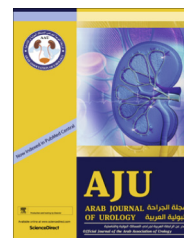




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**LAPAROSCOPY/ROBOTICS**

**ORIGINAL ARTICLE**

**Robot-assisted ureterocalycostomy: A single centre contemporary experience in adults**



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**KEYWORDS**

Robotics;  
Ureterocalycostomy;  
Pelvi-ureteric junction;  
Obstruction

**ABBREVIATIONS**

PCNL, percutaneous nephrolithotomy;  
PUJO, pelvi-ureteric junction obstruction;  
RAUC, robot-assisted ureterocalycostomy;  
UC, ureterocalycostomy

**Abstract Objective:** To present our technique and experience of robot-assisted ureterocalycostomy (RAUC) in managing secondary pelvi-ureteric junction obstruction (PUJO) in adults.

**Patients and methods:** We retrospectively reviewed all patients from our centre who underwent RAUC, between 2011 and 2015, for secondary PUJO resulting from previous surgical intervention. Six procedures in five patients, including a bilateral RAUC were performed. The median (range) patient age was 33.7 (18–41) years. The outcome variables included operative time, duration of hospital stay, and objective evidence of unimpeded drainage on urography.

**Results:** The mean (range) operating time was 172 (144–260) min and estimated blood loss was 100 (50–250) mL. There were no conversions to open or laparoscopic surgery, and no intraoperative complications. Two patients had Clavien–Dindo Grade I complications that were managed conservatively and one patient had a Grade IIb complication, which required balloon dilatation and re-stenting. After a median (range) follow-up of 11 (7–48) months, five of the six renal units had successful outcomes.

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**Conclusion:** The robot-assisted approach appears to be ideally suited for redo cases demanding fine dissection with meticulous suturing. In our present series of adult patients, we could safely and successfully perform RAUC with minimal morbidity. However, a larger multi-institutional outcome analysis is required to substantiate the role of the robot-assisted approach in performing UC.

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## Introduction

There are various management options for PUJ obstruction (PUJO), encompassing endoscopic to the definitive repairs, such as pyeloplasty and ureterocalycostomy (UC). The means of performing the latter repairs have transitioned from the era of open surgery to laparoscopy and recently to robot-assisted techniques. Although most PUJO can be specifically dealt with by Anderson–Hynes pyeloplasty [1], there are circumstances, such as failed prior pyeloplasty with minimal pelvis, PUJO with an intra-renal pelvis, obstructed horse-shoe kidney, and PUJO resulting from prior interventions, which may warrant UC [2]. Contemporary series have shown that endourological failures and complications thereof, have been an increasing indication for UC, consistent with the increased use of these minimally invasive procedures [3].

As far as the approach for performing UC is concerned, owing to the technical complexity, it has long been performed by open means. However, Gill et al. [4] published their first feasibility study of laparoscopic UC in a clinical context and brought UC into the realms of minimally invasive surgery. Similarly Korets et al. [5] reported the first robot-assisted procedure and their experience. The robot-assisted approach with its inherent unique attributes appears to be particularly appealing, owing to the technical complexity and meticulous suturing required for accomplishing the procedure. We herein present our technique and experience with robot-assisted UC (RAUC).

## Patients and methods

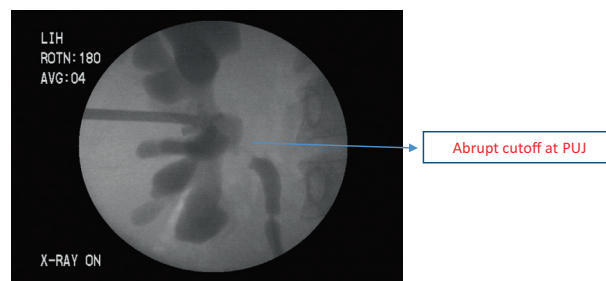
We retrospectively reviewed the records of all patients who underwent RAUC at our centre from March 2011

to February 2015. In all, six procedures on five patients, including a bilateral RAUC, were performed and followed. The patients' presentations and demographics are shown in Table 1. The PUJO was evaluated and documented by CT-urography and/or antegrade dye study through the pre-placed nephrostomy tube (Fig. 1). Four renal units had undergone pyelolithotomy previously, one had a history of percutaneous nephrolithotomy (PCNL), and one had a previously failed pyeloplasty.

### The technique

After thorough discussion with the patient and a decision made to proceed with RAUC, an informed consent was obtained. Prophylactic antibiotic was administered 1 h before the induction of general anaesthesia. All the procedures were performed by the same surgeon.

After placement of 5-F open-ended 'pigtail' ureteric catheter over a 0.09-cm (0.035") guidewire and 16-F Foley catheter, the patient was positioned for the RAUC. The patient was placed in a lateral flank position. Pneumoperitoneum was created using a Veress needle (closed technique). Port positioning comprised



**Figure 1** PUJO evaluated by CT-urography and/or antegrade dye study through the pre-placed nephrostomy tube.

**Table 1** Patient presentation and demographics.

Patient number	Age, years	Sex	Laterality	Cause of PUJO	Prior endourological attempt	Pre-placed nephrostomy
1	41	Male	Right	Secondary PUJO, post-pyelolithotomy	+	+
2	28	Female	Right	Secondary PUJO, post-PCNL	+	+
3	36	Female	Right	Secondary PUJO, post-pyelolithotomy	+	+
4	40	Male	Bilateral	Secondary PUJO, post-bilateral pyelolithotomy	+	+
5	18	Female	Right	Failed pyeloplasty	+	+

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