

# A new stent for retrograde ureteropelvic junction obstruction therapy; experience with 19 patients with the use of the Overtoom Balloon Catheter.

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## INTRODUCTION

Currently, the primary therapy options for ureteropelvic junction (UPJ) stricture are open, laparoscopic or robotic pyeloplasty. For some patients, however, a retrograde approach is more desirable; for instance when the patient has co-morbidities, previous abdominal surgeries, (re)recurrences or if the patient has a wish for a less invasive option. The retrograde approach, however, is known to be less effective than pyeloplasty. A possible explanation for this is the use of conventional stents (5/9-Fr) for prolonged stenting that are not wide enough to support the treated area. The objective is to present the first experience with the Overtoom Balloon Catheter; a ureter stent that has a width of 18-Fr at the proximal end and that is placed, in addition to a conventional stent, after balloon dilatation.

## MATERIAL & METHODS

Between 2001 and 2012, all patients in our clinic who had UPJ stricture and for whom conventional treatment was not desirable were included. All patients had a standard work-up protocol that included CT-U and diuresis renogram. Treatment included a balloon dilation (24/27-Fr) of the obstruction and subsequent placement of a conventional stent (6-Fr) together with an Overtoom Balloon Catheter (Overtoom Ltd) (Fig 1). All patients signed an informed consent form. The Overtoom Balloon Catheter is comprised of a stent (6.3-Fr), with a special balloon attached to it. The balloon has two sections: a cranial bulb of 10 mm diameter, and a 5.5cm section of 6mm/18-Fr diameter (Fig. 2). The larger cranial bulb prevents distal migration. The 18-Fr section keeps the predilated stricture open at an increased diameter. The two stents were removed in outpatient clinic after 6 weeks. The renogram was repeated. A successful outcome was defined as pain relief with improvement or unchanged renal function.

## RESULTS

Nine females and 10 males with a mean age of 44 yrs (15-74yrs) were included. Seven patients were included due to a recurrence after a previous treatment for the obstructed UPJ: open pyeloplasty (4), laparoscopic pyeloplasty (1), cautery wire balloon (1), balloon dilation (1). Other reasons for inclusion were: patient's desire for a minimally invasive approach (6), co-morbidity (2), recurrent pyelonephritis (1), long stenotic segment (1), previous abdominal surgery (1) and intrarenal pyelum (1).

Of all patients, 7(37%) had both pain relief and improved renogram. 5(26%) had pain relief and unchanged renogram, 6(32%) had neither pain relief nor improved renogram. One patient had no pain prior to treatment and no improved renogram after treatment (Table 1). After a mean follow-up period of 7yrs (1-12yrs), all 12(63%) patients who had pain relief after treatment required no further treatment. Of the patients without a successful outcome, 4 had further treatment: lap. pyeloplasty (2), nephrectomy (1), ureterorenoscopy with removal of surgical sutures at UPJ (1). Adverse events included 3 patients with upward migration, which did not correlate with failure. No serious adverse events occurred.



Fig. 1. X-ray image of conventional ureterstent with an Overtoom Balloon Catheter, placed after dilation of an obstructed ureteropelvic junction.

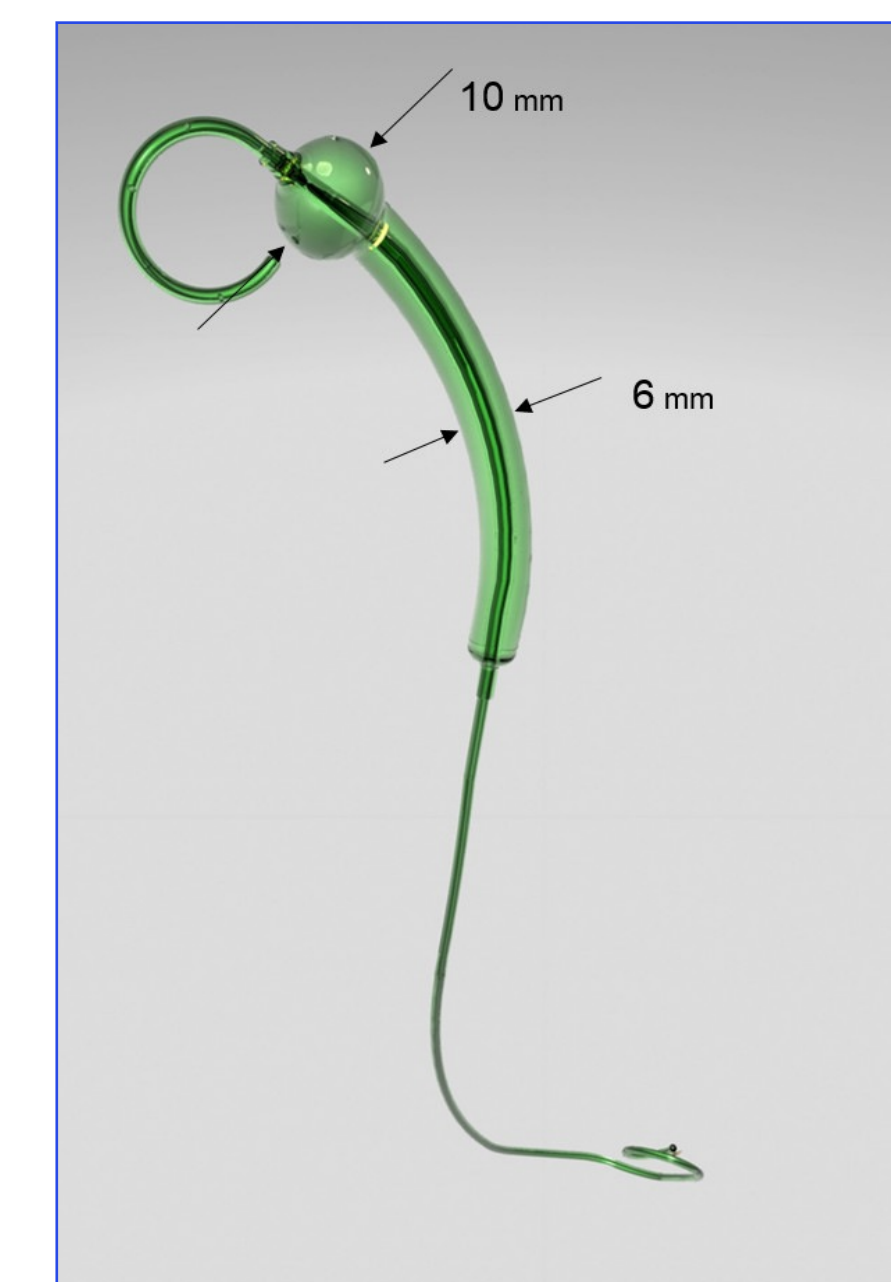


Fig. 2. Dimensions of Overtoom Balloon Catheter.

Table 1. Patient demographics and results.

	Age	Inclusion indication	Side	Pain relief	Renogram results	Further treatment at follow-up	Adverse Events
1	F 58 yr	recurrent pyelonephritis	Right	No	Unchanged	lap. Nephrectomy	
2	M 22 yr	recurrence after open pyeloplasty	Right	No	Unchanged	URS with removal of surgical sutures at UPJ	Upward migration
3	M 54 yr	previous abdominal surgery	Right	x	Unchanged	None	
4	M 43 yr	recurrence after open pyeloplasty	Right	No	Unchanged	lap. Pyeloplasty	
5	F 35 yr	patients choice for minimal invasive approach	Left	Yes	Improved	None	
6	M 57 yr	patients choice for minimal invasive approach	Left	Yes	Unchanged	None	
7	M 38 yr	intrarenal pyelum	Left	Yes	Improved	None	
8	M 41 yr	recurrence after lap. pyeloplasty and laserincision	Left	No	Unchanged	None	
9	F 15 yr	long stenotic segment	Left	No	Unchanged	None	
10	M 42 yr	recurrence after cautery wire balloon	Left	Yes	Improved	None	
11	F 71 yr	patients choice for minimal invasive approach	Right	Yes	Improved	None	
12	F 27 yr	patients choice for minimal invasive approach	Right	No	Unchanged	lap. Pyeloplasty	
13	F 67 yr	patients choice for minimal invasive approach	Right	Yes	Improved	None	
14	F 74 yr	comorbidity	Left	Yes	Unchanged	None	
15	F 70 yr	comorbidity	Left	Yes	Improved	passed away due to melanoma	
16	M 33 yr	recurrence after open pyeloplasty	Right	Yes	Unchanged	None	Upward migration
17	F 24 yr	recurrence after open pyeloplasty	Right	Yes	Unchanged	None	
18	M 21 yr	recurrence after balloondilation	Left	Yes	Improved	None	Upward migration
19	M 48 yr	patients choice for minimal invasive approach	Right	Yes	Unchanged	none	

x=no pain prior to treatment, Lap= laparoscopic, URS=ureterorenoscopic UPJ= ureteropelvic junction

## CONCLUSIONS

When choosing for a retrograde approach for UPJ obstruction treatment placement of the Overtoom Balloon Catheter, together with a conventional stent, may be a better option. Further testing with a larger group is required.