



Congenital Anomalies Of Female Genital Tract And Its Effect On Reproduction

Dr. Radhika Parmar, Dr. Aditi Atodaria, Dr. Shruti Naria, Dr. Kishor Chauhan,

M.D (Obstetrics and gynecology), Assistant Professor, Department of obstetrics and gynecology , Smt.B.K.Shah Medical Institute & Research Centre, Sumandeep Vidyapeeth Deemed to be university, waghodia, Vadodara. District 391760, Email:radhikaparmar2105@gmail.com Contribution: Concept, Planning, Literature review, Manuscript preparation.

second year Resident doctor (obstetrics and gynecology) , Department of obstetrics and gynecology, Smt.B.K.Shah Medical Institute & Research Centre, Sumandeep Vidyapeeth Deemed to be university, waghodia, Vadodara. District 391760, Email:aditiatodaria16@gmail.com Contribution: Data Collection. first year Resident doctor (obstetrics and gynecology) , Department of obstetrics and gynecology, Smt.B.K.Shah Medical Institute & Research Centre, Sumandeep Vidyapeeth Deemed to be university, waghodia, Vadodara. District 391760, Email:shruti.naria98@gmail.com Contribution: Data Collection.

M.D (Obstetrics and gynecology)(Corresponding author) , Professor and head of Department, Department of obstetrics and gynecology , Smt.B.K.Shah Medical Institute & Research Centre, Sumandeep Vidyapeeth Deemed to be university, waghodia, Vadodara. District 391760.

Abstract:

INTRODUCTION

Congenital malformations of the female genital tract are defined as deviations from normal anatomy resulting from embryonic maldevelopment of the Müllerian or paramesonephric ducts. It includes malformations that affect the development and morphology of the Fallopian tubes, uterus, vagina and vulva, with or without associated ovarian, urinary, skeletal or other organ malformations

AIMS AND OBJECTIVES

To study the congenital malformations of the female genital tract and its effect on reproduction.

METHODOLOGY

This study was conducted in the department of obstetrics & gynaecology at Dhiraj Hospital, Waghodia, Piparia over a period of 18 months and 100 patients were included in the study,

STATISTICAL METHODS

Data was analysed and appropriate statistical methods like Mean, Median, Mode and chi-square test was employed to analyse data throughout study.

RESULTS AND CONCLUSION

After the work up of the patient and detecting the anomaly, it has been classified and can further guide the patient for the intervention required. From this study we find out the types and incidence of the congenital anomalies and also see its effect on reproduction, evaluate the factors leading to infertility and have explained about the preventive measures for that or treat the cause behind these anomalies as early as possible..

Keywords: Uterine anomalies

Vaginal anomalies

Malformations

1 trimester abortions



Introduction

Congenital anomalies of female genital tract are described as any deviations from normal anatomy as a consequence of embryonic maldevelopment of Müllerian or paramesonephric ducts including malformations affecting development and morphology of Fallopian tubes, uterus, vagina and vulva or associated ovarian, urinary, skeletal or other organ abnormality.

It excludes the abnormalities of sexual determination [involving chromosomal alteration, male histocompatibility (HY) antigen, sex-determining region of the Y chromosome (SRY) and testis-determining factor (TDF) gene or the gonads] and sexual differentiation (by abnormal steroidogenesis or pseudohermaphrodites). Malformations of reproductive tract result from mal-development or developmental arrest at a critical stage of embryonic development but may also result from genetic mutations or environmental insults during the period of organogenesis.

The clinical presentation implies on the anatomical distortions including congenital absence of the vagina to defects in the lateral and vertical fusion of the Müllerian duct system. Symptoms are often seen at or after onset of puberty.

Problems in the development of female reproductive organs may be caused by:

Genetic defects.

Heredity.

Drugs used during pregnancy.

Radiation.

Chemical factors.

Hormonal imbalance.

Diagnosing Mullerian anomalies the malformations of the female genital tract are not very common but they do occur and are often incorrectly identified, inappropriately treated and incorrectly reported. The main reasons for frequent diagnostic delay and/or inappropriate surgery are as follows:

(I) not considering the malformation as a cause of the patient's clinical symptoms

(II) not considering the embryological origin of the different constituent elements of the Genito-urinary tract.

(III) majority of Mullerian duct anomalies go undetected until a patient reaches puberty and presents with amenorrhea of reproductive-aged woman presents with consistent adverse pregnancy outcomes or infertility

Aims & Objectives

AIM

To study the congenital malformations of the female genital tract and its effect on reproduction.

OBJECTIVES

- 1) Classify different types of congenital anomalies
- 2) Compare reproductive outcome in each type.

Materials And Method

PROTOCOL & STUDY PERIOD

After clearance from departmental committee and ethics committee the work will be started. Time scale 1.5 years.

Study design

It is a retrospective observational & comparative study.
We have completed the study in limited time of 1.5 yrs.



Place of study

The study was carried out at Dhiraj General Hospital in Obstetrics & Gynaecology department, Pipariya. The hospital has 1200 beds with a high dependency unit and an emergency department open 24 hour a day. The outpatient department reviews approximately 110 patients per day, 6 days per week.

Source of Data

Cases with congenital anomalies coming to Dhiraj Hospital with complaints and records.

Sample Description

100 patients having anomalies of genital tract will be studied.(selected after taking into consideration the selected criteria)

Sample size decided by the formula: $4pq/L^2$

p-positive character

q-1-p

L-allowable error in p (10% to 20%)

Study time

The study duration will be 1.5 years or until the study completes whichever satier

SELECTION CRITERIA

Inclusion criteria

- 1) Females with problems of infertility due to congenital causes
- 2) Patients of age group 25-45 years with genital tract anomalies.

Exclusion Criteria

Patients with same anomaly not falling in range of 25-45years of age Patients with acquired defects.

Materials/equipment for the study

Not applicable

Methodology

After the approval from the ethical committee and informed consent of participation from the patients, the study was conducted at Dhiraj hospital.

This study was conducted as a retrospective observational study & consisted of patients with congenital genital tract anomalies within inclusion & exclusion criteria as mentioned.

As per the classification of congenital genital tract anomalies, failure to conceive was used as the criteria for selection.

Detailed history & thorough clinical examination of each patient was carried out as per the attached proforma. Then investigations was carried out like usg(abdomen- pelvis). However in this study patient were selected which comprised patients clinically symptomatic and radiologically Once the group is identified it is subjected to further studies as per the topic.



The records of all the details were kept as per the attached proforma, Complete workup for the patient as per the standardized protocols was used & the investigation were decided as per the requirement of the patient, Finances were held by the patient as it was part of the management

1. SELECTION OF PATIENTS (ON BASIS OF CLINICAL HISTORY)
2. INVESTIGATIONS (HSG/USG/MRI)
3. DEPENDING UPON THE ANOMALY THE SUBJECTS WERE GROUPED
4. MATERNAL AND FETAL OUT COME
5. BIOSTATIC ANALYSIS

1. SELECTION OF PATIENTS (ON BASIS OF CLINICAL HISTORY)

Detailed history & thorough clinical examination of each patient was carried out as per the attached proforma. Patients were selected on basis of inclusion criteria.

2. INVESTIGATIONS (HSG/USG)

On basis of Detailed history & thorough clinical examination of each patient were subjected to radiological diagnostic tools which include USG, HSG.

3. DEPENDING UPON THE ANOMALY THE SUBJECTS WERE GROUPED

The patients were then classified into various categories under the American Fertility Society Classification and followed up for treatment and antenatal care.

4. MATERNAL AND FETAL OUT COME

Subjects were followed up and at the end pregnancy outcomes were noted. The following outcome variables in relation to type of anomaly were noted.

A. Maternal outcome

Preterm delivery

➤ malposition

malpresentations

➤ ectopic ruptured pregnancy

➤ recurrent abortions

B. Fetal outcome

➤ Miscarriage

➤ IUD/stillbirth

➤ IUGR

➤ LBW

5. BIOSTATIC ANALYSIS-

➤ Statistical analysis was done using descriptive and inferential statistics. Tests used for analysis were Chi Square Test and T-Test or population test.

➤ The results were analysed by using software and results were tested at 5% level of significance and Graph pad prism 5.0 version.

➤ P value of <0.05 was considered as significant



Results And Observations

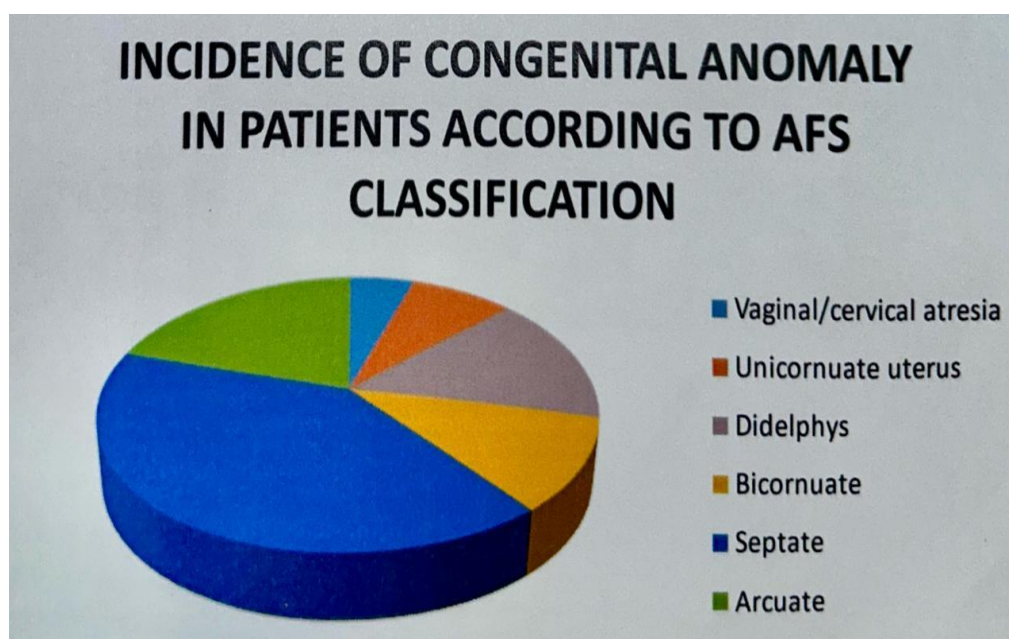
Among 5000 deliveries in Dhiraj Hospital, 100 cases with congenital malformations with pregnancy and other complains were collected from March 2020 to Sep 2021.

Vaginal atresia was seen only in 5% cases,

Septate uterus in 41% cases followed by unicornuate uterus in 8% cases, uterus didelphys in 15% cases and arcuate uterus in 20% cases.

Hence the most commonly anomaly observed was septate uterus (AFS class 5). The least number was with vaginal atresia (AFS class 1).

INCIDENCE OF CONGENITAL ANOMALY IN PATIENTS ACCORDING TO AFS CLASSIFICATION			
Type of anomaly	AFS CLASSIFICATION	NUMBER OF CASES	PERCENTAGE OF CASES
Vaginal/cervical atresia	1	5	5.00%
Unicornuate uterus	2	8	8.00%
Difelphys	3	15	15.00%
Bicornuate	4	11	11.00%
Septate	5	41	41.00%
Arcuate	6	20	20.00%
Total	7	100	100%

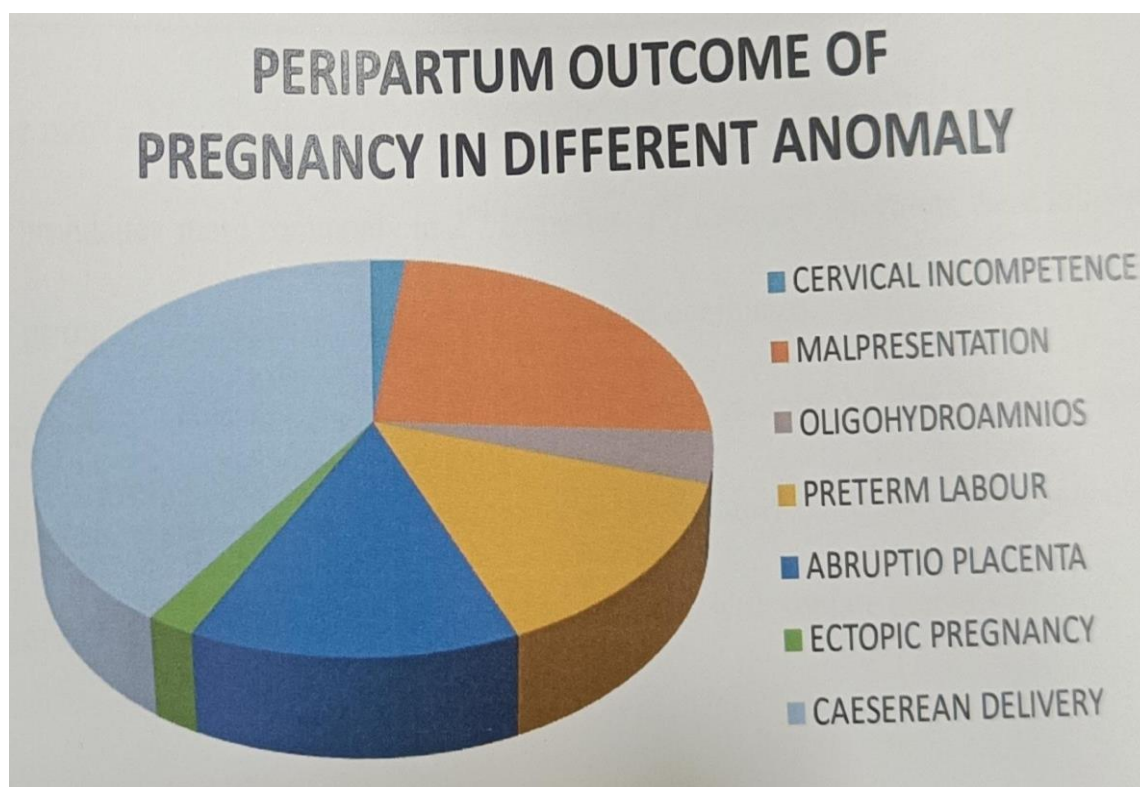


PERIPARTUM OUTCOME OF PREGNANCY IN DIFFERENT ANOMALY



COMPLICATIONS	NUMBER IN TOTAL CASES	PERCENTAGE OF TOTAL CASES
CERVICAL INCOMPETENCE	2	2.00%
MALPRESENTATION	24	24.00%
OLIGOHYDROAMNIOS	4	4.00%
PRETERM LABOUR	13	13.00%
ABRUPTIO PLACENTA	13	13.00%
ECTOPIC PREGNANCY	2	2.00%
CAESERAEN DELIVERY	39	39.00%

VALUES PRESENTED AS MEAN PLUS DISTRIBUTION



Patients with uterine anomalies had significantly higher rates of malpresentations (24%), preterm delivery (13%) and oligohydramnios (24%) followed by caesarean section(39%). in all of the following placental abruption was more common in septate uterus and ectopic pregnancy was observed in arcuate and unicornuate uterus. The most common mode of delivery was caesarean section. Malpresentation was the indication in (24%). Cervical encirclearge was done in 8 cases indicating cervical incompetence.



COMPLAIN OF PATIENT IN DIFFERENT TYPE OF ANOMALY

COMPLAIN OF PATIENT	TYPE OF ANOMAY (AFS CLASSIFICATION)					
	1	2	3	4	5	6
ABDOMINAL PAIN	0	4	0	0	0	1
UTI	0	0	2	1	5	1
NORMAL LABOUR PAIN	0	0	0	0	0	0
HEMATOMETRA	0	0	1	0	4	1
PRIMARY INFERTILITY	5	0	10	1	4	0
PRETERM LABOUR PAIN	0	0	0	0	0	0
1ST TRIMESTER ABORTION	0	1	0	2	3	0
2ND TRIMESTER ABORTION	0	0	0	6	17	1
MedCalc - Chi-Square Value	92.202	P<0.0001				

The most common presenting complain among the various anomalies found was loss of pregnancy more commonly in 2nd trimester. 2nd trimester abortions were followed by primary infertility being the 2nd most common complains.

Abdominal Pain was the presenting complain mainly in unicornuate uterus. Hematometra and urinary tract infection was seen mainly in septate uterus patients.¹

trimester abortion was also mainly found in women with septate uterus.

CHARACTERISTIC OF WOMEN WITH UTERINE ANOMALIES

PATIENT GROUP	NUMBER OF WOMEN	AGE (MEN)	HEIGHT (MEAN)	WEIGHT (Mean)	GRAVIDITY (NO OF PREGNANCIES)	MULTIPARA	MISCARRIAGE> 2	MISCARRIAGE> 1
AFS 1	5	28.60	159.60	60.00	0	0	0	0
AFS 2	8	29.75	159.38	61.25	2	8	0	2



AFS 3	15	31.33	153.73	57.47	1	6	0	0
AFS 4	11	29.45	156.55	64.91	2	10	0	2
AFS 5	41	29.76	155.51	62.29	2	36	2	4
AFS 6	20	29.70	156.50	58.65	3	20	1	3
VALUES PRESENTED AS MEAN PLUS DISTRIBUTION								

The above table represents the characteristics of women taken into the study. AFS Class 1 of anomalies had 5 women with 28.6 years as the mean age and 159.6 as the mean height and 60 kgs as the mean weight.

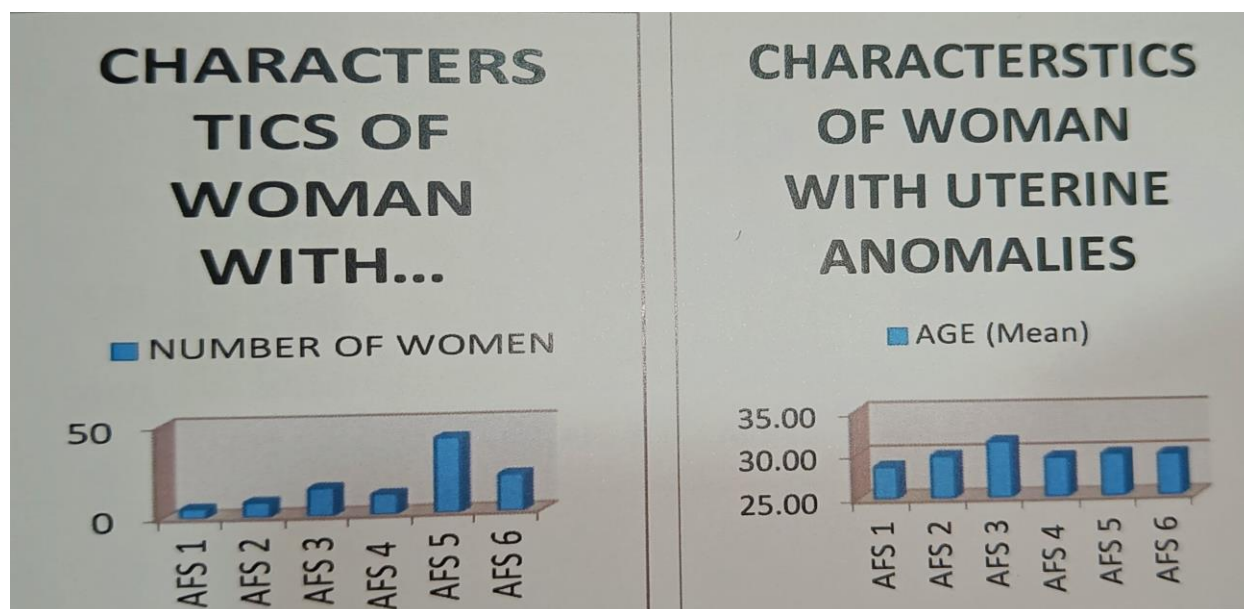
In case of AFS class 2 had 8 women with mean age of 29.75 years, mean height of 156.38 cm and mean weight of 61.25 kgs.

In case of AFS class 3 had 15 women with mean age of 31.33 years, mean height of 153.73 cm and mean weight of 57.47 kgs.

In case of AFS class 4 had 11 women with mean age of 29.45 years, mean height of 156.55 cm and mean weight of 64.91 kgs.

In case of AFS class 5 had 41 women with mean age of 29.76 years, mean height of 155.51 cm and mean weight of 62.29 kgs.

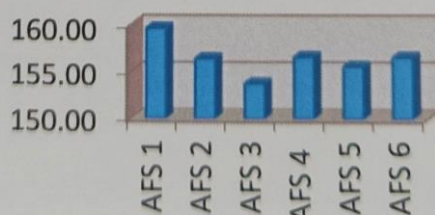
In case of AFS class 6 had 20 women with mean age of 29.70 years, mean height of 156.50 cm and mean weight of 58.65 kgs.





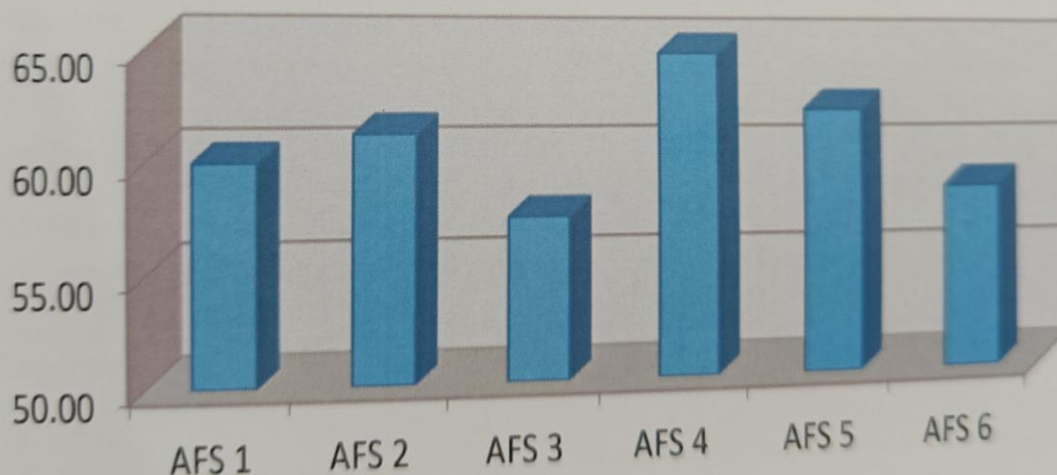
CHARACTERISTICS OF WOMAN WITH UTERINE ANOMALIES

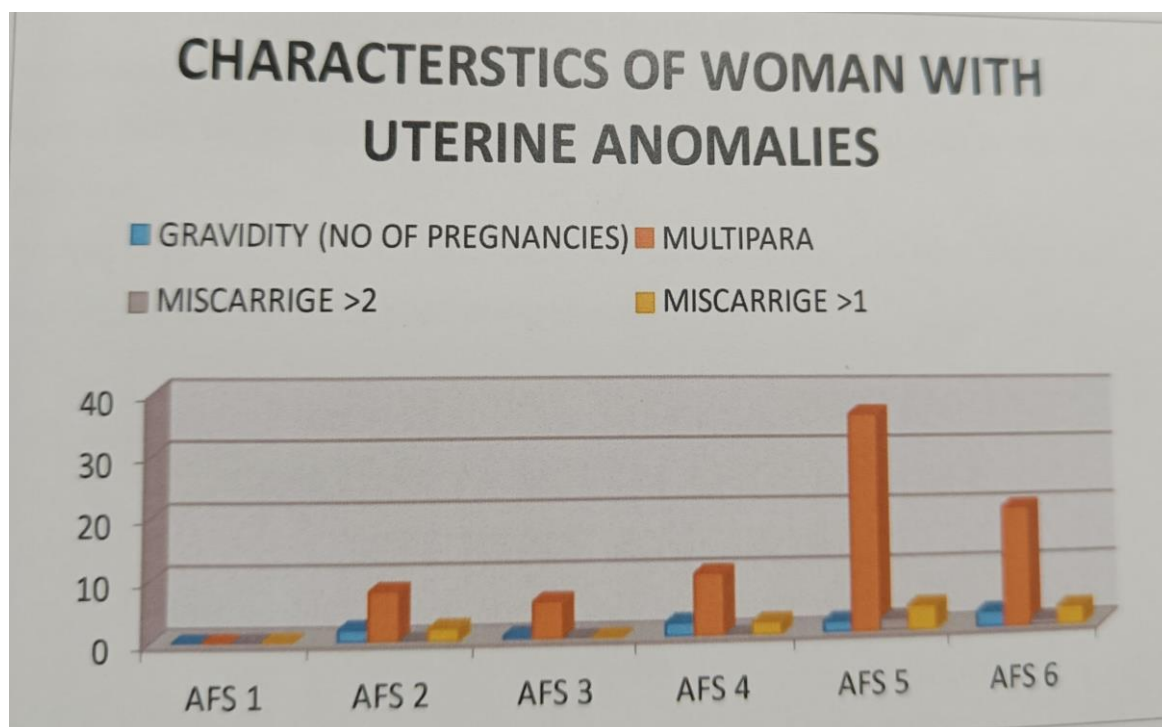
■ HEIGHT (Mean)



CHARACTERISTICS OF WOMAN WITH UTERINE ANOMALIES

■ WEIGHT (Mean)



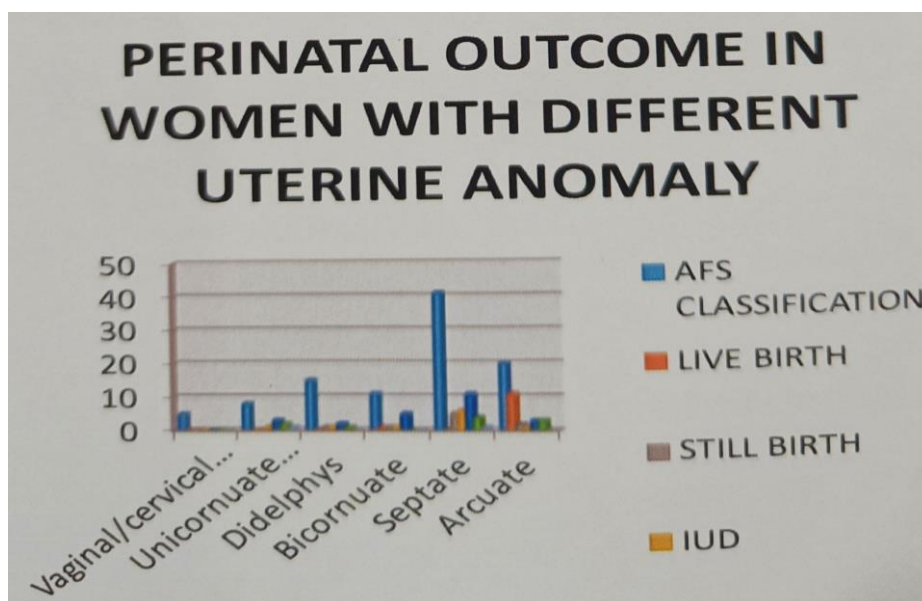


PERINATAL OUTCOME IN WOMEN WITH DIFFERENT UTERINE ANOMALY

TYPE OF ANOMALY	AFS CLASSIFICATION	LIVE BIRTH	STILL BIRTH	IUD	MISCARRIAGE	LBW	ECTOPIC
Vaginal/Cervical atresia	5	0	0	0	0	0	0
Unicornuate uterus	8	0	0	1	3	2	1
Didelphys	15	0	1	1	2	1	0
Bicornuate	11	1	1	1	5	0	0
Septate	41	0	5	6	11	4	1
Arcuate	20	11	2	1	3	3	0

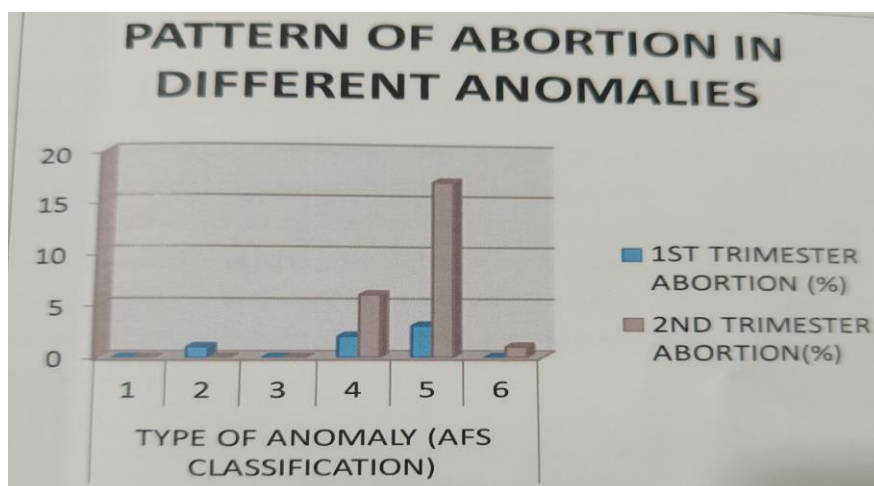
The above table shows the perinatal outcome of women with different anomalies. The best outcomes were seen in case of arcuate uterus. There were 11 live births out of 20 cases. the worst pregnancy outcomes were noticed in septate uterus majority ending up in miscarriages, iud and still birth out of 41 cases there was not a live birth with normal birth weight and Apgar and pregnancy was complicated with ectopic and low birth weight babies.

Ectopic were common with unicornuate and septate uterus. Low birth weight outcome was seen in arcuate and septate uterus mainly.



PATTERN OF ABORTION IN DIFFERENT ANOMALIES

	TYPE OF ANOMALY (AFS CLASSIFICATION)					
	1	2	3	4	5	6
1ST TRIMESTER ABORTION (%)	0	1	0	2	3	0
2ND TRIMESTER ABORTION (%)	0	0	0	6	17	1



MedCalc-Chi-Square Value	4.688	P=0.1962			
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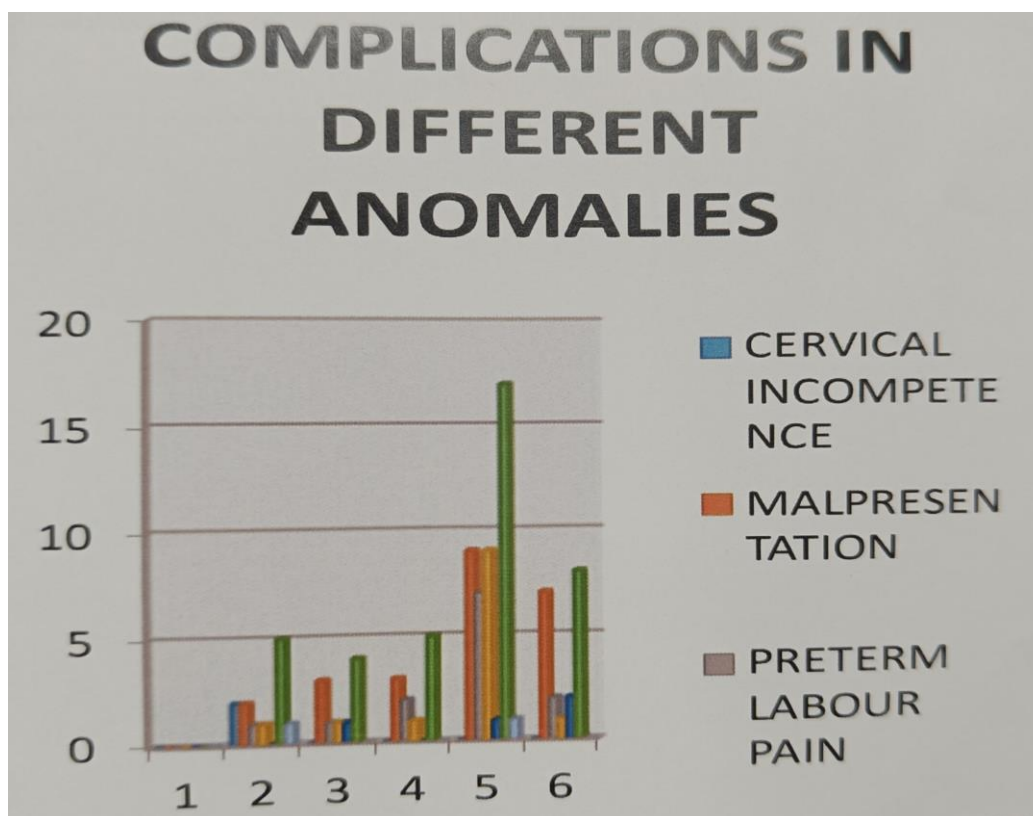


The table shows the different types of abortion seen in the various anomalies. It mainly consisted more of second trimester anomalies. 1st and 2nd trimester abortions were most common in Class 5 anomalies but mainly 2nd trimester abortions were found to be more common.

COMPLICATIONS IN DIFFERENT ANOMALIES

MATERNAL COMPLICATION	TYPE OF ANOMALY (AFS CLASSIFICATION)					
	1	2	3	4	5	6
CERVICAL INCOMPETENCE	0	2	0	0	0	0
MALPRESENTATION	0	2	3	3	9	7
PRETERM LABOUR PAIN	0	1	1	2	7	2
ABRUPTIO PLACENTA	0	1	1	1	9	1
OLIGOHYDROAMNIONS	0	0	1	0	1	2
CAESEREAN DELIVERY	0	5	4	5	17	8
ECTOPIC PREGNANCY	0	1	0	0	1	0

In the study it was observed that cervical incompetence was most common in AFS Class 2 (2%). Malpresentation was present in septate uterus (9%) mainly. Preterm labour was also highest in Septate uterus(7%).abruptio placenta was the most common presentation in class 5 anomalies(9%). Oligohydramnios was seen mainly in AFS class 6(2%).caesarean delivery was mainly the mode of delivery found in 17% cases mainly in class 5 anomalies. Ectopic pregnancy was found in AFS class 2(1%) and AFS class 5(1%).



Discussion

In present study that enrolled 100 patients with congenital anomalies of the female genital tract. The prevalence rate of AFS class 1 was 30%. Thus we observed that AFS class 5 was the most common group of anomalies and in these women. As per literature, the most common Anomaly drained is AFS class 5 which is septate uterus followed by arcuate uterus that is AFS class 6 (Saravelos et al). Another author had a similar result obtained showing septate uterus being the most common findings. Both the studies show similar results with least common anomaly being AFS Class 1 vaginal or cervical atresia. (Cocksedge et al) 2.1.4.5.6 were 5% 15% 11% 41%

The Prevalence rate of AFS class I was 5% in our study but in other studies these cases were rare and accounted less than 2%. (Tin-chiu Li et al), the prevalence rate of our study for AFS class 2 anomalies were 8% which was much higher as compared to another study (Saravelos, et al)

The prevalence rate of AFS class 3 anomalies were 15% in our study which was similar to findings in the other studies. (Braun P, et al) the prevalence rate of AFS class 4 anomalies were 11% which was similar to findings of another author (Yan Zhang, et al).

Some patients are clinically asymptomatic, müllerian duct anomalies are associated with primary infertility, hematometra and urinary tract anomalies. Normal pregnancies can occur in patients with müllerian duct anomalies, but obstetric complications such as spontaneous abortion, stillbirth and preterm birth are frequent (Yan Zhang, et al)

The mean age of patients in each group was evaluated, it was observed that mean age was on higher side across all the groups. This may be because we had enrolled subjects between the age group of 25-35 years. Also, this may be because subjects tend to wait out certain period before they consult with gynaecologist. It was observed that AFS class I anomalies, were found in women of younger age group, mean age being 28.6 years, class 2 anomalies are found in women with age group 29.7 years more commonly class 3 in 31.3 years age group and AFS class 4 in 29.45 years of age group. AFS Class 5 in 29.76 years age group's class 6 in 29.70 mean maternal age group which was similar to another study. (Saravelos, et al)

Some patients are clinically asymptomatic, müllerian duct anomalies are associated with primary infertility, hematometra and urinary tract anomalies.



The most common presenting complain among the various anomalies found was loss of pregnancy more commonly in 2nd trimester. 2nd trimester abortions were followed by primary infertility being the 2nd most common complains.

Abdominal Pain was the presenting complain mainly in unicornuate uterus. Hematometra and urinary tract infection was seen mainly in septate uterus patients. 1 trimester abortion was also mainly found in women with septate uterus. The patients presented with similar complains in other studies. (saravelos,et al)

the primary infertility was mainly the complain of AFS class 3 women. Class 5 also presented with complain of primary infertility though. This was different from other authors. (saravelos,et al), they found primary infertility more common a presentation of class 2 anomalies.

Normal pregnancies can occur in patients with müllerian duct anomalies, but ofertes complications such as spontaneous abortion, stillbirth and protein Hirth are frequent (Yan Zhang, et als Patients with congenital anomalies had significantly higher rates of malpresentation, preterm delivery and caesarean section compared with the normal uterus group. In our study the incidence of malpresentation was 34% which was lesser the other study.(Yan Zhang.et al). Out of all cases of malpresentation, 26% was breech and only 5% were transverse lie malpresentations were most commonly associated with AFS class 5. 2nd mont common was class 6. which had major number of malpresentations

The rate of preterm delivery was 13% which was similar to another author (Tin-chia Li.et al) the rate of caesarean sections were found to be 39% which was much lesser as compared to another study which was 78%. (yan Zhang,et al).

The rate of placental abruption was higher in the AFS class 2 anomalies which was a similar finding in another study. (saravelos,et al) Cervical cerclage was performed in women with risk of cervical incompetence.. Only one of five patients with cervical cerclage had a preterm delivery.

The caesarean sections performed had indications like malpresentation, abruptio placenta, oligohydramnios. the rates of abruption as indications for primary caesarean section were higher in women with a septate uterus and unicornuate uterus compared with other uterine anomalies similar to other studies. (Yan Zhang,et al

The rate of malpresentation was significantly higher in patients with a septate uterus in comparison with patients with other anomalies this were the similar resuts by other this secoding marinerse He as the finding

The rates of elective caesarean section were highest in patients with re and lowest in patients with arcuate uterus. (Yan Zhang et alt

The best outcomes were seen in case of arcuate uterus. There were 11 live birthe of 20 cases the worst pregnancy outcomes were noticed in septate uterus majority ending up in miscarriages, iud and still birth out of 41 cases there was not a live birth with normal birth weight and Apgar and pregnancy was complicated with ectopic and low birth weight babies.

Patients with anomalies higher chances of low and very low birth-weight than those with a have normal uterus The best outcomes were seen in case of arcuate uterus There were 11 live births out of 20 cases the worst pregnancy outcomes were noticed in septate uterus majority ending up in miscarriages(30), iud and still birth(9) out of 41 cases there was not a live birth with normal birth weight and Apgar and pregnancy was complicated with ectopic and low birth weight babies. Similar findings were in seen in studies of the other authors.(co Women with uterine anomalies had significantly higher rates of preterm birth (<28 weeks, 28-32 weeks, and 33-37 weeks) than those with a normal uterus. However. aside from the lower birth-weight in the uterine anomalies, we did not observe a significant difference in perinatal outcome among the groups of patients with different uterine anomalies majority of the anomalies were diagnosed on HSG though there not a very significant difference in utility of both diagnostic tools that is USG and HSG.however other studies involved diagnosing the anomalies by laparoscopy and open Laparotomy (saravelos.et al) Our study has given a new prospect to the reproductive outcome in patients with genital tract anomalies Hopefully this study will allow doctors to better aid patients with known anomalies in reducing their complains and helping them to gain fertility Furthermore,



doctors might be able to better counsel women on making decisions regarding their current and future pregnancies.

Conclusion

In congenital anomalies of female genital tract hence undiagnosed lead to bad This study provides insight into how the automatic self patients to undergo timely diagnostic evaluation and interesting variations of miscarriages and unwanted deaths and stillbirths

The presenting complaints like primary infertility, hematometra and many others seem to be common and should also be taken into account for anomalies of the genital tract easy and unexpensive diagnostics like USG and HSG should not be avoided in such cases. They can help patients undergo physical and mental trauma of repeated pregnancy loss

AFS Class I anomalies can lead to primary infertility and can be easily found by complaints of dyspareunia and per vaginal examination followed by transvaginal USG These patients can be treated by modified McIndoe vaginoplasty and Williams Vaginoplasty and cervical canal dilation can be done by putting artificial ulicom moulds.

AFS Class 2 anomalies constituting unicornuate uterus cases during evaluation for infertility or bad obstetric outcome present as a deviated banana shaped cavity with single fallopian tube. There is increased chance of dysmenorrhoea, infertility and endometriosis. Preterm labour occurs most pregnancies, and live birth rate is on lower side. This can be treated excision of a cavitary rudimentary horn is indicated when identified.

AFS Class 3 anomalies constitute bicornuate uterus in these cases HSG USG often helpful in diagnosing the problem and the reproductive outcomes are good in most cases. if problems like recurrent abortions or preterm labour present the patient can be taken for Strassman's technique of unification can be done abdominally and laparoscopically for uterine rupture Caesarean delivery is indicated after metroplasty due to high risk

AFS Class 4 anomalies constitute uterus didelphys where women are symptomatic and in fact of all the major anomalies it has the best reproductive performance with foetal survival rate to the maximum and minimum rate of spontaneous abortions Pregnancies are located more commonly in the right uterus. This anomaly is usually diagnosed incidentally on USG or HSG or dyspareunia due to the presence of vaginal septum. No surgical intervention is recommended unless repeated late trimester losses.

AFS Class 5 anomalies constitute Septate uterus is associated with a significantly more pregnancy loss rate (88%) and first trimester abortion rate (42%) than bicornuate uterus. Diagnosis is made on HSG and confirmed on sonography and laparoscopy. Metroplasty is the option in patients with poor reproductive outcome or in women with infertility recently with the advent of endoscopy, hysteroscopic septal resection under laparoscopic guidance is the answer.

AFS Class 6 anomalies constitute arcuate uterus. They often have good reproductive outcomes and do not require any surgical interventions.

Hence we see that congenital tract anomalies are often ignored and not taken into consideration when presented with common problems. They should be diagnosed and treated accordingly. Patients can be helped to regain fertility and relieved of the symptoms.

The rate of caesarean section is higher in cases of congenital anomalies and hence the associated complications. The early diagnosis and proper prevention can prevent preterm labour, malpresentations and recurrent miscarriages. Hence perioperative complications can also be avoided.

The primary infertility in such cases is easily treatable provided a good ponderance is given over the problem and surgical intervention is made.

The problem of these women who are unaware of the cause of the symptoms and suffering from repeated loss of conceptus is totally avoidable by simple awareness of the physician and a sharp acumen to diagnose these anomalies



Bibliography

1. Christopoulos P, Fotopoulou G, Gazouli M, et al. Genetic basis for the development of Mullerian abnormalities: a review of current evidence. *Eur J Obstet Gynecol.* 2010;5:7-12.
2. Acie'n P, Acie'n MI. The history of female genital tract malformation classifications and proposal of an updated system. *Hum Reprod Update.* 2011;17(5):693-705. doi: 10.1093/humupd/dmr021.
3. Vallerie A, Breech L. Update in Mullerian anomalies: diagnosis, management, and outcomes. *Curr Opin Obstet Gynecol.* 2010;22:381-387. doi: 10.1097/ GCO.0b013 e32833e4a4a.
4. Saravelos SH, Cocksedge KA, Li TC. Prevalence and diagnosis of congenital uterine anomalies in women with reproductive failure: a critical appraisal. *Hum Reprod Update.* 2008;14(5):415-429. doi: 10.1093/humupd/ dmn018.
5. Chan YY, Jayaprakasan K, Zamora J, et al. The prevalence of congenital uterine anomalies in unselected and high-risk populations: a systematic review. *Hum Reprod Update.* 2011;17:761-771. doi: 10.1093/humupd/ dmr028.
6. Grimbizis GF, Gordts G, Di Spiezio SA, et al. The ESHRE/ESGE consensus on the classification of female genital tract congenital malformations. *Hum Reprod.* 2013;28:2032-2044. doi: 10.1093/humrep/det098.
7. Grimbizis GF, Gordts S, Di Spiezio Sardo A, et al. The ESHRE-ESGE consensus on the classification of female genital tract congenital anomalies. *Gynecol Surg.* 2013;10:199-212. doi: 10.1007/s10397-013-0800-x.
8. Breech LL, Laufer MR. Mullerian anomalies. *Obetet Clyneoil Che North Am* 2009;36:47-68. doi: 10.1016/ opc 2009 162.002 8.
9. Bocca S, Abuhamad A. Use of 3-dimensional sonography to assess sterine anomalies. *J Ultrasound Med.* 2013;32:1-6. doi: 10.7863/jim. 2013.12.1.1. 0.
10. Berger A, Batzer F, Lev-Toaff A, et al. Diagnostic imaging modalities for mullerian anomalies: the case for a new gold standard. *3 Minem invasive Gynecol.* 2014;21:335-345. doi: 10.1016/j.jmig 2013.10.014.
11. Ercan CM, Karasahin KE, Alanbay I, et al. Imperforate hymen causing hematocolpos and acute urinary retention in an adolescent girl. *Taiwan J Obstet Gynecol.* 2011;50(1):118-120. doi: 10.1016/j.tjog 2011.01.005.
12. Anselm OO, Ezegwui UH. Imperforate hymen presenting as acute urinary retention in a 14-year old Nigerian girl. *J Surg Tech Case Rep.* 2010;2:84-86 doi: 10.4103/2006-8808.73623.
13. van Bijsterveldt C, Willemsen W. Treatment of patients with a congenital transversal vaginal septum or a partial aplasia of the vagina. The vaginal pull- through versus the push-through technique. *JPAG.* 2009;22:157-161.
14. Acien P, Acien M, Sanchez-Ferrer ML. Mullerian anomalies "without a classification: from the didelphys-unicollis uterus to the bicervical uterus with or without septate vagina. *Fertil Steril.* 2009;91:2369-2375. doi: 10.1016/j.fertnstert. 2008.01.079.
15. Smith NA, Laufer MR. Obstructed hemivagina and ipsilateral renal anomaly (OHVIRA) syndrome: management and follow-up. *Fertil Steril.* 2007;87:918- 922. doi: 10.1016/j.fertnstert.2006.11.015.
16. Quint Ell, Mearthy JD, Smith YIR. Vaginal surgery for cotigenital anomalies. *Clin Obstet Gynecol.* 2010;53(11):115-124 del 10.1007 GRE ob013e3181 cd4128.
17. Ismail-Pratt IS, Bikoo M, Liao LM, et al. Normalization of the vagina by dilator treatment alone in complete androgen insensitivity syndrome and Mayer-Rokitansky-Kuster-Hauser Syndrome. *Hum Reprod* 2007;22:2020- 2024. doi: 10.1093/humrep/dem074.
18. Giannesi A, Marchiole P, Benchaib M, et al. Sexuality after laparoscopic Davydov in patients affected by congenital complete vaginal agenesis associated with uterine agenesis or hypoplasia. *Hum Reprod.* 2005;10:2954- 2957. doi: 10.1093/humrep/dei 152.
19. Brucker SY, Gegusch M, Zubke W, et al. Neovagina creation in vaginal agenesis: development of a new laparoscopic Vecchietti-based procedure and optimized instruments in a prospective comparative interventional study in 101 patients. *Fertil Steril.* 2008;90:1940-1952. doi: 10.1016/j.fertnstert. 2007.08.070. [PubMed] [CrossRef] [Google Scholar]
20. Darai E, Ballester M, Bazot M, et al. Laparoscopic-assisted uterovaginal anastomosis for uterine cervix atresia with partial vaginal aplasia. *J Minim Invasive Gynecol.* 2009;16:92-94. doi: 10.1016/j.jmig.2008.09.617.



21. Nguyen DH, Lee CL, Wu KY, et al. A novel approach to cervical reconstruction using vaginal mucosa-lined polytetrafluoroethylene graft in congenital agenesis of the cervix. *Fertil Steril*. 2011;95:2433.e5-2433.e8. doi: 10.1016/j.fertnstert.2011.02.007.
22. Kriplani A. Kachhawa G. Awasthi D, et al. Laparoscopic-assisted uterovaginal anastomosis in congenital atresia of uterine cervix: follow-up study. *J Minim Invasive Gynecol*. 2012;19(4):477-484. doi: 10.1016/j.jmig.2012.03.017.
23. Venetis CA. Papadopoulos SP, Campo R, et al. Clinical implications of congenital uterine anomalies: a meta-analysis of comparative studies. *Reprod BioMed Online*. 2014;29:665-683. doi: 10.1016/j.rbmo.2014.09.006. Hua M. Odibo A, Longman R, et al. Congenital uterine anomalies and adverse 24. pregnancy outcomes. *Am J Obstet Gynecol*. 2011;204:S334-S335. doi: 10.1016/j.ajog.2010.10.947.
25. Pang LH, Li MJ. Li M, et al. Not every subseptate uterus requires surgical correction to reduce poor reproductive outcome. *Int J Gynecol Obstet*. 2011;115:260-263. doi: 10.1016/j.ijgo.2011.07.030.