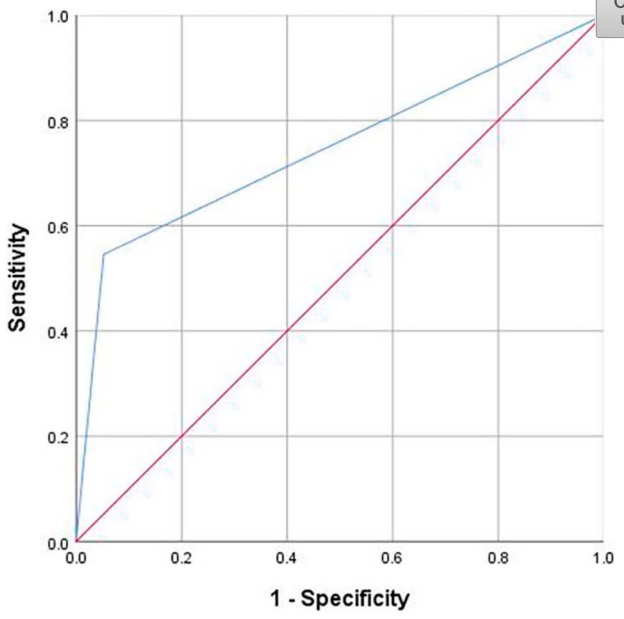

Source of Funding: None

MP42-09

FAILURE OF TANDEM URETERAL STENTS FOR MALIGNANT URETERAL OBSTRUCTION- WHAT'S NEXT?

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INTRODUCTION AND OBJECTIVE: The success rate of drainage with tandem ureteral stents (TUS) for malignant ureteral obstruction (MUO) is 72-87%. Failure of TUS is usually followed by the insertion of a percutaneous nephrostomy tube (PCN). The objective of this study was to examine the possibility of replacing the first-time failed TUS with a new pair of TUS- the success rate of the procedure, and the risk factors for a second failure.

METHODS: The medical records of all patients with MUO who underwent balloon dilation and TUS insertion in our institution between 2014-2022 were retrospectively analyzed. Failure of TUS was defined as an episode of urosepsis, recurrent urinary tract infections, acute kidney failure, or detection of new hydronephrosis on imaging scans. Independent risk predictors of failure of secondary TUS were determined by a multivariate cox regression analysis.

RESULTS: 240 procedures were performed on 186 patients during the study period. 67 (36%) patients failed for the first time after a median follow-up time of 7 months (IQR 4-17). Of which, 25 (37.4%) patients were drained by a PCN, and 42 (62.6%) were treated by exchanging the TUS with a new pair. Among the patients who underwent a second TUS insertion, 18 (42.8%) did not fail again, and continued to enjoy timely replacements of the TUS. However, 24 (57.2%) patients did fail for the second time and were drained via PCN. In a multivariant analysis, we found that inserting the same diameter TUS as the pair that failed ($p=0.002$) and time to first failure $\leq$6 months ($p=0.006$) were significant risk factors for a second failure of TUS. Cox regression analysis found that distal ureteral stricture predicts shorter time to second failure. During the study period, the group that didn't fail for a second time underwent 73 replacements of TUS overall (4$\pm$2.3 procedures per patient) in a median follow-up time of 19.5 months.

CONCLUSIONS: The success rate of replacing TUS after its failure is 42.8%. When replacing failed TUS, one should consider larger-diameter stents.

Source of Funding: None

MP42-10

SELF-EXPANDING LARGE CALIBER URETERAL STENTS FOR TREATMENT OF IDIOPATHIC URETERAL STRICTURE

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INTRODUCTION AND OBJECTIVE: Treatment for the idiopathic ureteral stricture has not yet been established. Recently, efficacy of self-expanding large caliber stent (Allium, Allium LTD, Israel) for ureteral stricture related to surgery, radiation or malignancy was reported. This study aims to investigate the effect of Allium stent on idiopathic ureteral stricture.

METHODS: From July 2018 and January 2022, 54 patients with 58 renal units were underwent ureteroscopic balloon dilation and placement of Allium stent. All the patients showed hydronephrosis before the stenotic lesion and pain. In all the patients, we used, 12 cm or 20cm length of self-expanding Allium ureteral stent and inserted retrogradely with intraoperative x-ray guidance after dilation of the stricture (Figure 1). The primary outcome was immediate improvement in pain and improvement in hydronephrosis through ultrasound examination at 1 month after the procedure. And the secondary outcome was stricture resolution rates following stent removal.

RESULTS: Patients and ureteral stricture characteristics were summarized in Table 1. Of 54 patients, 20cm stent was inserted in 47 patients and 12cm stent was inserted in 7 patients. After median follow-up period of 16.5 months, 39.7 % (23/58) of stents were kept in situ. Median indwelling time was 10months (range 1-37) and stent migration was observed in 8 cases (13.8%). All the patients were immediately free of pain after the procedure, and through ultrasound examination, improvement of hydronephrosis was confirmed in 53 out of 58 renal units. Among the 42 renal units which stent removal was performed, 13 renal units (31.0%) recurred stricture. Logistic analysis showed that stricture length was a significant predicting factor for stent failure (HR 2.75, 95% CI 1.58, 4.79, $p<0.01$)

CONCLUSIONS: Self-expanding allium ureteral stenting showed efficacy in relieving pain and improving hydronephrosis in idiopathic ureter stricture with minimal risk of complication. Overall success rate after stent removal was associated with preoperative stricture lengths.

Figure 1. A. Structure of self expanding ureteral Allium stent, B-C. Allium ureteral stents indwelled over the stricture site in right ureter. (b: 12cm stent length. c: 20cm stent length)

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Table 1. Patients and ureteral stricture characteristics

Variable	Overall
No. patients, n (%)	54
Male	37 (68.5)
Female	17 (31.5)
Median age, years (range)	54 (23-80)
No. renal unit	58
Stricture location, n (%)	
Proximal	16 (27.6)
Middle	7 (12.1)
Distal	14 (24.1)
Multiple	21 (36.2)
Median length of stricture, cm (range)	3 (1-10)

Source of Funding: None

MP42-11

SILICONE STENTING FOR CHRONIC URETERAL OBSTRUCTION IMPROVES STENT EXCHANGE FREQUENCY

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INTRODUCTION AND OBJECTIVE: Chronic ureter stenting is recommended for patients with malignant ureteral obstruction, or with benign ureteral obstruction but cannot tolerate or do not want definitive surgical management. Stents are exchanged at time intervals often limited by stent encrustation; prior in vitro studies have demonstrated that silicone stents have less encrustation. Our objective was to compare patients undergoing chronic exchanges with polymer-based and silicone stents.

METHODS: This IRB-approved retrospective study included all adult patients who underwent chronic ureter stent exchange from August 2017 through August 2022. Patients were stented with either a Boston Scientific PercuflexTM Plus or a Cook Black Silicone stent. Demographics, dates of exchange, stent type and size, and the presence of external and luminal encrustation were captured from operative reports. A subset of patients with >8F stents was analyzed given larger stents have lower rates of encrustation. Students t-test and chi-squared analysis were used to compare polymer-based vs silicone stents.

RESULTS: In total, 52 patients underwent 165 stent exchanges: 72% were polymer-based (n=119), 28% were silicone (n=44), and 1% were metallic (n=2, excluded). Table 1 lists patient demographics and stent sizes. Mean exchange interval for silicone stents was significantly longer than for polymer-based stents (197±60 vs 139±87 days, $p<0.0001$). Despite this, there was no significant difference in external encrustation (9 vs 18%, $p=0.18$) or luminal encrustation (7% vs 4%, $p=0.49$). Sub-group comparison of stents >8F also showed longer exchange interval (191±40 vs 106±36 days, $p<0.0001$), similar external encrustation (10.3 vs 24%, $p=0.13$), and similar luminal encrustation (6.9 vs 5.6%, $p=0.82$).

CONCLUSIONS: Utilizing silicone stents for chronic ureter stent exchanges significantly increases the exchange interval due to lower encrustation rates over similar time periods compared to a polymer-based stent. Further work with other polymer-based and silicone stents is warranted to evaluate the generalizability of these results.

	Polymer (n, %)	Silicone (n, %)
Stent Width		
4.8F	2 (1.7%)	n/a
6F	79 (66.4%)	15 (34.1%)
7F	2 (1.7%)	n/a
8F/8.5F	36 (30.3%)	29 (65.9%)
Stent Length (cm)		
20	8 (6.7%)	3 (6.8%)
22	20 (16.8%)	9 (20.5%)
24	51 (42.9%)	14 (31.8%)
26	16 (13.4%)	8 (18.2%)
28	11 (9.2%)	8 (18.2%)
30	13 (10.9%)	2 (4.5%)

Sex (M/F)	38.5%/61.5%
Age (Years, Mean ± Std Dev)	65.3 ± 15.5
Race	
White	65.4%
Black	3.8%
Hispanic	15.4%
Asian	3.8%
Other	11.5%
Indication	
Malignancy	71.2%
Benign Stricture	23.1%
Other	5.8%
Number of exchanges (range)	1-17
Side (Unilateral/Bilateral)	59.6%/40.4%

Source of Funding: COI: Consultant for Boston Scientific and Cook Medical, this study is unfunded

MP42-12

TISSUE AND PHARMACOKINETIC RESPONSE TO TREATMENT WITH A DRUG-COATED BALLOON IN A PORCINE URETER MODEL

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INTRODUCTION AND OBJECTIVE: Paclitaxel Drug Coated Balloons (PDCBs) have proven efficacious in the treatment of urethral stricture disease. Application of PDCBs for ureteral strictures holds promise but safety and efficacy of their use have yet to be evaluated. This study was designed to gather data concerning; pharmacokinetics, histology, safety and healing potential for the ureter after ureteral dilation with a PDCB in a porcine model.

METHODS: Ureteral dilation with PDCBs was performed on three anesthetized female pigs. In all cases one ureter was treated with PDCB dilation alone while the contralateral ureter was treated first with holmium laser endoureterotomy followed by PDCB dilation. Treatments were delivered in the proximal and distal ureter on each side using either an 8mm x 50 mm or 10 mm x 50 mm PDCB. Retrograde pyelograms (RPG) were performed to assess for extravasation after dilation. Ureteral stents were placed. Animals were terminated at 10, 28 and 45 days and gross necropsy was performed. Ureteroscopy with RPGs were also performed during the 28 & 45 day termination procedure. Paclitaxel concentration was quantified from plasma, urine, and tissues. Histology was also performed on treatment site and adjacent tissue.

RESULTS: PDCB dilation according to study protocol was successful in each case. Contrast extravasation was seen at each laser endoureterotomy/PDCB sites and none of the PDCB alone sites. All three animals survived to their scheduled termination date. RPG performed at 28 & 45 days showed complete resolution of extravasation though panureteral dilatation was seen in each case presumably related to stenting. Ureteroscopic and gross necropsy confirmed complete healing of treatment sites. Histology at 28 & 45 days showed only minimal inflammation of the PDCB alone treatment sites and complete healing of the endoureterotomy sites with otherwise minimal inflammatory response (Figure 1). Paclitaxel remained detecA in urine and target tissue for up to 45 days with plasma levels being below level of quantification.

CONCLUSIONS: PDCBs are capable of delivering paclitaxel to the upper urinary tract and do not appear to inhibit potential for healing despite significant ureteral injury among healthy female pigs. Further

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