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Research Article

Myomectomy versus total abdominal hysterectomy in women with uterine fibroid

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ABSTRACT

Leiomyomas are benign tumors of the uterus with obscure etiology. These neoplasms are mostly seen in women during their reproductive age and are seen in 80% of them throughout their lifetime. By far, the uterine fibroid is the most frequent reason for surgery in young women. Myomectomy can be carried out via "hysteroscopy, laparoscopy, or classically as an abdominal procedure". This study was aimed to find out what characteristics can predict the type of operation in women with uterine fibroid. The present cross-section study was included 56 women with uterine fibroid with a mean age of 40.54 ± 9 years. Forty women (71.4%) were married and the rest 16 women (28.6%) were unmarried. Myomectomy was carried out for 33 women (58.9%) and total abdominal hysterectomy was the operation of choice in 23 women (41.1%). Clinical presentation, the age of women, blood group and type of operation were the main variables included in the current study. The results of this study revealed that age was a strong predictor of the type of operation (P<0.001). The best age cutoff value was >40 years that made the best sensitivity and specificity combination, 91.30 % and 81.82 % respectively. In addition, marital status was a significant determinant of the type of operation. The Odds ratio of married women to undergo TAH was 7.74 (95% Confidence interval of 1.74-38.56); in other words, married women are at risk of undergoing THA approximately seven times those women who are unmarried. Women with blood group O+ were more associated with TAH than other groups followed by blood group B+, A+, AB+, and B-. Women age and state of marriage are by far the most reliable predictors for the type of surgical procedure done for women with uterine fibroid.

Keywords: Uterine fibroid; Myomectomy; Hysterectomy.

INTRODUCTION

Leiomyomas are benign tumors of uterus with obscure etiology. These neoplasms are mostly seen in women during their reproductive age and are seen in 80% of them throughout their lifetime (Bowden et al., 2009). Being mostly asymptomatic, these tumors passed unnoticed before the era of modern imaging diagnostic techniques (Laughlin et al., 2010). The prevalence of these neoplasms varies according to method of its estimation: about 30% according to clinical observation, 50% as proved by imaging and 77% in histologically examined hysterectomy specimens (Sparic et al., 2016). Their pathogenesis remains enigmatic and usually linked to interaction among environmental risk factors and genetic susceptibility. The interaction among these factors will ultimately affects estrogens and progesterone levels and their metabolism, the terminal players in the sequence of pathogenesis (Ciavattini et al., 2013). However, recent work made a big question mark on the role of estrogens and progesterone (Peddada et al., 2008). Uterine fibroids are true neoplasms being monoclonal in origin (Lobel et al., 2006; Wei et al., 2005, 2006; Wolanska and Bankowski, 2007). Ethnic variations in protein expression have been observed in these tumors and the size of them has been linked to molecular markers (Wang et al., 2007; Wei et al., 2006). These benign tumors are usually asymptomatic (Okolo, 2008; Schwartz et al., 2000), however, they may cause several manifestations such as "abnormal uterine bleeding, a feeling of pelvic pressure, urinary incontinence or retention, or pain or associated with reproductive problems such as infertility and miscarriage" (Sabry and Al-Hendy, 2012; Watkinson and Nicholson, 2007). The most frequent complaint is abnormal uterine bleeding, particularly in form of prolonged and heavy bleeding. (Ryan et al., 2005). Treatment options are often individualized according to the severity of the manifestations, the site and size of the tumor, the age of women and the patient's will to complete her family (Sabry and Al-Hendy, 2012). Regarding symptomatic tumors, the standard approach is surgical removal, hysterectomy or myomectomy (Lethaby et al., 2001). By far, the uterine fibroid is the most frequent reason for surgery in young women (Vessey et al., 1992). Myomectomy can be carried out via "hysteroscopy, laparoscopy, or classically as an abdominal procedure". Submucosal tumors can usually be

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excised via hysteroscopy, under general or regional analgesia; moreover, it can be carried out as an office procedure in some centers, taking into consideration the size and the type of the fibroid (Haimovich et al., 2015; Mavrelos et al., 2010). The laparoscopic approach is till now extensively used for subserosal fibroids and can be carried out for intramural tumors in a certain situation (Haimovich et al., 2015). A cohort study made a comparison in perioperative morbidity between patients subjected to abdominal myomectomy and those subjected to abdominal hysterectomy and the results showed no significant variation between the two groups. In addition, there was substantially less rate of bleeding in women subjected to myomectomy than those who underwent hysterectomy; however, myomectomy needed longer time than hysterectomy. Another reported a significant advantage of a myomectomy is the less hospital stay postoperatively (Sawin et al., 2000). The first reported successful hysterectomy procedure was carried out in 1813 by -German surgeon Konrad Langenbeck (Salama and Kılıç, 2013) and nowadays it ranks the second most common surgical procedure, just after cesarean section, in reproductive women (Okolo, 2008; Salama and Kılıç, 2013; Siegel et al., 2016). Hysterectomy leads to complete cessation of periods and guarantees that the fibroid will not return back again. The usual hysterectomy approach involves a "large abdominal incision, 2–5day hospital stay, and significant requirements for postoperative analgesia". Laparoscopic hysterectomy possesses many benefits over laparotomies, such as less postoperative pain, fewer hospital stays and faster resumption of routine daily life (Salama and Kılıç, 2013).

PATIENTS AND METHODS

The present cross-section study was carried out in Al Diwaniyah province, Iraq and included 56 women with uterine fibroid with an age range of 25 to 60 years. Cases included in the present study were those visiting Al Diwaniyah maternity and child teaching hospital and also those visiting some private clinics in Al Diwaniyah province. Informed consent obtained from the patients also an ethical approval obtained. Clinical presentation, the age of women, blood group and type of operation were the main variables included in the current study.

Statistical analysis

Statistical analysis was carried out using statistical package for social sciences (SPSS version 23.0) and Medcalc 15. Numeric variables were expressed as mean and standard deviation while categorical variables were expressed as number and percentage. The level of significance was considered at $P \leq 0.05$.

RESULTS

The present study included 56 women with uterine fibroid with a mean age of 40.54 ± 9 years. Forty women (71.4%) were married and the rest 16 women (28.6%) were unmarried. Women of blood group A+ were 15 (26.8%), of blood group B+ were17 (30.4%), blood group AB+ were 4 (7.1%), blood group O+ were 18 (32.1%) and blood group B- were 2 (3.6%). Myomectomy was carried out for 33 women (58.9%) and total abdominal hysterectomy was the operation of choice in 23 women (41.1%), as shown in table 1.

To determine the effect of age in the prediction of the type of operation, receiver operator characteristic curve (ROC) analysis was carried out and the results are shown in figure 1, table 2, table 3 and table 4. Age was a strong predictor for the type of operation as it is shown from the area under the ROC curve which was 0.897 and had a 95% confidence interval of (0.786 to 0.962) and the prediction was highly significant (P<0.001). The best age cutoff value was >40 years that made the best sensitivity and specificity combination, 91.30 % and 81.82 % respectively. In addition, marital status was a significant determinant of the type of operation. The rate of TAH in unmarried women was far less than that of married women, 12.5% versus 52.5% and the difference was highly significant (P=0.006). The Odds ratio of married women to undergo TAH was 7.74 (95% Confidence interval of 1.74-38.56); in other words, married women are at risk of undergoing THA approximately seven times those women who are unmarried, as shown in table 4. Women with blood group O+ were more associated with TAH than other groups followed by blood group B+, A+, AB+, and B-, as shown in table 5.

DISCUSSION

The present study showed that uterine fibroid can be seen in women with a wide age range (25 to 60 years). However, it was mainly seen in women within the reproductive age, a mean age of 40.54 ± 9 years and this mean of age is in accordance to the finding of a large American cohort study which described a mean age in women with a diagnosis of uterine fibroid of 40.4 ± 6.9 years. (Zimmermann et al., 2012). In a US study "with randomly selected women between 35 to 49 years, who were screened by self-report, medical record and sonography, the incidence of uterine fibroids by age 35 was 60% among African-American women, increasing to > 80% by age 50, whereas Caucasian women showed an incidence of 40% by age 35, and almost 70% by age 50 (Baird et al., 2003). Myomectomy was carried out in 33 (58.9%) whereas, hysterectomy was done in 23 (41.1%). Although the number, size, and location of the tumor are a major determinant for the type of operation that women with uterine fibroid can undergo, we were looking for presenting features that determine or predict with an acceptable sensitivity and specificity the type of surgical procedure even before imaging is done. In this study, we succeeded to address the age of the woman and her marital status as major predictors with this regard (Mezher et al., 2017). Preoperative assessment is important to determine the operative strategy according to size, number, and location of the myomas. Precise preoperative diagnosis indicates whether laparoscopic myomectomy is possible or whether laparotomy should

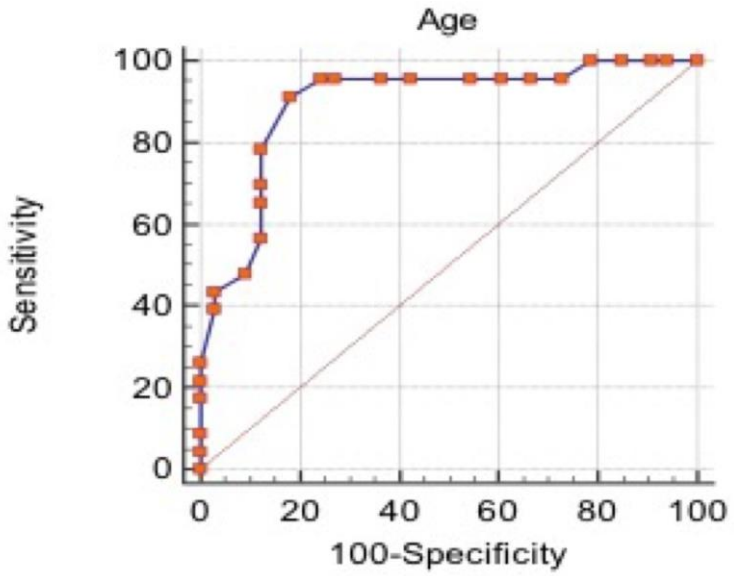

Figure 1: Receiver operator characteristic (ROC) analysis for calculation of age cutoff value that predicts type of surgical operation

Table 1: Characteristics of the study group

Characteristic		Value
Age (years)		40.54 ± 9 *
Marital status	Married	40 (71.4) †
	Unmarried	16 (28.6) †
Blood group	A+	15 (26.8) †
	B+	17 (30.4) †
	AB+	4 (7.1) †
	O+	18 (32.1) †
	B-	2 (3.6) †
Surgery	Myomectomy	33 (58.9) †
	TAH	23 (41.1) †
Total		56 (100) †

TAH: total abdominal hysterectomy; *: Mean ±Standard deviation; †: number (%)

Table 2: Characteristics of the ROC analysis

Cutoff	> 40 years
AUC (95% CI)	0.897 (0.786 to 0.962)
P	<0.001
Sensitivity	91.30 %
Specificity	81.82 %

Table 3: Criterion values and coordinates of the ROC curve

Criterion	Sensitivity	95% CI	Specificity	95% CI
≥25	100.00	85.2 - 100.0	0.00	0.0 - 10.6
>29	100.00	85.2 - 100.0	21.21	9.0 - 38.9
>31	95.65	78.1 - 99.9	27.27	13.3 - 45.5
>39	95.65	78.1 - 99.9	75.76	57.7 - 88.9
>40	91.30	72.0 - 98.9	81.82	64.5 - 93.0
>42	78.26	56.3 - 92.5	87.88	71.8 - 96.6
>46	56.52	34.5 - 76.8	87.88	71.8 - 96.6
>47	47.83	26.8 - 69.4	90.91	75.7 - 98.1
>48	43.48	23.2 - 65.5	96.97	84.2 - 99.9
>49	39.13	19.7 - 61.5	96.97	84.2 - 99.9
>50	26.09	10.2 - 48.4	100.00	89.4 - 100.0
>60	0.00	0.0 - 14.8	100.00	89.4 - 100.0

Table 4: Association between marital status and type of operation

Marriage	TAH	Myomectomy	Total	P	OR	95% CI
Married	21 (52.5%)	19	40	0.006	7.74	1.74-38.56
Unmarried	2 (12.5%)	14	16			

Table 5: Association between blood group and type of operation

Blood group	TAH	Myomectomy	Total
O+	8 (44.4)	10 (55.6)	18 (100.0)
B+	7 (41.2)	10 (58.8)	17 (100.0)
A+	6 (40.0)	9 (60.0)	15 (100.0)
AB+	2 (50.0)	2 (50.0)	4 (100.0)
B-	0 (0.0)	2 (100.0)	2 (100.0)
Total	23 (41.1)	33 (58.9)	56 (100.0)

be performed for large or numerous myomas. Each approach has its own indications (Mettler et al., 2012). In one study, there were statistically significant differences in the mean age between women who underwent abdominal myomectomy and abdominal hysterectomy and those women who underwent TAH were significan tly older than those who underwent abdominal myomectomy (Rouzi et al., 2001). These findings are supportive of the findings of the present study. On the other hand, marital status was also an important determinant, so that the usual mode of surgical approach in unmarried women is myomectomy to save fertility (Rahim et al., 2016).

CONCLUSION

In conclusion, women age and state of marriage are by far the most reliable predictors for the type of surgical procedure done for women with uterine fibroid.

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