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Objective: Distal tunnel ureteral reimplantation is among the well-established techniques used for the correction of ureterovesical junction conditions, even though not the most popular one. The most important reason for this is that it's not suitable for all patients due to anatomical characteristics. Here we aim to report our experience on the pneumovesicoscopic distal tunnel ureteral reimplantation in children also known as Glenn-Anderson technique.

Material and method: A total of 12 patients are enrolled with 7 girls and 5 boys. Patients were divided into two groups as unilateral or bilateral. Patients were retrospectively evaluated in terms of age, duration of surgery, indications and surgical technique.

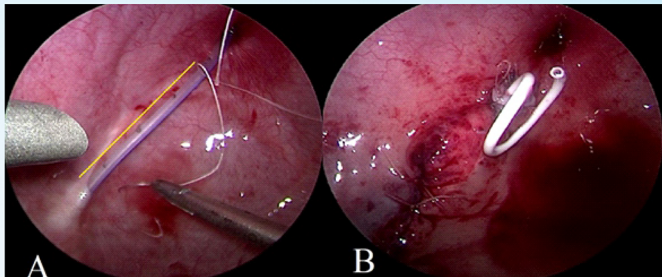


Figure 1. Classical GA repair. A) Ureter is intubated with feeding tube. Yellow line indicates the tunnel length (around 3cm). B) Completed repair with double J stent in place.

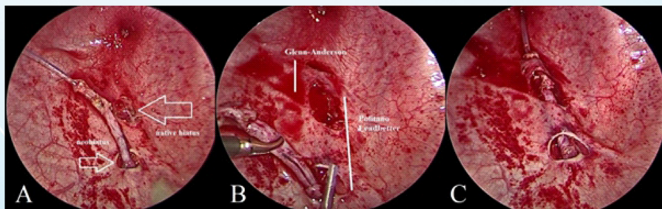


Figure 2. GA repair combined with PL in order to achieve a longer tunnel. A) A separate neohistius created cranially. B) Distal submucosal tunnel prepared. C) Advancement of the ureter through the both tunnels.

Results: Mean duration of surgery in unilateral, bilateral and the whole patients were 131 ± 16.619 , 165 ± 11.222 , and 150.83 ± 10.36 minutes, respectively. Mean age of the patients were 63.91 ± 12.51 months and mean duration of follow-up was 22.16 ± 3.58 months. The surgical indications were vesicoureteral reflux (VUR) in 7 patients, obstructing megaureter in 3, VUR with paraureteral diverticulum in 1, and isolated paraureteral diverticulum in 1. The ureteral orifices were ectopic located high in the cranial position in all the patients with VUR. The Politano-Leadbetter principle was integrated as a combination in 4 patients when deemed necessary according to anatomical characteristics of the patients. Co-morbid conditions were overactive bladder (n=3), paraureteral diverticulum (n=2), and duplicated collecting system (n=2). Postoperative follow-up was uneventful except for 1 patient who experienced recurrent simple urinary tract infection. No reflux was demonstrated on the control cystogram in this patient and infections were resolved by medical management of overactive bladder.

Conclusion: Glenn-Anderson technique involves distal advancement of the ureter in the bladder and is a relatively easier technique with lower complication rates. However, the length of the created submucosal tunnel is limited compared to other techniques which makes the patient selection critical. Cranially located ectopic ureters with sufficient distance to the bladder neck, conditions that do not mandate long submucosal tunnels, and combination with the Politano-Leadbetter principle in some cases are distinguished indications for this technique. The pneumovesicoscopic Glenn-Anderson technique appears to provide better exposure, surgical vision, and cosmetic results with lower tissue trauma, morbidity, and complication rates.

Keywords: Laparoscopy, Megaureter, Pneumovesicoscopy, Ureteroneocystostomy, Vesicoureteral reflux