

**Short Title:** Ureterocele Double-Puncture Technique

**A Step-by-Step Guide to Double-Puncture Technique for Endoscopic Management of  
Ureterocele**

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## *Summary*

To date, the optimal surgical technique for treatment of ureterocele remains unclear and the available options are variable. The endoscopic techniques that are gaining popularity mostly share major drawbacks including low success rate, high probability of mandatory secondary surgery and de novo vesicoureteral reflux to the ureterocele moiety. The Double-Puncture technique is shown to have promising outcomes in terms of long-term success and low rate of complications. In this video, a step-by-step guide to this technique is presented.

**Background:** Optimal management of ureterocele is still a challenging topic in pediatric urology [1]. Over the past two decades, treatment approaches have shifted towards more minimally invasive endoscopic techniques [2]. However, these techniques have common drawbacks such as low success rate, high probability of reoperation, de novo vesicoureteral reflux (VUR), and high rates of urinary tract infections. Herein, we aim to present a step-by-step guide to the Double-Puncture technique for endoscopic management of ectopic and large orthotopic ureteroceles in children; which is shown to have a higher success rate [3].

**Material:** Initially in this technique (Video 1), the stylet of a 3 Fr ureteral stent and the pusher is passed through the working channel of cystoscope. The distal puncture is created in the most distal part of the ureterocele. Afterwards, the stylet is passed upward through the ureterocele to meet the roof of the ureterocele and the proximal puncture is made at the most proximal part of the ureterocele. While the pusher remains in the current position, the stylet is removed and guidewire is inserted. Then, a Double-J stent is passed over the guidewire through the both punctured sites. Next, the cystoscope is passed next to the Double-J stent through the distal puncture site. Using an electrode (3 Fr Bugbee set at low coagulation current [15 W]), the collapsed walls of the

ureterocele is fulgurated at multiple sites under direct visualization. Urine channel continuity is preserved by the Double-J stent.

**Results:** Immediate decompression of ureterocele is achieved by making the two puncture sites. Long-term decompression is achieved with fulguration and adhesion of ureterocele walls at multiple points. The urine channel inside the ureterocele is formed by maintaining a Double-J stent through the two punctured sites and intraureterocele fulguration (similar to tailoring of dilated ureters in open surgery). Double-J stent is retrieved about 2 weeks post-operatively using extraction string. The channel with a diameter comparable to Double-J stent will remain patent after stent removal.

**Conclusion:** Long-term outcomes in patients treated with the Double Puncture technique, shows development of de novo VUR in 3.9% of the patients which is considerably lower compared to other endoscopic techniques [3]. This can be explained by the fulguration of ureterocele epithelial walls that provides wall adhesion and subsequent muscular backing to minimize the risk of de novo VUR to the ureterocele moiety. Additionally, the new intramural channel with patent orifices at each end allows urine drainage from the upper puncture during bladder contraction, which can reduce VUR due to outlet obstruction and ureterocele bulging [4]. In conclusion, Double-Puncture Technique is a successful endoscopic technique for management of ureterocele with lower postoperative complications and more favorable long-term outcomes.

**Keywords:** Ureterocele; Endoscopic management; Double-puncture

**Conflicts of Interest:** None.

## References

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