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Original Research Article

A retrospective study of mullerian anomalies and their outcome in pregnancy in a tertiary care center

Chinthala Sai Lakshmi Shreya*, Rathnamma Papanna

Department of Obstetrics and Gynecology, Sri Devaraj URS Medical College, Tamaka, Kolar, Karnataka, India

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***Correspondence:**
Dr. Chinthala Sai Lakshmi Shreya,
E-mail: shreyachinthala31@gmail.com

ABSTRACT

Background: Uterine abnormalities resulting from aberrant embryonic development, fusion, or resorption of the Mullerian ducts, the primitive homologue of the female reproductive tract, are known as congenital uterine malformations. In the reproductive age range, its prevalence is 2-4%, and in women who have had unfavourable reproductive outcomes, it is 5-25%. These deformities are linked to several obstetrical outcomes, including fetal growth limitation, fetal death, premature rupture of the membranes, preterm delivery, and a higher risk of ectopic pregnancy. They are also linked to first and second-trimester abortions. This study aimed to observe the different types of Mullerian anomalies and their outcome among pregnant women.
Methods: A retrospective observational study was carried out in the Department of Obstetrics and Gynecology in tertiary care hospital from May 2022 to March 2024.
Results: During this study, malpresentations found in bicornuate, unicornuate, didelphys uterus. Abortions were reported in 25% of cases.
Conclusions: A high suspicion level should be maintained for patients presenting with infertility, repeated pregnancy loss, malpresentations, and a poor obstetric history. Early diagnosis and treatment will give better outcome among the cases who had recurrent abortions and infertility.

Keywords: Abortions, Malpresentations, Mullerian anomaly, Pregnancy outcome

INTRODUCTION

The term "congenital uterine malformations" refers to abnormalities in the female genital tract that arise from abnormal development of the Mullerian or paramesonephric ducts during embryonic development.[1,2] Acquired deficiencies, developmental arrest, or gene mutations can cause these common anatomic problems.[3] The disorders range from abnormalities in the lateral or vertical fusion of the Mullerian ducts to congenital absence of the uterus and vagina.[2] The majority of cases are identified either during pregnancy or during a gynecological consultation. However, in the absence of symptoms, most abnormalities remain undetected. Abnormalities of the uterus are linked to unfavorable reproductive outcomes.[4] They affect roughly 3 to 4% of the general population.[5] They are accountable for 5 to 10% of recurrent miscarriages, 25% of women who experience miscarriages in the late first and second trimesters, and 25% of premature births.[6-8] Nowadays the prevalence of HSG, USG 2D/3D, MRI, and diagnostic laprohysteroscopy has enhanced the rate of uterine anomaly discovery. Any uterine anomaly has the potential to produce fetal malpresentation, preterm delivery, infertility, recurrent pregnancy loss, and unfavorable perinatal outcomes.[7-11]

This study aimed to observe the different types of Mullerian anomalies their outcome in pregnant women.

METHODS

This is retrospective observational study conducted in department of Obstetrics and Gynecology, RL Jalappa Hospital, Kolar during May 2022 to March 2024. During the study period, 20 cases with Mullerian anomalies were reported. The study was conducted after obtaining an Ethical Clearance Certificate and consent from the participants. Each of the aforementioned patients with uterine abnormalities was identified either during their current pregnancy, based on previous obstetric data, or during surgery. Clinical and radiological examination was performed for each participant. Parameters such as age, gravida, gestational age, presentation, mode of delivery, abortion, birth weight, and neonatal condition were collected.

Inclusion criteria

Singleton pregnant women diagnosed with Mullerian anomalies either before delivery or intraoperatively during cesarean section were included.

Exclusion criteria

Women undergone surgical correction of the mullerian anomaly.

Statistical analysis

Data were analyzed with Microsoft Excel version 10. Mean and standard deviation (SD) were measured. Results were expressed in numbers and percentages and displayed as tables and figures.

RESULTS

The present retrospective study was conducted from May 2022 to March 2024. During the study period, 4123 deliveries were performed; 20 Mullerian anomaly cases were registered. The mean age of the cases was 25.15±3.42 years, and the mean birth weight was 2±0.51 kgs.

In this study, 9 (45%) cases were primi gravida, and 11 (55%) were multigravida (Table 1).

Table 1: Gravida.

Gravida	Frequency	Percentage (%)
Primi	9	45
Multi	11	55
Total	20	100

In the present study, 6 (30%) cases had an arcuate uterus followed by bicornuate and septate uterus in each 4 (20%). 3 (15%) patients had unicornuate uterus and 2 patients had didelphus uterus (10%), 1 (5%) patient had transverse vaginal septum (Figure 1).

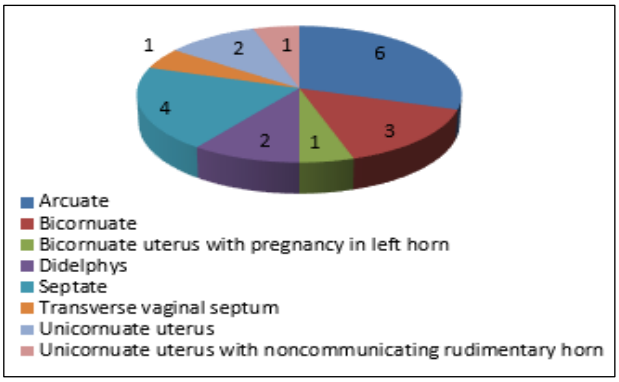

Figure 1: Type of anomaly.

50% patients had spontaneous abortions in bicornuate and septate uterus. In unicornuate uterus 66% had preterm birth and 33% had term delivery and 33% cases had spontaneous abortion. In arcuate uterus, 83% cases had term delivery, and 1 (16%) cases had pre-term delivery (Table 2).

Table 2: Type of anomaly as per gestational age.

Type of anomaly	Abortion (%)	Preterm (%)	Term (%)	Total (%)
Arcuate	0	1 (16.7)	5 (83.3)	6 (30)
Bicornuate	2 (50)	1 (25)	1 (25)	4 (20)
Didelphys	0	1 (50)	1 (50)	2 (10)
Septate	2 (50)	1 (25)	1 (25)	4 (20)
Transverse vaginal septum	0	1 (100)	0	1 (5)
Unicornuate	1 (33.3)	2 (66.7)	0	3 (15)
Total	5 (25)	7 (35)	8 (40)	20 (100)

Regarding presentation, of the 15 deliveries, cephalic was seen in 8 (53.3%) cases, breech was observed in 6 (40%) cases, and transverse position was reported in 1 (6.7%) case (Figure 2).

Regarding presentation, malpresentation was most commonly observed in each 2 (100%) cases of bicornuate, didelphys, and in each case of arcuate (16.7%), septate (50%), and unicornuate (50%) (Table 3).

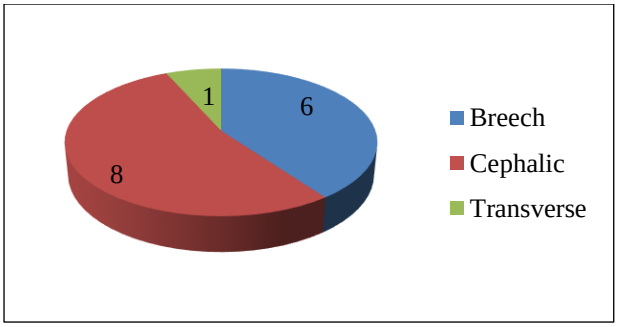

Figure 2: Presentation.

In the arcuate uterus, in each 3 (50%) cases, LSCS and NVD were observed. Among the four cases with a bicornuate uterus, half experienced spontaneous second-trimester losses, while the other half required LSCS. In didelphys and unicornuate uterus, each 2 (100%) cases had LSCS. In the septate uterus, each one case had LSCS and NVD. In the transverse vaginal septum, all 1 (100%) case had LSCS. Unfavourable pregnancy outcomes were observed in uteri with bicornuation, septation, and unicornuation (Table 4).

Table 3: Type of anomaly as per presentation.

Type of anomaly	Presentation (%)			Total
	Breech	Cephalic	Transverse	
Arcuate (6)	1 (16.7)	5 (83.3)	0	6 (40)
Bicornuate (4)	1 (50)	0	1 (50)	2 (13.3)
Didelphys (2)	2 (100)	0	0	2 (13.3)
Septate (4)	1 (50)	1 (50)	0	2 (13.3)
Transverse vaginal septum (1)	0	1 (100)	0	1 (6.7)
Unicornuate (3)	1 (50)	1 (50)	0	2 (13.3)
Total (20)	6 (40)	8 (53.3)	1 (6.7)	15 (100)

Table 4: Type of anomaly in relation to mode of delivery and outcome.

Type of anomaly	Mode of delivery (%)		Outcome
	Lower segment caesarean section (LSCS)	Normal vaginal delivery (NVD)	
Arcuate (6)	3 (50)	3 (50)	6 babies with birth weight of 3, 2.5, 2.3, 2.2, 2.2 and 1.7kgs.
Bicornuate (4)	2 (100)	0	2 abortions at 16 and 17 weeks, 1 still birth of 2.2kg and 1live birth of 1.4kg.
Didelphys (2)	2 (100)	0	2 live births of 1.9 and 1.8kgs.
Septate (4)	1 (50)	1 (50)	2 abortions at 15 and 18 weeks, 2 live babies of 1.7 and 2.56kgs
Transverse vaginal septum (1)	1 (100)	0	Single live birth of 2.54kgs.
Unicornuate (3)	2 (100)	0	1 abortion at 14weeks, 2 live births of 1.16 and 1.4kgs.
Total	11 (73.3)	4 (26.7)	-

DISCUSSION

The presence of congenital uterine anomalies poses a significant clinical dilemma in terms of evaluation and treatment due to their possible impact on a woman's fertility. Mullerian duct maldevelopment can take many different shapes, and each abnormality is unique. The Mullerian abnormalities related to uterus are the cause of unfavourable pregnancy outcomes many times.[6] The accurate diagnosis serves as the foundation for the proper design of the therapeutic approach. Ultrasound examinations done in the early weeks of pregnancy aid in the diagnosis of these defects and further planning to manage the pregnancy.

In the present study, 20 cases were studied during the study period, similar to the study by Rao et al (21), in contrast to the studies by Joshi et al (30).[12,11] The mean age of presentation in this study was 25.15±3.42 years, similar to the studies by Kabadi et al (24.7 years), and Joshi et al (29.46±2.71).[5,11]

The prevalence of Mullerian anomalies was 4.75% per 1000 pregnant women, similar to the findings of Joshi et al (5%), Reyes-Munoz et al (4.4%), Attar and Amin (4.1%), contrast to the Jayashree et al (10%), and Nisha et al reports (8.1%).[8,10,11,13,14]

The arcuate uterus was found most commonly in this study, similar to the Rao et al, and Sayed et al reports, while the septate uterus was most widely reported in the Saravelos et al, Reyes-Munoz et al, and Nisha et al reports Term (8) deliveries were more than pre-term deliveries in the present study (7), similar to Joshi et al (3 term, 2 pre-term), in contrast to the study by Rao et al (6 term, 9 pre-term).[6,9,10,11,12,14,] In this study, 5 cases had abortions, similar to the studies by Rao et al (6).[12]

Malpresentation was most commonly observed in each 2 (100%) cases of bicornuate, didelphys, and in each case of arcuate (16.7%), septate (50%), and unicornuate (50%) in this study. In the Nagarathnamma et al study, malpresentation was reported in 2 cases of bicornuate and each 1 case of arcuate, septate and unicornuate uterus.[15]

In the present study, term delivery was reported in 5 (83.3%) cases of the arcuate uterus, 1 (25%) case of bicornuate, 1 (50%) case of didelphys, and 1 (25%) case of septate uterus. Preterm delivery was reported in 1 (16.7%) case of arcuate uterus, in 1 (25%) case of bicornuate, in 1 (50%) case of didelphys, in 1 (25%) case of septate uterus, in 1 (100%) case of transverse vaginal septum, and in 2 (66.7%) cases of unicornuate uterus.

In a bicornuate uterus, one stillbirth and two abortions occurred, one at 16 weeks and another one at 17 weeks. In the septate uterus, two abortions occurred, one at 15 and another at 18 weeks. In the unicornuate uterus, abortion occurred at 14 weeks.

In the study by Rao et al, in bicornuate uterus, each 2(50%) cases had spontaneous abortions and preterm deliveries.[12] In the septate uterus, 3 (60%) abortions, and 2 (40%) preterm deliveries were reported. In the unicornuate, each 1 case had full term, preterm deliveries and abortion. In the uterus didelphys, all 2 (100%) had preterm birth. In the arcuate, 3 (60%) cases had term, and 2 (40%) cases had pre term deliveries. In both transverse and longitudinal vaginal spetum, each one case had term deliveries.

The mean birth weight of the neonates was 2±0.51 kg, in contrast to the finding by Hiersch et al (2.78±5.79kg).[16]

In this study, in an arcuate uterus, in each 3 (50%) cases, LSCS and NVD were observed. In bicornuate, didelphys, and unicornuate uterus, each 2 (100%) cases had LSCS. In septate uterus, each 1 (50%) case had LSCS, and NVD. In the transverse vaginal septum, all 1 (100%) cases had LSCS.

In the study by Rao et al, in the bicornuate and didelphys uterus, LSCS was performed in each 2 cases.[12] In septate and unicornuate uterus in each 1 case, NVD and LSCS were reported. In the arcuate uterus, in 2 cases, NVD and in 3 cases, LSCS were done. In the transverse vaginal septum in 1 case, LSCS, and in the longitudinal vaginal septum in 1 case, NVD was reported. In the Nagarathnamma et al study, LSCS and NVD were observed in each of the 2 cases in the arcuate uterus.[15] LSCS was observed in 3 cases of bicornuate, 2 cases of septate, and one case of unicornuate uterus. Differences in this finding were due to variations in the selection criteria and the diagnostic modalities used.

CONCLUSION

Mullerian anomalies considerably worsen obstetric outcomes. Diagnosed cases of Mullerian malformations represent only a small portion of the overall problems and abnormalities. Correct diagnosis of Mullerian anomaly depends on an understanding of its embryological basis. All patients presenting with infertility, repeated miscarriages, premature labour, malpositions and malpresentation, or a poor obstetric history should be treated with a high suspicion index. Given the ease of access to modern pelvic examination techniques such as USG, HSG, lapro-hysteroscopy, and MRI, they should undergo these tests. Early diagnosis using modern technology and potential surgical procedures can produce a favorable outcome.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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