

The Effect of Uterine Leiomyomas Size on Presenting Symptoms and Accurate Sonography Assessment

Nayla Jamal Bushaquer, MD, Arab board in OB/GYN, Saudi board in OB/GYN*
Nawal Dayoub, MD, MRCOG, Msc Rep**

ABSTRACT

Background: Uterine leiomyomas are the most common uterine neoplasm; their symptoms could be related to the size and position. They could affect patients' capability to conceive and/or to continue the pregnancy. Ultrasound is the main diagnostic tool. However, accurate assessment might be affected by fibroid characteristics.

Objective: To evaluate the relationship between fibroid size, presenting symptoms, previous obstetric history and accurate ultrasound fibroid assessment preoperatively in patients who had abdominal myomectomy.

Design: A retrospective data analysis.

Setting: University of Dammam Teaching Hospital.

Method: All patients who had abdominal myomectomy between 1 December 2007 and 30 November 2012 were reviewed. Personal characteristics, obstetric history, indication for the myomectomy and myoma preoperative and intraoperative features were reviewed.

Result: One hundred thirty-seven procedures were performed during the study period. The mean age of the patients was 36 years, 81 (59.1%) were married and 112 (82%) were Saudi nationals. Menorrhagia was the leading presentation in 66 (48.2%) patients, followed by pain in 26 (19%), mass in 16 (12%), sub-fertility in 14 (10.2%) and pressure symptoms in 9 (7%) patients. However, 6 (4.4%) had combined presentations. The median of the two largest diameter myoma was 7 cm and the weight was 320 gm. However, fibroid size had a significant effect on the presenting symptoms. Previous parity was not affected by the size of the fibroid. The size of the fibroid on ultrasound had no effect on the accuracy of the assessment.

Bahrain Med Bull 2014; 36(2):74-77

* Senior Resident

**Consultant IVF

Obstetrics and Gynecology Department
Bahrain Defense Force Hospital
Kingdom of Bahrain
Email: dr.nayla.j.b@gmail.com

Conclusion: There was no relationship between patient's age and presenting symptoms, but fibroid size had a significant effect on presenting complaints. Childlessness with increased fibroid size was noted. However, the size of the fibroid had no effect on previous miscarriage history. Accurate assessment of the fibroid by sonography was not affected by its size.

INTRODUCTION

Uterine leiomyomas (fibroids or myomas) are benign tumors, which arise from the myometrial smooth muscle cells. They are the most common uterine neoplasm and are clinically apparent in about 20–25% of women of reproductive age^{1,2}. Uterine myomas could cause abnormal uterine bleeding, pelvic pain and infertility, pelvic pressure, difficulty in defecation or dyspareunia, bowel dysfunction and bladder symptoms, such as urinary frequency and urgency^{3,4}. Large uterine myomas have also been associated with miscarriage and poor obstetric outcome³.

The management of fibroid-related symptoms depends on many factors. The most crucial factor is the patients' desire for future fertility. These patients usually opt for a conservative approach, which ranges from observing the fibroid, medical therapy and myomectomy⁵. Abdominal myomectomy is the mainstay of conservative surgical treatment for uterine fibroids, particularly in women who wish to retain their uterus⁶.

The relationship between patient's age and presenting symptoms of myoma has not been reported previously. Furthermore, the relationship between the size of fibroid and previous history of miscarriage needed to be clarified. Imaging can provide information regarding precise myoma location, which may, in turn, dictate treatment options. Myomas may be classified based on their type and position within the uterus. With the increasing popularity of uterine-conserving therapy, accurate diagnosis of myomas has become important⁷.

The aim of this study is to evaluate the relationship between fibroid size, presenting symptoms, previous obstetric history and accurate ultrasound fibroid assessment preoperatively in patients who have undergone abdominal myomectomy.

METHOD

The present study is a retrospective data analysis of women who had abdominal myomectomy between 1 December 2007 to 30 November 2012.

The analysis involved personal and preoperative characteristics of patients including age, parity, nationality, marital status, myomectomy indications, sonographic myoma location, type, largest diameter and histopathology. Operative data included the total number, weight, location and type of myoma resected.

The data were analyzed using StatsDirect medical software. Kruskal-Wallis test was used to compare medians between more than 2 groups; one way analysis of variance was used to compare the mean between groups. P value of 0.05 was considered statistically significant.

RESULT

During the study period, 137 patients had abdominal myomectomy. The mean age of the patients was 36 years. Eighty-one (59.1%) patients were married. One hundred thirteen (82%) patients were Saudi nationals.

Menorrhagia was the leading symptom in 66 (48%) patients, followed by pain in 26 (19%) patients. Incidental mass was the presenting symptom in 16 (12%) patients. Subfertility was found in 14 (10%) patients and pressure symptoms in 9 (7%) patients. Two (1.5%) patients had myomectomy done for recurrent myoma. Four (3%) procedures had several symptoms.

The median of the largest diameter of myoma was 7 cm (2-20 cm). The median weight of myoma was 320 gm (30-4590 gm) and the median number of myoma removed was 2 myomas (1-20 myoma).

There was no difference in the mean age of patients in relation to presenting symptoms $p=0.74$. However, fibroid size had a significant effect on the presenting symptoms $P=0.03$. Patients who presented with pressure symptoms had a bigger fibroid. Patients who presented with subfertility had a smaller fibroid as they were seeking medical evaluation and treatment in order to conceive.

Fourteen (10.2%) patients were seeking treatment for infertility; their median size myomas was 5.5 cm, a range of 2-15 cm. Sixteen (12%) patients presented with abdominal mass; their median size myomas was 7.5 cm, a range of 4-16 cm. Sixty-six (48.2%) patients presented with menorrhagia; their median size myomas was 7 cm, a range of 3-20 cm. Twenty-six (19%) patients presented with pain; their median size myomas was 8 cm, a range of 4-17 cm. Nine (7%) patients presented with pressure symptoms; their median size myomas was 6-18 cm. However, 6 (4.4%) patients had combined presenting symptoms.

The ability to conceive and deliver is not affected by the size of the fibroid, though the trend to deliver is less with larger fibroids, $P=0.01$. Twenty-four (18%) patients with a fibroid of less than 5 cm were nulliparous, compared to thirteen (9%) patients with a fibroid of more than 12 cm, see table 1.

Table 1: The Size of Fibroid and Previous Delivery

	≤ 5 cm	6- 8 cm	9- 12 cm	≥ 12 cm
Nulliparous	24 (18%)	40 (29%)	19 (14%)	13 (9%)
Parous	15 (11%)	21 (15%)	4 (3%)	1 (0.72%)
Fisher-Freeman-Halton exact $P= 0.06$ linear trend $P= 0.01$				

In this study, 9 (7%) patients who had a fibroid with a size less than 5 cm had previous miscarriage, compared to one (0.72%) patient with a large fibroid of more than 12 cm. There was no statistical difference between different fibroid size groups and previous miscarriage, see table 2.

Table 2: Relationship between the Size of Fibroid and Previous Miscarriage

	≤ 5 cm	6- 8 cm	9- 12 cm	≥ 12 cm
No miscarriages	30 (22%)	45 (33%)	19 (14%)	13 (9%)
Miscarriages	9 (7%)	16 (12%)	4 (3%)	1 (0.72%)
Fisher-Freeman-Halton exact P= 0.49 linear trend P= 0.2				

The size of the fibroid had no effect on accurate assessment of fibroid type (intramural, submucosal and subserosal) and location (fundal, anterior or posterior), as confirmed during surgery, see table 3. The total fibroid type mismatched cases identified were 29 cases; 69% of the mismatched fibroids were either submucosal or subserosal type, which were reported by the sonographer as intramural.

Table 3: Fibroid Size and Assessment of the Type and Location of Fibroid by Ultrasound

	≤ 5 cm	6- 8 cm	9- 12 cm	≥ 12 cm	
Type of fibroid correlation	30/39 (77%)	46/61 (75%)	18/23 (78%)	11/14 (79%)	P= 0.99
Site of fibroid correlation	37/39 (95%)	59/61 (97%)	20/23 (87%)	14/14 (100%)	P= 0.24

All the pathology of myoma was benign: leiomyoma (130 cases), adenomyosis (4 cases) or both (3 cases).

DISCUSSION

The mean age of the patients was 36 years, which was similar to other studies^{8,9}. This finding reflects the fact that leiomyoma is more prevalent in reproductive age. Therefore, patients in their late thirties tend to be keen on preserving their fertility. Approximately 60% of myomectomies were carried out for married patients, who are more likely to seek treatment for their fibroids. Single women in Middle Eastern countries usually avoid going for a medical check-up of their fibroid for the fear of surgical intervention.

The majority of patients were Saudi nationals (82%). There were limitations on the acceptance of other nationalities due to treatment cost.

Common presenting symptom is menorrhagia mainly due to increased vascularity of the uterus, endometrial venous plexus congestion, dilatation, obstructed veins and increased anovulatory cycles. Menorrhagia was the leading indication for myomectomy in 48% of our patients, it is less than 58% reported by Geidam et al, 67% by Schüring and 73% by Pundir et al^{10,12}. However, Thomas et al reported menorrhagia in only 1% of their patients as the majority were presenting with infertility. This reflects a completely different population of patients⁹.

Geidam et al reported that 63% of their fibroids were found incidentally¹². This is 5-fold higher than 12% found in our study or 8% reported by Schüring et al¹⁰. Patient's awareness, availability

of screening and regular medical checkup has direct effect on diagnosis in completely symptom-free patients¹². Approximately 1.5% of our patients had abdominal myomectomy for recurrent myoma compared to 10% reported by Pundir et al¹¹. This actually could indicate the effectiveness of the primary procedure at our hospital and the patient's fear of repeated procedure, which carries a higher risk of hysterectomy.

In our study, the median of the fibroid largest diameter was 7 cm with a range of 2-20 cm. In other studies, the mean was 4.4 cm ranging between 1-14 cm and 9 cm ranging between 4-22 cm⁹⁻¹¹. In our analysis, the median weight of myoma was 320 gm with a range of 30-4590 gm. Other studies have reported the mean weight was between 110 gm (range 1-1165 gm) and 668 gm (range 102-2467 gm)⁹⁻¹³.

Many surgeons will not remove small subserosal fibroids to avoid prolongation of the operating time and the risk of bleeding. Surgeons in our hospital removed a median of 2 fibroids with a range of (1- 20 myoma). Pundir et al removed a mean of 11 (1-42 myoma) fibroids in their patients; most of their patients were presenting with menorrhagia, which affect the decision of surgical removal of smaller fibroids. In patients presenting with infertility, a more conservative approach is applied⁹⁻¹³.

The relationship between the mean age of patients and the presenting symptoms has not been addressed in any previous studies. Our data shows no relationship between presenting symptoms and patient age. Although younger patients tend to present with pressure and pain, this did not reach significant levels ($p=0.74$).

Patients with large fibroids usually present with pressure symptoms. Patients who present with subfertility have a smaller fibroid. Oladapo et al found that 43.9% of patients with larger uterine size ≥ 20 weeks presented with subfertility and 31.7% of patients with large uterus presented with menorrhagia. Pressure symptoms were only found in 1.6% of patients. The presenting symptoms were not much different for smaller uterine size < 20 weeks, apart from menorrhagia, where fewer cases were done in smaller uterine size (only 5% reported menorrhagia preoperatively)⁸.

We found that the ability to conceive and deliver is not affected by the size of the fibroid, though the trend to be childless with larger fibroids is significant $P=0.01$, a finding similar to Oladapo et al⁸. Our data illustrated no statistical difference between different fibroid size groups and previous miscarriage. Recurrent miscarriage was reported to be 5% after abdominal myomectomy⁹.

Abdominal and transvaginal ultrasound imaging is the most accurate and widely used modality in the detection and characterization of uterine leiomyomas. Dudiak reported a low sensitivity of 69% and an accuracy of 87% when ultrasound imaging was used compared to MRI¹⁴. In our analysis, fibroid size did not affect ultrasound assessment (intramural, submucosal or subserosal) and location (fundal, anterior or posterior) as confirmed during surgery. Large fibroids presented no difficulty in identifying their site, but their type was less easy to confirm.

Fibroids are usually benign tumors; no patients in our study had uterine sarcoma, endometrial hyperplasia or endometrial cancer. Pathology assessment after surgery confirmed leiomyomas in 130 cases, 4 cases were adenomyosis and 3 cases were both. Similar findings were found in other studies¹³.

CONCLUSION

Our study revealed that myomectomy was done for married young patients aged around 36 years. Menorrhagia was the leading complaint of patients undergoing abdominal myomectomy with pressure symptoms being the least. There was no relationship between patients' age and presenting symptoms, but fibroid size had a significant effect on presenting complaints. The size of fibroid had no effect on previous miscarriage history.

The size of the fibroid had no effect on sonography assessment (intramural, submucosal or subserosal) or location. Our study was retrospective and this obviously restricted our ability to discuss other crucial factors related to leiomyomas. Long term follow-up will reveal possible effects of the procedure on future fertility and delivery.

Author contribution: All authors share equal effort contribution towards (1) substantial contribution to conception and design, acquisition, analysis and interpretation of data; (2) drafting the article and revising it critically for important intellectual content; and (3) final approval of manuscript version to be published. Yes.

Potential conflicts of interest: None.

Competing interest: None. **Sponsorship:** None.

Submission date: 18 February 2014.

Acceptance date: 24 March 2014.

Ethical Approval: Approved by department of obstetrics and Gynecology, King Fahad Hospital of University, Khobar.

REFERENCES

1. Ciavattini A, Di Giuseppe J, Stortoni P, et al. Uterine Fibroids: Pathogenesis and Interactions with Endometrium and Endomyometrial Junction. *Obstet Gynecol Int* 2013; 2013:173184
2. Buttram VC Jr, Reiter RC. Uterine Leiomyomata: Etiology, Symptomatology and Management. *Fertil Steril* 1981; 36(4): 433–445.
3. Guarnaccia MM, Rein MS. Traditional Surgical Approaches to Uterine Fibroids: Abdominal Myomectomy and Hysterectomy. *Clin Obstet Gynecol* 2001; 44(2): 385–400.
4. ACOG Committee on Practice Bulletins-Gynecology. ACOG Practice Bulletin. Surgical Alternatives to Hysterectomy in the Management of Leiomyomas. Number 16, May 2000 (Replaces Educational Bulletin Number 192, May 1994). *Int J Gynaecol Obstet* 2001; 73(3): 285–93.

5. Ciavattini A, Tsiroglou D, Litta P, et al. Ultra-minilaparotomy Myomectomy: A Minimally Invasive Surgical Approach for the Treatment of Large Uterine Myomas. *Gynecol Obstet Invest* 2009; 68(2):127-33.
6. Obed JY, Bako B, Kadas S, et al. The Benefit of Myomectomy in Women Aged 40 Years and Above: Experience in an Urban Teaching Hospital in Nigeria. *Niger Med J* 2011; 52(3):158-62.
7. McLucas B. Diagnosis, Imaging and Anatomical Classification of Uterine Fibroids. *Best Pract Res Clin Obstet Gynaecol* 2008; 22(4):627-42.
8. Oladapo OT, Akinsanya AF. Relative Morbidity of Abdominal Myomectomy for Very Large Uterine Fibroids in a Developing Country Hospital. *Arch Gynecol Obstet* 2011; 283(4):825-30.
9. Thomas RL, Winkler N, Carr BR, et al. Abdominal Myomectomy--A Safe Procedure in an Ambulatory Setting. *Fertil Steril* 2010; 94(6):2277-80.
10. Schüring AN, Garcia-Rocha GJ, Schlösser HW, et al. Perioperative Complications in Conventional and Microsurgical Abdominal Myomectomy. *Arch Gynecol Obstet* 2011; 284(1):137-44.
11. Pundir J, Krishnan N, Siozos A, et al. Peri-operative Morbidity Associated with Abdominal Myomectomy for Very Large Fibroid Uteri. *Eur J Obstet Gynecol Reprod Biol* 2013; 167(2): 219-24.
12. Geidam AD, Lawan ZM, Chama C, et al. Indications and Outcome of Abdominal Myomectomy in University of Maiduguri Teaching Hospital: Review of Ten Year. *Niger Med J* 2011; 52(3):193-7.
13. West S, Ruiz R, Parker WH. Abdominal Myomectomy in Women with Very Large Uterine Size. *Fertil Steril* 2006; 85(1):36-9.
14. Dudiak CM, Turner DA, Patel SK, et al. Uterine Leiomyomas in the Infertile Patient: Preoperative Localization with MR Imaging versus US and Hysterosalpingography. *Radiology* 1988; 167(3):627-30.