



Innovative Use of Padded-Condom Penile Mould Post-vaginoplasty in Low Transverse Vaginal Septum: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. Authors AOU, CMN and AKA conceptualized and designed the study. All authors were involved in the writing and revising the manuscript for intellectual content. All authors read and approved the final manuscript and agreed to be accountable for all aspects of the work.

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Case Report

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ABSTRACT

Transverse vaginal septum is a rare congenital anomaly of the genital tract. The septum could be complete (obstructive) or incomplete (non-obstructive) located anywhere along the vaginal length with variation in thickness. It is usually asymptomatic in the pre-menarchial patient. In the post-menarchial periods, obstruction makes it symptomatic unlike the non-obstructive variety where

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symptoms occur when attempt is made at vaginal intercourse. The case report below is that of an initially obstructive low transverse vaginal septum who had relieve of obstruction as an adolescent through an incision and drainage only to present with inability to achieve vaginal intercourse much later. Diagnostic dilemma was resolved by a paediatric Foley catheter passed through the septal dimple and the inflated bulb of catheter viewed as it is advanced along the vaginal canal. She had surgical septum resection by the double cross-plasty technique of vaginoplasty and vaginal dilator was fabricated as an adjunct to prevent stenosis. She had successful post operative period with no complication. She resumed uneventful sexually relationship that subsequently led to pregnancy after marriage. She is currently being followed up in our antenatal clinic.

Keywords: *Transverse vaginal septum; complete septum; incomplete septum; double cross vaginoplasty; penile mould.*

1. INTRODUCTION

Transverse vaginal septum (TVS) is a rare congenital anomaly of the genital tract [1,2,3]. The incidence varies from 1/2100 to 1/7200 [2,3,4]. The aetiology is either one of incomplete canalization of the vaginal plate or failure of fusion of the paramesonephric ducts and the urogenital sinus [5,6]. The septae may be of complete or incomplete variety occurring anywhere along the vagina as any of; high, middle or low transverse vaginal septum [2,7,8]. Most common (72%) locations are in the lower part of the vagina, followed by the middle portion (22%) and in the upper (6%) part of the vagina [8,9].

These septa usually do not exceed in 1 cm thickness but may be so thick and adjacent to the cervix enough to prevent development of a significant portion of the vagina presenting as congenital absence of the vagina with presence of the uterus [10].

The septum should be clearly differentiated as either complete, also referred to as imperforate or obstructive septum or incomplete septum, which is also termed perforate or non-obstructive septum [1,2,3,10]. This variation in anatomical presentation is important with respect to clinical presentation which is variable and depends on septum being complete or incomplete and the pre-menarchial or post-menarchial status of patient [1].

In pre- menarche, it is asymptomatic if incomplete (perforated) and mostly so if complete (imperforate) except a huge mucocolpos occurs [1,10]. In the post-menarchial patient, complete septum presents with abdominal pain, cyclical dysmenorrhoea associated with primary amenorrhoea, hematocolpos, haematomata or haematosalpinx

depending on how high the septum is located [1,10]. If the septum is incomplete post-menarche, it may be initially asymptomatic until attempts at vaginal intercourse where it presents with dyspareunia or infertility [1,10].

Clinical examination alongside ultrasound and magnetic resonance imaging (MRI) are essential for making a diagnosis [10].

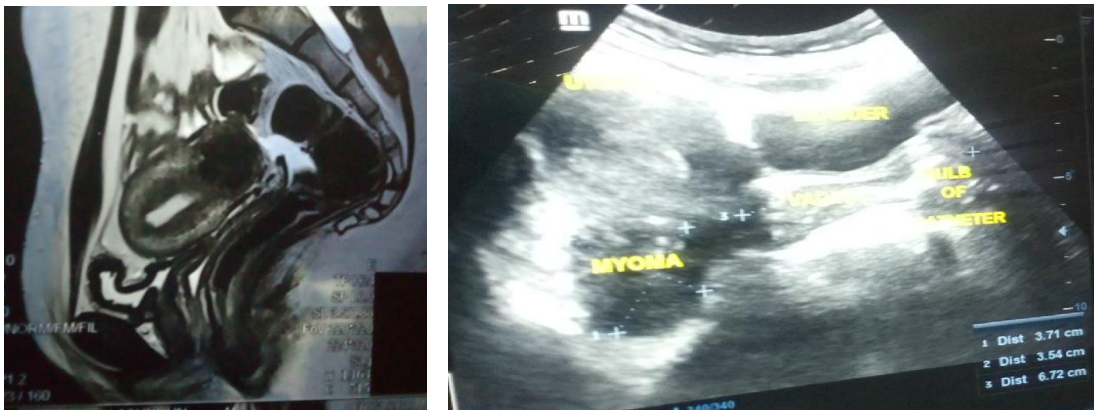
2. CASE REPORT

She was a 26-year-old nulliparous single lady with a history of inability to achieve penetrative vaginal intercourse. There was a history of previous vaginal procedures comprising vulval incision and drainage at ages 13 and 14 years respectively to allow for menstrual flow and relief from amenorrhoea associated with lower abdominal swelling, and abdominal pain. She had since then had regular menstrual flow lasting 4-5 days with a regular menstrual cycle and dysmenorrhoea. She had an MRI a month before presentation suggestive of a high transverse vaginal septum. General examination was unremarkable. Genital examination revealed a very shallow blind vaginal pouch just behind and adjacent the hymenal area and a tiny dimple barely accessible with the uterine sound. The blind pouch was not distinguishable from the hymen. A transabdominal ultrasound scan showed a normal sized uterus. She had examination under anaesthesia with easy passage of uterine sound. A Paediatric Foley catheter size 6 was passed through the same dimple after removing the uterine sound and the bulb of the catheter inflated with 5mls saline. The bulb of the catheter was advanced from the lower end of the vagina up to the cervix freely without resistance and viewed under transabdominal ultrasound scan indicated that the septum was limited to the lower third of the vagina. The vaginal canal was measured from the lower end

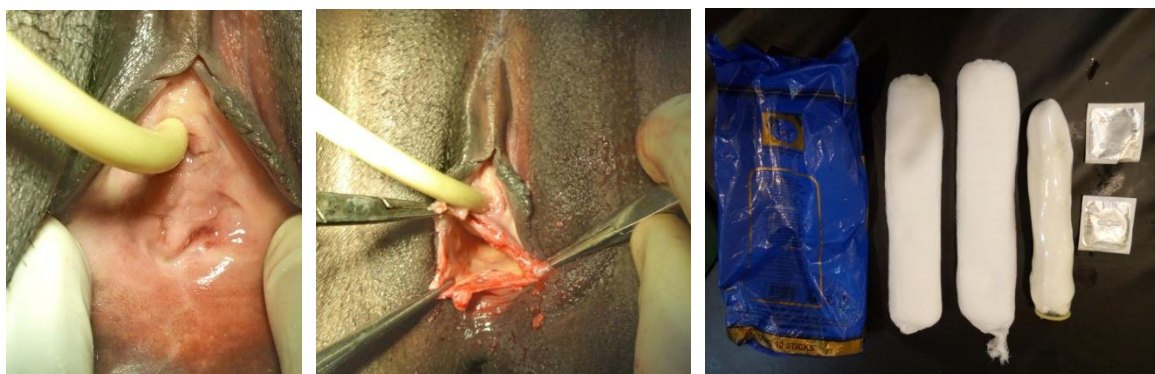
of the catheter bulb to the lower end of the cervix to be 6.7cm. She was counselled on findings, and she consented to vaginoplasty. Vaginoplasty was done under combined spinal-epidural anaesthesia. Urinary bladder was catheterized to allow for easy palpation of the urethra per vagina to allow for caution to the urethra during dissection. An adrenaline (1:100000) solution was used for hydro dissection at the lower/distal vaginal septal mucosa. The double cross plasty technique of vaginoplasty was used. A cruciate incision on the lower surface of the septum creating four triangular flaps with their apices at the intersection of the cruciate incision which were dissected and suspended by stay sutures. The flaps were dissected to the lateral vaginal wall with caution keeping in view the risk of urethra and bladder injuries anteriorly and rectal injuries posteriorly. The upper layer of the septum was visible after dissection of the thin fibro areolar tissue between both layers. A cruciate incision is made on this upper layer of the septum perpendicular to the incision of the lower layer.

Four new triangular flaps were created from the upper layer of the septum by the second cruciate incision and each fixed with stay sutures. The triangular flaps of the two layers are interposed with 2-0 polyglactin (Vicryl) suture forming a circumferential but zigzag suture line inside the vagina comprising an apex-to-base union of each flaps from respective layers of the septum. The cervix was normal looking and the vaginal canal of normal length.

An penile mould was made using a lubricated condom worn over a folded adult size maternity sanitary pad which patient was taught how to make one for personal use as she had no sexual partner at the time. She was to use the improvised mould for up to 3 months except if she became sexually active before then. She was discharged on oral analgesics, antibiotics and seen weekly for next 3 weeks. Her follow up was uneventful. She was last seen 13 months after procedure with a six weeks intrauterine pregnancy.



Figs. 1 and 2. MRI image (Left) and pelvic ultrasound scan showing bulb of Foley catheter beyond the septum (Right) respectively



Figs. 3, 4 & 5. Septum before repair, during vaginoplasty and consumables for penile mould respectively

3. DISCUSSION

The transverse vaginal septum which could either be complete or incomplete is a defective embryogenesis of the vagina leading to the incomplete fusion between the lower Mullerian duct component and the upper urogenital sinus component of the vagina or from the incomplete canalization of the vaginal plate [6,9]. Vaginal atresia or aplasia which is a congenital anomaly unlike vaginal stenosis/ gynatrasia which can be congenital or less commonly acquired [6,7].

Occurrence is mostly sporadic, having no genetic basis in most cases but few has been linked to autosomal recessive transmissions [11] or occurring as part of other congenital anomalies, inter-sex state, maternal exposure to teratogenics such as thalidomide and stilbesterol [12].

The septum can vary in location, thickness, and presence or absence of a perforation [3].

Prognosis is good for low thin septum or thin incomplete septums which are less complex unlike complete, mid, high, and thick septum which are more complex and complication prone [3].

Differential diagnoses include vagina aplasia and vaginal atresia which lacks a vaginal pouch with or without a functioning uterus. Imperforate hymen is a close differential of a low thin transverse vaginal septum [2,13].

Genital examination, ultrasonography, computed tomography (CT) and magnetic resonance imaging (MRI) are employed in the diagnosis of genital tract anomalies with each having its limitation to distinguish each malformation and their differentials [2]. MRI is the gold standard for diagnoses but limited by cost in resource poor set-ups [14]. Ultrasound imaging has the advantage of low cost and its benefit can be improved when combined with saline infusion sonocolpography to resolve diagnostic dilemma where septum is incomplete [2]. Vaginoscopy also proves useful also in the presence of septum perforation.

Treatment of transverse vaginal septum is usually surgical resection of the septum with anastomosis of the proximal and distal ends or lifting of grafts in thick or extensive cases [10].

The low thin and incomplete septum is less complex, and can be resected vaginally with good prognosis and a low complication rate [3]. Surgical treatment for extensive or thick septum are much more complex and such may leave a significant raw-surface of vagina wall between the proximal and distal edges of the resected septum prone to re-stenosis and scarring with risk of vaginal shortening and dyspareunia [15]. The ideal surgical technique for such complex cases should consist of grafts or flaps technique [3,10].

Dilatation alone is an option for transverse vaginal septae with large central defect [10].

The technique employed in the case presented above was the double crossplasty or "Z" plasty which has been demonstrated to prevent restenosis or vaginal shortening [9].

An important adjunct to surgical treatment is the prevention of stenosis by regular coitus or vaginal dilatation by any one of penile mould, vaginal dilator [3], vaginal catheter of high pressure dilatation balloon for up to 3 months if the patient is not sexually active [10]. There may be concern about psychological effect of use of penile mould or vaginal dilators for prolonged period especially for the young girl and adolescent without prior sexual intercourse [3]. These moulds and dilators may be expensive and not be readily available in resource poor communities hence various improvisations have been used and one of such is the less ideal 20mls syringe anchorage [10]. Home-made mould from carvings of wood, wax, plastics are possibilities in rural set-ups.

In the index case, an improvised padded-condom peno-vaginal mould was fabricated. This gives the benefit of being cheap, disposable, easy to recreate at home and requires no sterilization for use. It is soft and can be carried for the whole day with very minimal discomfort.

4. CONCLUSION

Transverse vaginal septum has far reaching impacts in the quality of life beyond the physical signs and symptoms, to its impacts on sexual, psychological and reproductive life. Early detection and appropriate treatment are paramount to mitigate the negative effect on the reproductive health of the woman.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

DECLARATION

The writing of the case report was done according to the ethical principles of Helsinki Declaration.

CONSENT

Patient consented for her anonymised data to be used in scientific publication.

ETHICAL APPROVAL

The ethical approval was obtained from the health research ethics committee of 68 Nigerian Army Reference Hospital Yaba.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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