



**Figure S1** Profile of the two stone shapes. Oval (horizontal arrow) and quasi-circular stone (vertical arrow).

**Table S1** Comparisons between the model with others

Item	Case	Center	Object	Surgery	Predictors	AUC	Validation
This model	275	Single	Upper ureteral	URS, URSard, fURS	Length, location, shape, surgery	0.803	Internal
Imamura Y <i>et al.</i>	412	Single	All ureteral	URS	Length, number, location, pyuria	0.743	Internal
Zhang Y <i>et al.</i>	348	Single	All ureteral, renal	fURS, miniPCN, microPCN	Surgery, location, irrigation, operation duration, stone mass	0.810	Internal
Hori S <i>et al.</i>	586	Single	All ureteral, renal	fURS	Length, Hounsfield unit, location	0.845	Internal
De Nunzio C <i>et al.</i>	356	Double	All ureteral	URS	Number, size, distal ureteral location, hydronephrosis	0.750	Internal

URS, ureteroscopy; URSard, ureteroscopy with anti-retropulsive device; fURS, flexible ureteroscopy; miniPCN, mini-percutaneous nephrolithotomy; microPCN, micro-percutaneous nephrolithotomy; AUC, area under the receiver operator characteristic curve.