Robotic-assisted laparoscopic pyeloplasty with the use of the Contour™ stent: description of the technique and analysis of outcomes after the first 30 cases

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INTRODUCTION

Robotic-assisted Anderson-Hynes pyeloplasty (RAP) is becoming the preferred technique for the surgical management of pelviureteric junction obstruction (PUJO) [1, 2], due to reduced postoperative pain, shorter hospital stays, faster convalescence and less scarring when compared to the open technique [3–6]. Two of the main critical steps of the technique are represented by the individuation of the exact point of the stenosis, especially for the minimally-invasive transmesocolic and supramesocolic approaches, as well as the insertion of the double J stent after the incision of the ureteropelvic junction.

We aim to present a technical variation using the Contour™ stent that might be helpful in both previously described stages of the surgery and to demonstrate the outcomes of our first 30 patients.

MATERIAL AND METHODS

We prospectively collected data of all consecutive adult patients undergoing robotic pyeloplasty according to Anderson-Hynes with the use of a Contour™ stent at our institution from April 2015 to May 2018. All procedures were performed by a single surgeon (FG) using the da Vinci Si robotic system. We performed a minimally-invasive transmesocolic approach for the left side PUJO and a supramesocolic approach for the right ones. Indications for surgical correction included: persistent...
The use of a Contour™ ureteric stent showed to be a safe and feasible technical variation while performing a robotic-assisted pyeloplasty (RAP). Its use shows the main advantage in the execution of a transmesocolic approach, allowing for a correct identification of the pelviureteric junction obstruction (PUJO) and a minimal incision of the retroperitoneum to carry out the surgery. Peri- and postoperative outcomes are similar of those reported by other authors [1, 7–10]. Attention must be paid by the patient to avoid a displacement of the ureteric catheter before its conversion into a double J stent. Despite the overall operative time being slightly higher when compared to other reports in literature, mainly due to the required change of the patients’ position after the Contour™ insertion, the global ‘robotic’ time (docking + console) showed to be one of the lower times in the reported literature [7, 8]. The preventive insertion of the stent, together with the inflation of saline solution during the RAP allowed for a quick and easy identification of the pelvic ureteric junction and avoiding possible ureteric damages due to a traumatic anterograde insertion of a double J ureteric stent. In the second post-operative day the Contour™ is then easily converted into a double J and its correct position double checked through an abdominal radiograph.

**RESULTS**

Mean (±SD) age at surgery was 48.2 ±15.3 years, mean (±SD) BMI was 22.9 ±2.6, while gender was equally represented with 15 males and 15 females. Median Charlson comorbidity score was 1 (0–1), while the median American Society of Anesthesiologists (ASA) classification was 2 (1–2). Twenty patients had a right sided PUJO, while 10 had a left sided one. The main intra- and post-operative outcomes are summarized in Table 1. Overall, six patients had a postoperative complication: five had a Clavien-Dindo grade II and one patient had a grade IIIa. In particular, all grade II complications were patients who developed hyperpyrexia or fever after surgery. The patient with a Clavien-Dindo IIIa had a displacement of the single J stent, developed hydronephrosis and underwent the temporary insertion of a percutaneous nephrostomy. At 4-months follow-up, 90% of patients showed a success of the procedure in terms of improved glomerular filtration rate (GFR) and/or absence of the PUJO and/or symptoms.

**CONCLUSIONS**

The use of a Contour™ ureteric stent showed to be a safe and feasible technical variation while performing a robotic-assisted pyeloplasty (RAP). Its use shows the main advantage in the execution of a transmesocolic approach, allowing for a correct identification of the pelviureteric junction obstruction (PUJO) and a minimal incision of the retroperitoneum to carry out the surgery. Peri- and postoperative outcomes are similar of those reported by other authors [1, 7–10]. Attention must be paid by the patient to avoid a displacement of the ureteric catheter before its conversion into a double J stent. Despite the overall operative time being slightly higher when compared to other reports in literature, mainly due to the required change of the patients’ position after the Contour™ insertion, the global ‘robotic’ time (docking + console) showed to be one of the lower times in the reported literature [7, 8]. The preventive insertion of the stent, together with the inflation of saline solution during the RAP allowed for a quick and easy identification of the ureter and pelvic ureteric junction, and therefore can be performed through a minimal incision of the retroperitoneum. For this reason, we believe that this technique may be particularly useful during the learning curve, when also the anterograde stent insertion might be challenging.

**CONFLICTS OF INTEREST**

The authors declare no conflicts of interest.
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