Correcting and sharing our complications. Misplacement of pigtail catheter, during a Robot Assisted Pyeloplasty. Clinical findings, diagnosis, possible causes and endoscopic treatment

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Discussion

In our practice before pyeloplasty patients are not routinely stented with a ureteral catheter pre-operatively unless renal function is compromised or a stent was required due to urinary upper tract infection.

The unstented and dilated renal pelvis is easier to be prepared surgically and the point of obstruction easier to recognize. The placement of a double J stent is always performed intra-operatively in an antegrade fashion and over a guidewire, after the completion of the rear part of the ureteropelvic anastomosis (4). The antegrade compared to the retrograde positioning of the stent requires significantly less time, by omitting the need for patient repositioning, which in a robotic modality would require even more time, due to robot undocking and redocking procedure (5). The use of a stent associated with placement of a Foley catheter facilitates a low pressure environment in the initial postoperative days, thus minimizing urine leakage (2, 6). A drain is left indwelling at the site of the operation in all cases. Other authors have found no difference in surgery outcome and complications between stented and unstented patients, especially in the pediatric population,and therefore omitted the use of ureteral stent (3, 7).

Correct placement of the double J stent is confirmed with a KUB X-ray on the first postoperative day, with the main concern of the lower end of the stent being positively inside the bladder. The intra-operative placement in a robotic assisted case has the disadvantage of no tactile feedback of the course of the guidewire and the forces applied, as in open and laparoscopic cases, solely relying in optical confirmation of the length of the inserted stent. The diagnostic approach we chose could have been supplemented with the use of Computed Tomography, in order to better evaluate the point of pigtail exit from the urinary tract, but with the disadvantage of not offering any treatment option and adding on the radiation exposure of the patient. The endoscopic approach we opted for, had the advantages of detailed diagnosis, and evaluation of the integrity of the upper urinary tract and the possibility of "*damage control*" strategy simply by placing a new pigtail, which in our case facilitated complete resolution.

In the course of endoscopically retrieving of the pigtail the major considerations were the integrity of the anastomosis and the ureter. The initial retrograde pyelography which did not reveal any significant leakage and the placement of a safety wire were key to our decision to follow through the case in an endoscopic fashion. The retrieval of the stent with upward from the anastomosis to the top of the renal pelvis movements were of pivotal significance, because this course applied the minimum possible stress to the ureter and the anastomosis.

Critically reviewing the recordings of the robotic case we tried to recognize the causes of stent misplacement. We concluded that the minimal exposure of the renal pelvis and ureter, in order to avoid devascularization which may hinder normal tissue repair, coupled with a suboptimum drain of small blood clots after the renal pelvis incision were key elements of a less than perfect optical control of the surgical field. The minimal handling of the anastomosis when placing the pigtail, while protecting its integrity, did not allow complete optical inspection of pigtail placement. Overconfidence regarding the surgical step of stent placement and especially disregarding the possibility of guidewire exiting along the line of anastomosis could have attribute to our mishap. Finally the insertion of the pigtail was mediated with long strokes that did not allowed to correctly evaluate the forces applied on the stent.

References

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