

ORIGINAL ARTICLE

EFFECT OF FIBROID IN CHANGING THE UTERINE SIZE, AND DISTORTION OF ENDOMETRIUM LINING IN A GROUP OF PRE- AND PERI-MENOPAUSAL WOMEN

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Background: Knowledge of the normal dimensions of the uterus and endometrial thickening are important for evaluating the uterine health and for forecasting the risk of infertility and recurrent pregnancy loss. This study was designed to find out the effect of fibroid in changing the uterine size and distortion of endometrium lining in peri- and pre-menopausal women. **Methods:** Forty-six pre- and peri-menopausal women presenting to Radiology Department, Sir Ganga Ram Hospital, and Lahore General Hospital, Lahore from October 2009 to January 2010 with complaints of heavy menstrual bleeding were included in the study. A transvaginal ultrasound or pelvic ultrasound was carried out to confirm the diagnosis of fibroids and taking measurements. 5 pre and 3 peri-menopausal women with no history of any disease were taken as control. **Results:** Uterine size in case of both pre- and peri-menopausal woman with fibroid was non-significantly increased. Mean size of fibroid was 3.87×3.84 Cm. Ultrasonography showed that the position of fibroid was either in anterior or posterior or post-fundal region in both groups of women. Mean endometrial thickness with and without fibroid was relatively same in pre-menopausal women. In peri-menopausal women endometrial thickness was slightly increased. Ultrasonography showed that fibroid pushing endometrium anterior and posterior site is more or less same but in some no effect on endometrium thickness was observed. **Conclusion:** Fibroid with a size of 3–3.5 cm cause a small change in the uterine size, distortion of endometrial lining in peri-menopausal women only. Further work is needed on large number of peri-menopausal women.

Keywords: uterus size, fibroid, endometrial thickness

INTRODUCTION

Knowledge of the normal dimensions of the uterus is important for evaluating the health status of women and for forecasting the risk of developing infertility and recurrent pregnancy loss.¹ Fibroids start in the muscle tissues of the uterus. They can grow into the uterine cavity, into the thickness of the uterine wall, or on the surface of the uterus into the abdominal cavity.²

The incidence of uterine fibroid tumours increases as women grow older, and they may occur in more than 30% of women 40–60 years of age. On the other hand, 80% of Pakistani patients with uterine leiomyomas were between the age of 31–50 years.³ Risk factors include nulliparity, obesity, family history, black race, and hypertension. Fibroid tumours are associated with menorrhagia, pelvic pain, pelvic or urinary obstructive symptoms, infertility, miscarriage, infertility, premature labour, and labour complications.⁴

The influence of fibroids on fertility is poorly understood. However it is thought that fibroids within the uterine wall can alter the uterine cavity, block the fallopian tubes, or displace the cervix.⁵ Submucosal and intramural fibroids that distort the endometrial cavity have been associated with decreased pregnancy rates. However, there is uncertainty about the effect of intramural fibroids that do not distort the endometrial

cavity. The presence of non-cavity-distorting intramural fibroids is associated with adverse pregnancy outcomes in women.⁶ However, contrary to common myth, the current feeling is that the substantial majority of women with fibroids are able to have successful pregnancies unless the uterine cavity is unusually distorted.⁷

Both intramural and submucosal fibroids may increase the size of the uterus cavity, forcing sperm to travel a greater distance. Additionally, both types of fibroid tumours can interfere with the uterus' ability to contract. As a result, sperm and egg transport may be hindered. The uterine cavity can also be distorted by multiple and large submucosal as well as intramural fibroid tumours. These fibroids can all impair the blood supply to the endometrium and disturb the structure of the endometrium, thereby altering anatomy of the uterus and reducing the chances of implantation.^{8,9}

Endometrial thickness >5 mm may indicate the presence of pathology especially endometrial sarcoma.¹⁰ Clinical importance of measurement of endometrial thickness with ultrasonography and applications extend throughout the phases of the reproductive lives of women. In pre-menopausal women, endometrial thickness is used to monitor infertility treatment, while in postmenopausal women with abnormal uterine bleeding it is useful as an initial investigation for endometrial hyperplasia or cancer.¹¹

Present study was carried out to find out the effect of fibroid in changing the uterine size, distortion of endometrium lining in a group of peri- and postmenopausal women.

MATERIAL AND METHODS

Total 46 women presenting to Radiology Department, Sir Ganga Ram Hospital, Lahore from October 2009 to January 2010 with the complaints of heavy menstrual loss were included in the study. A transvaginal ultrasound or pelvic ultrasound was carried out for the diagnosis of fibroids. With the uterus imaged in the longitudinal plan, uterine size and endometrial thickness were also measured at the thickest point between the two basal layers on the anterior and posterior uterine walls. Women with fibroids were divided into two groups, i.e., pre-menopausal (n=36) and perimenopausal (n=10) groups. Normal uterine size without fibroids were also taken in another 5 pre-menopausal and 3 peri-menopausal women. Data were analysed using SPSS-15 and compared using Student's *t*-test.

RESULTS

Thirty-six pre- and 10 perimenopausal women were included in the study. Another 8 women, 5 premenopausal and 3 perimenopausal, with no history

of fibroids and <6 mm endometrial thickness were taken as controls. Premenopausal women with mean age 33 years had mean uterine cavity size 9.03×4.08×4.88 Cm. In premenopausal woman mean uterine cavity size with fibroid was non-significantly ($p>0.05$) increased, i.e., 9.30×5.61×5.83 Cm with the fibroid size 3.87×3.84. Mean uterine cavity size was 8.25×3.53×4.27 Cm in perimenopausal women with age 50 year. In the presence of fibroid, the size was non-significantly ($p>0.05$) increased to 8.16×4.55×6.48 Cm. Size of fibroid in perimenopausal women was 3.24×3.10 Cm. Ultrasonography showed that the position of fibroid was either in anterior or posterior or post-fundal region in both groups (Table-1).

Table-2 shows the comparison of endometrial thickness with and without fibroids in pre- and perimenopausal women. Mean endometrial thickness with and without fibroid was more or less the same in premenopausal women (5.78 vs 5.76 mm). In perimenopausal women endometrial thickness was non-significantly ($p>0.05$) increased (5.76 vs 6.00 mm). Ultrasonography showed that fibroid pushing endometrium anterior and posterior site is almost the same, and in some cases no effect on endometrium thickness was observed.

Table-1: Uterine size with and without fibroids in pre- and peri-menopausal women

Subjects	Age (Years)	Controls (n=8)	Patients (n=46)	Size of fibroids (Cm)
Premenopausal	33.19±7.71	9.03×4.08×4.88 ±1.46×1.26×1.10	9.30×5.61×5.83 ±1.44×1.37×1.12	3.87×3.84 ±1.52×1.15
Perimenopausal	50.63±3.34	8.25×3.53×4.27 ±1.16×0.92×1.01	8.16×4.55×6.48 ±2.94×1.20×2.39	3.24×3.10 ±0.60×0.85

Table-2: Endometrial thickness with and without fibroids in pre- and peri-menopausal women

Subjects	Controls (Mean±SD, mm)	Patients (Mean±SD, mm)
Premenopausal	5.78±0.83	5.76±1.30
Perimenopausal	5.25±0.50	6.00±1.15

DISCUSSION

Abnormal pre- and perimenopausal bleeding is common and accounts for much medical and surgical intervention.¹²

Uterine size was increased due to the presence of fibroid in both pre- and perimenopausal women. However the size of fibroid in perimenopausal women was less as compared to the size of fibroid in case of premenopausal women. In both groups the position of fibroid was either in anterior or posterior, or post-fundal region. According to a study¹³ women with large subserosal fibroids, which develop on the outer covering of the uterus, may developed compressed fallopian tubes. This can cause a blockade in the fallopian tube, thereby blocking the passage of sperm and eggs. Subserosal fibroids can also distort the pelvic anatomy to such an extent that it becomes difficult for the

fallopian tube to capture an egg at the time of ovulation. Because of their location inside the uterine cavity, submucous fibroids can cause fertility problems and miscarriages.¹³

A study¹⁴ reported that uterine cavity shape can vary dramatically. They observed a slight increase in total uterine length which may be due to endometrial cavity length and transverse fundal diameter. They related it with parity and age.¹⁴ A group of workers reported that an apparently greater cavity length was seen in older and/or parous women, but the difference was not statistically significant.¹⁵ We observed the same. Our study was in contrast to a study¹⁶ that observed the mean uterus size as 8.66×4.96×4.06 Cm.

Another study observed that intramural and subserosal fibroids that do not disturb the uterine cavity have not been connected clearly to infertility. However, it was observed that when fibroids grow to be 5 Cm or larger, the risk of caesarean delivery increases.¹⁷

In premenopausal women the endometrial thickness was not affected although the fibroid was present. On the other hand in perimenopausal women the presence of fibroid may increase the endometrial

thickness, i.e., from 5.25 to 6.0 mm. Our study is in contrast to a study who found endometrial thickness of 5.2 mm, with submucosal myomas for premenopausal women.¹⁷ Some workers have reported that endometrial thickness of 8 mm showed optimal sensitivity and specificity.^{18,19}

Gull B *et al*²⁰ found an association between uterine fibroids and increased endometrial thickness. They reported that thickening of the endometrium may indicate the presence of endometrial carcinoma. Some workers found mean endometrial thickness of 3.97 mm. It was reported that the endometrium responds to oestrogens, and this endometrial thickness may constitute a biomarker of oestrogen status in perimenopausal women.^{9,21}

CONCLUSION

Fibroids of 3–3.5 Cm size cause a small change in the uterine size and distortion of endometrial lining in perimenopausal women. Further work is needed on larger number of perimenopausal women.

REFERENCES

- Gavai M, Berkes E, Lazar L, Fekete T, Takacs ZF, Urbancsek J, *et al*. Factors affecting reproductive outcome following abdominal myomectomy. *J Assist Reprod Genet* 2007;24(11):525–31.
- Ashraf T. Management of uterine leiomyomas. *J Coll Physicians Surg Pak* 1997;160–1.
- Evans P, Brunsell S. Uterine fibroid tumors: diagnosis and treatment. *Am Fam Physician* 2007;75(10):1452–3.
- Viswanathan M, Hartmann K, McKoy N, Stuart G, Rankins N, Thieda P, *et al*. Management of uterine fibroids: an update of the evidence. *Evid Rep Technol Assess* 2007;(154):1–122.
- Sunkara SK, Khairy M, El-Toukhy T, Khalaf Y, Coomarasamy A. The effect of intramural fibroids without uterine cavity involvement on the outcome of IVF treatment: a systematic review and meta-analysis. *Hum Reprod* 2010;25(2):418–29.
- Walker WJ, Bratby MJ. Magnetic resonance imaging (MRI) analysis of fibroid location in women achieving pregnancy after uterine artery embolization. *Cardiovasc Intervent Radiol* 2007;30(5):876–81.
- Ballesteros-Manzo A, Barro-Delgadillo JC, Ochoa-Rueda S, Villalobos-Acosta S, Barroso-Villa G, Sánchez-Solís V, *et al*. Effect of intramural and subserous myomas on *in vitro* fertilization cycles and their perinatal results. *Ginecol Obstet Mex* 2006;74(1):55–65.
- Parker WH. Etiology, symptomatology, and diagnosis of uterine myomas. *Fertil Steril* 2007;87(4):725–36.
- Sit AS, Modugno F, Hill LM, Martin J, Weissfeld JL. Transvaginal ultrasound measurement of endometrial thickness as a biomarker for estrogen exposure. *Cancer Epidemiol Biomarkers Prev* 2004;13(9):1459–65.
- Persadie RJ. Ultrasonographic assessment of endometrial thickness: a review. *J Obstet Gynaecol Can* 2002;24(2):131–6.
- D'Angelo E, Prat J. Uterine sarcomas: a review. *Gynecol Oncol* 2010;116(1):131–9.
- Goldstein SR, Zeltser I, Horan CK, Snyder JR, Schwartz LB. Ultrasonography-based triage for perimenopausal patients with abnormal uterine bleeding. *Am J Obstet Gynecol* 1997;177(1):102–8.
- Sulaiman S, Khaund A, McMillan N, Moss J, Lumsden MA. Uterine fibroid –do size and location determine menstrual blood loss? *Eur J Obstet Gynecol Reprod Bio* 2004;115(1):85–9.
- De Castro A. Assessment of uterine shape and size using Kurz's cavimeter. *Adv contracept* 1988;4:115–23.
- Somigliana E, Vercellini P, Daguati R, Pasin R, De Giorgi O, Crosignani PG. Fibroids and female reproduction: a critical analysis of the evidence. *Hum Reprod Update* 2007;13(5):465–76.
- Esmaelzadeh S, Rezaei N, Hajiahmadi M. Normal uterine size in women of reproductive age in northern Islamic Republic of Iran. *East Mediterr Health J* 2004;10(3):437–41.
- Porozhanova V, Porozhanova K. Uterine fibromas and infertility. *Akush Ginekol (Sofia)* 2004;43(6):33–8.
- Dreisler E, Sorensen SS, Ibsen PH, Lose G. Value of endometrial thickness measurement for diagnosing focal intrauterine pathology in women without abnormal uterine bleeding. *Ultrasound Obstet Gynecol* 2009;33(3):344–8.
- Getpook C, Wattanakumtornkul S. Endometrial thickness screening in premenopausal women with abnormal uterine bleeding. *J Obstet Gynaecol Res* 2006;32(6):588–92.
- Ozdemir S, Celik C, Gezginç K, Kıreşi D, Esen H. Evaluation of endometrial thickness with transvaginal ultrasonography and histopathology in premenopausal women with abnormal vaginal bleeding. *Arch Gynecol Obstet* 2010;282(4):395–9.
- Gull B, Karlsson B, Milsom I, Granberg S. Factors associated with endometrial thickness and uterine size in a random sample of postmenopausal women. *Am J Obstet Gynecol* 2001;185:386–91.

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