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Case Report

Delayed Presentation of Herlyn-Werner-Wunderlich Syndrome; A Rare Congenital Anomaly: A Case Report and literature Review

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Abstract

Herlyn-Werner-Wunderlich syndrome (HWWs) is a rare müllerian abnormality resulting in varying presentation, especially after puberty. A baseline pelvic ultrasound scan can help in diagnosis. The quality of life for these patients can be improved by timely and adequate surgical care., who otherwise may suffer from prolonged ongoing symptoms and complications in the future due to these anatomical abnormalities.

Background: Herlyn-Werner-Wunderlich Syndrome (HWWs) is a rare congenital condition involving uterus didelphys, obstructed hemi-vagina, and ipsilateral renal agenesis due to abnormal development of ducts. Diagnosing Müllerian anomalies can be challenging due to varying symptoms. The case of delayed HWW s presentation in a patient is discussed, emphasizing the need for early referral to specialized care.

Case: A 25-year-old woman with a history of recurrent UTIs as well as a single right kidney was diagnosed with Herlyn-Werner-Wunderlich Syndrome (HWWs), a rare condition involving obstructed hemi-vagina, uterus didelphys and ipsilateral renal agenesis. Surgical intervention successfully was a suitable treatment for this condition, and the patient was referred to a urologist for further urinary symptoms management.

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Conclusion: Herlyn-Werner-Wunderlich syndrome diagnosis is challenging, but early detection with pelvic ultrasound can aid in diagnosis; treatment involves resecting the hemivaginal septum.

Keywords: Hemivaginal septum; Müllerian anomalies; Hematometra.

Abbreviations: HWWs: Herlyn Werner Wunderlich syndrome; OHVIRA: Obstructed hemi-vagina and ipsilateral renal anomaly; ASRM: American Society for Reproductive Medicine.

Teaching points:

1. Patients with urinary tract abnormality should be investigated for Müllerian abnormality and vice versa.

2. Patients presenting with persistent symptoms like lower abdominal pain, vaginal pressure or vaginal discharge needs early investigation.

3. Gynaecologists should be aware of variations in the classification of Müllerian abnormalities and think outside the box that even with normal periods there can be partial obstruction of the reproductive tract.

Introduction

Herlyn-Werner-Wunderlich Syndrome (HWWs) is a very unusual congenital abnormality of the urogenital tract, that contains a triad of uterus didelphys, blocked hemi-vagina, and ipsilateral renal agenesis, which is produced by the anomalous development of Müllerian and Wolffian ducts.

It is also known as obstructed hemi-vagina and ipsilateral renal anomaly (OHVIRA). HWWs' precise aetiology and pathophysiology remain a mystery. Müllerian anomalies are rare and often present during adolescence. There is no exact age to diagnose this anomaly as the presentation of patients varies from age to symptom [1].

The numerous variations of Müllerian anomalies represent a continuum, and many are not easily classified. Congenital Müllerian anomalies can be very challenging to diagnose early for many gynaecologists and general practitioners as many patients present with lower abdominal pain, dysmenorrhoea, and urinary symptoms which can be easily confused with other causes as well [2].

In addition, there is a lack of understanding of the numerous variations seen with the Müllerian anomalies (American Society for Reproductive Medicine classification). It may take months or even years to accurately diagnose the problem and perform the necessary surgery.

It is advised for these patients to be referred as soon as possible to a tertiary facility for pediatric and adolescent gynecological treatment because a delay in diagnosis may increase the risk of problems including endometriosis and infertility [3].

According to the American Society for Reproductive Medicine (ASRM) classification 2021, The category IV uterus didelphys is distinguished by having one or two services, two widely separated hemi-uteri that are joined at the level of the cervix or lower uterine segment, and either a fully developed or partially developed vaginal septum [4,5]. In this study, the author reported a case of delayed presentation of HWWs in an adult

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woman and discuss variations of its clinical symptoms with management.

Case presentation

A 25-year-old nulliparous female complained of persistent lower abdomen pain when the patient arrived at the gynecological emergency room, mucopurulent vaginal discharge, and feeling of pressure in the vagina for 3 weeks.

Initially, the pain started a few months ago as a dull ache, occurring off and on followed by intermittent mucopurulent vaginal discharge, for which initially the patient had been prescribed antibiotics and painkillers. When the patient was 14 years old, the patient experienced menarche. Following menarche, the patient had consistent, mildly heavy menstrual cycles every 28 days that lasted for 6 days.

The patient's periods have always been very regular with no associated history of dysmenorrhea, menorrhagia, or intermenstrual bleeding. The patient was using combined hormonal contraceptive pills since the age of 16 years. The patient always found sexual intercourse slightly uncomfortable but never had any complaints of dyspareunia or post-coital bleeding.

The patient has been diagnosed with a single right kidney in utero, confirmed 2 months after birth. The patient had a history of recurrent urinary tract infections since adolescence. The patient reported an increased frequency of these UTIs since the female became sexually active. And also has a history of intermittent urinary incontinence for the last 10 years. The patient's past medical, surgical, and family history was unremarkable. The general physical examination was unremarkable. The patient had typical secondary sexual features for the age. The external genitalia appeared to be normal. Speculum examination demonstrated smooth-looking vaginal mucosa, a mild bulge in the left vaginal wall which was tender to touch, and the cervix was pushed towards the right side. A bimanual examination was not performed due to pain.

Two corpus uteri were seen on transvaginal ultrasound in the pelvis. The uterine corpus of the right had its own cervix. Hematometra was found in the left uterine corpus, however it was challenging to determine how the obstruction in the distal area of the vagina related to the left uterine cervix. Both ovaries were visualised on the scan. Magnetic resonance imaging (MRI) revealed a duplication of the uterine bodies, (Completely separated and widely splayed), two endometrial cavities, two separate endocervical cavities.

The left endocervical canal extends into the vagina to the introitus level and contains fluid and dilated left tubal structure which connects to fluid collection in the vagina. The scan also indicates a small remnant left ureter without dilatation that can be seen joining the left side of the proximal part of the vagina. These findings suggest a variation case of Herlyn-Werner-Wunderlich syndrome. Diagnosis of possible HWWs was made on the MRI scan. A Computed Tomography (CT) scan with contrast revealed an absent left kidney (this was diagnosed in utero and CT scan done during investigating the symptoms had confirmed it). The ureter and anatomy of the right kidney were both normal. Surgical

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procedure started with diagnostic laparoscopy that showed uterus didelphys with normal bilateral fallopian tubes and ovaries. Ureter was only identified on the right side. Although the MRI showed an ectopic left ureter, ureter could not be traced during the laparoscopic examination.

A small amount of endometriosis was noted in the pouch of Douglas. Examination under anesthesia (EUA) demonstrated a normal vulva, vagina with a right-sided normal-looking cervix and left-sided hemivagina with a bulging transverse vaginal septum. EUA was followed by diagnostic hysteroscopy which demonstrated a normal-looking right-sided cervix, endocervical canal, and endometrial cavity with single right Ostia. The hemivaginal septum was incised and mucopyohaematocolpos was drained. The vaginal septum was completely excised without any complications. After resecting the septum, the thin dilated cervical canal was noticed above the septum. Diagnostic hysteroscopy of the left cervical canal was performed that showed a normal left endometrial cavity and left-sided Ostia.

The postoperative recovery was uneventful. The patient has been referred to a urologist in tertiary center for further management of the urinary complaints.

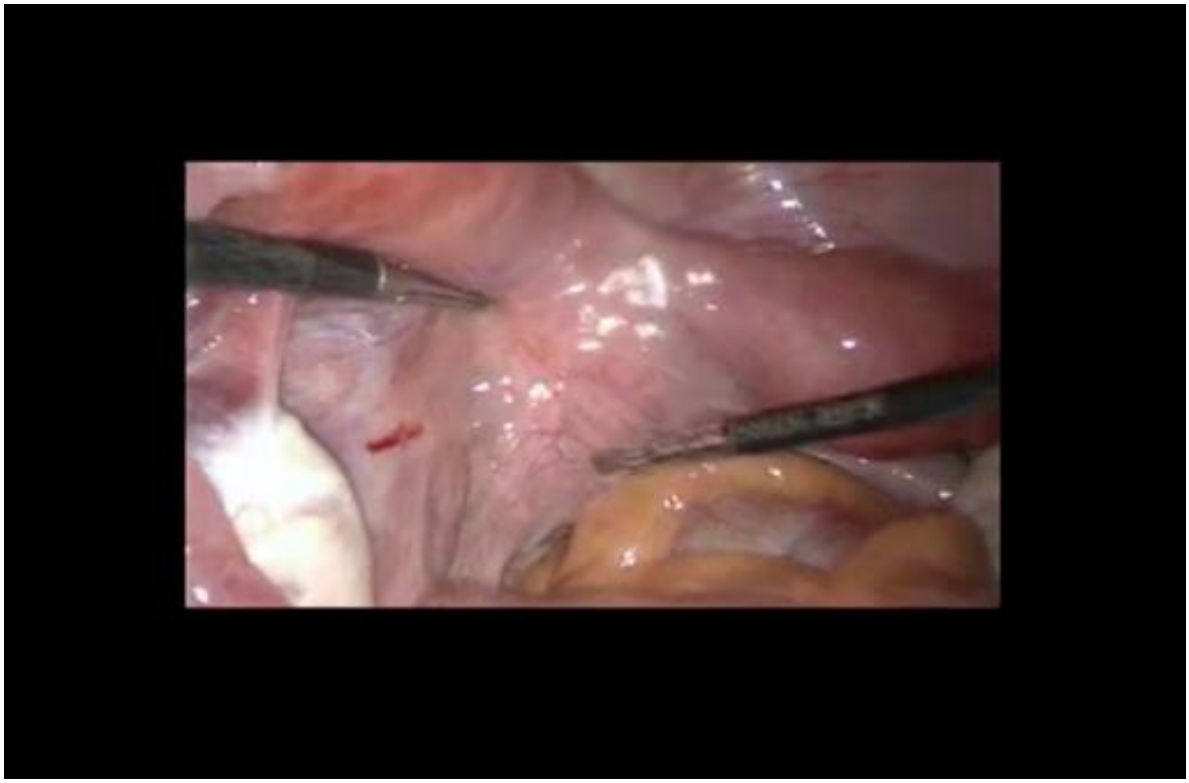

Figure 1: Bulge behind the uterus on the left side representing hematocolpos due to left vaginal septum which was resected and drained subsequently.

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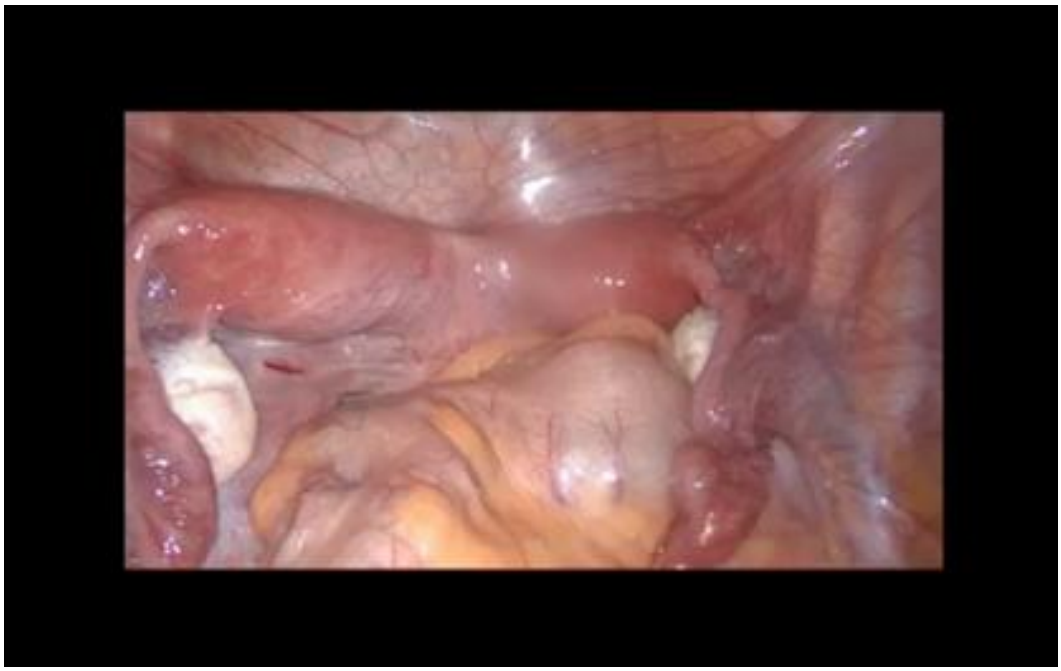

Figure 2: Two separate uterine bodies with respective normal fallopian tubes and ovaries on each side.

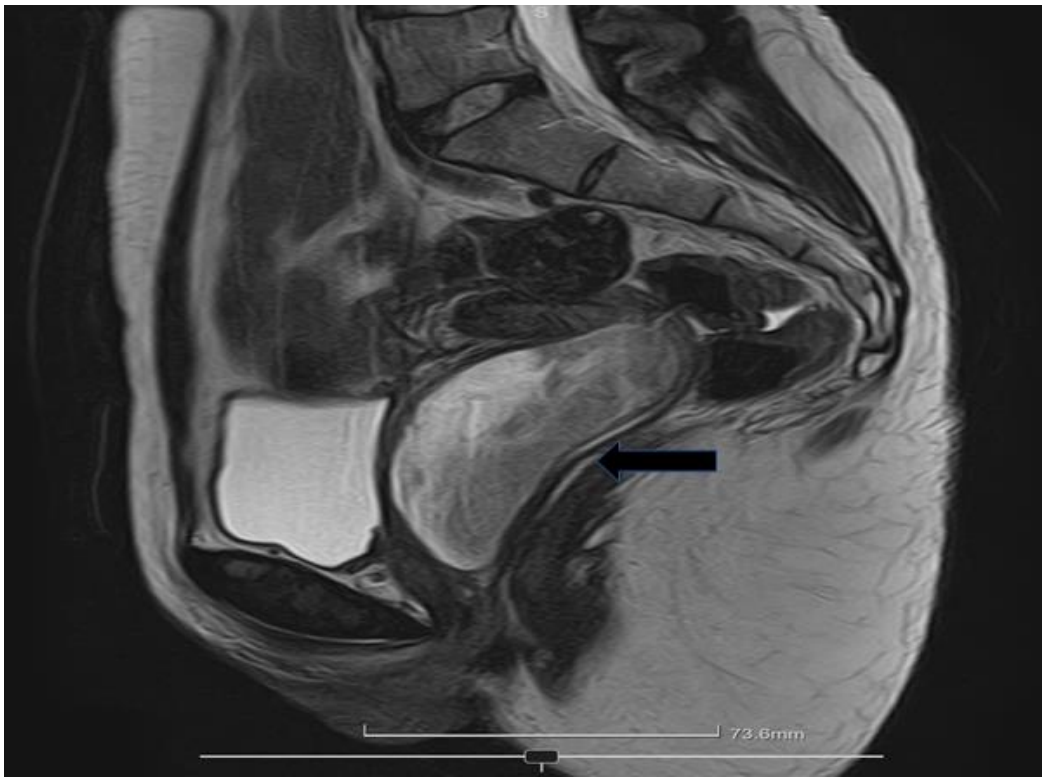

Figure 3: Sagittal T2WI shows dilated fluid filled vaginal canal (arrow) with fluid-fluid level suggestive of blood products of different ages. Appearances are consistent with haematocolpos.

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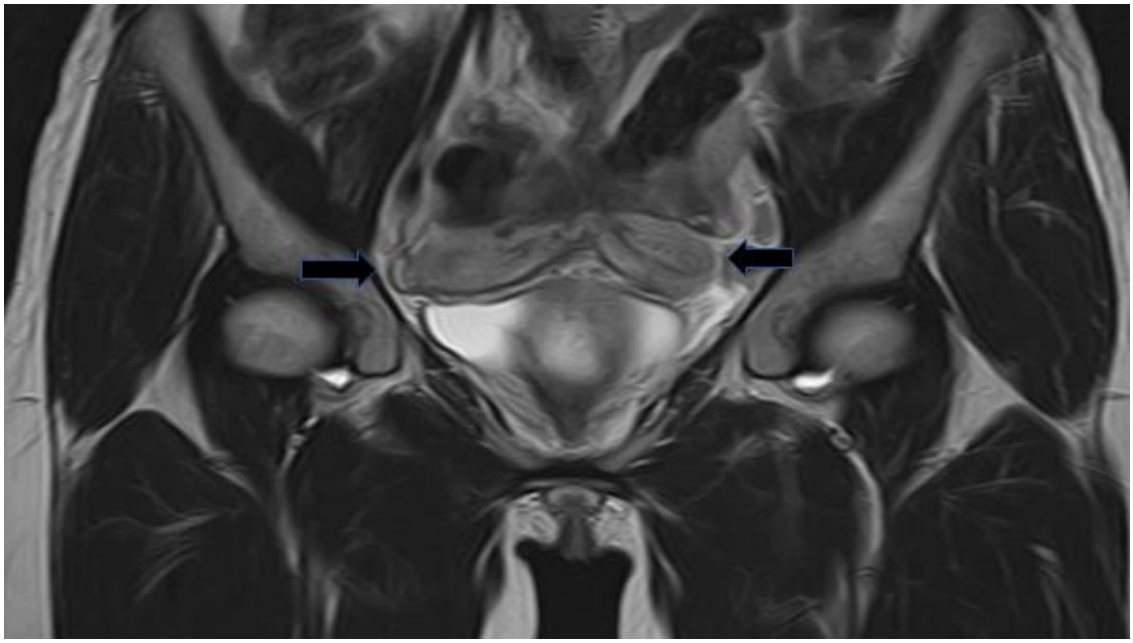

Figure 4: Coronal T2WI of the same patient with two uterus and cervical canal (thick arrows), with distended vaginal canal having fluid-fluid levels (thin arrow). Imaging suggestive of uterus didelphys with haematocolpos.

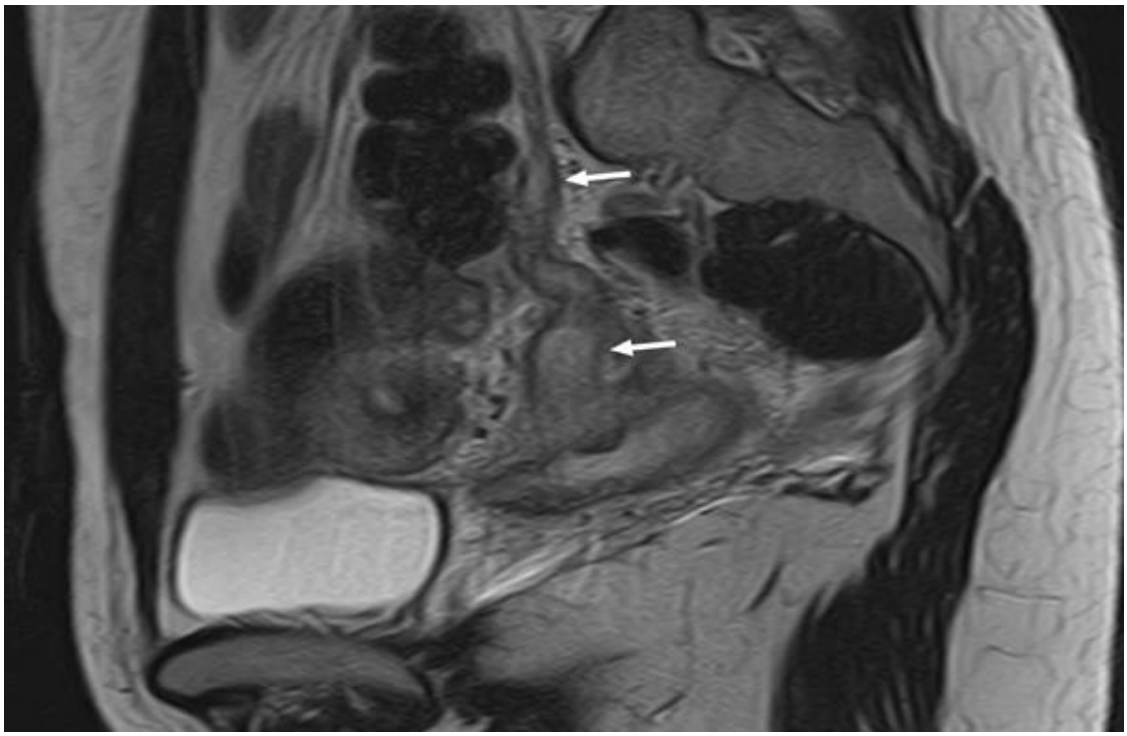

Figure 5: Sagittal T2WI shows a left ectopic, vaginal insertion hydroureter with blood products. The ureter is ending within the obstructed haematocolpos, causing reflux and dilatation of the left ureter.

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Discussion

Herlyn-Werner-Wundelich Syndrome (i.e., renal agenesis and an ipsilateral blind hemivagina) was initially described in 1971 by Herlyn and Werner.

In 1976, Wunderlich described an association of right renal aplasia with a bicornuate uterus and simple vagina in the presence of an isolated hematocervix. Its estimated incidence is 0.1%–3.8%. The most prevalent obstructive uterine abnormality is HWWs [6,7].

Embryologically the Müllerian (paramesonephric) system develops separate from the gonads, but in close association with, and proximity to the Wolffian (mesonephric) system. Consequently, developmental anomalies are seen in the two systems concurrently frequently. The exact pathogenesis is not fully understood.

Unilateral Müllerian duct anomaly is associated with ipsilateral renal anomaly mainly renal agenesis. Failure of fusion of the Müllerian duct at around 6 to 12 weeks of gestation can lead to a spectrum of Müllerian duct anomaly. Uterus didelphys comprises between 5% and 11% of all Müllerian duct anomalies [2]. Based on an examination of patients with HWWs at Peking Union Medical College Hospital, Zhu et al. 2015, suggested a thorough classification [6]. The classification is based on connectivity between the uterine chambers and whether there is a complete or imperfect septum between the vaginas. According to the proposed taxonomy, four categories were found.

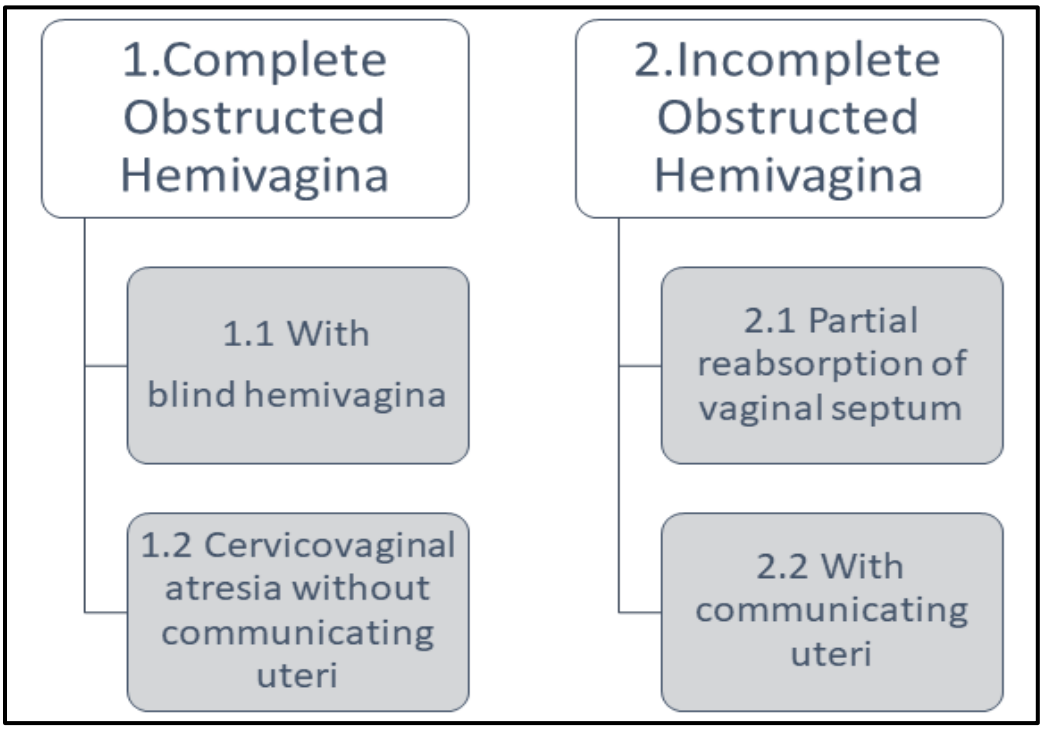

Figure 6: Classification of Herlyn-Werner-Wunderlich Syndrome on the basis of communication between two uteri and hemivagina [6].

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1.1: In this subtype, the uterus behind the septum is entirely separate from the uterus on the opposite side. It can present with hematocolpos. hematometra, hematosalpinx as well as bleeding in peri-adnexal and peritoneal space. The onset of symptoms could be from a few weeks to months after menarche.

1.2: In this subtype, the cervix behind the septum is maldeveloped or atretic. The menstrual blood cannot outflow through this atretic cervix. Clinical features are the same as subtype 1.1.

2.1: This subtype includes a minor communication within two vaginas. The menstrual blood will outflow through this small gap, but the free drainage is impeded. The onset of symptoms in these patients could be delayed till the late 20s. The patient can present with mucopurulent or bloody vaginal discharge and can often have ascending genitourinary infections. Such patients could be easily confused with acute PID, endometriosis, recurrent UTI, or urosepsis.

2.2: This subtype is characterized by a modest communication between duplicated cervices, which allows the uterine follicle behind the septum to readily empty its menstrual blood but still impairs it.

According to this classification, the patient can fall into category 2.1, which explains the delayed onset of symptoms including lower abdominal pain, and mucopurulent vaginal discharge, however, another argument for the delayed presentation could be repeated use of antibiotics since last few years due to recurrent UTIs that has temporarily masked the condition. A detailed study by Milan University depicted that right-sided anomaly is two-fold more prevalent than left-sided anomaly (91/ 138 cases) [7].

In this case, the irregularity was verified in this instance on the left side. The majority of HWW cases are identified in patients between the ages of 13 and 25; however, in India, a 34-year-old lady was diagnosed with OHVIRA while undergoing testing for infertility [7].

The most common presentations are lower abdominal pain, dysmenorrhea, and tender vaginal mass. Additionally, the patient may have uncommon symptoms like recurrent UTIs, urinary retention, or chronic pelvic pain, the patient had similar symptoms. To control symptoms and minimize long-term problems, early and precise identification of HWWs is crucial (pelvic adhesions, endometriosis, infertility, pyosalpinx, and pyometra). Magnetic Resonance Imaging (MRI) is the gold standard and investigation of choice in diagnosing and classifying Müllerian duct anomalies [2].

Laparoscopy can also be used as an adjuvant diagnostic modality for the complete evaluation of congenital anomalies of the female urogenital tract. As in the patient's, laparoscopy helped us in diagnosing coexisting endometriosis in the pouch of Douglas, which didn't correlate with the patient's clinical symptoms.

The most effective method of treatment is complete surgical excision of the vaginal septum that will not only relieve the outflow tract obstruction but also prevent long-term consequences like endometriosis and

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infertility. Most patients get complete benefits from resection of the vaginal septum in terms of symptom relief [1]. The fertility of patients with HWWs is usually not affected if diagnosed and treated early [2,7].

Conclusion

Herlyn-Werner-Wunderlich syndrome could be very challenging to diagnose. A baseline pelvic ultrasound scan can help in the early detection of cases where congenital ipsilateral renal agenesis has already been diagnosed. Appropriate treatment would be resection of the hemivaginal septum after a definitive diagnosis. The quality of life of patients with HWWs should be evaluated using a large study sample and with a longer follow-up period.

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