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Robot-assisted buccal mucosal graft ureteroplasty for the treatment of proximal ureteral strictures

Flavio Tanese, Salvatore Liguigli, Giuseppe Torre, Paolo Minafra, Luciano Rella, Michele Battaglia, Giuseppe Lucarelli, Marco Spilotros and Pasquale Ditonno

Abstract

The authors describe their initial experience with robot-assisted buccal mucosal graft (BMG) ureteroplasty for the management of proximal ureteral strictures.

Keywords

Urethroplasty, buccal mucosal graft, BMG, robot assisted, stenosis, ureteral stenosis

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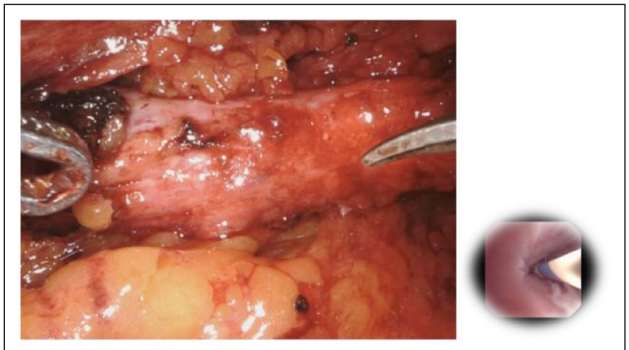
Objectives

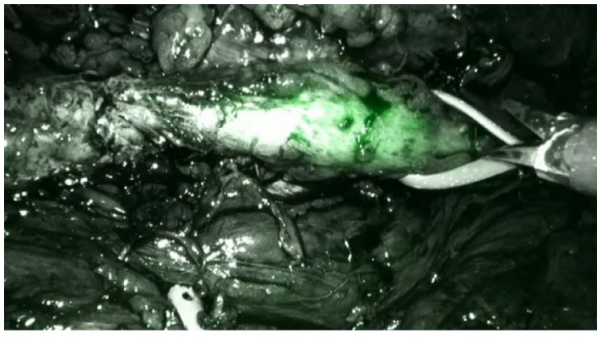
The authors describe their initial experience with robot-assisted buccal mucosal graft (BMG) ureteroplasty for the management of proximal ureteral strictures.



Flexible ureteroscopy + NIRF imaging

Methods

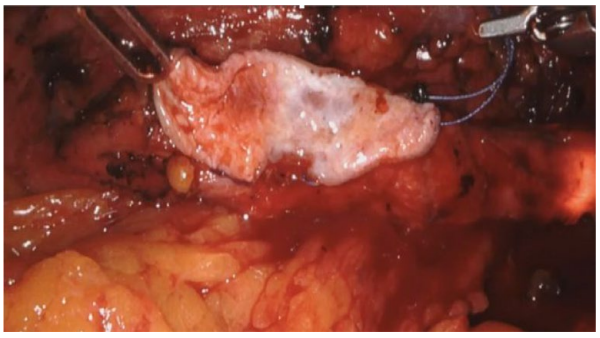
Two stone former patients, who had already undergone multiple intracorporeal lithotripsy procedures resulting in *proximal ureteral stenosis* (3 and 4 cm), were treated with robot-assisted BMG ureteroplasty.[1] For the precise identification of the ureteral stricture site, in one case *flexible ureteroscopy and near-infrared fluorescence (NIRF) imaging* were combined, exploiting the green fluorescence of the endoscopic light to identify the tip of the ureteroscope;

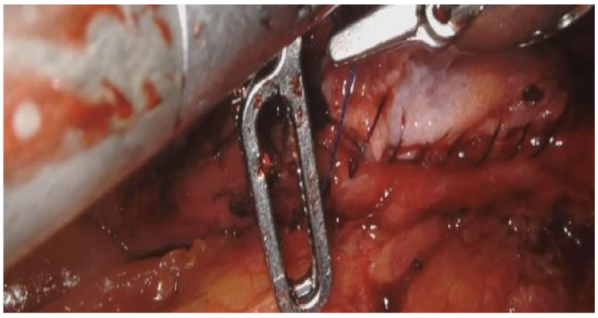


Intraureteral indocyanine green + NIRF imaging

Urology, Andrology and Kidney Transplantation Unit, Department of Regenerative and Precision Medicine, University of Bari "Aldo Moro", Bari, Italy

Corresponding author:
Salvatore Liguigli, Urology, Andrology and Kidney Transplantation Unit, Department of Regenerative and Precision Medicine, University of Bari "Aldo Moro", Piazza A. Moro, Bari 70121, Italy.
Email: salvatore.liguigli@gmail.com



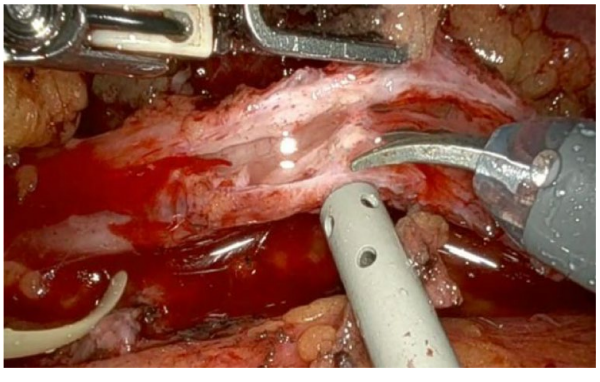


Buccal mucosal graft onlay anastomosis + NIRF

in the other, the *indocyanine green (ICG)* was retrogradely injected into the ureter using a ureteral catheter (under NIRF, the ureter tissue fluoresced green until the stricture area).[2] The robot-assisted treatment consisted of isolation of the ureteral stricture and its longitudinal incision at least 1 cm beyond the margins of the stenosis until healthy non-scarring tissue was reached. A *buccal mucosal graft* (BMG) of the required length was harvested, prepared, and sutured to the ureteral stricture tract. In order to reduce the risk of stenosis, detached stitches are placed on the distal and proximal ends of the buccal mucosal graft to anchor it to the ureteral mucosa. Then, two semicontinuous sutures are performed.[3] The BMG onlay anastomosis was completed after double-J stent placement. Finally, the anastomotic area was wrapped with an omental flap.[4]

Results

No postoperative complications were reported. Four weeks after surgery, the ureteral stent was removed in both patients and a CT urogram was performed, showing good anatomical resolution of the stenosis and no urinary leakage.



Conclusions

Robot-assisted buccal mucosal graft (BMG) ureteroplasty with the utilization of NIRF imaging combined with flexible ureteroscopy/indocyanine green represents a valid treatment option for complex proximal or middle-tract ureteral strictures.[1] This technique could be an alternative to permanent urinary diversion or more complex and bothersome procedures, such as ileal proureter or renal autotransplantation. This technique is well-suited for ureteral reconstruction as it allows for minimal disruption of the delicate ureteral blood supply and facilitates a tension-free anastomosis. Noticeably, the blood supply to BMG must be warranted by ureteral wrapping with omental flap.[4] Our preliminary results showed that BMG ureteroplasty for managing iatrogenic ureteral strictures seems safe and feasible.[2]

Declaration of conflicting interests

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ORCID iDs

Salvatore Liguigli https://orcid.org/0009-0002-0592-6059

Luciano Rella https://orcid.org/0000-0002-3409-4629

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