Supplementary Table S1. Cluster-adjusted GEE estimates for clinical failure and radiologic recurrence

Outcome domain	Comparison	OR	95% CI	p
Panel A. Clinical failure during the first 12 postoperative months				
Ureteral orifice morphology	Stadium vs. horseshoe	8.33	1.47-47.17	0.017
	Golf-hole vs. horseshoe	6.58	1.99-21.76	0.002
Duplex collecting system	Duplex vs. no duplex	Not stably estimable	Sparse-data separation	—
Panel B. Radiologic recurrence in the postoperative VCUG subgroup				
Preoperative VUR grade	Per one-grade increase	Not reported	Selection by imaging indication	—
VUR laterality	Bilateral vs. unilateral	4.29	0.84-21.76	0.079

GEE: Generalized estimating equations; OR: Odds ratio; CI: Confidence interval; VCUG: Voiding cystourethrography; VUR: Vesicoureteral reflux. Odds ratios were derived from generalized estimating equations with patient-level clustering and robust standard errors. The duplex row is descriptive only because all four duplex ureters had clinical failure, resulting in sparse-data separation. The radiologic analysis was restricted to ureters with available postoperative VCUG (n=33). No effect estimate is reported for preoperative VUR grade in the radiologic recurrence model because postoperative VCUG was selectively obtained, mainly after febrile UTI. The apparent grade-related pattern therefore reflects imaging indication rather than a reliable association with recurrence.

Supplementary Table S2. Cluster-adjusted estimates for clinical failure before and after adjustment for preoperative VUR grade

Model	Comparison	OR	95% CI	p
Model 1. Orifice morphology only	Stadium vs. horseshoe	8.33	1.47-47.17	0.017
	Golf-hole vs. horseshoe	6.58	1.99-21.76	0.002
Model 2. Adjusted for VUR grade (continuous)	Stadium vs. horseshoe	7.19	0.98-52.55	0.052
	Golf-hole vs. horseshoe	7.29	2.17-24.50	0.001
	VUR grade, per one-grade increase	0.89	0.51-1.56	0.686
Model 3. Adjusted for VUR grade (dichotomous)	Stadium vs. horseshoe	9.36	1.20-72.95	0.033
	Golf-hole vs. horseshoe	6.23	1.90-20.43	0.003
	Grade 4-5 vs. grade 2-3	1.21	0.35-4.21	0.759

OR: Odds ratio; CI: Confidence interval; VUR: Vesicoureteral reflux. Odds ratios were derived from cluster-adjusted logistic models with patient-level clustering and robust standard errors. The outcome was clinical failure during the first 12 postoperative months (33 events among 107 ureters). Horseshoe-type orifice served as the reference category. The association between ureteral orifice morphology and clinical failure persisted after adjustment for preoperative reflux grade, whereas reflux grade showed no independent association with outcome under either parameterisation. The wider confidence interval for the stadium-type comparison in Model 2 reflects the small number of stadium-type ureters (n=11) rather than confounding by reflux grade, as the corresponding effect estimate remained essentially unchanged.

Supplementary Table S3. Baseline and postoperative characteristics of ureters with and without postoperative VCUG

Variable	Postoperative VCUG available (n=33)	No postoperative VCUG (n=74)
Age, years (mean ± SD)	7.21±3.37	7.01±3.00
Male sex, n (%)	4 (12.1)	23 (31.1)
Female sex, n (%)	29 (87.9)	51 (68.9)
Ureter from bilateral case, n (%)	16 (48.5)	39 (52.7)
Ureter from unilateral case, n (%)	17 (51.5)	35 (47.3)
VUR grade 2, n (%)	5 (15.2)	8 (10.8)
VUR grade 3, n (%)	4 (12.1)	16 (21.6)
VUR grade 4, n (%)	7 (21.2)	15 (20.3)
VUR grade 5, n (%)	17 (51.5)	35 (47.3)
Duplex collecting system, n (%)	3 (9.1)	1 (1.4)
Horseshoe-type orifice, n (%)	7 (21.2)	26 (35.1)
Golf-hole type orifice, n (%)	22 (66.7)	41 (55.4)
Stadium-type orifice, n (%)	4 (12.1)	7 (9.5)
STING, n (%)	22 (66.7)	48 (64.9)
Double HIT, n (%)	11 (33.3)	26 (35.1)
Dx/HA formulation A, n (%)	25 (75.8)	50 (67.6)
Dx/HA formulation B, n (%)	8 (24.2)	24 (32.4)
Clinical success, n (%)	10 (30.3)	64 (86.5)
Clinical failure, n (%)	23 (69.7)	10 (13.5)

VCUG: Voiding cystourethrography; VUR: Vesicoureteral reflux; Dx/HA: Dextranomer/hyaluronic acid. Postoperative VCUG was not protocol-driven. Imaging was obtained selectively, most commonly after postoperative infection, and in a smaller number of ureters despite the absence of postoperative infection because of outside-center imaging or family request. Values are presented descriptively to characterise the composition of the imaged and non-imaged subgroups.

Supplementary Table S4. Concordance between clinical outcome and radiologic findings (ureter-level analysis)

Clinical outcome	Radiologic recurrence (+), n (%)	Radiologic recurrence (-), n (%)	Total, n (%)
Febrile UTI-free follow-up	0 (0.0)	10 (100.0)	10 (30.3)
Clinical failure	19 (82.6)	4 (17.4)	23 (69.7)
Total	**19 (57.6)**	**14 (42.4)**	**33 (100)**

UTI: Urinary tract infection; VCUG: Voiding cystourethrography. Clinical success was defined as the absence of febrile urinary tract infection during the first 12 postoperative months. Radiologic recurrence was defined as vesicoureteral reflux on postoperative VCUG. The analysis was restricted to ureters with available postoperative VCUG (n=33).