

**Case Report**

# Distal Ureteric Injury Following Excision of Transverse Vaginal Septum and Distal Vaginoplasty: A Rare Complication

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**Abstract**

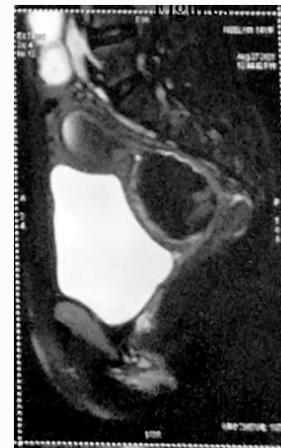
A 12 years young girl presented with cyclical lower abdominal pain and primary amenorrhoea. Her clinical and radiological examination revealed it as a case of hematometra, hematocolpos (proximal vagina) with thick transverse vaginal septum and distal vaginal atresia. She was managed initially by excision of the transverse vaginal septum and distal vaginoplasty. She had left distal ureteric injury following this operation for which cystoscopy and retrograde ureteric stenting was tried initially which remained unsuccessful. Later she was managed by left percutaneous nephrostomy followed by Modified GregoirLich ureteroneocystostomy through a mini-incision. She is doing well in follow-up.

**Keywords:** Hematometra; GregoirLich; Vaginoplasty; Vaginal septum

**Case Presentation**

A 12 years young girl presented with primary amenorrhoea and cyclical lower abdominal pain for 6 months. There was no other associated symptom. Her general physical examination was unremarkable. The examination of the perineum showed an absent vagina and rectal examination revealed an anteverted uterus of 10-12 weeks size. Her ultrasound of the lower abdomen showed the echogenic fluid collection in the uterine cavity and enlarged cervix with a similar echogenic fluid collection in proximal vagina and absent distal vagina. The MRI of the pelvis showed large approximately 8.4 mm × 3.5 mm × 3.6 mm size mixed clotted blood seen in the uterine and cervical canal. A 1.7 cm × 1.1 cm cystic blood-filled cystic structure below external os was seen (Figure 1) suggestive of proximal vagina. The clinical and MRI findings were consistent with a diagnosis of hematometra with hematocolpos due to Transverse Vaginal Septum (TVS) associated with an absent lower vagina. Her blood chemistry and other parameters were normal. She was managed by resection of thick vaginal septum and drainage of hematocolpos under general anesthesia. The distal vaginoplasty was performed by mobilizing the upper vagina and suturing to mucocutaneous margins at introitus by 3-0 Polygalactin suture. On the 7<sup>th</sup> postoperative day, the patient complaining of leakage of urine per vagina which was managed initially conservatively by changing pads and continuous catheter drainage. The urologic consultation was taken and a cystoscopic

examination excluded any vesicovaginal/urethrovaginal fistula. A bilateral retrograde pyelogram under fluoroscopy was performed. A 5 F ureteric catheter mounted on flexible tip terumo guidewire could not be negotiated 2 cm beyond the left ureteric orifice and there was complete cutoff on injection of contrast, while right retrograde pyelogram was normal. A Contrast-Enhanced CT scan of Kidney, Ureter, and Bladder (KUB) showed left mild hydroureteronephrosis with left lower ureterovaginal fistula (Figure 2). Ultrasound-guided left percutaneous nephrostomy was performed and an antegrade contrast study suggested left lower ureteric stricture (Figure 3). She was managed by left open ureteroneocystostomy over a 5 F double J stent. The lower ureter was approached extra peritoneal by a small mini-incision (5 cm) in the left iliac fossa and an ante-refluxing modified GregoirLich ureteric reimplantation was performed (Figure 4a and b). The postoperative period was uneventful and the patient became dry following the procedure. The double J stent was removed after 6 weeks. A DTPA scan following stent removal showed normal function and clearance by the left kidney. The patient is doing well in 12 months of follow-up.



**Figure 1:** The MRI of pelvis showing hematometra, hematocolpos (dilated proximal vagina) and distal vaginal atresia.

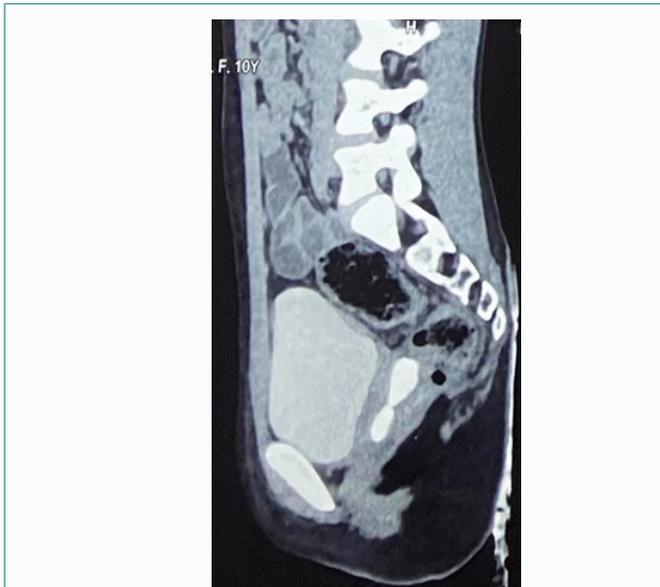
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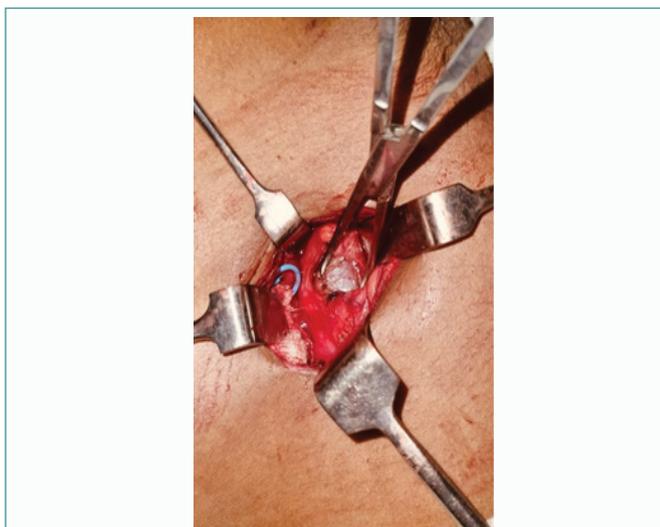
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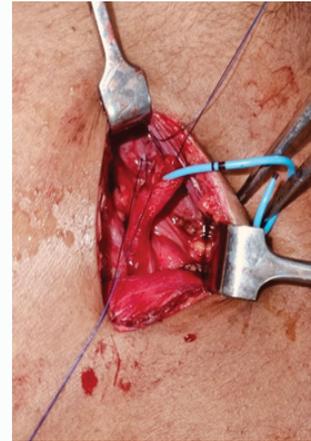
**Figure 2:** The CECT pelvis lateral view showing contrast in vagina suggestive of Ureterovaginal fistula.



**Figure 3:** Left percutaneous nephrostomy with antegrade contrast study showing distal ureteric blockade suggestive of ureteric stricture.



**Figure 4a:** Dissection of detrusor to expose bladder mucosa.



**Figure 4b:** Modified stented left Gregoir Lich ureteroneocystostomy in progress.

## Discussion

The Transverse Vaginal Septum (TVS) with distal vaginal atresia is a rare abnormality of the female genital tract with an estimated incidence of 1/200 to 1/7200 cases [1]. The most common cause is a defect in the fusion and/or channeling of the urogenital sinus and paramesonephric/Mullerian ducts [2]. The TVS is usually not more than 1 cm thick, could be an isolated anomaly located either in the upper, middle, or lower vagina. The commonest location is in the lower vagina where it can be associated with distal vaginal atresia. In young girls following the onset of menarche, they present with cyclical lower abdominal pain and accumulation of menstrual blood in the uterine cavity, cervical canal, and vaginal lumen producing the conditions called hematometra and hematocolpos [1,2]. The diagnosis of TVS is based on clinical history, gynecological examination, and radiological investigations. The ultrasound of pelvis/transrectal ultrasound and or transperineal sonography helps in making the diagnosis. Magnetic Resonance Imaging (MRI) is advised in complicated cases [1,2,3].

The early postoperative complications of resection of the transverse vaginal septum with drainage of hematocolpos are small hematoma formation on sutured line and infection. The late complications are vaginal stenosis, dyspareunia, menstrual irregularity, and fertility-related issues [1-3]. The urinary incontinence due to distal ureteric injury following resection of TVS and distal vaginoplasty has not been previously reported in English literature. It is reported that accidental needle puncture or laceration can cause ureteric injury which may not heal and persists as ureteric fistula in open surgical operations [4]. In the present case just before excision of the transverse vaginal septum and distal vaginoplasty, the treating gynecologist had transperineally inserted thick bore (14 G) needed mounted on a 10 ml syringe to create negative pressure for sucking out the content in proximal dilated sac (proximal vaginal lumen) below external os seen in MRI study (Figure 1). This needle insertion was also for intraoperative assessment of the distance between mucocutaneous skin at introitus and transverse vaginal septum because vaginoplasty was also planned during the same operation. The needle might have traversed deep and would have gone to the level of the distal ureter and have caused a ureteric injury which persisted as ureteric fistula. Another potential cause for ureteric injury could have been during mobilization of the proximal vagina following excision of TVs. For management of acute ureteric injury initially, cystoscopy and retrograde pyelogram should

be done and if a guidewire is negotiated in the pelvicalyceal system then a self-retaining internal ureteric stent must be inserted [4].

In the present case, there was a complete cutoff on injecting contrast under fluoroscopy in the distal ureter 2 cm beyond the left ureteric orifice. The next step in such cases should be ultrasound-guided percutaneous nephrostomy and antegrade contrast study. This nephrostomy is useful to preserve kidney function and also for temporary control of urinary incontinence. Antegrade stenting should also be tried and sometimes it is successful to pass a ureteric stent across the site of injury. The excision of ureteric stricture/ fistula with spatulation of ureteric orifice and stented ureteroneocystostomy is the procedure of choice to cure urinary incontinence and to preserve long-term kidney function in such cases. The modified Gregoir Lich technique of extravesical ureteral reimplantation is simple to perform, reproducible, and associated with low morbidity. It also requires a minimal hospital stay. This technique of ureteral reimplantation has been proven efficacy in terms of preventing reflux and maintaining long-term renal function [5].

## Conclusion

The distal ureteric injury following excision of transverse vaginal septum and distal vaginoplasty is extremely rare complication. Initially the cystoscopy and retrograde ureteric stenting must be tried. The percutaneous nephrostomy should be done if retrograde stenting is unsuccessful. The definitive management is stented ureteroneocystostomy. In present case the Modified Gregoir Lich technique of ureteroneocystostomy through a mini-incision was performed which showed excellent result.

## Statements

### Ethical approval and consent to participate

The Written Consent of participation was taken from the patient for publishing a case report.

### Consent for publication

The authors give the right to publication for Springer nature

## Author's contribution

Dr. Vishwajeet Singh: Substantial contributions to the conception or design of the work and the acquisition.

Dr. Nitish Dev: Drafting the work

Dr. Sandeep Kumar Patel: Analysis, or interpretation of data for the work.

Dr. Jayant Maurya: The agreement related to the accuracy or integrity of any part of the work is appropriately investigated and resolved.

Dr. Ravi Mishra: Agreement to be accountable for all aspects of the work

Mr. Mukul Kumar Singh: Revising it critically for important intellectual content

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