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Robotic prostatectomy following previous major abdominal surgeries resulting from gunshot injury

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ABSTRACT

Major previous abdominal surgery involving more than one abdominal quadrant may be considered a relative contraindication to robotic assisted radical prostatectomy (RARP) due to the potential increased risk of adhesions, bowel injuries, and is often associated with longer operating time and increased blood loss. We describe the use of a mini-laparotomy to allow safe port placement with extensive open and robotic adhesiolysis at the time of RARP with an excellent post-operative recovery, good oncologic and functional outcomes.

Introduction

Robotic assisted radical prostatectomy is increasingly the preferred operation when access to robotic surgery is available.[1] The benefits of minimally invasive surgery, which include reduced recovery time, more rapid discharge from hospital, decreased patient discomfort and blood loss are considered significant by patients and surgeons. In addition, many surgeons prefer robotic prostatectomy to open prostatectomy due to the improved visualisation and pelvic access. Currently, there is only one randomised trial comparing open to RARP, which demonstrated no difference in oncological or functional outcomes.[2]

However, patients with a history of previous abdominal surgery often presents a complex challenge. A meta-analysis[1] demonstrated increased risk of enterotomy at re-operation (3.3%), which increases to 5.8% in patients who require adhesiolysis. This is associated with comparable or increased operative time. This is more evident following lower abdominal surgery in particular, with lower rates of enterotomy in upper gastrointestinal procedures (cholecystectomy 0.4%) compared with lower gastrointestinal procedures (8.7%). As such, these patients are often not offered robotic prostatectomy due to concerns of increased operative risks as outlined above.

Case report

A 57-year-old man presented with Gleason 3 + 4 = 7 prostate adenocarcinoma following investigation of an elevated PSA. The past medical history included a gun shot injury to his abdomen in 1984, requiring emergency laparotomy and formation of colostomy to due significant bowel injury and intraabdominal hemorrhage. The colostomy was electively reversed 10 months following the original operation. For investigation of his elevated PSA, the patient was unable to have magnetic resonance imaging (MRI) of his pelvis due to retained abdominal metallic foreign bodies. Computed tomography (CT) Chest/Abdomen/Pelvis demonstrated multiple small metallic foreign bodies overlying soft tissues of right posterior lumbar region, with no evidence of metastatic disease (Figs. 1 and 2).

The patient was informed of the increased risks associated with robotic prostatectomy in the context of significant previous lower abdominal surgery, including the risk of extensive adhesiolysis, bowel injury, increased blood loss, and prolonged operative and anaesthetic times. The patient chose to proceed with robotic prostatectomy over the alternative treatment offered, radiation therapy.

The operation was commenced with standard supra-umbilical open cutdown for camera port placement. Extensive adhesions were noted and the incision was extended to 6cm to allow thorough adhesiolysis under direct vision (Fig. 3). Following adequate clearance of adhesions to allow for port placement, standard robotic ports were placed. Further extensive robotic-assisted laparoscopic adhesiolysis was required. A bilateral nerve sparing prostatectomy was performed robotically. Post adhesiolysis, the operative time was comparable to the previous 100 cases for this surgeon and blood loss was < 100ml etc. The patient had an uncomplicated recovery and was discharged home on day 3.

At 12 months follow up, the patient had recovered well from surgery with an unrecordable PSA and good continence. He reports

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Fig. 1. Computed tomography imaging demonstrating gunshot shrapnel at the time of RARP in coronal slice.

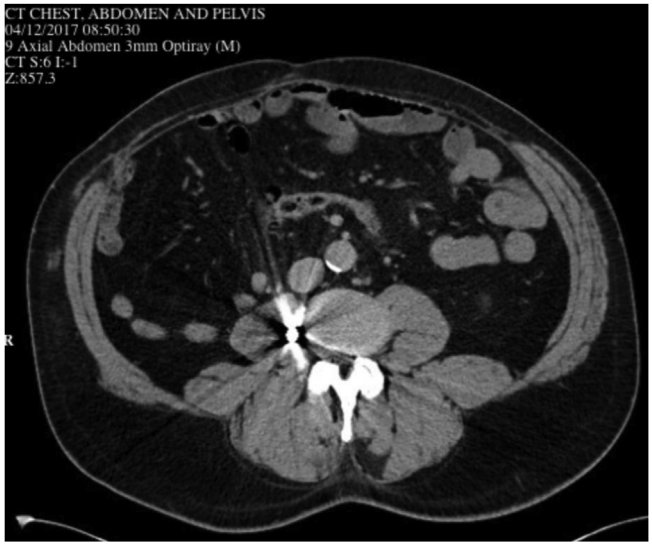

Fig. 2. Computed tomography imaging demonstrating gunshot shrapnel at the time of RARP in an axial slice.

adequate erections for intercourse with the use of oral phosphodiesterase inhibitors.

Discussion

With increasing experience and expertise in robotic surgery and robotic prostatectomy specifically, patients in whom robotic surgery would be traditionally contraindicated may be considered for minimally invasive prostatectomy. Several retrospective studies have reviewed undertaking robotic prostatectomy in patients with previous abdominal surgery. These studies include patients who have undergone previous abdominal surgery, which has be grouped into upper and lower abdominal surgery or divided by surgery type. Overall, 28–32% of patients included in these studies had previous abdominal surgery.[1,3–5] No distinction was made between patients with previous open surgery compared laparoscopic or robotic surgery, and no indication of whether patients had a single previous abdominal procedure or multiple surgeries performed previously.[1]

Fig. 3. Scarred abdomen following initial adhesiolysis (prior to port placement).

Several studies demonstrated no difference in margin positivity between the patient groups with and without previous abdominal surgery.[3,4]

Differences in operating time vary with no statistically significant difference demonstrated in any studies.[3–5] Furthermore, no significant difference in complications including bowel injuries was demonstrated however the rates of complications are fortunately low such that a significant difference may not be evident at these numbers.

Most significantly, these studies are all retrospective and as such selection of patients with previous abdominal surgery for robotic prostatectomy is inherently biased by the surgeon's judgement regarding whether robotic prostatectomy is feasible in these candidates in the context of their previous surgery. We must assume that the patients with more complex abdominal surgical history are not generally being considered for robotic prostatectomy.

Overall, these studies demonstrate that robotic assisted laparoscopic prostatectomy is feasible and safe, and is not associated with a significant increase in complication rates. This does not seem to be affected by the type of surgery (above or below the umbilicus in studies that have listed these details specifically), nor with the number of previous surgeries. However, as all studies were retrospective and thus are subject to biopsy of surgeon preference in not performing surgery at all or robotic surgery on patients with multiple previous operations or complex abdomens with history of complex surgery or injury.

Conclusions

Previous abdominal surgery is not an absolute contraindication to robotic prostatectomy, including multiple, significant and lower abdominal surgery. Though adhesiolysis is significantly more likely in patients with previous abdominal surgery, a robotic prostatectomy is feasible in the hands of an experienced surgeon, with the higher risk of adhesiolysis and bowel injury explained to the patient pre-operatively. Despite these increased risks, the benefits of minimally invasive surgery including faster recovery and discharge endure.

Conflicts of interest

The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

Informed consent

This case report has been described with the full and complete informed consent of the patient.

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None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2019.100861.

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