Abstract

Objectives: The objective of this monograph is to familiarize the reader with dynamic hydrodistention classification of the ureter and Hydrodistention Implantation Technique (HIT) methodology for the endoscopic correction of vesicoureteral reflux (VUR). The indications, current success rates, complications, and potential future applications of these methods are reviewed. Methods: Hydrodistention (HD) of the ureteral orifice and distal ureter permits visualization of the intraureteral submucosal injection site and assessment of the degree of ureteral coaptation. We have designated 4 levels of HD. H0 denotes absence of ureteral dilation, H1 indicates dilation of the ureteral orifice only. H2 allows visualization of the intramural ureter, and H3 allows visualization of the extramural ureter. The Double HIT method is a systematic technique that utilizes HD to both classify the ureter and gauge the degree of ureteral coaptation secondary to bulking during endoscopic injection. The needle is inserted at the mid ureteral tunnel at the 6 o’clock position. The first injection coapts the detrusor tunnel (until H1 or H0 is achieved), while a second implant within the most distal intramural tunnel leads to complete coaptation of the ureteral orifice (H0). Results: HD grade correlated significantly with VUR grade. Normal ureters rarely hydrodistended. While non-refluxing contralateral ureters demonstrated low HD grades, all contralateral ureters that subsequently developed VUR showed H2 or H3. The HIT method has not only been employed for primary VUR (90% cure), but also for repeat endoscopic injections (90%), VUR associated with paraureteral diverticula (81%), complex cases such as post-reimplantation (88%), neurogenic bladders (78%), duplication anomalies (80%), and in adults (88%). Furthermore, injection of contralateral VUR-negative but hydrodistending ureters may be treated to prevent new contralateral VUR. While decreasing success was seen with increasing VUR grade with the STING method, superior success rates have been realized with the HIT method. Conclusions: The dynamic hydrodistention classification reflects the competency of the ureterovesical junction. The HIT and Double HIT methods achieve superior cure rates and are likely to become the method of choice for the treatment of primary as well as complex cases of VUR.

Keywords,
Vesicoureteral reflux, Endoscopic injection, Hydrodistention