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Original Research Article

Reproductive Outcome in Women with different Types of Congenital Uterine Anomalies

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Abstract

Introduction: Mullerian ducts are the primordial analogue of female genital tract. They differentiate to form the fallopian tubes, uterine body, cervix and upper part of the vagina. A wide variety of malformation occur when this system is disrupted. The range from uterine agenesis, duplication of uterus to minor cavity abnormalities. All these congenital anomalies have been implicated as a potential cause for impaired reproductive outcome. Our aim was to evaluate the association between different types of congenital anomaly and various reproductive outcome. ***Material & Methods:*** This cross sectional descriptive study was conducted at the Department of gynae and obstetrics in Dhaka Community Medical College and Hospital (DCMCH), Ad-din Women's Medical College and Hospital and Gonoshasthaya Samaj Vittik Medical College and Hospital during the period of March 2012 to September 2022.The study subjects were women with uterine anomalies who were diagnosed during evaluation of causes for bad obstetric history, during infertility work up or incidental findings during antenatal investigations or during Carsarian section . Reproductive outcomes were observed in the form of infertility, miscarriage, preterm delivery, ectopic pregnancy, intra uterine growth retardation (IUGR) and post-partum haemorrhage (PPH). These were recorded in a standard research questionnaire. Data were analyzed regarding types of uterine anomalies and their reproductive performance. ***Results:*** During the study period total 84 patients were recruited with uterine anomalies. Regarding distributions of uterine anomalies in study subjects the most common uterine anomaly was bicornuate uterus (n-32,38%), followed by arcuate uterus (n-18,21%), septate uterus (n-16,19%), unicornuate uterus (n-12,14%), and uterine didelphys (n-6,7. 1%).Women with bicornuate uterus was associated with miscarriage (37.25%), term delivery (31.25%) and preterm delivery (25%). Therefore, bicornuate uterus was found more evident with miscarriage. Only two cases of ectopic pregnancy were observed in the study which was found with bicornuate uterus. And in arcuate uterus percentage of preterm delivery was 44.4%, term delivery 33.3%, miscarriage only 22.2%. Therefore, arcuate uterus was more associated with preterm delivery. In septate uterus miscarriage was maximum (37.5%) followed byl term and pre term delivery, 12.5% each We found 12 cases of unicornuateuterus, where pregnancy continued to term in 6(50%) cases,2 aborted and 4(33.3)were delivered before term. Infertility was more associated with canalization defect, 6 cases with septate and 2 with didelphys uterus. Among live births (preterm and term deliveries,) malpresentation (breech, transverse) was more common in bicornuate uterus (44%).PPh was found in 2 cases of didelphys and two of bicornuate uterus. One case of septate and one from bicornuate uterus were associated with IUGR. ***Conclusion:*** The study makes clear that congenital uterine anomaly is associated with poor reproductive outcome. The exact effect is dependent on the type of anomaly.

Keywords: Anomalous Uterus, Reproductive Outcome, bicornuate uterus, septate uterus, miscarriage, preterm delivery.

INTRODUCTION

Normal development of female reproductive tract involves a series of complex process characterized by the differentiation, migration, fusion, and subsequent canalization of the mullerian system [1]. Uterine anomalies result when these processes are interrupted which may involve the fallopian tubes, uterus, cervix, and vagina. Depending upon special defect, a woman's obstetrical and gynaecological health may be adversely affected [2]. Uterine anomalies are most common anomalies but true incidence is not known since many women are asymptomatic and sensitive imaging modalities have only recently become available [3]. Uterine defects are grouped into arcuate uterus, canalization defect (septate and sub septate), and unification defect (unicornuate, bicornuate, didelphys uteri) [1, 3]. Congenital uterine anomalies are nonconformities from normal anatomy resulting from embryological maldevelopment of the müllerian ducts [4]. While most congenital uterine anomalies are asymptomatic [5] and are related with normal reproductive outcomes [6], some may be associated with adverse reproductive outcomes [7]. Detection of congenital uterine anomalies has been increasing with the advent of three-dimensional (3D) ultrasound, which provides visible evidence of the internal and external contours of the uterus and makes the assessment of uterine morphology more reproducible, as well as being less invasive than other commonly used radiological and surgical diagnostic modalities [8]. Congenital uterine anomalies (CUA) are not uncommon [9]. A recent meta-analysis estimated the overall prevalence of congenital uterine anomalies to be 5.5% in an unselected population, 8.0% in infertile women, 13.3% in those with a history of miscarriage and 24.5% in those with miscarriage and infertility. It is therefore evident that clinicians will be regularly required to counsel women with a CUA. However, these anomalies will present very differently – ranging from asymptomatic or incidental to very complex reproductive pathology and/or symptomatology and often in the context of subfertility and miscarriage. All these congenital anomalies have been implicated as a potential cause of recurrent pregnancy loss, preterm labour, and fetal malformation [4]. It is also usually accepted that the various types of Mullerian anomaly are separately associated with these outcomes in different ways and to variable degrees, with greater effects being evident in women with more profound defects [5-12]. Congenital uterine abnormalities are present in 1-10% of unselected population, 2-8% of infertile women, and 5-30% women with a history of miscarriage, 5% of preterm delivery [2, 3]. Because of diagnostic improvement in the evaluation, more patients desirous of pregnancy come to clinicians with identified uterine anomaly [13]. It is helpful for the obstetricians to provide accurate information during preconceptional counseling of these patients. It is also generally accepted that the various types of anomalies are individually associated with these outcomes in different ways and to variable degree with greater effects being evident in women with more profound defects [14, 15]. Uterine malformation may present as impaired intrauterine fetal growth due to abnormal placentation and abnormal fetal positioning related to mechanical factors in the shape of uterine cavity [16]. Delivery and third stage problem may occur due to in-co-ordinate uterine action [17]. However individual studies often yield conflicting result.

METHODOLOGY

This cross sectional descriptive study was conducted at the Department of gynae and obstetrics in Dhaka Community Medical College and Hospital (DCMCH), Addin Women's Medical College and Hospital and Gonoshasthaya Samaj Vittik Medical College and Hospital during the period of March 2012 to September 2022. A total of 84 participants were included for the study according to following inclusion and exclusion criteria. Aim of the study was to evaluate the association between different types of congenital anomaly and various reproductive outcomes. History was taken from all the study subjects regarding age, previous obstetrical history, presence of any medical disorder, family history etc. Thorough examination was done. Diagnosis was done by Ultrasonography (USG) of pelvic organs. Histerosulpingography was also done in cases of subfertility. Then all the diagnosed cases were observed for reproductive outcome during subsequent follow up. There outcome measures were taken in account in term of miscarriage, preterm labour, term delivery, ectopic pregnancy and other pregnancy complications like malpresentation, IUGR, PPH etc. The patients who were diagnosed incidentally during LUCS were also included here and complications were recorded as pregnancy outcome. These were recorded in standard research performa. Data were analyzed regarding types of uterine anomalies and their reproductive performance.

Inclusion Criteria

- Diagnosed case of uterine anomaly during evaluation of causes in cases of bad obstetric history and infertility work up.
- Cases of uterine anomaly which were diagnosed incidentally during antenatal investigation
- Cases of uterine anomalies which were incidentally found during caesarean section.

Exclusion Criteria

- Patients with Class-l (have no reproductive potential) and Class Vll uterine anomaly as they present with primary amenorrhoea.

RESULTS

During the study period total 84 patients were recruited with uterine anomalies. Figure I shows the

distribution of uterine anomalies found in the study subjects. The most common uterine anomaly was bicornuate uterus (n-32,38%), followed by arcuate uterus (n-18,21.4%), septate uterus (n-16,19%), unicornuate uterus (n-12,14.2%), and uterine didelphys (n-6,7.1%). Table I shows the distribution of uterine anomalies with different reproductive outcome. Women with bicornuate uterus were associated with term delivery in 31.25%, preterm delivery in 25%, miscarriage in 37.25% cases. Therefore, bicornuate uterus was found more evident with miscarriage. Only two cases of ectopic pregnancy were observed in the study that occurred in bicornuate uterus. In arcuate uterus preterm delivery was 44.4%, term delivery was 33.3% and miscarriage only 22.2%. Therefore, arcuate uterus was more associated with preterm delivery. In septate uterus miscarriage was maximum (37.5%), term delivery 12.5% and preterm delivery was also 12.5%. We found 12 cases of unicornuate uterus, where pregnancy continued to term in 6(50%) cases, 2 aborted and 4(33.3%) delivered before term. Infertility was associated with canalization defect, 6 with septate and 2 with didelphus uterus. Table II shows the outcome of preterm and term delivery at delivery. Among live births (preterm and term deliveries) malpresentation (breech, transverse) was more common in bicornuate uterus 55%, four cases of PPH, two in didelphys, two in bicornuate uterus was found. IUGR also found in four cases, two in septate and two in bicornuate uterus.

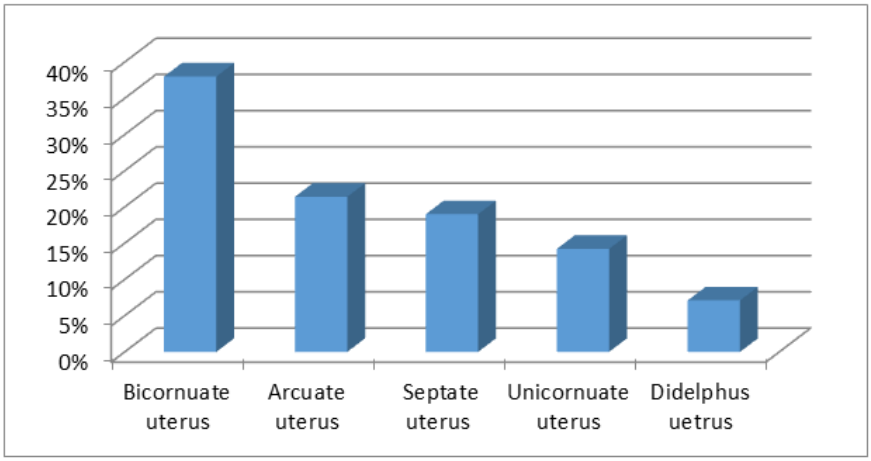

Figure I: Distribution of uterine anomalies found in the study subjects, (N=84)

Table I: Distribution of uterine anomalies with different reproductive outcome, (N=84)

Outcome	Bicornuate n-32	Arcuate n-18	Septate n-16	Unicornuate n-12	Didelphys n-6	Total n-84(100%)
Miscarriage	12(37.5%)	4(22.2%)	6(37.5%)	2(16.6%)	2 (50%)	26 (30.95%)
Preterm	8(25%)	8(44.4%)	2 (12.5%)	4(33.3)	2	24 (28.57%)
Ectopic	2	0	0	0	0	2 (2.38%)
Term	10(31.25%)	6 (33.3%)	2 (12.5%)	6 (50%)	0	24 (28.57%)
Infertility	0	0	6(37.5%)	0	2	8 (9.52%)

Table II: Outcome of delivery in different uterine anomalies, (N=84)

Outcome of preterm and term delivery	Bicornuate Preterm+Term 8+10=18	Arcuate Preterm+Term 8+6=14	Septate Preterm+Term 2+2=4	Unucornuate Pretern+Term 4+6=10	Didelphus Term pregnancy 2
Malpresentation	10 (55.55%)	4 (28.57%)	2 (50%)	4 (40%)	0
PPH	2 (11.11%0	0	0	0	2 (100%)
IUGR	2 (11.11%)	0	2	0	0
Normal without complications	4 (22.22%)	10 (71.42%)	0	6 (60%)	0

DISCUSSION

The prevalence of uterine anomalies varies widely between 0.1-3.5% [1]. Though infrequent, these uterine anomalies have now become significantly important to demand the attention of every practicing obstetrician as it has impact on reproductive outcome. Patients with a bicornuate uterus has little effect in conceiving but spontaneous abortion ranges from 26-94% and overall premature rate ranges from 9% to33% [4]. In our study we found that bicornuate uterus was associated with 37.5% miscarriage - term delivery 31.25%, Preterm delivery 25%, and live birth 56.25% (term-31.25%+preterm-25%). It is similar with findings of Fauzia Butt [13] where frequency of live birth was

67% but unlike with rate of miscarriage which was 11%. Stillman RJ [18] also found same result as ours. In this study we found no effect of bicornuate uterus on conceiving. Unification defects, such as the bicornuate, unicornuate and didelphic uterus, do not appear to reduce fertility but are associated with aberrant outcomes throughout the course of pregnancy. The exact effects are, however, dependent on the type of anomaly [17]. Women with bicornuate and unicornuate uteri have an increased risk of miscarriage, preterm birth and fetal malpresentation [19] while women with uterus didelphys seem to have only a mildly increased risk of preterm labor [20]. These findings are consistent with those of previous studies [8, 9, 12]. Data analyzing the reproductive outcome of patients with an arcuate uterus is widely disparate[3].In small studies both poor and good obstetrical outcomes were reported. The live birth rate of 85% has been quoted [19]. In our study the second commonest uterine abnormality was arcuate uterus 21.4% where preterm delivery was 44.4%, term delivery was 33.3%, miscarriage only 22.2%. So live birth was found in 77.7% cases (pretrm-44.4+term-33.3=77.7%). It is almost comparable with the result of Acein in which live birth rate was >60% and abortion rate was very less. The septate uterus is associated with abortion rate 26-94%, preterm birth 9-33% and term delivery rate varies from 10-75% [15] in a study done by Woelfer B *et al*., In our study we found that miscarriage was maximum (37.5%) in septate uterus and preterm delivery occurred in 12.5% patients, These results are consistent with Woelfer B, salim [21] in which septate uterus is associated with poor outcome. We found 12 cases of unicornuateuterus, where pregnancy continued to term in 6(50%) cases, 2aborted and 4(33.3%) delivered before term. Infertility was found more associated with canalization defect, 6 with septate and 2with didelphus uterus.

Limitation of the study

Study population was small in number. Asymptomatic patients could not be assessed as they were missed. Further study is needed to correlate the findings.

CONCLUSION

The study indicates that congenital uterine anomaly is associated with poor reproductive outcome but may be compatible with normal reproductive outcome. The exact effect is dependent on the type of anomaly. Bicornuate uteri are associated with aberrant outcome throughout the course of pregnancy. All uterine anomalies are appearing to be associated with an increase incidence of fetal malpresentation at delivery.

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