



ORIGINAL RESEARCH PAPER

Obstetrics & Gynaecology

REPRODUCTIVE OUTCOME IN WOMEN HAVING CONGENITAL UTERINE ANOMALIES: A RETROSPECTIVE STUDY

KEY WORDS:

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ABSTRACT

Background: Congenital uterine anomalies result from failure of or incomplete development, fusion or canalisation of one or both Mullerian ducts during foetal life. [1] These anomalies are often asymptomatic and unrecognized, until menarche or starting of reproductive life. The spectrum of uterine anomalies ranges from an arcuate uterus, uterine didelphys , unicornuate , bicornuate, t-shaped and septate uterus.[3] Pregnancy occurs in many women despite these anomalies. The complication rates with pregnancy are considerably increased; complications include intrauterine fetal growth restriction, fetal malposition, preterm labor, preterm premature rupture of membrane and malpresentation (breech) [21]. Not surprisingly, the rate of caesarean delivery is markedly higher. [4] Thus we want to conduct a systematic review to evaluate the association between the different subtypes of uterine anomaly and various clinical presentations and reproductive outcomes. **Method:** This study was carried out retrospectively in 52 patients that were in the age group of 12-38 years and having congenital uterine anomalies and presenting with either primary or secondary infertility / amenorrhoea, bad obstetrical history, recurrent abortions, preterm deliveries and ectopic pregnancies using consecutive sampling. All patients were evaluated and investigated further including reproductive & perinatal outcome. Data were analyzed regarding type of uterine anomalies and their reproductive performance. **Results & Conclusion:** Results of study shows that patients with uterine anomalies have higher rates of reproductive loss, preterm deliveries, that increase obstetric intervention and perinatal mortality.

INTRODUCTION

Congenital uterine anomalies result from failure of or incomplete development, fusion or canalisation of one or both Mullerian ducts during foetal life. [1] These anomalies are often asymptomatic and unrecognized, until menarche or starting of reproductive life. [1] Prevalence have been reported approximately 2-4% in reproductive age women [2-5] and up to 5-25% in women with adverse reproductive outcomes [5,6]

The most frequent uterine anomalies are those resulting from varying degrees of failure of fusion of the Müllerian ducts. There are two systems for classification of female genital tract malformations:

1. The American Society of Reproductive Medicine [formerly American Fertility Society (AFS)] Classification of Müllerian Duct Anomalies-1998.
2. European Society of Human Reproduction and Embryology (ESHRE) and European Society of Gynecological Endoscopy (ESGE) 2013.

The spectrum of uterine anomalies ranges from an arcuate uterus to uterine didelphys on the opposite end of the spectrum. [3] Other uterine anomalies includes unicornuate, bicornuate, t-shaped and septate uterus. [3]

In adults, amenorrhoea is an important clue and may suggest an imperforate hymen, vaginal septum or absence of the uterus. Congenital uterine anomalies may present in various forms like obstructed menstrual flow, menstrual irregularities and dysmenorrhoea, infertility and bad obstetric history. [4]

Pregnancy occurs in many women despite these anomalies. The complication rates with pregnancy are considerably increased; complications include intrauterine fetal growth restriction, fetal malposition, preterm labor, preterm premature rupture of membrane and malpresentation (breech) [21]. Not surprisingly, the rate of caesarean delivery is markedly higher. [4]

Thus we want to conduct a systematic review to evaluate the association between the different subtypes of uterine

anomaly and various clinical presentations and reproductive outcomes.

MATERIAL & METHODS

This study was carried out retrospectively in department of Gynaecology and Obstetrics in Geetanjali Medical College and Hospital, Udaipur from January 2021 to December 2021. A total of 52 patients were enrolled in study group that were in the age group of 12-38 years and was attended OPD or admitted in GMCH. The patients included in study were the women having congenital uterine anomalies and presenting with either primary or secondary infertility /amenorrhoea, bad obstetrical history, recurrent abortions, preterm deliveries and ectopic pregnancies using consecutive sampling.

All patients underwent detailed history regarding, menstrual pattern including amenorrhoea, duration of infertility, type of infertility or obstetrical outcome. A detailed general physical, abdominal and pelvic examination was noted as per file records. Detailed investigations including Ultrasonography report & MRI were noted & analysed.

Inclusion Criteria:

- Patient aged ≥ 12 years of age.
- Patient having any type of congenital uterine malformation.

Exclusion Criteria:

- Patients of amenorrhoea, infertility and bad obstetric history without any congenital uterine malformation.

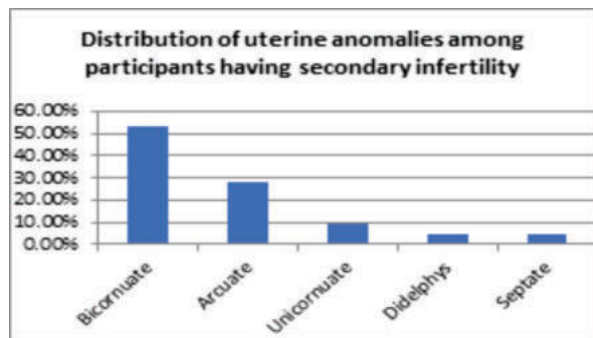
All patients were evaluated and investigated further including reproductive & perinatal outcome. The data were analyzed using research Performa on computer using SPSS 11 applying "t" test for numerical data and Chi-square for nominal data. Data were analyzed regarding type of uterine anomalies and their reproductive performance. P value of <0.05 was considered as statistically significant.

RESULTS

During the study period a total of 52 women with congenital uterine anomalies were enrolled. Out of which 9 participants were having gynaecological complaints and rest of 43 were obstetrical patients.

Among these nine gynaec patients 5 had complaint of primary amenorrhoea and out of these 2 were diagnosed with hypoplastic uterus, 2 were having imperforate hymen and one had transverse vaginal septum. Other 2 patients had complaint of primary infertility on hysteroscopic examination they were diagnosed with bicornuate and arcuate uterus respectively. Remaining 2 patients had history of multiple abortions diagnosed with bicornuate and didelphys uterus.

Regarding distribution of uterine anomalies in 43 obstetrical patients the most common uterine anomaly diagnosed as bicornuate uterus (53.5%) followed by arcuate uterus (27.9%), unicornuate uterus (9.3%), didelphys uterus & septate uterus (4.7%) respectively.



The perinatal outcomes in 43 pregnant women having congenital uterine anomalies were further analyzed for outcome.

The total number of miscarriages in patient with uterine anomalies were 10 (23.3%), preterm deliveries in 14 (32.6%), ectopic pregnancy in 2 (4.6%), term deliveries in 17 (39.5%), malpresentation in 18 (34.6%) and abnormal placentation in 7(13.5%).

	Bicornuate (n= 23)	Arcuate (n= 12)	Unicornuate (n=4)	Didelphys (n=2)	Septate (n=2)	Total (n=43)
Miscarriage	2	4	2	1	1	10 (23.3%)
Ectopic pregnancy	1	0	1	0	0	2 (4.6%)
Preterm delivery	10	2	1	0	1	14 (32.6%)
Term delivery	10	6	0	1	0	17 (39.5%)
Malpresentation	14	2	0	0	2	18 (34.6%)
Abnormal placentation	3	2	1	0	1	7(13.5%)

We then divided the participants with uterine anomalies into two subgroups: major fusion defects (unicornuate, bicornuate, didelphys) and minor fusion defects (arcuate and septate) Baseline demographics, maternal uterine congenital anomalies and past obstetrical performance across these two groups are listed in below table.

	Minor defect (n=14)	Major defect (n=29)
Mean age	30 ± 3.5 years	28.2 ± 5.2 years

Spontaneous pregnancy	8 (59.2%)	17 (58.6%)
ART pregnancy	6 (42.8%)	12 (41.4%)
Gravid 1	6 (42.9%)	4 (13.8%)
2	7 (50%)	20 (68.9%)
3 or more	1(7.4%)	5 (17.2%)
Prior term birth	9 (64.2%)	8 (27.6%)
Prior preterm birth	5 (35.7%)	17 (58.6%)
Prior cesarean delivery	7(50%)	25 (86.2%)
Fibroids	9 (64.3%)	13 (44.8%)

Based on the Above table findings: As expected increasing severity of uterine abnormality as associated with a younger maternal age, decreased parity and a higher proportion of prior preterm birth and caesarean delivery.

Current obstetrical outcome in relation to maternal congenital uterine anomalies across the two groups listed in table below.

	Minor defects (n=14)	Major defects (n=29)
Cervical incompetence	6 (42.8%)	17 (58.6%)
Malpresentation	6(42.8%)	12(41.4%)
Gestational age at delivery (mean)	37.5 ± 3.2	36.2 ± 2.5
Abnormal placentation	3(21.4%)	4(13.7%)
Preterm birth <37 wk	3 (21.4%)	11(37.9%)
Term birth >37 wk	11 (78.6%)	(62.1%)

Comparing participants with minor fusion defects and major fusion defects; the gestational age at delivery decreased significantly & The rate of preterm births (<37wk) increased significantly in participants with major fusion defects. Similarly malpresentation, Abnormal placentation rate and Cervical incompetence was high in major fusion defects.

Majority of our participants underwent for cesarean section most commonly due to malpresentation and abnormal placentation except for one patient who had induced preterm vaginal delivery at 26 week of gestation because of anhydramnios with septate uterus.

Pregnancy outcomes across these groups are listed in following table. Comparing major and minor fusion defects, the birth weight decreased across both groups more in major fusion defect. Similarly 17.5% NICU admission were shown in major fusion defect.

	Minor defects (n=14)	Major defects (n=29)
Term birth	11 (78.5%)	10 (34.5%)
Preterm birth	3 (21.5%)	19 (65.5%)
Birth weight <1.5kg	1 (7.5%)	6 (20.7%)
1.5 to 2.5kg	2 (14.3%)	7 (24.3%)
2.5 to 3kg	9 (64.3%)	12 (41.3%)
>3 kg	2 (14.3%)	4 (13.8%)
NICU admission	2 (14.3%)	5 (17.5%)
Take home baby	12 (85.7%)	24 (82.7%)

DISCUSSION

Congenital müllerian defects are a challenging clinical problem encountered by obstetricians and gynaecologists. The true prevalence of these uterine anomalies is difficult to assess partly because there are no universally agreed standardized classification systems and partly because the best diagnostic techniques are invasive and, therefore, rarely applied to low-risk study populations.^[8] As a result, reported population prevalence rates have varied between 0.06% and 38%.^[9]

In this study, we found that in patients with uterine anomalies, the risk of adverse pregnancy outcomes was more in patients with minor fusion defects (arcuate, septate) and further increased in patients with major fusion defects (unicornuate,

bicornuate and didelphys). In minor fusion defects mean gestational age of delivery was 37.5 ± 3.2 years, preterm deliveries and abnormal placentation 21.4%, malpresentation and cervical incompetence 42.8%. In major fusion defects mean gestational age of delivery was 36.2 ± 2.5 years, 37.9% preterm deliveries, 41.4% malpresentation, 13.7% abnormal placentation and 58.6% cervical incompetence. These similar findings were seen in study of Nathan S. Fox et al.^[7] and Hua et al.^[12] that uterine anomaly was associated with preterm birth, cesarean delivery and IUGR that is even more in major fusion defects.

Among patients with minor defects miscarriages were 41.6%, term deliveries were 78.6% and in major fusion defects overall miscarriages were 23.3%, ectopic pregnancy 4.6% and term deliveries were 39.5%. This was similar to study of Nathan S. Fox et al.^[7], Butt F et al.^[11] and Ramalingappa P et al.^[9] Another novel finding in our study was the increased risk of cesarean delivery seen in patients with uterine anomalies.

In this study bicornuate uterus was most commonly (53.5%) seen congenital uterine anomaly with 13% miscarriage and 43.8% term deliveries without any associated complications although mode of delivery was cesarean in all these patients. It is rarely the cause for infertility or recurrent miscarriage.^[13] This finding is corroborated by Raga et al.^[14] in their study on uterine anomalies. It is probably the safest anomaly as it has the least effect on reproduction and comes close to a normal pregnancy.^[9]

The arcuate uterus was 2nd most common anomaly (27.9%) after bicornuate uterus in our study. Among these patients 50% had term delivery, 16% preterm deliveries with 25% miscarriages. In study of Raga F^[9] et al. almost 80% had a live birth rate and no impact on reproduction. This agrees with data of Butt F et al.^[11] but disagree with previous reports in which this anomaly presented the poorest survival rates and highest abortion rates.

The reproductive outcome of unicornuate uterus in our study is the abortion rates (50%) especially early miscarriage (37.5%) were high, data consistent with study of Raga F et al.^[9] Also 25% ectopic pregnancy has been seen in patient having unicornuate uterus. Similar observation was done in Butt F et al.^[11] Study showing 50% ectopic pregnancy in unicornuate uterus that also in rudimentary horn.

Patients with the didelphys uterus in our study had 50% term delivery and 50% miscarriage. Thus, it can be concluded that the reproductive performance of unicornuate and didelphys uteri is poor, although we also have to admit that the incidence of these defects in our population was low, and therefore the conclusions drawn cannot have the same power as those reached when other Müllerian defects were evaluated. Similar finding were also seen in study of Raga F^[9] et al. and Butt F et al.^[11]

Septate uterus is strongly associated with an adverse pregnancy outcome^[9] due to impact on uterine capacity and the arrangement of uterine musculature (and may consequently cause cervical incompetence).^[12] We had two patients of septate uterus with pregnancy. Both had history of septal resection one had abortion at 16 week of gestation & another delivered vaginally at 22.3 weeks of gestation (misoprost induction for anhydramnios) and followed by manual removal of placenta for placenta accrete. Contritely to this Raga F^[9] et al. observed much better (51.7% term deliveries and live birth rate of 62%), although there was a considerable rate of miscarriage 33.8%. Whereas in Ramalingappa P et al.^[9] study preterm deliveries were seen more often with septate uteri. In septate uterus prior resection of septum (complete/incomplete) and restoring uterine cavity are the major determining factor for obstetrical outcome.

Patients with uterine anomalies had higher incidence of preterm birth and lower mean birth weight neonates. Possible etiology for preterm delivery would be attributed to abnormal uterine contraction and compromised uterine cavity. Cervical cerclage is a valuable procedure in bicornuate and unicornuate uterus but has no effect on the outcome of pregnancy in arcuate uterus^[21].

We further addressed non obstetrical outcome of each type of malformation. Out of nine participants 5 patients were adolescents had primary amenorrhoea out of these 2 had hypoplastic uterus thus future follow up need to be done for fertility, other 2 had imperforate hymen treated by cruciate incision with drainage of hematocolpos and hematometra followed by continuous menstrual bleeding. One had high up transverse vaginal septum that underwent on septal resection by laproscopic assisted abdomino-perineal approach. Patency of vaginal septum achieved and regular menses observed in follow up.

Another 2 patients had primary infertility after excluding male factor in these patients diagnostic hysteroscopy was planned and they were diagnosed with bicornuate uterus and genital tuberculosis, arcuate uterus with bilateral tubal blockage respectively. We had 2 patients with multiple abortions who diagnosed with bicornuate uterus and didelphys uterus with endometriosis respectively. Thus, infertility was due to other causes in 80% of the couples, irrespective of the presence of a uterine anomaly.

These results confirm that patients with uterine anomalies have higher rates of reproductive loss, preterm deliveries, that increase obstetric intervention and perinatal mortality but the results are not statistically significant ($p < .075$) and require large clinical trial.

CONCLUSION

True prevalence of congenital uterine anomalies is difficult to calculate for many reasons including lack of consensus regarding classification system, lack of screening in low risk group and non inclusion of patients with congenital uterine anomalies but normal reproductive outcome.

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