

## Case Report

# Salvage Robotic Surgery when Open Surgery has Failed

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## Abstract

Since the introduction of robotic minimal invasive surgery, indications for robotic approach have increased due to technological developments and increasing experience of surgeons utilising new techniques. However, open surgery remains the gold standard for complex cases such as salvage procedures. We present three cases, which show that even in complex cases, when previous surgery or radiotherapy has been done, robotic surgery can be performed safely. We believe that even when open surgery has failed, in experienced hands, robotic surgery can be considered and can result in successful outcomes.

## Keywords

- Salvage surgery
- Robotic surgery
- Prostate cancer
- Failed open surgery
- Bladder cancer

## ABBREVIATIONS

RARP: Robot-Assisted Radical Prostatectomy; RARC: Robot-Assisted Radical Cystectomy; CIS: Carcinoma *In Situ*; TUR-B: Transurethral Resection of Bladder; TURP: Transurethral Resection of Prostate; LUTS: Lower Urinary Tract Symptoms; RP: Radical Prostatectomy

## INTRODUCTION

When robot-assisted minimal invasive surgery was introduced, a new era for urologic surgery started. Initially it was mainly used for radical prostatectomy, however indications have been expanded to other oncological and reconstructive surgeries. Despite this progress, open surgery remains the gold standard for complex cases.

Increasingly articles highlighting robotic salvage procedures are published, most of them with small series. The focus for salvage robotic treatment is not just cancer treatment [1], but also functional [2] and reconstructive [3].

The aim of this case-report is to describe 'new' indications for robotic surgery when open surgery has failed.

## CASE PRESENTATION

## CASE 1: The inaccessible abdomen

A 79 year old woman complained of dysuria and haematuria. Urological work-up revealed a bladder cancer, G3pT1+CIS. Second look TURBT confirmed G3pT2 with no evidence of metastatic disease on staging scans.

She had a comprehensive history of abdominal surgery. In 2008, she presented with acute abdominal pain due to a perforated sigmoid cancer resulting in emergency surgery and placement of a colostomy. Shortly afterwards, she was re-operated

two further times: once for sigmoidectomy and subsequently for post-operative abscess. She was managed with temporary open abdominal wound and secondary closure. She received no chemotherapy or radiotherapy. In 2009, the colostomy was closed, but this was complicated with resection of 30cm of small bowel due to bowel injury because of adhesions and in the same time there was a mesh placement over the incision to treat an incisional hernia from the umbilicus to the pubis.

She went on to have RARC and totally intracorporeal urinary diversion (ileal conduit). The camera port was placed midline 5cm above previous incision and further robotic ports were placed under vision on the left and right side (at least 8cm away from camera port). Extensive adhesiolysis of small bowel attached to the abdominal wall and anterior bladder drop took 2 hours. When all the attachments were released, a standard robot-assisted radical cystectomy (1h) with extended lymphadenectomy (1h) was performed with removal of the specimen through the vagina. Intracorporeal urinary diversion with ileal conduit was performed (1 hour) with a bowel segment 15cm proximal to caecum (previous small bowel surgery was on jejunum or proximal ileum, and pre-operative evaluation indicated no risk of short-bowel syndrome). There was no major abdominal incision, so no new risk of hernia development. During operation, there was only minimal blood loss (50cc) and no problems with anaesthetic care. Patient had a fast recovery (discharge on day 5) further highlighting the advantages of minimal invasive approach.

## CASE 2: Failed open radical prostatectomy after mesh hernioplasty

A man (°1947) with LUTS symptoms and a PSA of 2,4ng/ml was diagnosed with prostate cancer stage T2NxMx, Gleason 3+3 (3/10 biopsies). He had a past history of appendectomy, bilateral

laparoscopic inguinal hernia repair and coeliac disease and underwent elective open radical prostatectomy.

Open radical prostatectomy failed because of significant adherence to abdominal mesh resulting in open surgery being abandoned. (Retzius space couldn't be developed). Patient was planned for radiotherapy with additional TURP because of LUTS.

A second opinion was asked in our centre and RALP was proposed to treat both prostate cancer and concomitant LUTS and minimise risk of incontinence. RALP was successfully completed with 3 robotic arms and 2 assisting ports. After incision of the peritoneum at the Douglas pouch, both seminal vesiculae were dissected out and Dennonvilliers' fascia was incised creating the posterior plane. The bladder was taken down and in this case, the bladder was completely attached to the anterior wall making the dissection difficult. Robotic surgery has the advantage of a 3-D vision with magnification and the pneumoperitoneum which reduce blood loss, enabling good progress developing this space without bladder perforations. Once Retzius' space was developed, a standard RALP could be performed. Operation time was only 70 minutes. There was minimal blood loss and patient was discharged on day 2 post-op.

### CASE 3: Cystoprostatectomy after radiotherapy

A man (°1944) was diagnosed with prostate cancer (T1c, Gleason 3+4) in 2010 and planned to have an open radical prostatectomy (RP) with lymphadenectomy. However, open RP failed due to bleeding and only the lymphadenectomy was performed with adjuvant external radiotherapy (72Gy) on the prostate. Now, 4 years later, his PSA was <0,04ng/ml, and he had developed radiation induced cystitis with a urethral stricture. As conservative management failed to relieve the severe bladder symptoms, he underwent salvage RARC with intracorporeal diversion (ileal conduit). After development of the posterior plane, both pedicles were cut with Ligasure® until the lateral part of the prostate was reached. The bladder was then taken down, his urethra was cut and the specimen was put in a bag which was removed through a supra-umbilical incision. This procedure was

done with minimal blood loss and standard enhanced recovery protocol (discharge on day 7).

## DISCUSSION

With more than a decade of experience in robotic surgery, there are more and more arguments that even in complex cases, this type of surgery is feasible in suitably experienced hands. These three cases show that robotic surgery remains an option even when open surgery has failed. The 3D vision with 10xmagnification, the motion scaling, endowrist technology and pneumoperitoneum combine to make complex surgery more feasible as anatomical structures are more clearly seen, targeted or avoided. Furthermore, robotic surgery decreases the morbidity of salvage therapy with decreased blood loss, less pain and a short length of stay [4]. However, salvage procedures should be centralised and performed by tertiary centres with a dedicated and experienced robotic team to achieve the optimal outcomes.

Whilst open surgery remains the gold standard for complex cases, we are now at a potential turning point where robotic surgery should be considered as an alternative to open surgery and with ongoing technological developments and increasing experience in robotics; robotic surgery is likely to be increasingly used in scenarios where open surgery has failed.

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