A Rare Case of Two Transverse Vaginal Septae in an Adolescent Patient*

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A transverse vaginal septum can develop at any level in the vagina, presumably caused by failure of absorption of the tissue that separates the junction between the vaginal plate and the caudal end of the fused mullerian ducts, or by complete failure of fusion of these two embryologic components of the vagina. Reported incidences vary up to 1 in 72,000, with occurrence of 46% in the upper vagina, 35-40% in the midvagina, and 14-19% in the lower vagina. But what are the odds of having two vaginal septae? This report discusses a rare case of an adolescent presenting with the classic signs and symptoms of having a transverse vaginal septum, but on surgical correction was found to have not only one, but two vaginal septae.

Key words: transverse vaginal septum, hematometrocolpos

Introduction

The development of the female genital tract is a complex process dependent upon a series of events involving cellular differentiation, migration, fusion, and canalization. Failure of any one of these processes results in different types of uterovaginal anomalies.[1]

To understand the etiology of the developmental abnormalities of the vagina, it is important to understand its embryogenesis.

In the fifth week of development in both male and female embryos, there are two pairs of genital ducts: mesonephric ducts and paramesonephric ducts. If there is no antimullerian hormone produced by the male testes, the paramesonephric ducts are retained and the mesonephric duct system regresses. The paramesonephric duct arises as a longitudinal invagination of the coelomic epithelium on the anterolateral surface of the urogenital ridge and opens into the coelomic cavity with a funnel-like structure and caudally runs lateral to the mesonephric duct but then crosses it ventrally to grow in a caudomedial direction. In the midline, it comes in close contact with the contralateral paramesonephric duct. These two ducts are initially separated by a septum but later fuse to form the uterine canal. Shortly after the solid caudal tip of the paramesonephric ducts has reached the urogenital sinus, it forms a swelling - the mullerian tubercle. A solid vaginal cord results from the proliferation of the cells at the caudal tip of the fused mullerian ducts. The cord gradually elongates to meet the sinovaginal bulbs from the posterior aspect of the urogenital sinus below. These sinovaginal bulbs extend cranially to fuse with the caudal end of the vaginal cord, forming the vaginal plate. Subsequent canalization of the vaginal cord occurs followed by epithelialization of the urogenital sinus, and is completed by the fifth month.[2]

A transverse vaginal septum can develop at any location in the vagina but is more common in the upper vagina at the point of junction between

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the vaginal plate and the caudal end of the fused mullerian ducts.[3]

The Case

This is the case of G.R., 12 years old, Filipino, Roman Catholic, nulligravid, who was admitted for the first time with a chief complaint of cyclic hypogastric pain.

The patient has no history of a pre-existing medical condition, and has no previous hospitalization. There is a history of hypertension and diabetes mellitus on the maternal side of the family, but no history of congenital abnormalities elicited. The patient's mother had regular prenatal consults at a health center starting at five months age of gestation, denies having any illness and had only taken multivitamins and ferrous sulfate during her pregnancy.

The patient was given unrecalled immunizations at a local health center. She is currently in the fourth grade at a public school. No developmental delay was noted. She had not had her menarche, and denies sexual contact.

Her present illness began six months prior to admission when she started experiencing cyclic hypogastric pain associated with a palpable hypogastric mass. No consultation was done until four months prior to admission, on her third episode of hypogastric pain, when her mother decided to bring the patient to a clinic, where pelvic ultrasound revealed the uterine cavity distended by homogenously hypoechoic blood products with approximate volume of 5.0ml, and the cervix and vagina markedly distended by blood products with approximate volume of 365.3ml. Findings were highly suggestive of hematometrocolpos. Patient was subsequently referred to our institution, where she was initially given Medroxyprogesterone and Mefenamic Acid. Work-ups were done and patient was then scheduled for surgery.

Patient came in conscious, coherent, ambulatory, and with stable vital signs. Height was 144 cm and weight was 38 kg. On physical examination, patient has no pallor, with pink palpebral conjunctivae. Breasts were at Tanner stage 3 (Figure 1). Breath sounds were clear; heart rate was normal, with regular rhythm and no murmurs were noted. Abdomen was soft but slightly distended, with a palpable, tender hypogastric mass measuring 7cm x 4cm. On inspection, the external genitalia was normal-looking with no active lesions, pubic hair was at Tanner stage 3 (Figure 2). The urethral opening was normally positioned anterior to the vaginal opening. A transverse vaginal septum was noted one centimeter from the introitus, with no discoloration nor bulging on Valsalva maneuver. (Figure 3). Rectoabdominal examination revealed an enlarged uterus 14-16 weeks size, and a palpable fluctuant mass 8 cm x 4 cm at the cul de sac area. Admitting impression was Primary Amenorrhea secondary to transverse vaginal septum

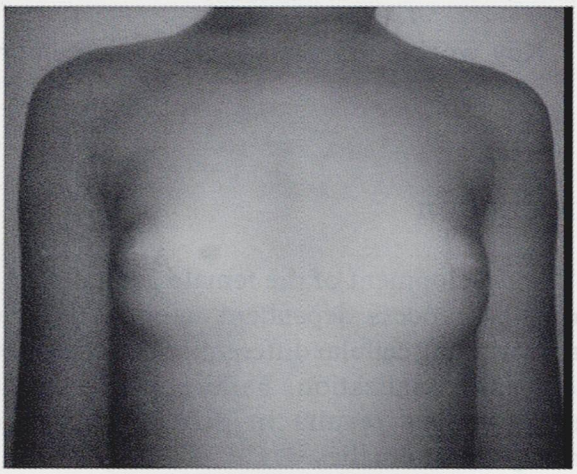

Figure 1. Breast and areola.

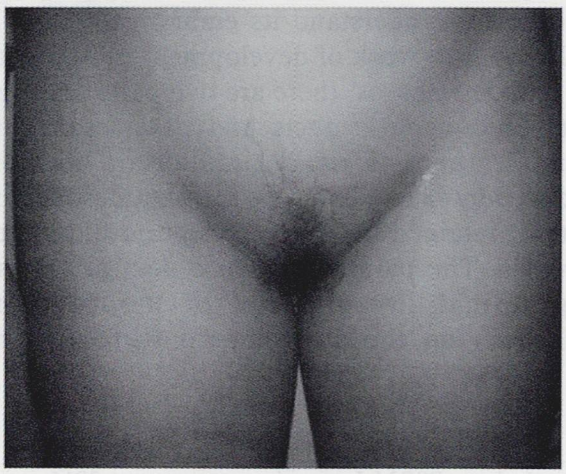

Figure 2. Pubic area.

Figure 3. Inspection of the genital area, transverse vaginal septum.

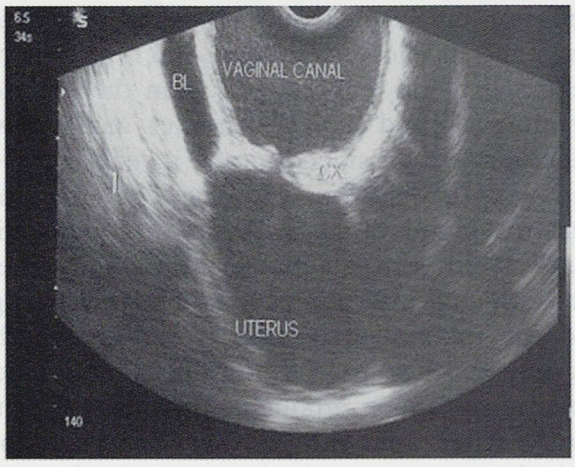

Figure 4. Transrectal ultrasound of the uterus, cervix, and vagina.

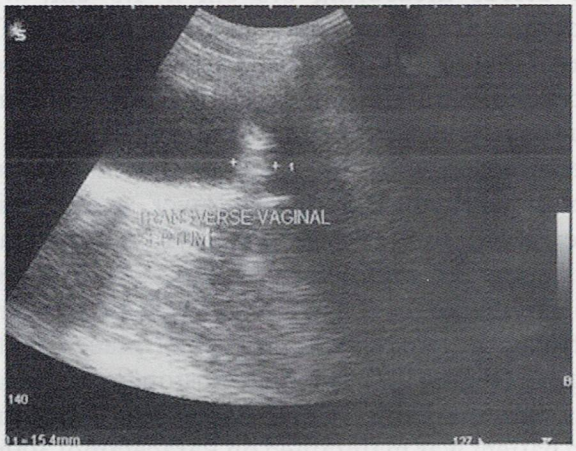

Figure 5. Transrectal ultrasound of the transverse vaginal septum.

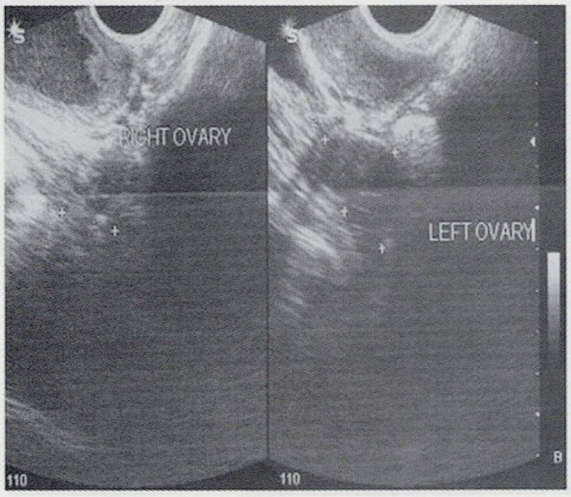

Figure 6. Transrectal ultrasound of the ovaries.

On admission, the patient was initially allowed regular diet. Transrectal, transabdominal, and transperineal scanning revealed hematometrocolpos, with the uterus measuring 10.5 cm x 5.1 cm, and the vagina distended to 10.1 cm x 5.1 cm, both containing homogenous, hypoechoic fluid. (Figure 4). A transverse vaginal septum with thickness of 1.54 cm was noted. (Figure 5) The right ovary measures 1.6 cm x 1.8 cm x 2.2 cm, while the left ovary measures 2.7 cm x 2.0 cm x 2.0 cm (Figure 6). The patient was referred to Pediatrics for preoperative risk assessment, and was classified to have low risk for perioperative complications. The patient was then referred to a Pediatric Gynecologist, placed on nothing per orem on her second hospital day with bowel prep done, and scheduled for surgery on her third hospital day.

In the operating room, the patient was given Cefuroxime 750mg intravenously thirty minutes prior to the procedure. After induction with spinal anesthesia, patient was placed on dorsal lithotomy position, and an Indwelling foley catheter french 12 was inserted aseptically. The perineum was prepared using betadine solution and drapes were applied. After retraction of both labia minora, the genitalia was inspected, revealing the transverse septum (Figure 7). Aspiration on the left side produced brownish menstrual blood while

aspiration on the right side produced only air. A transverse incision was then done, and retained menstrual blood was drained from the left side, revealing a blind pouch. Another incision was made on the right-sided septum, revealing to be a true vaginal septum. However, no retained menstrual blood was drained. The now open vagina was explored, with palpation of the urethral catheter anteriorly and insertion of a double-gloved finger into the rectum posteriorly, revealing another vaginal septum in the middle part. Needle aspiration was done, producing brownish menstrual blood. After adequate retraction, the second vaginal septum was excised, and a gush of retained menstrual blood was noted, amounting to 300ml. Transabdominal ultrasound was done revealing the uterus measuring 6.0 cm x 4.5 cm, with endometrial thickness of 0.28 cm (Figure 8). The lateral margins of the excised second septum were extended, and the edges of the upper vaginal mucosa was undermined, mobilized, and anastomosed with the edges of the first vaginal septum and mucosa of the lower vagina using interrupted sutures with Vicryl 4-0. Hemostasis was done. An improvised vaginal dilator using a 2.5 cm-diameter, 7 cm-long candlestick covered with sterile latex sheath was then placed in the vagina. (Figure 9). Immediate postoperative period was unremarkable; Cefuroxime was continued and patient was maintained on Paracetamol 300mg intravenously every four hours for analgesia.

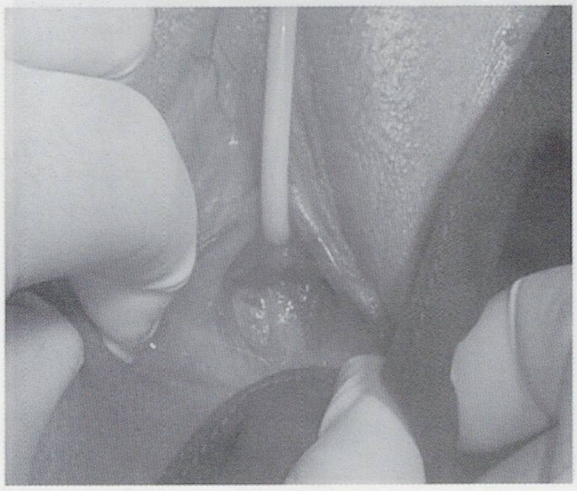

Figure 7. Inspection of the external genitalia prior to surgery.

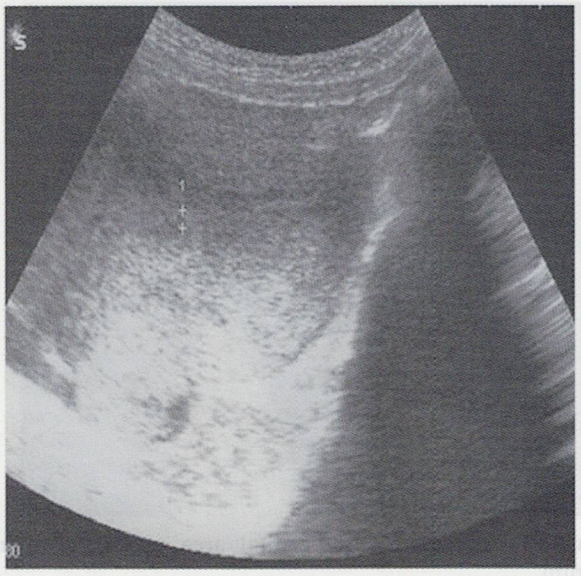

Figure 8. Transabdominal ultrasound of the uterus after drainage of hematometra.

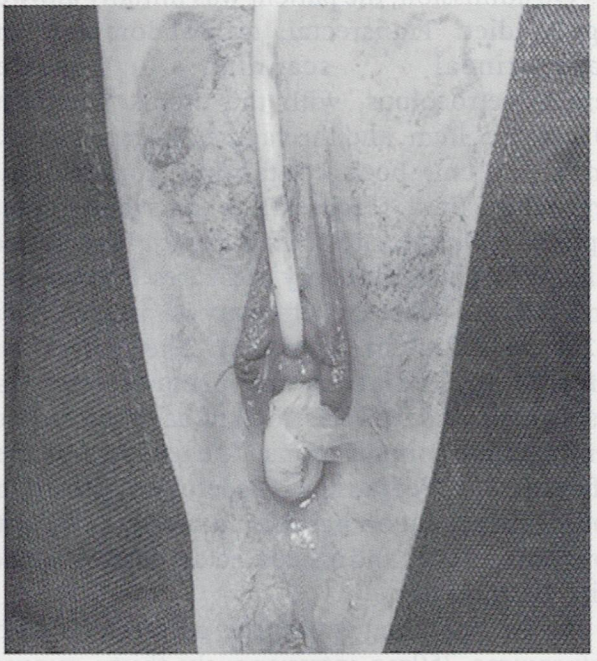

Figure 9. With improvised vaginal dilator immediately post-op.

On her third postoperative day, the dilator was temporarily removed to check and evaluate the post-operative site (Figure 10). Medications were shifted to oral Coamoxiclav 625 mg tablet twice daily and Paracetamol 500 mg tablet every four hours.

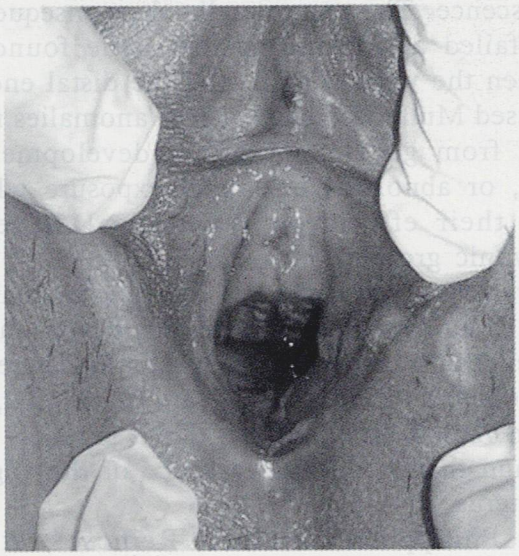

Figure 10. Three days post surgery.

On her fourth hospital day, patient was allowed to go home, and advised to complete her course of oral antibiotics and analgesics. Her mother was taught how to aseptically re-insert the vaginal dilator in case of displacement and was advised to maintain the dilator for the next six weeks, with change of sterile latex sheath every three days and as necessary. The patient was advised to follow-up on a weekly basis but can come back anytime if she develops any untoward symptom.

On the patient's first follow-up a week after discharge, neither foul-smelling vaginal discharge nor bleeding was noted. Pain was minimal, and post-operative site was noted to have beginning granulation tissue (Figure 11). Regular change of sterile latex sheath was advised. By the second week post-op, patient was asymptomatic and granulation tissue has increased, with yellowish but non-foul-smelling discharge noted on the operative site (Figure 12). By week 3 post-op, the previously noted yellowish but non-foul-smelling vaginal discharge was still present (Figure 13), but the sutures were already half-absorbed. Sutures were noted to be barely noticeable on inspection by the fourth week (Figure 14). On her sixth week post-op follow-up, patient was on day three of her menses. The sutures were not palpable, and complete healing of the operative site was noted (Figure 15). On internal examination, the cervix was closed. The vaginal dilator was permanently removed, and patient was advised to come back anytime if with any problem.

Discussion

The prevalence of congenital anomalies is difficult to determine since most patients are asymptomatic, and typically not diagnosed until

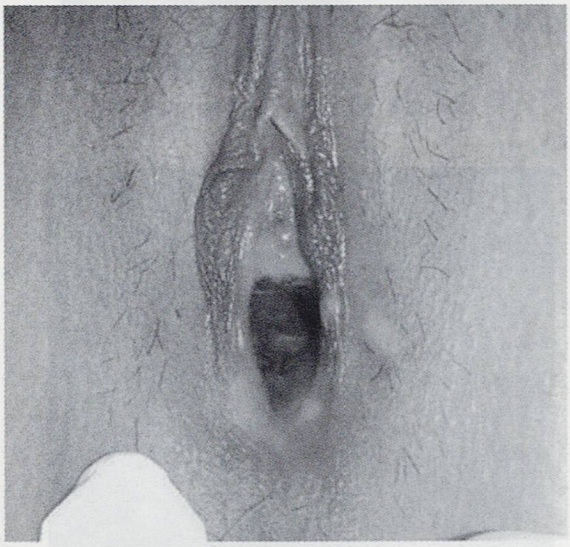

Figure 11. Ten days post-surgery.

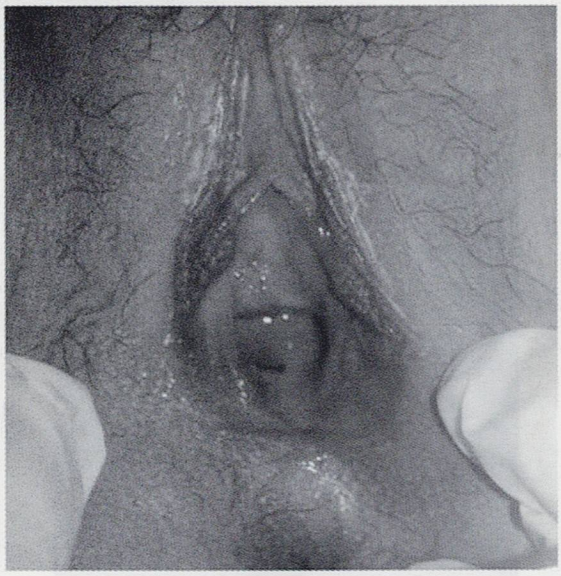

Figure 12. Two weeks post-surgery.

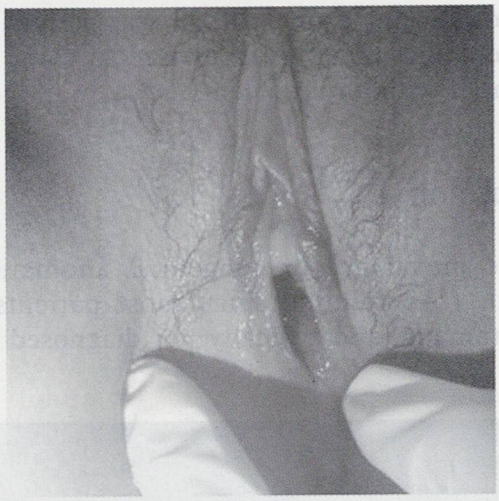

Figure 13. Three weeks post.

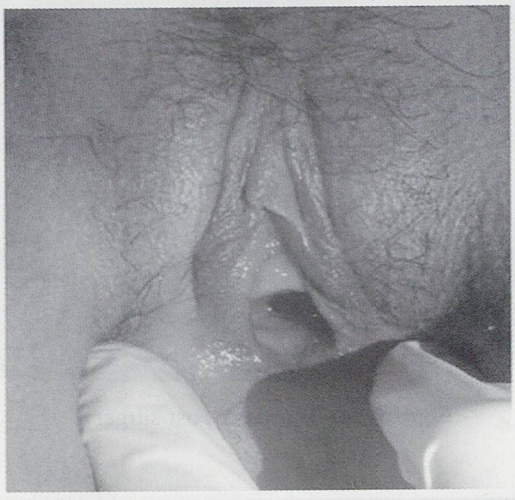

Figure 14. Four weeks post-surgery.

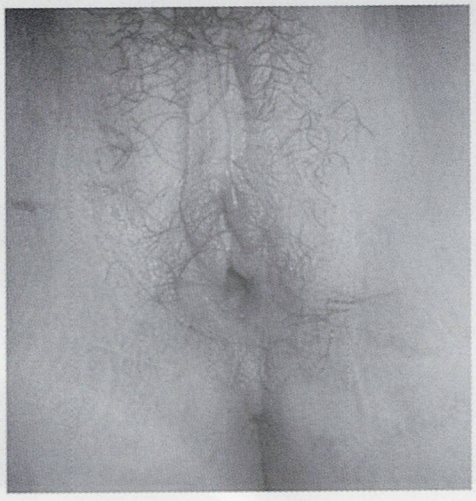

Figure 15. Six weeks post-surgery.

adolescence. They are usually the consequence of a failed absorption of the tissue found in between the vaginal plate and the distal end of the fused Mullerian ducts. These anomalies may result from genetic mutation, developmental arrest, or abnormal hormonal exposure which exert their effects on the critical stage of embryonic growth.[8]

Transverse vaginal septa are rare anomalies. There is no consistent epidemiologic data on the incidence of transverse vaginal septum. There are only reported incidences that vary from 1 in 2,100 to 1 in 72,000. It is said that this is probably less common than congenital absence of the vagina and uterus.[1]

In Philippine literature, Reinoso[9], et al. documented the incidence of transverse vaginal septum from 1971-1981 at Philippine General Hospital at 13 in 68,260 or 1 in 5277. Most of these patients were diagnosed at the age of 15 to 20, nulligravid, and commonly presenting with hypogastric pain or hypogastric mass.

Patients with a complete transverse vaginal septum may generally present with a complaint of primary amenorrhea. In a high transverse septum, patients are most likely to experience pelvic pain that will manifest earlier than in patients with a septum located lower in the vagina. When incomplete, patients may complain of profuse vaginal discharge, dyspareunia, inability to insert tampon, or tear during intercourse.[4] In this case, the patient presented with the classical symptoms of an obstructed lower genital tract: primary amenorrhea, cyclic pelvic pain, and development of a hypogastric mass. Diagnosis may be confirmed either by sonography or magnetic resonance imaging (MRI), MRI is superior in the assessment of the septal thickness and depth, prior to surgery.[5] When ultrasound is chosen, the rectal route, transperineal or transabdominal is preferred as it provides a better visualization.[6] In our case, we confirmed the presence of a transverse vaginal septum and hematometrocolpos using ultrasound and CT scan, as MRI was not accessible in our setting. In retrospect, MRI should have been utilized to assess the septal depth, which could have provided preoperative information that the patient has two vaginal septae.

The site of the septum and thus obstruction may occur at any point along the vaginal canal. It is most common in the upper vagina (46%), followed by the middle (35%), with the least common location being the lower third (13%). The thickness of the septum varies and the one located nearer the cervix is thicker. The average thickness of the septum is 1 centimeter but septum of 5 to 6 centimeters has been reported in literature.[5] On ultrasound, the patient was found to have a transverse vaginal septum 1.54 cm in thickness, located in the middle third of the vagina. However, on surgical correction, the patient was found to have two vaginal septae, with the other located in the lower third, which is more rare. No data is available yet on such cases. With such occurrence rate, it is at great odds that the patient developed two septae in the more uncommon locations, but fortunate to have it in a more accessible area.

In cases of very low transverse vaginal septum, there is a possibility of a clinical misdiagnosis of an imperforate hymen. The hymen is the embryologic septum between the sinovaginal bulbs above and the urogenital sinuses below, and its incidence approximates 1 in 1000 to 2000 females.[5] The clinical presentation of an imperforate hymen and transverse vaginal septum may be similar but in cases of transverse vaginal septum, there is usually no bulging at the outlet.[6] Imperforate hymen bulges out to the introitus. Moreover, after excision, histology will show columnar epithelium typical of Mullerian epithelium in the superior aspect of the septum, and squamous epithelium typical of the urogenital sinus in the inferior aspect.[7]

Women with a transverse vaginal septum require surgical correction due to pain, increased risk of infection, retrograde menses, and difficulty with sexual intercourse or vaginal delivery.[2] The classic technique is to do a transverse incision through the vault of the vagina. A probe is introduced through the septum after a portion of the barrier has been separated by sharp and blunt dissection until continuity can be established. The lateral margins of the excised septum are extended widely, then the edges of the upper and lower vaginal mucosa are undermined and mobilized enough to permit anastomosis with the use of interrupted delayed-absorbable sutures.[10] The index case underwent excision of both vaginal septae and end-to-end anastomosis of the vaginal mucosa. Several authors have described the innovative approaches in the surgical treatment of transverse vaginal septum. The first involves using the Olbert Balloon Catheter to mobilize the proximal vaginal mucosa and facilitate low anastomosis. The other approach used a foley catheter to drain the hematocolpos and was done on a 13 year-old whose family refused vaginal surgery in order to preserve hymenal integrity. Finally, laparoscopic drainage can be done for the acute treatment of transverse vaginal septum. Laparascopic drainage provides pain relief without compromising the success of definitive surgery which can be performed at a later date.[10]

The unfortunate consequence of very early surgical management is the increased rate of subsequent vaginal stenosis. This is most likely due to inconsistent use of vaginal dilators by young adolescents.[4] In our patient, course in the wards was uneventful, as well as the post-operative period. The importance of the use of a vaginal dilator to maintain the patency of the vagina was emphasized, especially since the patient has no regular sexual contact yet. Frank dilators may be used to distend the vagina until it is healed to prevent vaginal adhesions.[10] Another ideal dilator is a soft foam rubber vaginal form, which will be removed in 10 days for evaluation of the healing process covered with sterile latex sheath. This form can be worn for 4 to 6 weeks until complete healing has occurred.[1] Since this is not available, using an improvised dilator is acceptable so long as it fits the length and the diameter of the vagina, and sterility is maintained when the latex sheath is changed.

Another approach is a mold covered with amnion for the epithelialization of the denuded vaginal mucosa. This was used in a 12 year old with a four cm vaginal septum, since large circumferential vaginal mucosa was exposed and end to end anatomosis was not possible.[5]

Transverse vaginal septum is occasionally associated with urologic defects as well as other structural anomalies, including imperforate anus, bicornuate uterus, coarctation of the aorta, atrial

septal defect, and malformation of the lumbar spine.[1] Different diagnostic procedures were requested on this patient to rule out the presence of these abnormalities. Chest x-ray was normal, as well as her lower abdomen CT scan.

Conclusion

Transverse septum in the vagina is due to the partial failure of canalization of either the urogenital or the Mullerian component of the vagina. It may be found at any level in the vagina but most often occurs on the upper part of the vagina. If complete, the septum will result in a hematocolpos and hematometra. Surgical correction is necessary to relieve symptoms, and different techniques vary depending on the thickness and location of the septum/septae within the vagina. Work-up should be done to rule out any concomitant congenital abnormality. The long-term management of this case is maintaining the patency of the vagina. Use of a dilator to the maximum time advised is imperative.

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