ROBOTIC UPPER URINARY TRACT RECONSTRUCTION FOR URETERAL STRICTURE (#690)

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Introduction

Ureteral strictures :
- Iatrogenic ++
- Abdominal surgery
- Ureteroscopy

Historical techniques :
- Open ureteral reimplantation
- Ileal ureter
- Autotransplantation

Robotic surgery :
- Facility
- Buccal mucosa graft (BMG) ureteroplasty
- Side to side reimplantation

Literature :
- 7 reviews on BMG
- 22 case-reports

Material and methods

Study format :
- Single center
- Retrospective

Inclusion criteria :
- 2015 -2022
- All patients with UUTRR

Exclusion criteria :
- Ureteropelvic junction obstruction
- Open reconstructions
- Ureteroileal strictures

Primary outcome

No re stenosis
- No need for drainage
- No revision surgery
- No symptomatic upper urinary tract dilation

Results

Figure 1 : Patients charts

Mean age : 51 y

Mean BMI : 25,8 kg/m2

Mean stenosis length : 3,8 cm

Previous radiothe -rapy : n = 3

27 patients

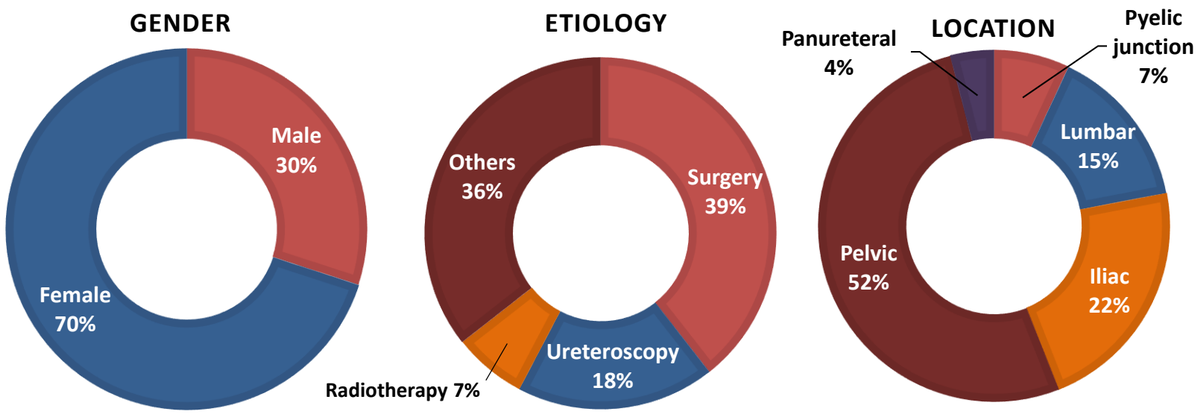
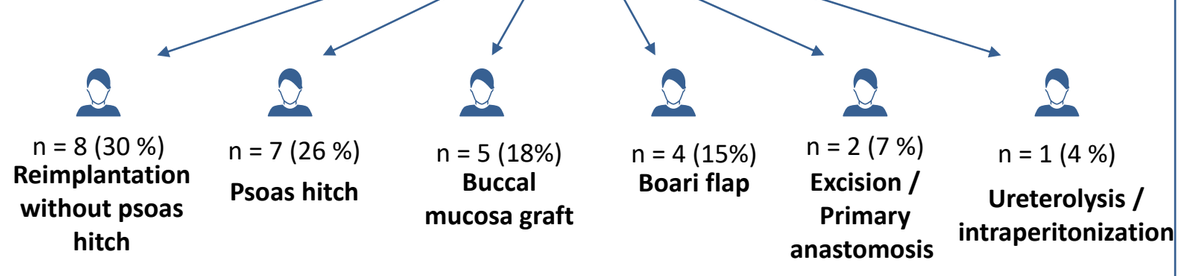


Figure 2 : Surgical techniques



1. One patient had both surgical and radiotherapic cause.
2. Two patients had iliac and pelvic ureteral strictures. Location was unknown for two patients.
3. Stenosis length was unknown for eleven patients. The three patients with complete ureteral disruption and the patient with reflux were excluded.

MEDIAN FOLLOW- UP : 10 MONTHS → 1 lost to follow-up

Table 1 : Perioperative and postoperative charts

	n = 27
Mean operative time[1], min	221
Ureteral rest, n (%)	21 (78)
Firefly/ Indocyanine green use, n(%)	12 (44)
Peroperative ureteroscopy, n (%)	5 (18)
Mean blood loss[2], cc	86
Postoperative complications <30 days, n(%)	8 (30)
Mean hospital stay, days	3

1. Duration of procedure wasn't known for 5 patients.
2. Blood losses weren't known for 5 patients.

Minimal blood loss

Short duration of stay

Clavien grade	n (%)
1	3 (38)
2	3 (38)
3b	2 (25)

Figure 3 : Primary outcome results

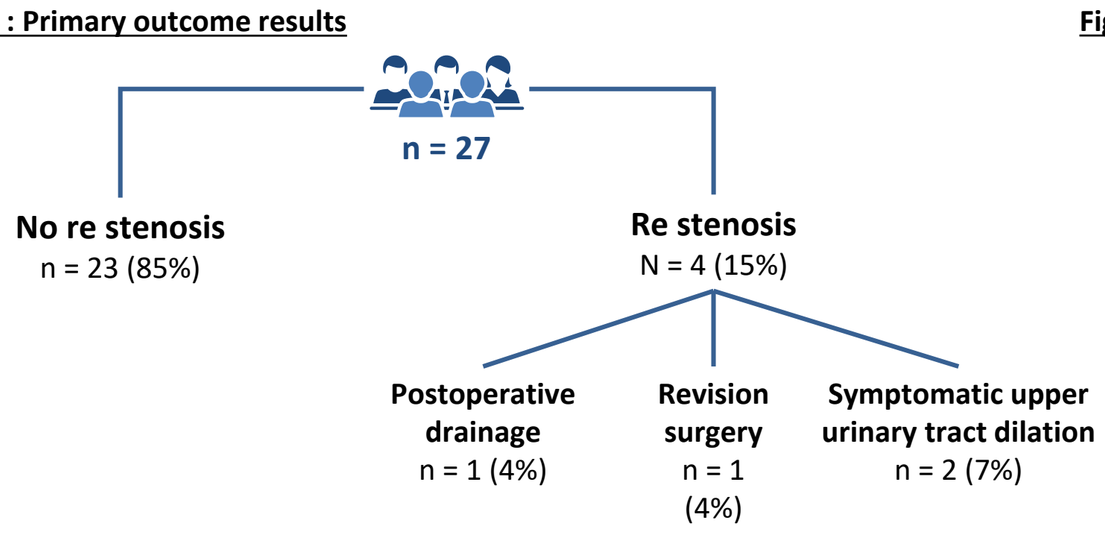


Figure 4 : Significant factors

Predictive significant factors

- **Previous radiotherapy** (failure risk 66.7% vs. 8.3%; p=0.02)
- **Stenosis length** (OR=2.4; p=0.009)

Conclusion

- Reconstruction : Feasible, various techniques
- Low morbidity and recurrence rate
- Radiotherapy / extended ureteral strictures : higher risk of recurrence

References

1. Teng J, Jia Z, Ai X, Guan Y, Gao F. A Modified Transurethral Stenting Technique for (Robot-Assisted) Laparoscopic Ureteral Reimplantation. Urol Int. 2019;102(4):385–9.
2. Lee Z, Lee M, Koster H, Lee R, Cheng N, Jun M, et al. A Multi-Institutional Experience With Robotic Ureteroplasty With Buccal Mucosa Graft: An Updated Analysis of Intermediate-Term Outcomes. Urology. 2021 Jan;147:306–10.
3. Lee Z, Keehn AY, Sterling ME, Metro MJ, Eun DD. A Review of Buccal Mucosa Graft Ureteroplasty. Curr Urol Rep. 2018 Mar 1;19(4):23.
4. Del Pozo Jiménez G, Castillón-Vela I, Carballido Rodríguez J. [Buccal mucosa graft for the treatment of long ureteral stenosis: Bibliographic review.]. Arch Esp Urol. 2017 May;70(4):445–53.
5. Heijkoop B, Kahokehr AA. Buccal mucosal ureteroplasty for the management of ureteric strictures: A systematic review of the literature. Int J Urol. 2021 Feb;28(2):189–95.
6. Urban DA, Kerbl K, Clayman RV, McDougall E. Endo-ureteroplasty with a free urothelial graft. J Urol. 1994 Sep;152(3):910–5.
7. Gundogdu G, Okhunov Z, Cristofaro V, Starek S, Veneri F, Orabi H, et al. Evaluation of Bi-Layer Silk Fibroin Grafts for Tubular Ureteroplasty in a Porcine Defect Model. Front Bioeng Biotechnol. 2021;9:72355
8. Zahran MM. Flap ureteroplasty for segmental structure of middle third of ureter. Urology. 1979 Apr;13(4):368–71.
9. Gao X, Chen J, Jian Z, Wang M, Wang W, Peng L, et al. Initial Experience of Self-Expanding Metal Ureteral Stent in Recurrent Ureteral Stricture After Ureteroplasty. Front Surg. 2021;8:765810.
10. Kapogiannis F, Spartalis E, Fasoulakis K, Tsouroufl is G, Dimitroulis D, Nikiteas NI. Laparoscopic and Robotic Management of Ureteral Stricture in Adults. In Vivo. 2020 Jun;34(3):965–72.
11. Schiavina R, Zaramella S, Chessa F, Pultrone CV, Borghesi M, Minervini A, et al. Laparoscopic and robotic ureteral stenosis repair: a multi-institutional experience with a long-term follow-up. J Robot Surg. 2016 Dec;10(4):323–30.
12. Paludo A de O, Menegola C, Gorgen ARH, Diaz JO, da Silva Batezini NS, Tavares PM, et al. Laparoscopic ureteroplasty with gonadal vein graft for long ureteral stenosis: A step by step video. J Pediatr Urol. 2020 Oct;16(5):729–30.
13. Tsaturyan A, Akopyan K, Levonyan A, Tsaturyan A. Long ureteric stricture replacement by buccal mucosa graft: an Armenian experience case series report. Cent European J Urol. 2016;69(2):217–20.
14. Bausch K, Sauter R, Subotic S, Halbeisen FS, Seifert HH, Feicke A. Long-Term Outcome of Non-antireflux Robotic-Assisted Robot-Assisted Laparoscopic Ureter Reimplantation in Ureteral Obstruction. J Endourol. 2022 Sep;36(9):1183–91
15. Sun G, Yan L, Ouyang W, Zhang Y, Ding B, Liu Z, et al. Management for Ureteral Stenosis: A Comparison of Robot-Assisted Laparoscopic Ureteroureterostomy and Conventional Laparoscopic Ureteroureterostomy. J Laparoendosc Adv Surg Tech A. 2019 Sep;29(9):1111–5.