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OBSTRUCTIVE MÜLLERIAN ANOMALIES: DIAGNOSIS AND SURGICAL INTERVENTIONS

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ABSTRACT
Mullerian duct abnormalities are rare in the general population; however females with these abnormalities face many gynecological issues. Until puberty, when symptoms like dysmenorrhea appear, these abnormalities frequently go unnoticed. In order to relieve blockage and avoid problems, obstructive Mullerian abnormalities can be treated by surgically excising the non-communicating rudimentary horn, along with other approaches. Depending on the complexity of the anatomy and the surgeon's preference, laparoscopic or laparotomic techniques may be used. In certain situations, reconstructive treatments could be taken into consideration in order to maintain fertility. Hormonal control for related symptoms may also employ to postpone surgery. This article highlights clinical perspective of obstructive mullerian anomalies along with their diagnosis and surgical interventions.

KEYWORDS: Gynecological, Mullerian Anomalies, Obstructive, Reproductive, Surgery.

INTRODUCTION

A wide range of congenital defects caused by inadequate development, impaired vertical or lateral fusion, or failure of resorption of the Mullerian ducts are together referred to as Mullerian duct anomalies. These abnormalities might result from acquired causes, developmental stoppage or genetic mutations. Mullerian duct anomalies are typically detected in people with outwardly normal female genitalia and normal ovarian function. Some abnormalities are discovered by accident and have no symptoms. Obstructive abnormalities, on the other hand, disrupt regular menstrual flow and can result in issues such pelvic adhesions, endometriosis, retrograde menstruation, hematometra and hematocolpos, etc. The major causes of Mullerian duct anomalies are presented in **Table 1.**[1-4]

Table 1: Major causes of Mullerian duct anomalies.

Cause	Description / Examples
Embryological Defects	Failure of formation Failure of fusion Failure of resorption
Genetic Factors	Mutations in developmental genes Familial occurrence
Environmental Factors	Utero exposure to teratogens
Syndromic Associations	MRKH syndrome

Primary amenorrhea, severe dysmenorrhea, dyspareunia are common clinical symptoms. A high level of clinical suspicion is necessary for a timely diagnosis, and a comprehensive evaluation is necessary prior to starting treatment. This condition can be present alone or in conjunction with other congenital abnormalities. Menstrual blood buildup in the non-communicating horn can result in adnexal torsion, acute or persistent pelvic

pain, or, in certain situations, an ectopic pregnancy that could rupture and produce hemodynamic instability that could be fata.[4-6] There are several varieties of Mullerian anomalies (**Figure 1**); the most prevalent ones are septate and bicornuate uteri. The unicornuate uterus is a less frequent but noteworthy variation that results from one Mullerian duct not developing fully while the other grows correctly. Although some people remain asymptomatic during adolescence and may initially present with major obstetric issues such as ruptured ectopic pregnancies. The patient's clinical background is very important in these instances; clinicians must thus keep a close eye for correct diagnosis. Long-term surgical surveillance is necessary, with gynecologic examination being given particular consideration for female patients at the onset of puberty.[5-7]

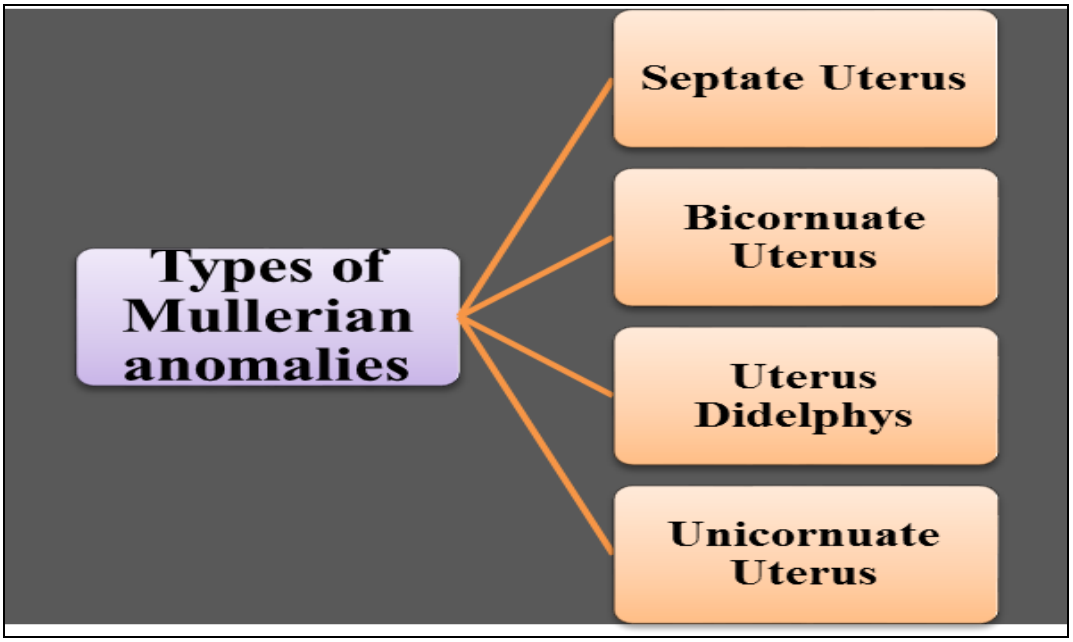

Figure 1: Various types of Mullerian anomalies.

Diagnostic Approaches

Ultrasound is typically insufficient for a thorough evaluation, even if it may occasionally identify significant Mullerian abnormalities at birth. Therefore, in order to detect and address any potential obstructive abnormalities, a comprehensive evaluation of the internal reproductive architecture should be carried out prior to menarche. Additionally, when doing procedures that are previously recommended before to puberty, like colostomy reversal, it is necessary to assess the internal gynecologic anatomy.

Pelvic imaging, ideally using ultrasound or MRI, should be carried out as soon as breast growth starts in order to identify any new obstructive problems. Since ectopic pregnancies in a primitive uterus can result in rupture and potentially fatal hemorrhage, early detection and treatment are essential, particularly before reproductive age. This instance highlights the fact that patients with unilateral Mullerian blockage can nevertheless experience normal menstruation, which could postpone diagnosis. Developing method for evaluating cervical and vaginal anatomy in patients for whom speculum examination is impractical is sonovaginocervicography.[6-8]

Some important diagnostic approaches are as follows

- ✓ ***2D/3D ultrasound:*** Non-invasive and perfect for routine screening. Particularly helpful for evaluating uterine symmetry and internal features, 3D ultrasound and sonohysterography allow for a detailed coronal reconstruction of the uterus.
- ✓ ***MRI***: Because of its high-resolution multi-planar imaging capabilities, it is the preferred method for assessing complicated anomalies. Better visibility of the surrounding pelvic organs and uterine structure is possible with MRI, which is operator-independent in contrast to ultrasound.
- ✓ ***Laparoscopy and hysteroscopy:*** Once thought to be the gold standard, these procedures are now mostly saved for therapeutic procedures or situations in which non-invasive imaging cannot provide a definitive answer.
- ✓ ***3D SonohysteroAVC:*** Assists in pre and post-operative evaluation by providing automated volume calculation and cavity morphological assessment.

Therapeutic Approaches

Hormonal suppression is one of the approach in which temporarily suppression of menstruation, by progestins, or GnRH agonists might reduce the buildup of menstrual blood in blocked structures and provide symptom relief. This strategy is particularly useful for postponing surgery until the patient is old enough to take part in decisions about their long-term care.

Surgical and interventional care is needed in acute situations; percutaneous drainage can be helpful in

relieving hematometra or hematocolpos, particularly when inflammation or uncertain anatomy is present. Surgical excision is suggested to avoid recurrence and major consequences like ectopic pregnancy or persistent pelvic pain, obstructing structures must frequently be removed.[7-9]

Hysteroscopic septum incision suggested as minimally invasive surgery, which can frequently be done in an office setting or on the same day, greatly shortens recovery times and replaces conventional metroplasty techniques.

Laparoscopic/Robotic Strassman Metroplasty recommended for treating a bicornuate uterus, this procedure offers superior results with a faster recovery time than open surgery.

One new option for women with uterine agenesis that may help them become fertile in the future is robotic-assisted uterine transplantation. Minimally invasive robotic surgery is increasingly being used to retrieve donor uteruses.

Conservative options like drainage or hormone suppression can be employed until the patient is older and more knowledgeable in situations where definitive surgery may damage reproductive potential.[8-10]

CONCLUSION

As per the literature it is evident that developmental, genetic, or environmental variables that impact duct formation, fusion, or resorption can lead to Mullerian duct abnormalities. Menstrual or reproductive issues are apparent in some individuals, while others are asymptomatic. Preventing long-term consequences and maintaining reproductive potential require early diagnosis using suitable imaging and prompt intervention, which can include conservative or surgical methods. With improvements in imaging and minimally invasive procedures, the treatment of Mullerian anomalies has changed dramatically. It is crucial to use a customized multidisciplinary approach that includes early screening and precise diagnosis. In such types of complicated conditions physician can accomplish both discomfort relief and fertility preservation by combining hormonal, interventional and surgical therapy.

REFERENCES

1. Miglani U, Laul P, Kadam VK, Miglani S. Obstructive mullerian anamolies: a case series. Int J Reprod Contracept Obstet Gynecol, 2019; 8: 2954-8.
2. Friedman MA, Aguilar L, Heyward Q, et al. Screening for Mullerian anomalies in patients with unilateral renal agenesis: Leveraging early detection to prevent complications. J Pediatr Urol, 2018; 14(2): 144–9.
3. Hall R, Fleming S, Gysler M, et al. The genital tract in female children with imperforate anus. Am J Obstet Gynecol, 1985; 151(2): 169–71.
4. Li S, Qayyum A, Coakley FV., et al. Association of renal agenesis and mullerian duct anomalies. J Comput Assist Tomogr, 2000; 24(6): 829–34.
5. Pellerito JS, Mccarthy SM, Doyle MB, et al. Diagnosis of Uterine Anomalies: Relative Accuracy of MR Imaging, Endovaginal Sonography, and Hysterosalpingography. Radiology 1992; 183(3): 795–800.
6. Ince E, Oguzkurt P, Ezer SS, et al. Approaches to female congenital genital tract anomalies and complications. Int Surg, 2017; 102(7–8): 367–76.
7. Creighton SM, Hall Craggs MA. Correlation or confusion: The need for accurate terminology when comparing magnetic resonance imaging and clinical assessment of congenital vaginal anamolies. J Paediatr Urol, 2012; 8(2): 177-80. 6.
8. Reichman D, Laufer MR, Robinson BK. Pregnancy outcomes in unicornuate uteri: a review. Fertil Steril, 2009; 91(5): 1886–94.
9. Amesse LS, Pfaff-Amesse T. Congenital anomalies of the reproductive tract. Falcone T, Hurd WW, eds. Clinical Reproductive Medicine and Surgery. 1st ed. New York: Elsevier, 2007; 171. 21(2): 235-9.
10. Mandava A, Prabhakar RR, Smitha S. OHVIRA syndrome (obstructed hemivagina and ipsilateral renal anomaly) with uterus didelphys, an unusual presentation. J Ped Adolesc Gynecol, 2012; 25(2): e23-5.