

A Study of Pregnancy Outcomes in Women with Mullerian Uterine Malformations

¹Dr Akshay V Kovalli, Post Graduate, Resident, Department of Obstetrics and Gynaecology, M R Medical College, Kalaburagi

²Dr Suman Umeshchandra, Professor, Department of Obstetrics and Gynaecology, M R Medical College, Kalaburagi

³Dr Meenakshi S Devaramani, Professor and HOD, Department of Obstetrics and Gynaecology, MR Medical College, Kalaburagi

Corresponding Author: Dr Akshay V Kovalli, Post Graduate, Resident, Department of Obstetrics and Gynaecology, M R Medical College, Kalaburagi

How to citation this article: Dr Akshay V Kovalli, Dr Suman Umeshchandra, Dr Meenakshi S Devaramani, “A Study of Pregnancy Outcomes in Women with Mullerian Uterine Malformations”, IJMACR- October - 2025, Volume – 8, Issue - 5, P. No. 150 – 154.

Open Access Article: © 2025 Dr Akshay V Kovalli, et al. This is an open access journal and article distributed under the terms of the creative common's attribution license (<http://creativecommons.org/licenses/by/4.0>). Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Müllerian duct anomalies result from defective embryological development, fusion, or canalization of the ducts. These structural abnormalities are associated with adverse reproductive outcomes including miscarriage, preterm birth, fetal growth restriction (FGR), and malpresentation.

Objective: To assess pregnancy outcomes in women diagnosed intraoperatively with Müllerian uterine malformations.

Methods: This retrospective study analyzed 10 pregnant women diagnosed with Müllerian uterine anomalies during caesarean section or exploratory laparotomy between January 2023 and March 2025. Cases with prior surgical correction were excluded. Data on pregnancy outcomes—including miscarriage, malpresentation,

preterm delivery, fetal growth restriction, and low birth weight—were analyzed.

Results: Among 10 cases, bicornuate uterus was most common (40%), followed by partial septate (30%), unicornuate (20%), and arcuate uterus (10%). Malpresentation occurred in 50% of cases, predominantly breech. Preterm delivery occurred in 20% (very preterm 10%, late preterm 10%). The incidence of FGR was 60%, and low birth weight 70%. Miscarriages occurred in 20%, with one case of recurrent first-trimester loss (up to 9 miscarriages) in a unicornuate uterus. Caesarean section rate was 90%.

Conclusion: Pregnancy in women with Müllerian uterine malformations is associated with increased risks of miscarriage, preterm delivery, FGR, and low birth weight. Intraoperative recognition of such anomalies

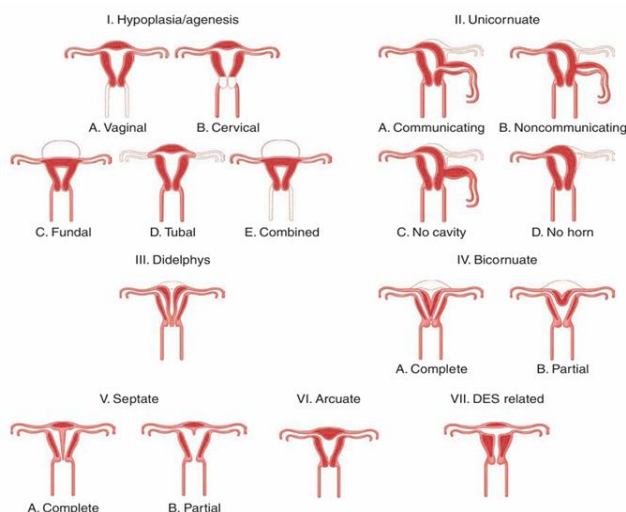
should prompt evaluation of both renal fossae and the uterine cavity to prevent future complications. Early diagnosis through safe imaging modalities like 3D ultrasound or MRI enables timely surgical correction and improved obstetric outcomes.

Keywords: Müllerian uterine malformations, pregnancy outcome, fetal growth restriction, miscarriage, malpresentation, low birth weight

Introduction

Four principal abnormalities arise from defective mullerian duct embryological steps: 1) agenesis of both ducts either focally or along entire duct length 2) unilateral maturation of mullerian duct with incomplete or absent development of the opposite side, 3) absent or faulty midline fusion of the ducts or 4) defective canalisation.

The prevalence with imaging ranges from 0.4 to 10 % and prevalence is higher in women with recurrent miscarriages. The most frequent findings are arcuate uterus, septate, bicornuate, didelphic and unicornuate classes in decreasing order.



- Müllerian uterine anomalies pose a greater risk for miscarriages, preterm birth, poor fetal growth.

- Müllerian uterine anomalies may be discovered first during pelvic examination, caesarean delivery, tubal sterilization or infertility evaluation.
- Depending on clinical presentation, sonography, HSG, MR imaging, laparoscopy and hysteroscopy.
- 2D TVS, 3D TVS, MR imaging, laparoscopy are safe in pregnancy.

Aims and Objectives

- To assess the pregnancy outcomes, the incidence of miscarriages, malpresentation, fetal growth restriction and low birth weight incidence in pregnancies with mullerian uterine anomalies

Methodology

Study design: retrospective study.

Sample size: 10 pregnant women with mullerian uterine anomalies diagnosed intra operatively.

Materials and Methods

A retrospective analysis of outcomes of pregnancy in women with Mullerian uterine malformations from January 2023 till march 2025 with sample size of 10.

The uterine anomalies were identified intra operative during caesarean section, exploratory laparotomy.

Inclusion criteria: pregnant women with mullerian uterine anomalies diagnosed intraoperatively.

Exclusion criteria: pregnant women with history of surgical correction uterine anomaly.

Results

AGE	NUMBER	PERCENTAGE
18-24 YEARS	5	50%
25-30YEARS	2	20%
31-35 YEARS	2	20%
>35 YEARS	1	10%

GESTATIONAL AGE	NUMBER	PERCENTAGE
VERY PRETERM <32 WEEKS	1	10%
EARLY PRETERM 32-34WEEKS	0	00%
LATE PRETERM 34-37WEEKS	1	10%
TERM 37-42WEEKS	8	80%

Incidence of preterm birth: 20%

Very preterm: 10%

Late preterm: 10%

While 80% were term pregnancies.

GRAVIDITY	NUMBER	PERCENTAGE
1	4	40%
2	1	10%
3	2	20%
4	2	20%
>4	1	10%

UTERINE ANOMALY	NUMBER	PERCENTAGE
ARCUATE UTERUS	1	10%
PARTIAL SEPTATE	3	30%
UNICORNUATE	2	20%
BICORNUATE	4	40%

Bicornuate uterus highest 40%

Partial septate uterus 30%

Unicornuate 20%

Arcuate uterus 10%

PRESENTATION	NUMBER	PERCENTAGE
CEPHALIC	5	50%
BREECH	5	50%
TRANSVERSE	0	00%
OBLIQUE	0	00%

50% malpresentation with uterine anomalies

50% had normal presentation

50% breech presentation

UTERINE MALFORMATION	MALPRESENTATION	PERCENTAGE
PARTIAL SEPTATE	3 BREECH (OUT OF 3)	100 %
ARCUATE	0	00%
UNICORNUATE	1 BREECH (OUT OF 2)	50%
BICORNUATE	1 BREECH (OUT OF 4)	25%

Highest incidence of malpresentation: partial septate 100%

Unicornuate uterus 50%

Bicornuate uterus 50%

	NUMBER	PERCENTAGE
FETAL GROWTH RESTRICTION	6 /10	60%
LOW BIRTH WEIGHT <2.5KG	7/10	70%

Overall Incidence of FGR is 60%

Overall Incidence of LBW IS 70%

BIRTH WEIGHT	NUMBER	PERCENTAGE
NORMAL >2.5KG	3	30%
LOW BIRTH WEIGHT <2500 GMS	7	70%
VERY LOW BIRTH WEIGHT <1500 GMS	0	00%

Overall Incidence of Low Birth Weight is 70%

UTERINE ANOMALIES	INTRA UTERINE FETAL GROWTH RESTRICTION	LOW BIRTH WEIGHT <2.5KG
ARCUATE UTERUS	1/2 (50%)	1/2 (50%)
PARTIAL SEPTATE UTERUS	1/3 (33%)	1/3 (33%)
UNICORNUATE UTERUS	1/2 (33%)	1/2 (50%)
BICORNUATE UTERUS	3/4 (75%)	3/4 (75%)

	NUMBER	PERCENTAGE
BAD OBSTETRIC HISTORY	2	20%
RECURRENT MISCARRIAGES	2	20%

Overall Incidence of BOH is 20%

Miscarriages in 20%

BAD OBSTETRIC HISTORY	NUMBER	PERCENTAGE
1 ST TRIMESTER PREGNANCY LOSSES	2	10%
2 ND TRIMESTER PREGNANCY LOSS	1	10%
RECURRENT PREGNANCY LOSS	2	20%
2 FIRST TRIMESTER PREGNANCY LOSS	1	10%
9 FIRST TRIMESTER PREGNANCY LOSS	1	10%

Recurrent Miscarriage Upto 9 First Trimester Pregnancy Loss Was Observed in A Case With Unicornuate Uterus

MODE OF DELIVERY	NUMBER	PERCENTAGE
CESAREAN SECTION	9	90%
VAGINAL DELIVERY (30 WEEKS) (ADHERENT PLACENTA REQUIRING HYSTEROTOMY AND REMOVAL OF PLACENTA)	1	10%

-Higher Cesarean Rate 90%.

-G10A9 Vaginally Delivered

At 30 Weeks Gestation With Adherent Placenta Requiring Laparotomy, Hysterotomy For Removal Of Placenta, Unicornuate Uterus Was Diagnosed Intra Op.

Discussion

Pregnancies with uterine malformations posed a greater risk of recurrent miscarriages 20%, upto 9 miscarriages in a case and bad obstetric history in 20%.

Preterm birth rate of 20% and low birth weight incidence of 70% was observed with Mullerian uterine malformations.

High incidence of fetal growth restriction 60% was observed in pregnancies with uterine malformations.

No cases were associated with any renal agenesis or malformations.

This study focused only on intra operative diagnosis of Mullerian uterine malformations and emphasises on the need for early detection of mullerian uterine malformations and timely surgical correction for a better fetal outcomes.

Unicornuate uterus if diagnosed intra operatively, the rudimentary horn should be prophylactically to avoid pregnancy in rudimentary horn which may lead to uterine rupture due to inadequate space.

Emphasises on the need to explore the uterine cavity before closing the hysterotomy incision to identify any mullerian malformations.

With any Mullerian anomaly, both the renal fossae are examined intra operatively to confirm kidneys to rule out any associated renal agenesis.

Imaging modalities like 2D TVS, 3D TVS and MR imaging are considered safe in pregnancy to confirm any Mullerian anomaly in pregnancy.

MR imaging can concurrently evaluate the secondary diagnosis of any concurrent renal anomalies.

References

1. Kim MA, Kim HS, Kim YH. Reproductive, obstetric and neonatal outcomes in women with congenital uterine anomalies: a systematic review and meta-analysis. *J Clin Med.* 2021;10(21):4797. doi:10.3390/jcm1021479 .
2. Campo MC, Sosa-Stanley JN, Reyes-Muñoz E, Álvarez R, Montoya-Estrada A. Impact of congenital uterine anomalies on obstetric and perinatal outcomes: a systematic review. *Reprod Sci.* 2024;31(2):345–356. doi:10.1007/s43032-023-01312-y
3. Mandelbaum RS, Adams CL, Roman LD, Matsuo K. Obstetric outcomes of women with congenital uterine anomalies: a population-based study. *Am J Obstet Gynecol MFM.* 2024;6(1):100946. doi:10.1016/j.ajogmf.2023.100946
4. Qian L, Zhang X, Liu Y, Zhao H. Pregnancy and perinatal outcomes in women with unicornuate uterus: a retrospective analysis. *BMC Pregnancy Childbirth.* 2023;23(1):384. doi:10.1186/s12884-023-05845-y
5. Buicu CF, Miha CM, Socolov D, Moldovan CA, Turcu-Stiolica A, Ilie AC, et al. Birth outcomes and obstetric complications in pregnancies with uterine malformations: a multicenter study. *J Clin Med.* 2025;14(4):1158. doi:10.3390/jcm14041158
6. Yoshihara T, Kido A, Yagi T, Tsuji Y, Togashi K. Association between congenital uterine anomalies and abnormal placentation leading to adverse pregnancy outcomes. *J Obstet Gynaecol Res.* 2024;50(1):89–97. doi:10.1111/jog.16032
7. Carriles I, Álvarez RM, Campo MC, Di Spiezio Sardo A, Grimbizis GF. Comparison of the ASRM 2016/2021 and ESHRE/ESGE classifications of

Müllerian anomalies: clinical implications and outcome correlation. Hum Reprod Update. 2024;30(3):410–423. doi:10.1093/humupd/dmae004

8. Chan YY, Jayaprakashan , Zamora J, et al: the prevalence of congenital uterine anomalies in unselected and high risk populations: a systematic review. Human reprod update 17(6):761, 2011b
9. Chan YY, Jayaprakashan , Tan A et al: reproductive outcomes in women with congenital uterine anomalies, a systematic review. Ultrasound obstret gynecol 2011a