

Evaluating the Frequency of Infertility in Retroverted Versus Anteverted Uterus Using Ultrasound

SYBIL ROSE¹, RANA MUHAMMAD ATHAR AZEEM SHAMS², AMBREEN SADAF³, SANA ALI⁴, UMAIR AHSAN⁵

^{1,2,4}Lecturer, Superior University, Lahore

^{3,5}Lecturer, The University of Lahore, Lahore

Correspondence to Sybil Rose, Email: sybilgill36@gmail.com | +92304-7757301

ABSTRACT

Aim: To evaluate the frequency of infertility in retroverted versus anteverted uterus using ultrasound.

Methods: The descriptive cross-sectional study was performed in total number of 380 patients using non-probability sampling technique. The study was conducted in the Department of Radiology, Tahir Medical Complex, Haroonabad in 6 months of duration. Married women of all age groups with anteverted and retroverted uterus were included in this study while all unmarried females were excluded from this study. The ultrasound was performed using VOLISON 730 with 3.5 MHz linear array broadband transducer on grayscale while patient positioning was supine.

Results: Total 386 woman were enrolled and the mean age of the patient was 25 years with a range of 21-30±3.26 years. Out of 386 woman anteverted uterus was found in 134(34.7%) and anteverted uterus was found in 2(0.5%). On the other hand, retroverted uterus was found in 86(22.3%) women and retroflex uterus was found and none of the women. Among 386 women, 142(36.8%) were nulliparous (P₀), 107(27.7%) were primiparas (P₁), 108(28%) were multiparas (P₂) and 29(7.5%) were grand multiparas (P₃). Primary fertility was diagnosed in 142(36.8%) women while secondary infertility was diagnosed in 244(63.2%).

Conclusion: Secondary infertility was seen more frequently in anteverted uterus as compared with retroverted uterus.

Keywords: Infertility, Ultrasound, Uterus.

INTRODUCTION

The uterus has multiple positions. The average uterine position is anteverted and retroverted. The most common orientation is anteverted. It has a fundus, body, and cervix. The fundus is the uterus's broadest and highest point. The cornua is where the fallopian tubes enter the uterine cavity. The biggest part of the uterus between the fundus and cervix. The endometrium is a fluid-filled region in the pelvis that allows for dynamic changes during menstruation and pregnancy¹.

The fundus is curved forward towards the cervix. An anteverted uterus has the body and fundus bent forward on the cervix. A retroverted uterus is inclined posteriorly. The retroverted uterus fundus lies in the recto-uterine pouch. Reversed uterine body on cervix is termed as retroflex².

Transabdominal sonography makes it difficult to see the retroverted uterus' fundus. Endovaginal sonography is better for assessing the retroverted uterus. A retroverted uterus is genetic and entirely normal, although other causes can cause it. Salpingitis, pelvic surgery, fibroids, pelvic inflammatory illness, or delivery might cause instances³.

One in 5 women has retroverted uterus. The condition might also be caused by weakened pelvic ligaments during menopause. Retroverted uterus causes pelvic pain, back pain, urinary tract infections, and fertility issues. A retroverted uterus can be fatal if not detected and treated promptly⁴. By 14-16 weeks of gestation, the gravid uterus shifts spontaneously upward and remains in that position throughout pregnancy. In some circumstances, the retroverted gravid uterus is stuck between the sacral promontory and pubic symphysis. The patient has lower abdomen and urinary symptoms of retention or incontinence that make diagnosis difficult. These ultrasonography features help in the identification and treatment of retroverted uterine cases⁵.

Early-trimester uterus reproduction happens in 15% of pregnancies, but without urinary issues, the fundus forms in the abdominal cavity. Uterine loupus occurs in 1 in 3000 pregnancies. These include uterine anomalies, pelvic adhesions, uterine wall leiomyoma, endometriosis, and frog butterfly deep sacroiliac feathers. The uterus was injured during pregnancy; thus, urinating is rare. This syndrome is defined in three phases; however, it can last from 10 to 16 weeks⁶.

Extrinsic compression of the uterus damages and enlarges the uterus, requiring a woman to use urine pathogenesis. Except

for uterine BP, pregnant women require urine retention, requiring alternating catheterization or a temporary permanent catheter. But both approaches raise bladder infection risk⁷.

Excessive endometrial tissue outside the uterus occurs in women during their reproductive years. Pain, infertility, dysmenorrhea, dyspareunia, and menorrhagia are common. Urinary tract involvement occurs in about 1% of women with pelvic endometriosis, most commonly in the bladder. Hematuria is a symptom of bladder endometriosis. It might be focused or diffuse. A mural or intraluminal cyst, a complicated or solid lesion may appear in the ureter or kidney. Cystoscopy biopsy is used to diagnose⁸. Endometriosis occurs when functioning endometrium is present outside the uterus. Pelvic discomfort, dyspareunia, and infertility are common symptoms. The ovaries and uterine endometriotic implants suspensory ligaments are most commonly impacted, however the intestines and urine bladder can also be affected. soft tissues, peritoneum⁹. The use of sonography is common in Transvaginal ultrasonography can detect and characterize endometriomas, commonly exhibiting "chocolate" cysts with homogeneous, low-level interior echoes. Stranding may be linked to complicated free fluid. Tiny echogenic foci can be seen on the pelvic peritoneal surfaces. These foci are observed in serous papillary ovarian neoplasms as well as endometriosis¹⁰. Laparoscopic assessment with peritoneal biopsy to rule out tumor is sometimes required. These plaques can bind to the organ's wall and indicate flow on color Doppler imaging. The transvaginal probe shows them best¹¹.

The objective of the study was to evaluate the frequency of infertility in retroverted versus anteverted uterus using ultrasound.

MATERIALS AND METHODS

There were 380 Pakistanis in the descriptive cross-sectional study. Non-probability sampling is a sampling method. Studies were conducted in the Department of Radiology, Tahir Medical Complex, Haroonabad, This study was approved by the Institutional Ethical Committee. A 6-month study after synopsis approval. We included married women of all ages. The study excluded all unmarried females. Patients with anteverted and retroverted uterus were examined. VOLISON 730 with 3.5 MHz linear array broadband transducer was used for ultrasonography. Gray scale observations were made. Supine positioning was used. Data collection was done via pre-made data sheets and questionnaires. The data were collected using a questionnaire and analyzed using Microsoft Excel and SPSS 21.0. Age, frequency, and percentage mean and standard deviation determined.

Received on 23-09-2021

Accepted on 13-02-2022

RESULTS

Total 386 women were enrolled in the study to determination the frequency of infertility in anteverted versus retroverted uterus by ultrasound. The mean age of the patients was 25 years with a range of 21-34 and standard deviation of ± 3.26 years. Among 386 women, 81(21%) were at the age of 24 years, 78(20.2%) women were at the age of 23 years, 42(10.9%) were at the age of 29 years, 41(10.6%) were at the age of 28 years, 40(10.4%) were at 30 years, 39(10.1%) were at 26 years, 38 (9.8%) were of 21 years, 21 (5. %) were of 32 years, 2(0.5%) were of 34 years, 1(0.3 %) were at the age of 25, 27, 31 and 33 years. Out of 386 women anteverted uterus was found in 134 (34.7 %) and anteverted uterus was found in 2 (0.5%). On the other hand, retroverted uterus was found in 86 (22.3%) women and retroflexed uterus was found in none of the women. The status of parity was as follows: among 386 women 142(36.8%) were nulliparous (P_0), 107 (27.7 %) were primiparas (P_1), 108(28%) were multiparas (P_2) and 29(7.5 %) were grand multiparas (P_3). Out of 386 women primary infertility was diagnosed in 142(36.8%) women while secondary infertility was diagnosed in 244(63.2%) women.

Figure 1: Frequency of age. Among 386 women, 81 were at the age of 24 years, 78 women were at the age of 23 years, 42 were at the age of 29 years, 41 were at the age of 28 years, 40 were at 30 years, 39 were at 26 years, 38 were of 21 years, 21 were of 32 years, 2 were of 34 years, 1 were at the age of 25, 27, 31 and 33 years.

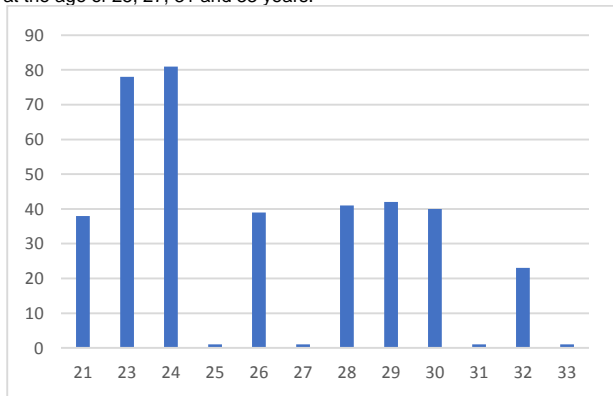


Figure 2: Anteverted, anteverted, retroverted, retroflexed and parity with primary and secondary infertility. Primary infertility in anteverted uterus was 47, and secondary infertility was 87. Secondary infertility in anteverted uterus was 2. Primary infertility in retroverted uterus was 33, and secondary infertility was 53. Primary infertility in retroflexed uterus was 0, and secondary infertility was 0. Primary infertility in nulliparous (P_0) was 141, and secondary infertility was 1. Primary infertility in primiparas (P_1) was 1, and secondary infertility was 106. Primary infertility in multiparas (P_2) was 0, and secondary infertility was 108. Primary infertility in grand multiparas (P_3) was 0, and secondary infertility was 29.

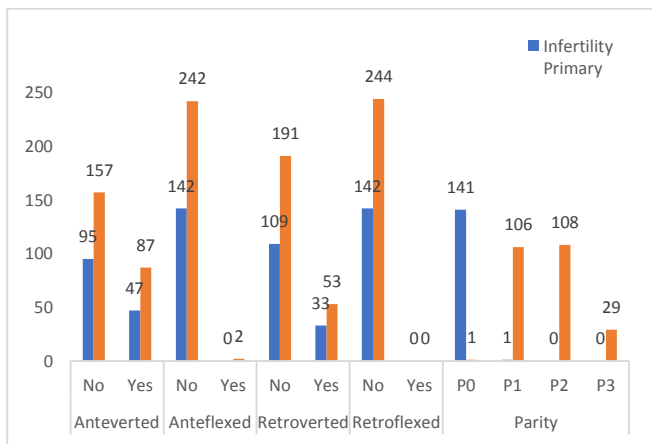


Image 1: Anteverted Uterus

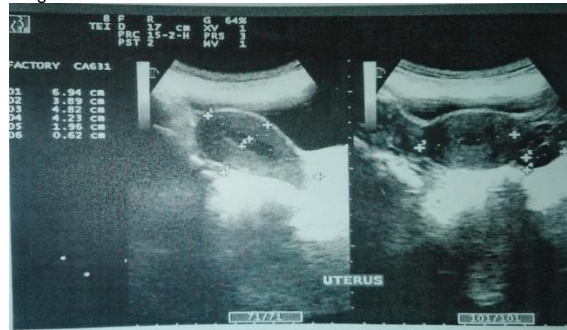


Image 2: Retroverted Uterus



DISCUSSION

The retroverted uterus is generally acquired due to endometriosis, pelvic inflammatory disorders, or pelvic malignancies. It also has a familial history. Many hypotheses exist about uterine retroversion, most of which state that anteverted uteri become retroverted if they prolapse. The majority of women with prolapsing retroverted uteri have had some indication of this orientation in the past, with no unequivocal preceding ultrasound evidence of an anteverted uterus. Longitudinally, uterine retroversion is accepted to be primarily developmental with little acquired component. Symptoms of retroverted uterus include pelvic pain or dragging sensation, sacral backache due to strained utero sacral ligaments, and eventually a lump formation¹².

Many studies suggest that placing the cervix anteriorly increases the risk of sexual interference, especially when prolapsed and causing dyspareunia on deep penetration¹³.

The anterior vaginal cuff of women with a retroverted uterus is shown to be shorter than those with an anteverted uterus. This has surgical implications, which will be discussed below. Unlike the anteverted uterus, the rear vaginal wall is functionally longer since there is no cervix filling the back fornix. However, rear vaginal divider prolapse is not more common in women with retroverted uteri than anteverted uteri. Due to the protective effect of the retroverted uterus, this examination may be best performed with the retroverted uterus decreased, e.g., in the left lateral position and with a Sims speculum. Getting a cervical smear with the patient in the left lateral position is often easier than with the patient in the anterior position. The higher occurrence of retroverted uterus in urogynecology than in general gynecology reflects the greater association for uterine and vaginal prolapse. Because uterine prolapse is associated with uterine retroversion in 69% of cases, this is "fundamental" to claiming prolapse. The majority valid pathophysiology concerning uterine prolapse is provided by abdominal "pulsion" constraints for an "axial" bearing. After one year of marriage with unprotected sexual intercourse, women are considered as infertile, affecting both parties (male and

female) globally. Around 8-12% of married couples worldwide have this issue. Infertility can be classified as primary or secondary. Primary infertility occurs after one year of unprotected intercourse. Secondary infertility occurs when a woman has a child but later is unable to conceive. It's difficult to estimate the prevalence of primary and secondary infertility because it's based on demographics or health service information. And neither source provides enough information to assess the problem's scope. Those uteri could be a regenerative cell component. Both uterine intrinsic states may reduce fertility. The uterine component is always surgical. While intrinsic uterine abnormalities aren't linked to infertility, they are linked to lower live birth rates. The sub-septate uterus is the only uterine defect with a high rate of live births after surgical excision. If a uterine septum is found incidentally, prophylactic hysteroscopic excision may be accepted given the low risk of the procedure. Gynecologists can potentially influence a woman's fertility by performing myomectomy for submucosal fibroids, polypectomy, and hysteroscopic excision of mild to moderate intrauterine adhesions. Yu Y et. al., 2014 in their study, initial infertility affected 36.8% of women, while secondary infertility affected 63.2%. And anteverted uterus was detected in 34.7 percent of women against 22.3 percent of women with retroverted uterus¹⁴.

CONCLUSION

Anteverted uterus was seen more as compared with retroverted uterus in the selected population. The mean age of the women was 24 years. The secondary infertility was observed more in comparison with primary infertility and majority of women were multiparas.

Conflict of interest: Nil

REFERENCES

1. Snell RS. Snell's Clinical Anatomy. Wolters kluwer india Pvt Ltd; 2018 Oct 16.
2. Hagen-Ansert SL. Textbook of Diagnostic Sonography-E-Book: 2-Volume Set. Elsevier Health Sciences; 2013 Aug 7.
3. Middleton WD, Morgan T. Ultrasound: The Requisites E-Book. Elsevier Health Sciences; 2015 Jun 25.
4. Boonprakong A. Clinical Imaging: An Atlas of Differential Diagnosis.
5. Datta S. Ultrasound in obstetrics and gynaecology. *Obstetrics, Gynaecology & Reproductive Medicine*. 2013 Jul 1;23(7):202-7.
6. Zhuang L, Wang XY, Sang Y, Xu J, He XL. Acute urinary retention in the first and second-trimester of pregnancy: Three case reports. *World journal of clinical cases*. 2021 May 6;9(13):3130.
7. Hickling DR, Sun TT, Wu XR. Anatomy and physiology of the urinary tract: relation to host defense and microbial infection. *Urinary Tract Infections: Molecular Pathogenesis and Clinical Management*. 2017 Feb 15:1-25.
8. Woodward PJ, Sohaey R, Mezzetti Jr TP. Endometriosis: radiologic-pathologic correlation. *Radiographics*. 2001 Jan;21(1):193-216.
9. Falcone T, Flyckt R. Clinical management of endometriosis. *Obstetrics & Gynecology*. 2018 Mar 1;131(3):557-71.
10. Robinson K, Menias C, Chen L, Schiappacasse G, Shaaban A, Caserta M, Elsayes K, VanBuren W, Bolan C. Understanding malignant transformation of endometriosis: imaging features with pathologic correlation.
11. Exacoustos C, Manganaro L, Zupi E. Imaging for the evaluation of endometriosis and adenomyosis. *Best practice & research Clinical obstetrics & gynaecology*. 2014 Jul 1;28(5):655-81.
12. Rao KR, Rani I, Ramesh B. Uterovaginal Prolapse. *Operations in Obstetrics & Gynecology: Text and Atlas*. 2020 Jan 27:134.
13. Steege JF, Zolnoun DA. Evaluation and treatment of dyspareunia. *Obstetrics & Gynecology*. 2009 May 1;113(5):1124-36.
14. Yu Y, Peng L, Chen L, Long L, He W, Li M, Wang T. Resilience and social support promote posttraumatic growth of women with infertility: The mediating role of positive coping. *Psychiatry research*. 2014 Feb 28;215(2):401-5.