

2 **Uterine Didelphys pregnancy management**

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6 **ABSTRACT**

7 **Introduction:** Didelphys uterus is a rare Mullerian duct abnormality, which affects 1-3 in 3000 women  
8 worldwide. It is usually asymptomatic. There are many patients with this condition in Saudi Arabia,  
9 and this compelled us to study this condition.

10 **Aims:** To describe the management and outcomes of pregnant women diagnosed with uterus  
11 didelphys.

12 **Study design:** This is a multicenter prospective cohort study.

13 **Place and Duration of study:** This study was conducted in Saudi Arabia in 4 cities; 8 hospitals over  
14 a period of five years.

15 **Methodology:** 286 patients were enrolled in this study, all diagnosed previously to have didelphys  
16 uterus, pregnant and willing to join, follow up and deliver in one of the research hospitals. Patients  
17 consented to join the search and every 2 weeks follow up and management was done accordingly.

18 **Results:** 15 (5.2%) patients aborted during the first half of the pregnancy. 139 (48.6%) patients had  
19 cervical cerclage done. 79 (27.6) patients had preterm labor which was managed conservatively. 231  
20 (80.8%) patients delivered by cesarean section and 17 (5.9%) delivered spontaneous vaginal  
21 delivery. Added to that, 38 (13.3%) had operative vaginal delivery. 271 neonates delivered.  
22 Unfortunately, three (1.1%) had intrauterine fetal death (IUFD) at 30-32 weeks of gestational age due  
23 to multiple congenital anomalies. All remaining neonates were normal and healthy except 25 (9.2%)  
24 who were admitted to NICU for various causes, but eventually discharged in good condition.

25 **Conclusion:** Antenatal care in patients with uterine didelphys is challenging, but given proper care,  
26 they can compete pregnancy with good neonatal outcome. Preterm labor and operative deliveries in  
27 the form of cesarean section and instrumental delivery were found to be high though.

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29 Keywords: *Cesarean, Cervical Cerclage, Didelphys, Mullerian, Preterm Labor, Vaginal Septum.*

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31 **1. INTRODUCTION**

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33 Didelphys uterus or double uterus is a rare condition due to the failure of fusion of Mullerian ducts. It  
34 affects one to three in 3000 women worldwide [1, 2]. This condition is a congenital anomaly, which  
35 can be isolated but more frequently associated with vaginal anomalies including double vagina,  
36 septate vagina and semi-septate vagina. Moreover, this condition may be associated with renal or  
37 skeletal anomalies. Usually, each uterus is attached to ipsilateral tube and these patients have  
38 healthy ovaries[1-4].

39 At age of 6 weeks of fetal life Mullerian ducts develop and by the end of 9th week, they start the  
40 process of fusion in the middle part of the tube in caudal cephalic fashion leading to the formation of  
41 the uterus. If for any reason, this fusion disturbed, it leads to the formation of didelphys uterus[1, 4-6].  
42 Usually, patients of didelphys uterus have no symptoms, and it is discovered during investigation for  
43 recurrent abortion, or preterm labor[7-9]. Nevertheless, some patient may complaint dysmenorrhea or  
44 dyspareunia. This condition may be discovered during transvaginal ultrasound, hysteroscopy,  
45 hysterosalpingogram, abdominal laparoscopy and laparotomy[1, 10, 11].

46 This condition is associated with recurrent abortion, preterm labor and abnormal lie of the fetus[4, 6,  
47 7]. Most of the pregnancies of women with didelphys uterus ends by cesarean section[4, 8, 9, 11]. It  
48 was noticed that, there are many women with this abnormality present in obstetric practice and  
49 management of these patients differ from one health facility to another.

50 This research aims to describe the management and outcomes of pregnant women diagnosed with  
51 uterus didelphys.

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53 **2. METHODS**

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This is a multicenter prospective observational cohort study conducted in four cities in Saudi Arabia and included eight major hospitals: In Holy city of Makkah, Maternity and children Hospital (MCH) and Hera'a Hospital, in Holy city of Madinah, Maternity and children Hospital (MCH) and Uhod Hospital, in Jeddah city, Mesadiah Maternity and children Hospital and North Jeddah Hospital, in Al-Baha area, King Fahad Hospital and Prince Meshari Hospital in Baljurashi. This research was conducted over five years, started on first of February 2013 and ended in 31st of January 2018. Ethical approval was taken from the (Approval number 34-0012-678-10034) Saudi Ministry of Health Central Ethical Approval office governing all these government hospitals. All above-mentioned hospitals are government hospitals providing service to the patients free and are the main providers for Obstetrical and Gynecological services in above mentioned cities. The average number of deliveries in all above-mentioned hospitals is 50,000 thousand deliveries per annum and the average rate of cesarean sections is 24%. The inclusion criteria included patients diagnosed with pregnancy with uterine didelphys, those willing to give written consent to participate, come for follow up as advised and ready to deliver in one of the hospitals included in study. If any of the above-mentioned conditions not met patient were excluded. In first antenatal visit, patients came to perform first ultrasound and start the follow up in the clinic. If she is known or diagnosed to have didelphys uterus then she is offered to join the research and a written informed consent was taken. Two weekly follow up and management was done. Outcomes included, incidence of didelphys uterus among the population of Saudis and non-Saudis (Saudi patients, represents the national population of the country, while Non-Saudis, represent people who are living in Saudi Arabia from any other origin and working, studying or living in the country), incidence of cervical cerclage, incidence of abortion among those patients, rate of preterm labor. Also, rate of cesarean section among them and rate of vaginal and operative vaginal delivery among them, rate of admission to Neonatal Intensive Care Unit (NICU) for their neonates. Added to that, types of neonatal problems among infants of those mothers. Data presented as frequencies and percentages.

### 3. RESULTS

During the duration of this study 371345 patients were seen in the antenatal clinics and 243746 patients completed their follow up and delivered in participating hospitals. There were 286 patients diagnosed to have didelphys uterus, representing 0.12% of patients completed follow up and who delivered (Table 1).

**Table 1: Patient distribution during the study**

	<b>Saudis N (%)</b>	<b>Non-Saudis N (%)</b>	<b>Total N (%)</b>
Patients seen in antenatal clinic	295622 (79.6%)	75723 (20.4%)	371345 (100%)
Patients completed follow up and delivery	215729 (88.5%)	28017 (11.5%)	243746 (100%)
Didelphys patients pregnancies	275 (96.2%)	11 (3.8%)	286 (100%)

There were 211 (73.8%) patients with didelphys uterus and single vagina, 72 (25.2%) patients with didelphys and double vagina and 3 (1%) patients with didelphys and incomplete vaginal septum (Table 2).

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**Table 2: distribution of patients according to type of anomaly**

	<b>Saudis N (%)</b>	<b>Non-Saudis N (%)</b>	<b>Total 286 N</b>
Didelphys uterus and single vagina	205 (97.2%)	6 (2.8%)	211
Didelphys uterus and double vagina	67 (93.1%)	5 (6.9%)	72
Didelphys uterus and vaginal septum	3 (100%)	0	3

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Fifteen (5.2%) patients aborted during the first half of the pregnancy. Hundred and thirty-nine (48.6%) patients had cervical cerclage done because of history of recurrent abortions before. Seventy-nine (27.6) patients had preterm labor pains, which was managed according to guidelines. All delivered at term. While, 231 (80.8%) patients delivered by cesarean section and 17 (5.9%) delivered spontaneous vaginal delivery. Added to that, 38 (13.3%) had operative vaginal delivery (Table 3).

**Table 3: management during antenatal care and method of delivery**

	<b>Saudis N (%)</b>	<b>Non-Saudis N (%)</b>	<b>Total 286 N</b>
Cervical cerclage	131 (94.2%)	8 (5.8%)	139
Preterm labor	76 (96.2%)	3 (3.8%)	79
Cesarean deliveries	223 (96.5%)	8 (3.5%)	231
Spontaneous vaginal delivery	17 (100%)	0	17
Forceps delivery	20 (100%)	0	20
Vacuum extraction delivery	18 (100%)	0	18

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Regarding neonates, 271 neonates delivered. Unfortunately, 3 (1.1%) had intrauterine fetal death (IUFD) at 30-32 weeks gestational age with no obvious cause, but, when examined post-delivery, multiple congenital anomalies discovered in them (These, 3 patients missed there anomaly scans. Anomalies include cardiac and renal anomalies). All remaining neonates were normal and healthy except 25 (9.2%) admitted to NICU for various causes, but discharged eventually in good condition (Table 4).

**Table 4: neonatal outcomes**

	<b>Saudis N (%)</b>	<b>Non-Saudis N (%)</b>	<b>Total 286 N</b>
Lost as abortion	12 (80%)	3 (20%)	15
IUFD	2 (66.7%)	1 (33.3%)	3
Asphyxia at delivery	1 (100%)	0	1
Respiratory distress	3 (75%)	1 (25%)	4
Meconium aspiration	7 (53.8%)	6 (46.2%)	13
Sever prematurity	3 (42.9%)	4 (57.1%)	7

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#### **4. DISCUSSION**

Didelphys uterus is a rare mullerian duct anomaly which affects 0.03-0.1% of women in the fertile age group[1, 2, 4]. Usually, fertility of these patients preserved and it is considered better than patients of

129 other mullerian duct anomalies[2, 4, 9]. These patients suffer from multiple fetal loos due to abortion  
130 or preterm labor[2, 4, 5]. They usually need special attention during antenatal care and delivery[2].  
131 This is a multicenter multiracial prospective observational cohort, conduct over 5 years to study the  
132 best management method for pregnant women diagnosed with uterus didelphys. 286 women  
133 diagnosed to have didelphys uterus and pregnant joined the study, with a result of 268 babies born  
134 alive and discharged in good condition.  
135 On literature review, this condition is associated with excellent results of the pregnancy, and this is  
136 can be seen in this study. Paying special care for these patients with close follow up paid off in this  
137 group of patients. This results agreeing with most of the studies in these women [3-11]. Only one  
138 large study was against all other studies including this study, and concluded that women with  
139 didelphys uterus has the highest rate of preterm delivery, spontaneous abortion, and the lowest rate  
140 of having a term delivery[2].  
141 In this study, we found women with didelphys uterus have a chance of preterm delivery and may need  
142 cervical cerclage, but they have a good chance of completing the pregnancy to term.

## 143 144 **5. CONCLUSION**

145 Women with didelphys uterus are rare patients who needs special attention in antenatal care, but,  
146 have a good chance to compete pregnancy to the end and can deliver like any other normal patient  
147 with higher cesarean section rate.  
148 Properly designed larger studies are needed for this group of women which focus on follow up, cost  
149 effectiveness and outcomes of their pregnancy.

## 150 151 **CONFLICT OF INTERESTS**

152 None known

## 153 154 **REFERENCES**

- 155  
156 1. Amesse, L., *Mullerian Duct Anomalies*. MedScape, 2018.from  
157 <https://emedicine.medscape.com/article/273534-overview#a4>.
- 158 2. Raga, F., C. Bauset, J. Remohi, F. Bonilla-Musoles, C. Simón, and A. Pellicer, *Reproductive*  
159 *impact of congenital Müllerian anomalies*. Human Reproduction Update, 1997. 12(10): p.  
160 2277-81.PMID: 9402295
- 161 3. Grimbizis, G., M. Camus, B. Tarlatzis, J. Bontis, and P. Devroey, *Clinical implications of uterine*  
162 *malformations and hysteroscopic treatment results*. Human Reproduction Update, 2001.  
163 7(2): p. 161-74.PMID: 11284660
- 164 4. Jr, J.H., *Pregnancy in uterus didelphys*. American Journal of Obstetrics and Gynecology, 1941.  
165 41(5): p. 885-9.
- 166 5. Ación, P., *Reproductive performance of women with uterine malformations*. Human  
167 Reproduction Update, 1993. 8(1): p. 122-6.PMID: 8458914.
- 168 6. Altwerger, G., A. Pritchard, J. Black, and A. Sfakianaki, *Uterine didelphys and vaginal birth*  
169 *after cesarean delivery*. Obstetrics & Gynecology, 2015. 125(1): p. 157-9.PMID: 25560118  
170 DOI: 10.1097/AOG.0000000000000505
- 171 7. Magudapathi, C., *Uterus Didelphys with Longitudinal Vaginal Septum: Normal Delivery*.  
172 Journal of Medical Case Report, 2012. 2(13): p. 194-5.doi:10.4172/2165-7920.1000194.
- 173 8. Maiti, G., P. Tugnait, A. Anand, and S. Garg, *Uterine Didelphys with Pregnancy and Cervical*  
174 *Incompetence*. Medical Journal of Armed Forces India, 2006. 62(2): p. 200-1.PMID 27407898
- 175 9. Maneschi, I., F. Maneschi, M. Parlato, G. Fucà, and S. Incandela, *Reproductive performance in*  
176 *women with uterus didelphys*. Acta Europaea Fertilitatis, 1989. 20(3): p. 121-4.PMID:  
177 2624066
- 178 10. Martínez-Beltrán, M., J. Giménez, and P. Ación, *Uterus didelphys with septate cervix and*  
179 *unilateral endometrial carcinoma: a case report*. Journal of Genital System & Disorders,  
180 2012. 1(1): p. article 1.doi:10.4172/2325-9728.1000101

181 11. Rezai, S., P. Bislam, I. Alcantara, R. Upadhyay, C. Lara, and M. Elmadjian, *Didelphys Uterus: A*  
182 *Case Report and Review of the Literature*. Case Report in Obstetrics and Gynecology, 2015.  
183 865821.doi:10.1155/2015/865821. PMID: 26435865.

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