

Preperitoneal placement of an inflatable penile prosthesis reservoir for postoperative erectile dysfunction after radical cystoprostatectomy with orthotopic neobladder

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Purpose: To describe a case of safe placement of an inflatable penile prosthesis reservoir for postoperative erectile dysfunction (ED) with a history of radical cystoprostatectomy with an orthotopic Studer neobladder.

Materials and Methods: A 55-year-old bladder cancer patient, who underwent radical cystoprostatectomy with orthotopic Studer neobladder 2 years prior, suffered from postoperative ED. A 3-piece inflatable penile prosthesis was implanted via a penoscrotal incision. The alternative reservoir placement began with a longitudinal 4-cm incision, which was 2 finger-breaths to the left and lateral to the umbilicus. Thereafter, the anterior and posterior rectus sheaths were dissected and incised. Then, the transversalis fascia entering into the preperitoneal space was incised, followed by circumferential sweeping using the forefinger, and, finally, placement of a 100 mL 'flat' reservoir. The reservoir was filled with 65 mL saline and then evaluated for back pressure. The reservoir tubing exited through the defect of the rectus sheaths and tunneled through the abdominal fat into the penoscrotal wound.

Results: Total operative time was 105 minutes, and the estimated blood loss was minimal. The patient was discharged at postoperative day 1 and experienced no perioperative complications. At the 6-month follow-up, there was no abdominal bulging from the preperitoneal reservoir, and the reservoir was not palpable.

Conclusions: The preperitoneal placement of the flat reservoir at the level of the umbilicus is a safe and acceptable surgical technique for postoperative ED after radical cystoprostatectomy with orthotopic neobladder.

Keywords: Cystectomy; Erectile dysfunction; Penile implantation; Prostatectomy; Prosthesis design

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INTRODUCTION

Traditionally, it has been suggested that the retropubic or prevesical space is the best location for inflatable

penile prosthesis (IPP) reservoirs. However, scarring after pelvic surgeries (such as radical retropubic prostatectomy, cystectomy, renal transplantation, and radiation to the pelvis) obliterate this space, and then, may require multiple

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blind piercing and sweeping to gain access to the space of Retzius [1]. This poses the risk of injury to the bladder, iliac vessels, and surrounding structures, and, therefore, may warrant alternative reservoir site placement.

Alternatively, ectopic reservoir placement above the transversalis fascia but beneath the abdominal musculature (submuscular) has been described [2-4]. Another ectopic reservoir placement site in the lateral retroperitoneal space via a separate second incision just above the anterior superior iliac spine in either lower lateral quadrant has also been used as a means of reducing potential damage to pelvic structures [5].

However, to the best of our knowledge, there is no report about the specific surgical technique for placement of an IPP reservoir in erectile dysfunction (ED) patients with a history radical cystoprostatectomy with an orthotopic neobladder, which we believe requires a different surgical approach and technique.

We present a case of the safe placement of an IPP reservoir for postoperative ED with a history of radical cystoprostatectomy with orthotopic Studer neobladder.

SURGICAL TECHNIQUE

A 55-year-old bladder cancer patient underwent radical cystoprostatectomy and pelvic lymph node dissection with the creation of an orthotopic Studer neobladder 2 years ago. He had suffered from ED since then.

A 3-piece inflatable penile prosthesis (AMS 700 CXM, American Medical Systems Inc, Minnetonka, MN, USA) was implanted via a penoscrotal incision. A surgical technique with the low lithotomy position was performed according to the protocol described by Harper [6] using the following alternative reservoir placement.

A separate longitudinal 4-cm incision was made 2 finger-breaths to the left and lateral to the umbilicus. Dissection

was carried out through to Scarpa's fascia. The anterior rectus fascia was incised and dissected laterally. The rectus muscle itself was mobilized slightly within its sheath to gain access to the posterior rectus sheath. Thereafter, a longitudinal 3-cm incision was made at the most lateral aspect of the posterior rectus sheath, and the transversalis fascia entering into the preperitoneal space was incised by identifying the yellow preperitoneal fat (Fig. 1). Then, the preperitoneal space was actualized using the forefinger, by circumferentially sweeping laterally and then medially, where a 100 mL 'flat' reservoir (AMS Conceal Low Profile Reservoir) was placed (Fig. 2). The reservoir was filled with 65-mL saline and then evaluated for back pressure. The posterior and anterior sheaths were then closed. The reservoir tubing exited through the defect of the rectus sheaths and tunneled through the abdominal fat into the penoscrotal wound. The next step was to create a connection between each of the cylinders and the pump. The final connection was completed between the pump and the reservoir. The system was then cycled to ensure functional results. The penoscrotal incision was closed as usual.

At the 6-month follow-up, the device functioned normally. There was no abdominal bulging resulting from the preperitoneal reservoir, and the reservoir was not palpable.

DISCUSSION

There is one report that describes a case of reservoir erosion into an orthotopic neobladder [7]. In this case, the 100 mL IPP reservoir was placed into the right

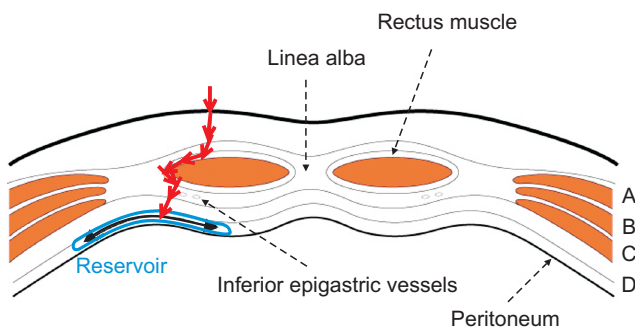


Fig. 1. Access route (arrows) to preperitoneal space for placement of a reservoir. A, external oblique muscle; B, internal oblique muscle; C, transversus muscle; D, transversalis fascia.

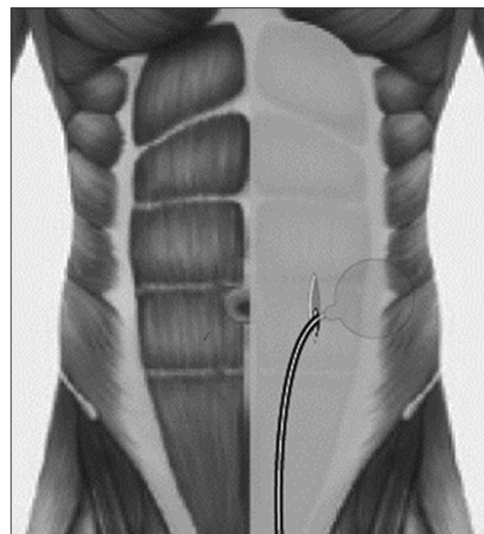


Fig. 2. Reservoir placed in the preperitoneal space at the level of umbilicus.

retroperitoneal space via a transverse penoscrotal incision without difficulty, but reservoir erosion into an orthotopic neobladder was discovered 6 years later. It was presumed that chronic pressure on the thin wall of the neobladder would be the primary contributing factor, with the possibility of surrounding adhesions also contributing to the relative fixation of the reservoir. Therefore, securing enough space for the reservoir and avoiding contact with the hollow viscera seemed necessary for the safe placement of an IPP reservoir.

We believe that placement of an IPP reservoir in ED patients with a history of radical cystoprostatectomy with orthotopic neobladder requires a different surgical approach and technique. After radical cystoprostatectomy with an orthotopic neobladder, where a considerable part of caudal side of the peritoneum cannot be closed, it is possible that the small intestine and omentum descend and adhere to the pelvic cavity. In this clinical situation, ectopic reservoir placement above the transversalis fascia via a scrotal or infrapubic incision might also risk damage to the neobladder, bowel, neighboring structures, and inferior epigastric vessels [3,4]. Furthermore, even with successful placement, the ectopic reservoir may be visible and palpable. In addition, Morey et al. [4] reported a 1.9% reservoir herniation rate in their retrospective series of high submuscular reservoir placement.

Ectopic reservoir placement in the lateral retroperitoneal space via a separate second incision at the level of the anterior superior iliac spine in the lower lateral quadrant might also risk damage to the neobladder, bowel, and surrounding structures, even though, it is less likely [5]. This low-lying ectopic reservoir in the area of the beltline may also be visible and palpable that cause an inconvenience.

In our procedure, the preperitoneal space is actualized rather than the space between the transversalis fascia and the abdominal musculature, because the preperitoneal space is more adequately sufficient to avoid bulging. At the 6-month follow-up, the patient was very satisfied with the results.

Regarding the ectopic reservoir, two 'flat' reservoirs are

available on the market (American Medical Systems Conceal and Coloplast Cloverleaf).

CONCLUSIONS

Our new procedure, the preperitoneal placement of the flat reservoir at the level of the umbilicus, is a safe and acceptable surgical technique for postoperative ED with a history radical cystoprostatectomy with orthotopic neobladder. Further long-term follow-up data and reliable number of cases are needed to clarify our findings.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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