morbidity rates of myomectomy procedures were significantly lower due to modern minimally invasive techniques employed by the gynecological surgeons, expertise and exposure to advanced clinical related cases and state of the art institutional facilities.

5. Conclusion

Uterine fibroid is common in our environment and usually presents with menorrhagia, pelvic pain, recurrent miscarriage, and infertility. The surgery may be complicated by post operative pyrexia, blood loss, wound infection and even death. Midline incision, closure of rectus sheet with chromic catgut and myomectomy were associated with postoperative complications in this review. To avoid postoperative morbidities associated with surgical management of fibroid, Pfannenstiel incision where feasible, use of non-absorbable or delayed absorbable sutures and hysterectomy in women who have completed family should be adopted in the Southwestern region of Nigeria. Whereas prevalence of uterine leiomyomas is generally prevalent in the

Southwest, there are varying age prevalence's in the north and Southwest. It is recommended that yearly ultrasound scan for screening of fibroids commencing from earlier ages to achieve the goal of early diagnosis.

Limitations

The cross-sectional nature of the study and the findings from the study might not be a representation of the general women population in Nigeria because it is a dual-centered study.

Transvaginal ultrasound could have picked smaller nodules if done.

Declaration

Ethical Approval and Consent to Participate

This analytical study and the consent to participate was granted and Approved by the Board of Clinical Research at Aminu Kano Teaching Hospital, kano State, Nigeria and the Administration of Obstetrics & Gynecology department, Obafemi Awolowo University, Ile – Ife, Nigeria.

The data collected and used in this research was approved by the Department of Obstetrics & Gynecology department, Obafemi Awolowo University, Ile – Ife, Nigeria and the Department of Radiology, Bayero University Kano/Aminu Kano Teaching Hospital, Kano, Kano State, Nigeria.

Ethical Statement

We ensured that all research was conducted in accordance with ethical principles and confidentiality of the patients. We also ensured that all research conducted was in accordance with the approval of the Board of Clinical Research at Aminu Kano Teaching Hospital, kano State, Nigeria and the Administration of Obstetrics & Gynecology department, Obafemi Awolowo University, Ile – Ife, Nigeria. The use of patients-clinical records and patients' confidentiality was duly observed with an ethics of respect for cultures, communities, the individuals/person, and independent knowledge.

Consent for Publication

The research was carried out by the author and co-authors and supervised/assisted by other clinicians. The authorization of publication is based on the partnership agreement of the author and co-authors who conducted this research.

Availability of Data and Material

The availability of data used in this research study was easily obtained during and after the research. The equipment used in this study were already facilities established by the hospitals administration.

Competing Interest

There was no competing interest involved in this research study.

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Author's Contribution

The author contributed to compiling and comparing the research materials used in this research study.

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