Utility of the Surgical Robot in Peritoneal Dialysis Catheter Placement

Yasmin Gore B.S. [1], **Ahmad Bosaily M.D.** [1], **Stephen Stanek M.D.** [1,2], **Roberta Redfearn Ph.D.** [2], **Joseph Sferra M.D.** [1, 2]

[1]*The University of Toledo College of Medicine and Life Sciences, Department of Surgery, Toledo, OH 43606*
[2]*ProMedica Toledo Hospital, Department of Surgery, Toledo, OH 43606*

Introduction

Peritoneal Dialysis (PD) is a growing form of renal replacement therapy (RRT) for patients with end-stage renal dialysis (ESRD). Extensive intraperitoneal adhesions and complex abdominal wall hernias are barriers to application in some patients.

Methods

CASE 1

A 66-year-old male with history of radical cystoprostatectomy, bilateral nephroureterectomy, pelvic lymph node dissection and sigmoid colectomy with primary anastomosis for treatment of high-grade papillary urothelial carcinoma and sigmoid stricture underwent PD catheter placement. On laparoscopy, extensive small bowel and omental adhesions were appreciated. The robot was utilized for extensive adhesiolysis while keeping select adhesions as a natural omentopexy. On completion, the catheter had excellent flow. The patient continued PD at 2-month follow-up.

CASE 2

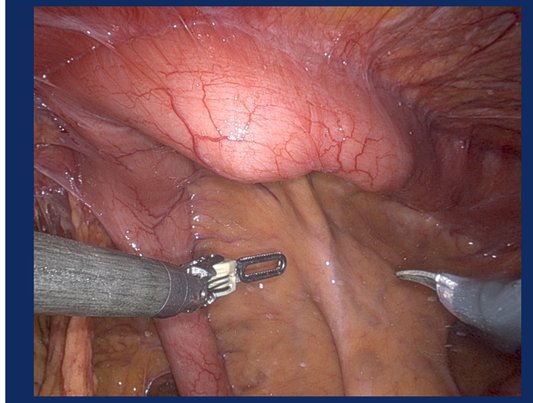
A 70-year-old female with a large ventral hernia and past surgeries notable for total abdominal hysterectomy with bilateral salpingo-oophorectomy and open cholecystectomy underwent PD catheter placement. On laparoscopy, a large ventral incisional hernia in a swiss-cheese pattern and extensive adhesions connecting small bowel to abdominal wall were appreciated requiring 3 hours of robot-assisted lysis of adhesions and mesh placement. The PD catheter was then placed with excellent flow appreciated. The patient returned one month later requiring PD catheter repositioning and had successful PD on postoperative day 1. The catheter is functional at 3-month follow-up.

Results

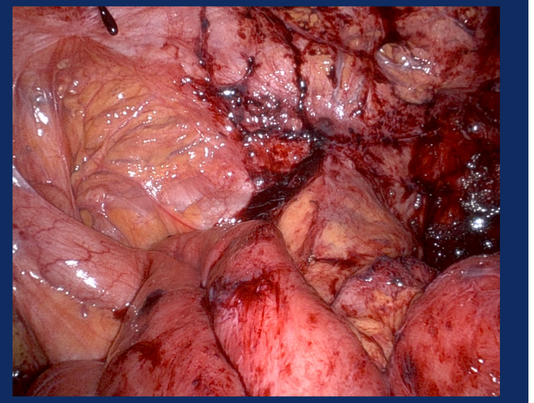
Two patients successfully began PD following use of the surgical robot to address intraperitoneal adhesions and abdominal hernias for PD catheter placement.

Discussion

The Advancing American Kidney Health Executive Order of 2019 calls for an investment in PD given its clinical and financial benefits [1]. Clinically, studies show patients report decreased burden of kidney disease, fewer adverse symptoms, and improved cognitive status with peritoneal dialysis [2]. Financially, the United States Renal Data System reports a $14,450 per patient per year Medicaid saving on PD compared to hemodialysis for over 500,000 patients on RRT [3]. Key factors for success of peritoneal dialysis include lack of intraabdominal obstruction and resolution of hernias. As such, patients with complex abdominal hernias or surgical histories concerning for extensive adhesions are often considered noncandidates for PD without surgical intervention [4]. In these cases, the surgical robot was utilized to overcome said barriers for successful peritoneal dialysis catheter placement and function.



Small bowel and omental adhesions to abdominal wall



Pelvis following extensive lysis of adhesions

Conclusion

The robot can be used to expand patient selection for PD to patients who have complex hernias or significant intraperitoneal adhesions.

References

1. Exec. Order No. 13879. 2019: 84 Fed. Reg. p. 33817-33819.

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