

## Maternal and Fetal Outcome in Mullerian Anomaly: A Study at Tertiary Care Center in Northern Part of Maharashtra

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### Abstract

**Background:** In mullerian anomalies uterine anomalies are most common. They are associated with normal as well as adverse reproductive outcomes. This study aims to evaluate different types of uterine congenital anomalies and its impact on maternal and fetal outcome. **Setting & Design:** The present study is carried out in the Dept of OBGY in tertiary care hospital and medical college. It is a retrospective observational study done among patients who have various types of mullerian anomalies with pregnancies. **Methods:** The study was conducted from April 2008 to March 2015. Universal sampling done. Data of 21 patients collected and analysed using MS Excel software. **Statistical Analysis:** Frequency analysis done for study variables using MS Excel 10.0. **Results:** During this period 21 patients with various uterine anomalies with pregnancy were studied. 19.4% patients had bicornuate uterus, 23.8% had septate uterus & 14.28% had unicornuate uterus, 9.52% had uterus didelphys, 23.80% patients had arcuate uterus and 4.76% patient of transverse vaginal septum and longitudinal vaginal septum each. Malpresentation was found in bicornuate, unicornuate, didelphys, arcuate uterus. Bad pregnancy outcome was seen in bicornuate, septate and unicornuate uterus. **Conclusion:** Mullerian anomalies have a significant adverse impact on obstetric outcomes. High suspicion index should be kept with all patients coming with infertility, recurrent pregnancy loss, preterm labor, malpositions and malpresentations and bad obstetric history. Favorable outcome can be achieved by early diagnosis with the help of advanced modality and possible surgical interventions.

**Keywords:** Maternal and Fetal Outcome; Mullerian Anomalies; Malpresentation; Recurrent Pregnancy Loss.

### Introduction

Congenital mullerian anomalies result from abnormal fusion of the paramesonephric (mullerian) ducts during embryonic life causing variety of malformations such as septate uterus, unicornuate uterus, bicornuate uterus, uterus didelphys, arcuate uterus [1]. Uterine anomalies are the most common of the mullerian anomalies but the true incidence is difficult to estimate [2]. Uterine anomalies are associated with normal as well as adverse reproductive outcome. They occur in approximately

3 to 4% of general population, and are responsible for 5 to 10% of recurrent pregnancy losses, 25% of women with late 1<sup>st</sup> and second trimester pregnancy loss or preterm delivery [3,4,5,6]. The true prevalence of uterine anomalies in the population is unknown because of unavailability of diagnostic aids in the past. Nowadays widespread use of HSG, USG 2D/3D, MRI, diagnostic lapro- hysteroscopy increased the rate of detection of uterine anomalies in general population. All uterine anomalies are potential cause of infertility, recurrent pregnancy loss, preterm delivery, fetal malpresentations and adverse perinatal outcome [7,8,9,10].

Abnormal development of female reproductive tract involves series of complex processes causing abnormality in migration, fusion and subsequent canalization of mullerian system causing variety of congenital mullerian anomalies [11]. ASRM (American society of reproductive medicine) classified mullerian anomalies in an attempt to provide better document, the actual anatomy and subsequently follow the patients in regards to both conception and pregnancy outcome [12].

Purpose of the present study is to evaluate different uterine malformations in obstetric patients either diagnosed in pre-natal or during antenatal or intranatal period with respect to their period of gestation, need of any surgical interventions, mode of termination and their maternal and fetal outcome.

## Methods

This is retrospective observational study conducted at tertiary care center in northern Maharashtra during April 2008 to March 2015. All patients with uterine anomalies admitted to maternity ward for various obstetric problems were included in the study. All the above patients with uterine anomalies were diagnosed either during present pregnancy or by past obstetric records. Total 60,952 patients were admitted to maternity ward during this period. Out of that, 21 patients with uterine anomalies were selected and studied in respect to type of mullerian anomaly, gestational age of patient, presentation of pregnancy, mode of termination, any surgical intervention done and their maternal & fetal outcome. Data collected and analysed using MS Excel 10.0, frequency analysis done for study variables.

## Results

A total of 60,952 patients were admitted to maternity ward of Tertiary care hospital in northern Maharashtra, during April 2008 to March 2015. Out of these, study was conducted on 21 patients with various uterine anomalies admitted for different obstetric reasons. The rate of anomaly was 0.3 per 1000 pregnant women.

In present study out of 21, 4 (19.4%) patients had bicornuate uterus. 5 (23.80%) patients had septate uterus. 3 (14.28%) patients had unicornuate uterus, 2 (9.52%) patients had uterus didelphys, 5 (23.80%) patients had arcuate uterus and 1 (4.76%) patient of transverse vaginal septum and 1 (4.76%) patient of

longitudinal vaginal septum (Table 1). 6 (28%) cases had full term delivery, 9 (44%) had preterm delivery and 6 (28%) patients had second trimester abortions (figure 2). In Bicornuate uterus 50% patients had spontaneous abortions and 50% patients had preterm birth. In septate uterus 60% patients had spontaneous abortion and 40% had preterm birth. In unicornuate uterus 33% patients had term delivery, 33% patients had preterm birth and 33% patients had spontaneous abortion. In uterus didelphys, all patients had preterm birth (Table 2). 42% cases undergone LSCS, 28% cases had vaginal delivery (Figure 3). In remaining 15 patients, 11 (80%) patients had malpresentation, out of those, breech presentation was observed in 73.33% of patients and transverse lie in 6.66% of cases. Malpresentation was commonly observed in bicornuate, unicornuate, didelphys, septate and arcuate uterus (Table 3). 7 (46.66%) patients undergone cervical circlage, one patient had undergone metroplasty operation in prenatal period and one patient had undergone laparotomy for resection of ruptured rudimentary horn. Out of 15, 10 (66%) patients had live fetuses and 5 (44%) babies could not be saved due to extreme prematurity. Bad pregnancy outcome was seen in bicornuate, septate and unicornuate uterus (Table 4). Out of 4 patients of bicornuate uterus, 50% had spontaneous second trimester losses and 50% patients had preterm LSCS with no live fetuses. Both patients had undergone cervical circlage. Out of 5 cases of septate uterus one patient had complete septum who was operated for metroplasty operation in past in our unit. Subsequently she delivered 1.7 kg live, preterm baby by LSCS. She had undergone cervical encirclage in present pregnancy. Second patient also had cervical circlage but delivered prematurely vaginally and baby died due to extreme prematurity and IUGR. In present study there were 3 cases of unicornuate uterus with pregnancy. One patient had ruptured rudimentary horn in second trimester of pregnancy, diagnosed intraoperatively. Patient was referred as a obstetric emergency. Resection of the horn was done. Out of remaining 2 patients one patient had live baby and in another patient baby could not be survived in spite of cervical circlage. Two patients of didelphys uterus has been diagnosed antenatally, undergone cervical circlage. We have taken circlage on both cervixes. Both patients had preterm LSCS with one live baby in one patient and one baby died in other patient. Out of 5 patients of arcuate uterus 3 patients undergone LSCS & 2 patients had vaginal delivery, birth weight was ranging from 2.2 to 2.7 kg. One patient of transverse vaginal septum with midline small fibrosed opening had came in labor with full term pregnancy. She was diagnosed in labor room. She undergone LSCS with

2.5 kg live baby. Another patient had longitudinal vaginal septum came in labor room in second stage of labor. She had full term vaginal delivery with 2.3 kg live foetus. Both patients advised for resection of septum after 6 wks of delivery (Table 4).

**Table 1:** Distribution of cases according to type of anomaly

Type of Anomaly	Cases (n=21)
Bicornuate uterus	4(19.4 %)
Complete septate uterus	1(4.76%)
Partial septate uterus	4(19.4%)
Arcuate uterus	5(23.80%)
Unicornuate uterus with rudimentary horn	1(4.76%)
Unicornuate uterus without rudimentary horn	2(9.52%)
Didelphus uterus	2(9.52%)
Tranverse vaginal septum	1(4.76%)
Longitudinal vaginal septum	1(4.76%)

**Table 2:** Association of anomaly with gestational age

Type of anomaly	Number	Term pregnancy	Preterm pregnancy	Abortion
Bicornuate	4	0	2(50%)	2(50%)
Septate uterus	5	0	2(40%)	3(60%)
Unicornuate	3	1(33.3%)	1(33.3%)	1(33.3%)
Didelphic uterus	2	0	2(100%)	0
Arcuate uterus	5	3(60%)	2(40%)	0
Tranverse vaginal septum	1	1(100%)	0	0
Longitudinal vaginal septum	1	1(100%)	0	0
total	21	6(28.57%)	9(42.85%)	6(28.57%)

**Table 3:** Association of uterine anomaly with presentation

Type of anomaly	Number	Presentation		
		Cephalic	Breech	Transverse
Bicornuate	4	0	1(25%)	1(25%)
Septate uterus	5	0	2(40%)	0
Unicornuate	3	0	2(66.6%)	0
Didelphic uterus	2	0	2(100%)	0
Arcuate uterus	5	2(40%)	3(60%)	0
Tranverse vaginal septum	1	0	1(100%)	0
Longitudinal vaginal septum	1	1(100%)	0	0
total	21	3(20%)	11(73.33%)	1(6.66%)

**Table 4:** Mode of termination & maternal & fetal outcome:

Type of anomaly	Number	Surgical intervention done	Vaginal delivery	LSCS	Outcome
Bicornuate	4	Cervical circlage done in 2 patients	0	2	2 patients aborted & 1 <sup>st</sup> patient- 32wks, 1.4 kg, baby, died, preterm
Septate	5	1-metroplasty 2-os tightening	1	1	2 <sup>nd</sup> patient-33 wks, 1.6kg, baby died preterm . 3 patients aborted, out of 2, 1 patient after metroplasty had 1.7kg, preterm baby, live & second patient had 1.3kg baby died due to severe IUGR & extreme prematurity.
Unicornuate	3	1-ruptured rudimentary horn, resection done 2-os tightening in 2 patients	1	1	1 patient had ruptured rudimentary horn at 18 wks. 2 <sup>nd</sup> patient-2 kg FT LSCS, live baby and 3 <sup>rd</sup> patient-1.7 kg, Preterm baby died
didelphus	2	Cervical ciclage in both patients	0	2	1 <sup>st</sup> patient-32 wks, 1.5kg baby, died & 2 <sup>nd</sup> patient 1.9 kg Preterm baby, live.
Arcuate	5	0	2	3	3 full term deliveries & 2 pre term deliveries, all live babies, 2.2 to 2.7kg. Full term delivery & 2.5 kg live baby
Tranverse vg septum	1	Adv resection after 6 wks of delivery	0	1	Full term delivery & 2.5 kg live baby
Longitudinal vaginal septum	1	Adv resection after 6 wks of delivery	1	0	Full term delivery & 2.3 kg, live baby.

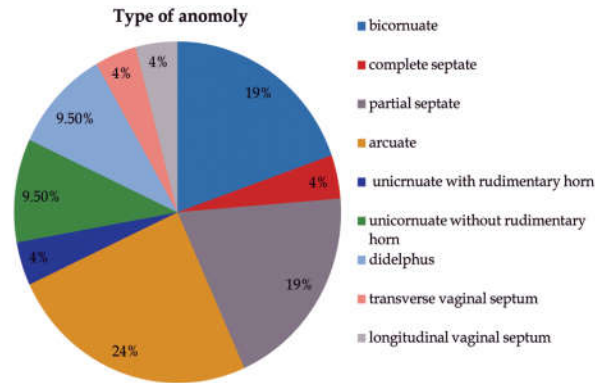


Fig. 1: Distribution of cases according to type of anomaly-

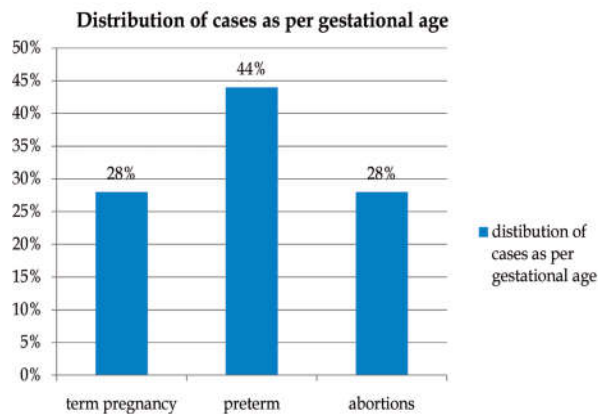


Fig. 2: Distribution of cases according to gestational age

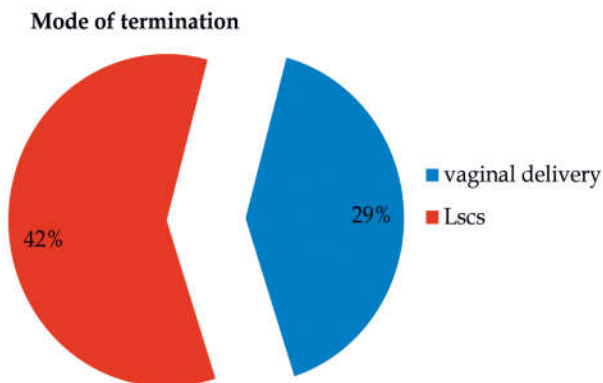


Fig. 3: Distribution of cases according to mode of termination

## Discussion

Mullerian anomalies are important clinical entity encountered frequently by obstetrician and gynecologists. All mullerian anomalies those involving the uterus are more commonly responsible for adverse pregnancy outcome. As many women of mullerian anomalies are asymptomatic, the true prevalence is difficult to assess. In present study detection rate of mullerian anomalies is 0.03%. In other studies prevalence varied from 0.06% & 38% [13]. This wide variation is likely to be due to different

patient selection, different diagnostic techniques and inadequate assessment of uterine morphology. Moreover most of the data has taken from patients presenting with obstetric problems. In our study we found 24% patients with septate uterus, 24% patients with arcuate uterus, 20% patients of bicornuate uterus, 15% of unicornuate uterus. However most of the studies in unselected population noted that arcuate uterus is most common anomaly but historically most common anomaly is bicornuate uterus. Arcuate uterus rarely found with adverse outcome [5]. Few studies showed association of arcuate uterus with fetal losses and obstetrical complication [14,15]. But in present study 60% of arcuate uterus had full term delivery and 40% had preterm delivery. Bicornuate uterus is associated with increased risk of complications. Most of the cases, the presentation was found to be breech presentation in bicornuate uterus and 25% of patients were having transverse lie. 50% of patients of bicornuate uterus had second trimester losses and 50% pts had preterm delivery. As per Shuiqing M et al recurrent pregnancy losses, preterm birth and malpresentation are major problems with bicornuate anomaly [16]. This outcome is comparable with present study. 28% patients were spontaneously aborted in second trimester and 42% patients had preterm delivery. 50% patients of bicornuate, 75% of unicornuate, 100% of didelphus and 40% of arcuate and 40% of septate had preterm birth. Patients with uterine anomaly has higher incidence of preterm birth, probable cause of preterm labor is (a) cervical incompetence [17], (b) abnormal uterine contractions [18], (c) reduced uterine volume [19]. Eight other studies quoted preterm birth as an outcome [3,14-16,20-23]. Seven studies described that, in arcuate uterus preterm birth was not more common as compared to bicornuate, unicornuate and didelphus [3,14,15,20-23]. Pooled analysis of 5 studies had reported that septate and partial septate had more incidence of preterm birth [3,14,16,21,22]. Metaanalysis of 5 studies found that in bicornuate, unicornuate and didelphus uterus there is significant association between defect and preterm birth [3,16,21,22,23]. We have conducted cervical circlage in 46% patients. 14% patients of unicornuate uterus had full term birth and 86% patients had preterm birth. Pregnancy was able to carry only upto 32 to 34 wks with circlage in present study. Most of the studies found that cervical circlage is valuable procedure which prevents second trimester miscarriage in mullerian anomalies [24]. 28% patients had second trimester miscarriages. We found 50% second trimester miscarriages in bicornuate, 60% in septate, 33% in unicornuate uterus. 5 studies quoted miscarriage as a outcome [3,14,16,21,23]. Pooled

analysis of four studies revealed that significant increase in second trimester loss with arcuate uterus compared with normal uterus [3,14,18,23]. In present study we did not encounter second trimester losses in arcuate uterus. Three studies commented doubling in a risk of second trimester miscarriages in unification defect i.e unicornuate, bicornuate and didelphus, compared with normal uterus [ 3,16,21]. In present study 80% patients had malpresentation. Meta analysis of 5 studies found that uterine anomaly are associated with malpresentations [3,15,16,20,21, 22,23]. Three more studies of women showed that there is increase rate of fetal malpresentation at delivery with canalization defect i.e septate and subseptate uterus [3,16,20]. Other studies showed that unification defects are also more likely to experience fetal malpresentation than women with normal uterus[3,16,20]. Surgical interventions have improved reproductive outcome in our study. Few have reported increase in reproductive outcome following surgical interventions [13,25,26,27,28].

### Conclusion

Mullerian anomalies have a significant adverse impact on obstetric outcomes. Diagnosed cases of mullerian anomalies are like the tip of iceberg in terms of their diagnosis and defects. Understanding the embryological origin of the defect of mullerian anomaly is key to its correct diagnosis. High suspicion index should be kept with all patients coming with infertility, recurrent pregnancy loss, preterm labor, malpositions and malpresentations and bad obstetric history. They should be subjected to detail pelvic examinations like USG, HSG, lapro-hysteroscopy and MRI as they are readily available nowadays. Favourable outcome can be achieved by early diagnosis with the help of advanced modality and possible surgical interventions.

### Reference

1. Moore KL, Persaud TVN, Torchia MG. The Urogenital System. The Developing Human, Clinically Oriented Embryology. 9th ed. Philadelphia: Saunders/ Elsevier; 2013; 245-287.
2. Lin PC. Reproductive outcomes in women with uterine anomalies. J Womens Health. 2004; 13(1): 33-9.
3. Acien P, Acien MI. The history of female genital tract malformation classifications and proposal of an updated system. Hum Reprod Update. 2011; 17: 693-705.

4. Grimbizis GF, Campo R. Congenital malformations of the female genital tract: the need for a new classification system. Fertil Steril. 2010; 94:401-7.
5. Raga F, Bauset C, Remohi J, Bonilla-Musoles F, Simon C, Pellicer A.
6. Simon C, Martinez L, Pardo F, Tortajada M, Pellicer A. Mullerian defects in women with normal reproductive outcome. Fertil Steril 1991; 56:1192-1193.
7. Stein AL, March CM. Pregnancy outcome in women with mullerian duct anomalies. J Reprod Med 1990; 35:411-414.
8. Rock JA, Schlaff WD. The obstetric consequences of uterovaginal anomalies. Fertil Steril, 1985; 43:681-692.
9. Tulandi T, Arronet GH, McInnes RA. Arcuate and bicornuate uterine anomalies and infertility. Fertil Steril 1980; 34:362-364.
10. Rackow BW, Arici A. Reproductive performance of women with mullerian anomalies. Curr Opin Obstet Gynecol, 2007;19:229-237.
11. Amesse LS, Pfaff-Amesse T. Congenital anomalies of the reproductive tract. In Clinical Reproductive Medicine and Surgery (1st edn) Falcone T, Hurd WW (eds). Mosby: New York, NY, 2007; 171-190.
12. American Fertility Society. The AFS classification of adnexal adhesions, distal tubal occlusion, tubal occlusion secondary to tubal ligation, tubal pregnancies, Mullerian anomalies and intrauterine adhesions. Fertil Steril. 1998; 49:944-55.
13. Guimaraes Filho HA, Mattar R, Pires CR, Araujo E Jr, Moron AF, Nardoza LM. Comparison of hysterosalpingography, hysterosonography and hysteroscopy in evaluation of the uterine cavity in patients with recurrent pregnancy losses. Arch Gynecol Obstet. 2006; 274:284-8.
14. Woelfer B, Salim R, Banerjee S, Elson J, Regan L, Jurkovic D. Reproductive outcomes in women with congenital uterine anomalies detected by three-dimensional ultrasound screening. Obstet Gynecol 2001; 98:1099-1103.
15. Maneschi F, Zupi E, Marconi D, Valli E, Romanini C, Mancuso S. Hysteroscopically detected asymptomatic müllerian anomalies. Prevalence and reproductive implications. J Reprod Med. 1995; 40(10):684-8.
16. Shuiqing M, Xuming B, Jinghe L. Pregnancy and its outcome in women with malformed uterus. Chin. Med Sci J. 2002; 17(4):242-5.
17. Airoidi J, Berghella V, Sehdev H. Transvaginal ultrasonography of the cervix to predict preterm birth in women with uterine anomalies. Obstet Gynecol. 2005; 106:553-6.
18. Dabirashrafi H, Bahadori M, Mohammad K, Alavi M, Moghadami-Tabrizi N, Zandinejad K, Ghafari V. Septate uterus: new idea on the histologic features

- of the septum in this abnormal uterus. *Am J Obstet Gynecol.* 1995;172:105-7.
19. Puscheck EE, Cohen L. Congenital malformations of the uterus: the role of ultrasound. *Semin Reprod Med.* 2008; 26:223-31.
  20. Zhang Y, Zhao YY, Qiao J. Obstetric outcome of women with uterine anomalies in China. *Chin Med J (Engl)* 2010; 123:418-422.
  21. Zlopasa G, Skrablin S, Kalafatic D, Banovic V, Lesin J. Uterine anomalies and pregnancy outcome following resectoscopic metroplasty. *Int J Gynaecol Obstet,* 2007; 98:129-133.
  22. Zupi E, Solima E, Marconi D, Valli E, Romanini C. Uterine anomalies prevalence and reproductive outcome in women undergoing diagnostic hysteroscopy. *Gynaecol Endoscopy* 1996; 5:147-150.
  23. Sorensen SS, Trauelsen AGH. Obstetric implications of minor mullerian anomalies in oligomenorrhoeic women. *Am J Obstet Gynecol* 1987; 156:1112-1118.
  24. Fakhrolmolouk Yassaee, Leila Mostafae. The Role of Cervical Cerclage in Pregnancy Outcome in Women with Uterine Anomaly. *J Reprod Infertil.* 2011; 12(4):277-9.
  25. Homer HA, Li TC, Cooke ID. The septate uterus: a review of management and reproductive outcome. *Fertil Steril,* 2000; 73:1-14.
  26. Daly DC, Maier D, Soto-Albors C. Hysteroscopic metroplasty: six years' experience. *Obstet Gynecol* 1989; 73:201-205.
  27. March CM, Israel R. Hysteroscopic management of recurrent abortion caused by septate uterus. *Am J Obstet Gynecol* 1987; 156:834-842.
  28. Mollo A, De Franciscis P, Colacurci N, Cobellis L, Perino A, Venezia R, Alviggi C, De Placido G. Hysteroscopic resection of the septum improves the pregnancy rate of women with unexplained infertility: a prospective controlled trial. *Fertil Steril* 2009; 91:2628-2631.
  29. Pabuccu R, Atay V, Urman B, Ergun A, Orhon E. Hysteroscopic treatment of septate uterus. *Gynaecol Endoscopy* 1995; 4:213-215.
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