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Case Report

A Rare Case of Ileal Neobladder Enteric Fistula Treated with Robot-Assisted Laparoscopic Repair

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Abstract

Background: Ileal neobladder construction following radical cystectomy represents a significant advancement in urological surgery. However, complications such as entero-neobladder fistulas, though rare, pose considerable clinical challenges and necessitate prompt, effective management.

Case Presentation: We report a case of 55-year-old male who developed an entero-neobladder fistula 14 months after robot-assisted radical cystectomy with intracorporeal neobladder reconstruction. The patient underwent robot-assisted laparoscopic repair. Postoperative recovery was unremarkable except for paralytic ileus, which was conservatively managed.

Conclusion: Our case show that Laparoscopic robotic surgery is a viable and effective approach for the treatment of rare and complex complications such as entero-neobladder fistulas.

Introduction

Ileal neobladder construction represents a significant advancement in urological surgery, offering improved quality of life outcomes for patients undergoing radical cystectomy compared to traditional urinary diversion methods [1,2]. However, the procedure is not without risks, and complications such as enteric fistula formation can present challenging clinical scenarios [3]. Enteric fistulas involving the ileal neobladder, though rare, require prompt diagnosis and management to mitigate associated morbidity and mortality risks [4]. Laparoscopic robotic surgery has emerged as a transformative tool in urological reconstruction, leveraging advancements in technology to enhance surgical precision and patient outcomes [5,6]. This approach offers distinct advantages over conventional open surgery, including reduced blood loss, shorter hospital stays, and faster recovery times [7]. The application of robot-assisted techniques in managing complex urological conditions, such as ileal neobladder enteric fistulas, highlights the evolving role of minimally invasive surgery in improving postoperative recovery and quality of life [8].

In this report, we present a rare case of ileal neobladder enteric fistula successfully treated using robotic approach. We outline the clinical presentation, diagnostic approach, surgical technique, and postoperative outcomes, underscoring the efficacy and feasibility of this advanced approach in addressing intricate urological complications. By sharing our experience and integrating findings from recent literature, we aim to contribute valuable insights into the evolving landscape of robotic surgery and its application in complex reconstructive procedures.

Case Presentation

We present a case of a 55 years old male with a history of dyslipidemia, obesity and smoking, in a good general state and fully functional in daily life, Eastern Cooperative Oncology Group of 0. The patient was diagnosed with a non-muscle invasive urothelial carcinoma of the bladder in 2018, and subsequently he was treated with BCG instillation therapy. Unfortunately, the

disease had recurred and progressed to muscle invasive bladder cancer in 2023. The patient received neoadjuvant chemotherapy (gemcitabine and cisplatin) and underwent robot-assisted radical cystectomy (RARC) with pelvic lymphadenectomy and Florence robotic intracorporeal neobladder (FloRIN) formation. After the surgery, the histology report showed two foci of muscle invasive high-grade adenocarcinoma and multiple foci of non-muscle invasive high grade urothelial carcinoma including carcinoma in situ. Several weeks after the surgery the patient was hospitalized because of emphysematous pyelonephritis of the right kidney that treated with antimicrobials and catheter drainage of the neobladder.

Fourteen months after the surgery the patient presented to our emergency department because of fever, a month long diarrhea and urinary retention. Physical examination revealed signs of a distended neobladder and after a Foley catheter was inserted 800 ml were drained, and fecaluria was noted. Because of suspicion for entero-neobladder fistula a CT cystogram was performed, which showed passage of contrast material from the neobladder to the terminal ileum where the anastomosis was originally done (Figure 1). We discussed the surgical options with the patient and minimally invasive approach was planned. Pre-operatively, Serum creatinine was 1.6 mg/dL with a glomerular filtration rate of 45mL/min, Urine culture was positive for E.coli and Klebsiella pneumonia and appropriate antimicrobial treatment was given prior to the procedure.

Figure 1: CT cystogram illustrating the passage of contrast material from the neobladder to the small bowel.

The procedure was done in the Trendelenburg position, We started by placing five trocars in the abdomen as shown in (Figure 2). Next was the release of small bowel adhesions in the pelvis. Separation of the ileal loop adhered to the reconstructed bladder was performed. Careful dissection was continued until reaching the location of the fistula between the reconstructed bladder and the bowel anastomosis, which was resected. The old anastomosis was excised, and a new anastomosis was performed using a robotic GIA stapler. Debridement of the fistula opening in the reconstructed bladder was done and followed by a two-layer closure with 3-0 V-lock. A leak test was conducted and was negative. Post operatively the patient had paralytic ileus which was treated conservatively, a urinary catheter was left for one month to allow proper healing. At 6 weeks post operative follow up the patient still had high residual volume, therefore, he was taught to utilize clean intermittent catheterization (CIC) to prevent distention of the neobldder.

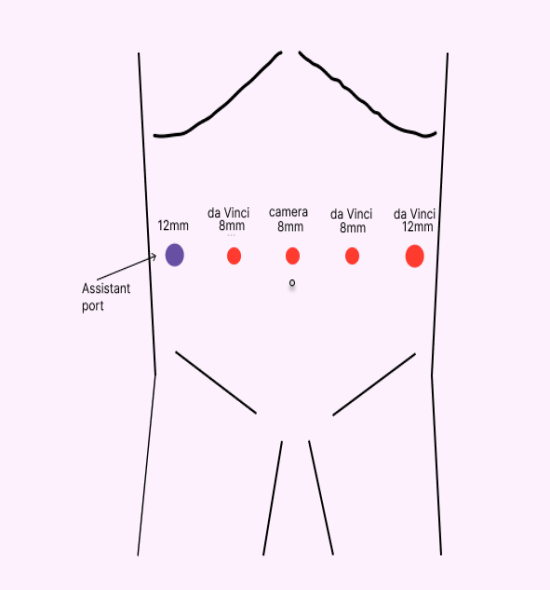

Figure 2: Trocars placement.

Discussion

Entero-neovesical fistula formation following an orthotopic ileal bladder reconstruction after radical cystectomy is a rare occurrence, presenting significant challenges in both diagnosis and management [1,2]. An entero-neobladder fistula typically presents with symptoms such as fecaluria, pneumaturia, or recurrent urinary tract infections, and is most often diagnosed using contrast-enhanced abdominopelvic CT imaging [1,4]. It is thought that the entero-neobladder fistulas could be caused by multiple factors. Our patient lacked comorbidities that would be a usuall suspect for such complication such as diabetes, tumor recurrence, radiotherapy, inflammatory bowel disease, or diverticular disease. In this case, we attribute that the entero-neovesical fistula formation was due to the proximity of the terminal ileum segment containing the stapled anastomosis to the anterior suture line of the neobladder. In addition, an element of neobladder outlet dysfunction with a resulting over continence and the presence of elevated post-void residual urine and chronic neobladder distension may have had also contributed to fistula formation [2].

Conservative management may be attempted initially in certain cases, however, surgical intervention is frequently necessary and involves resection of the affected bowel segment and formation of a new anastomosis restoring the bowel continuity [1-3]. To the best of our knowledge, this is the first report describing the feasibility of robot-assisted laparoscopic approach for the repair of entero-neobladder fistula following RARC. As minimally invasive radical cystectomy techniques (laparoscopic or robotic) advance, even rare cases of entero-neobladder fistula can potentially benefit from a minimally invasive approach as well [8].

Conclusion

This case highlights the successful management of a rare and complex complication-an entero-neobladder fistula-following RARC with FloRIN reconstruction. The use of laparoscopic robotic surgery proved to be a feasible and effective approach, offering the precision and control needed to address the intricate surgical challenges presented by this condition.

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