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Delayed inferior epigastric bleed following robotic assisted laparoscopic prostatectomy: An algorithmic approach

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ABSTRACT

Definitive surgical treatment for prostate cancer continues to evolve with robotic prostatectomy being the preferred technique. This technique has led to decreased blood loss and transfusion rates. Although uncommon, this case report presents a rare incident of delayed inferior epigastric bleed from a port site after a robotic prostatectomy. Our case report aims to establish the first known algorithm to address port site bleeding after robotic prostatectomies. Having an established algorithmic approach to evaluate and treat patients with post-operative port site bleeding is paramount. Using the algorithm, this patient was stabilized, and bleeding was controlled with embolization.

1. Introduction

Robotic assisted radical prostatectomy (RALP) has taken the place of both the laparoscopic and open retropubic approaches for prostatic cancer surgery, with data to support 85 % of prostatectomies are performed on the Da Vinci platform in the United States.[1] Clear benefits to performing prostatectomies robotically vs. open include a decrease in mean blood loss and transfusion rates.[2,3] A retrospective review in 2019 showed a small subset of RALP procedures requiring transfusion (1.6 %, 60/3/749) and even a smaller subset requiring a second procedure to control bleeding (.32 %,12/3749).[4] This case describes a 52 year old male who underwent a RALP, which was complicated with a rare inferior epigastric bleed requiring blood transfusions and embolization.

2. Case presentation

The patient is a 52 year old male with NCCN intermediate risk prostate cancer, elected to undergo robotic assisted laparoscopic prostatectomy with bilateral pelvic lymph node dissection. There is no additional pertinent past medical or surgical history, and the patient was not on blood thinners. Port placement was performed in standard fashion (Fig. 1). Intra-op there were no bleeding concerns, and the prostate and nodes were removed in standard fashion. A Jackson Pratt (JP) drain was placed under direct vision through the left lower quadrant port site. The remaining ports were removed under direct vision. The patient was admitted postoperatively for monitoring. Postoperatively, he was meeting all his milestones, including ambulating, tolerating a diet and was pain controlled. After ambulating for a second time, 12 h after surgery, he was found to have bloody bright red JP drain output. Over ten minutes there was over 500ml of blood emptied from the JP drain. A rapid response was called due to a blood pressure of 60/40 and a hemoglobin drop of 13.8 to 7.1. Following our port site bleed algorithm (Fig. 2) resuscitation was started, which included fluid boluses and 2 units of packed red blood cells. After the patient became stable, a computed tomography angiography study was obtained. This showed active bleeding from the left inferior epigastric artery (Fig. 3). The interventional radiology department was contacted and the team was called in for embolization. Prior to embolization, the patient had lost over 1 L of blood over 45 minutes. Interventional radiology successfully located the active bleed (Fig. 4) and embolized the left inferior epigastric artery (Fig. 5). Post embolization, the patient progressed adequately and was discharged on postoperative day three with a stable

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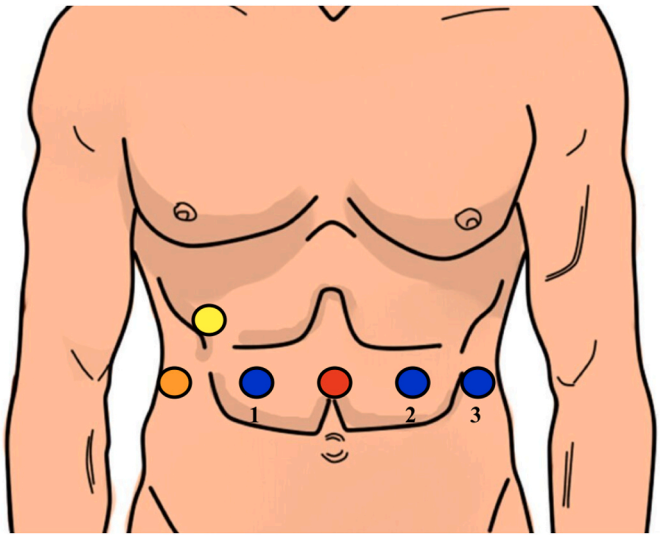

Fig. 1. Port placement. Orange: 12mm airseal, yellow: 5mm assistant port, red: 8mm camera port, blue 1: 8mm monopolar scissors, blue 2: 8mm Maryland bipolar forceps, blue 3: 8mm ProGrasp forceps. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

hemoglobin and minimal JP drain output (removed prior to discharge). Post hospitalization he recovered, and his prostate specific antigen was undetectable.

3. Results and discussion

Although postoperative bleeding following a robotic assisted laparoscopic prostatectomy requiring a transfusion and second procedure is very rare, it has been documented. When placing ports or during dissection, the inferior epigastric vessels are important to keep in mind. Inferior epigastric vessels are 4–8 cm from the midline, and staying away from these areas are termed the safety zone.[5] During dissection, the lateral umbilical fold is the elevation of the anterior abdominal wall caused by the inferior epigastric vessels and should be avoided. Iatrogenic injury to these vessels can occur when anatomical structures are not kept in mind. Additional causes for immediate or delayed bleeding from the vessels include port stress, caused by tension on the vessels and thermal injury during dissection. Lastly, other causes for port site bleeding include bleeding from the skin edge and smaller vessels that may have retracted or tamponaded during surgery. Regardless of the mechanism of injury, immediate intervention should be performed. In our case, a delayed inferior epigastric bleed presented as a port site bleed, which was evident due to continuous bleeding from the JP drain. Having an algorithmic approach to port site bleeding (Fig. 2), led to a swift identification and intervention of the inferior epigastric bleed.

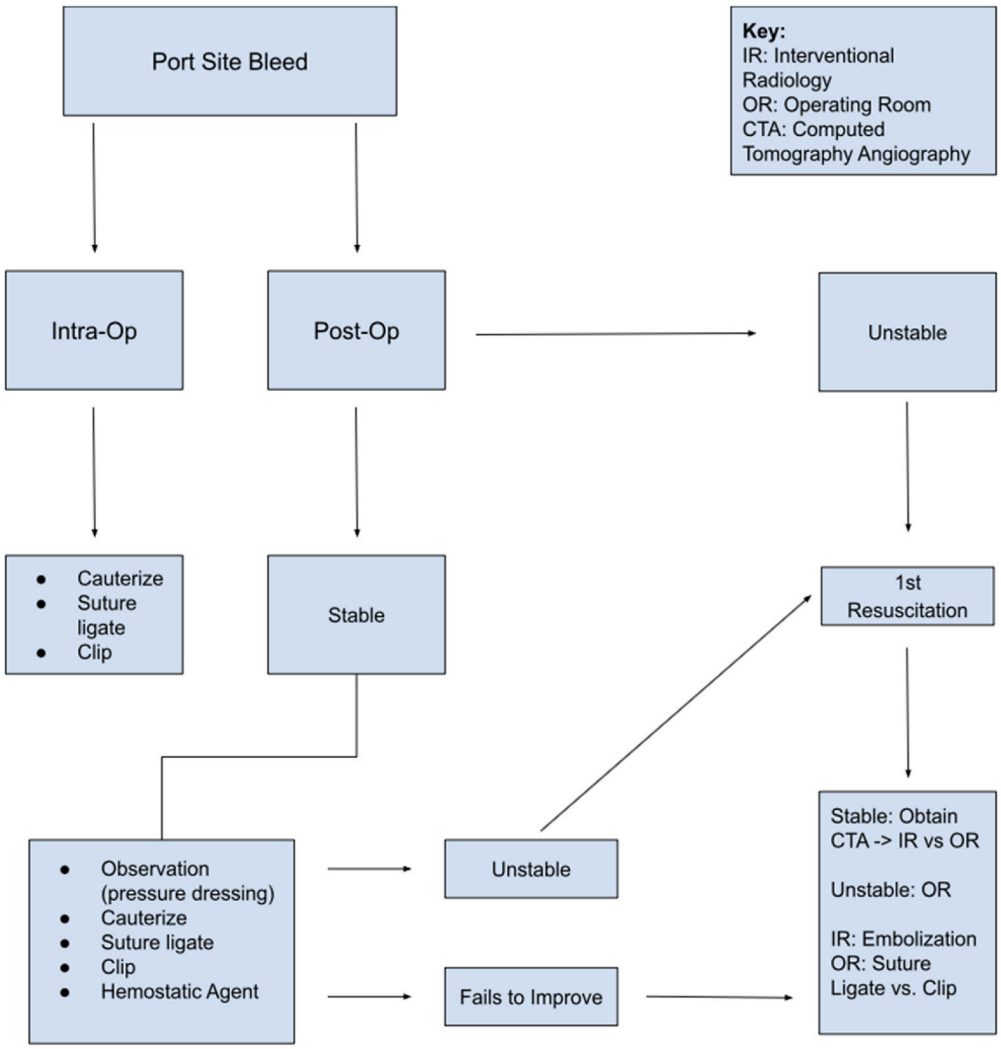

Fig. 2. Port site bleed algorithm.

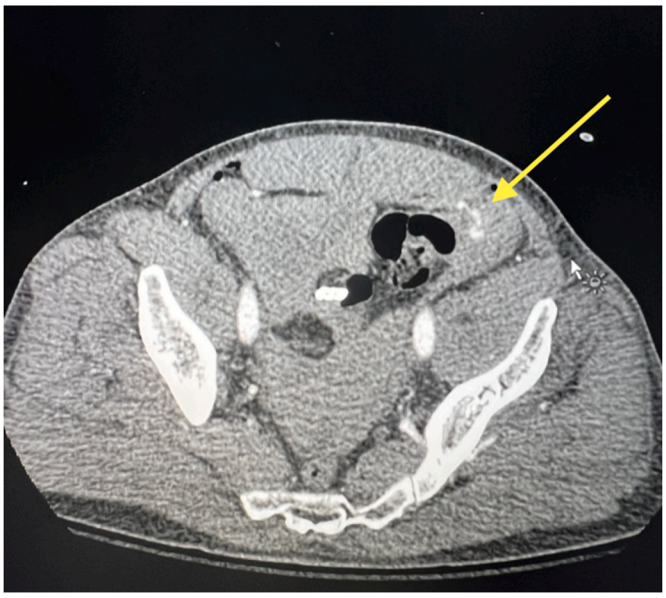

Fig. 3. CT showing an active bleed along the left lower quadrant, consistent with inferior epigastric artery.

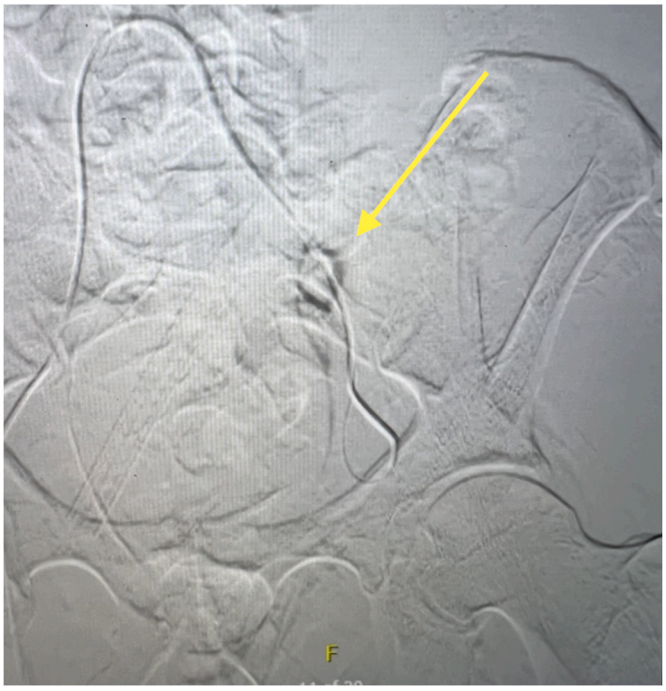

Fig. 4. Angiography confirming active bleed (blush) from the left inferior epigastric artery.

Ultimately, this was lifesaving. Although port site bleeds have occurred following laparoscopic and robotic surgery, to our knowledge, no concurrent algorithmic approach has been documented following robotic assisted laparoscopic prostatectomy.

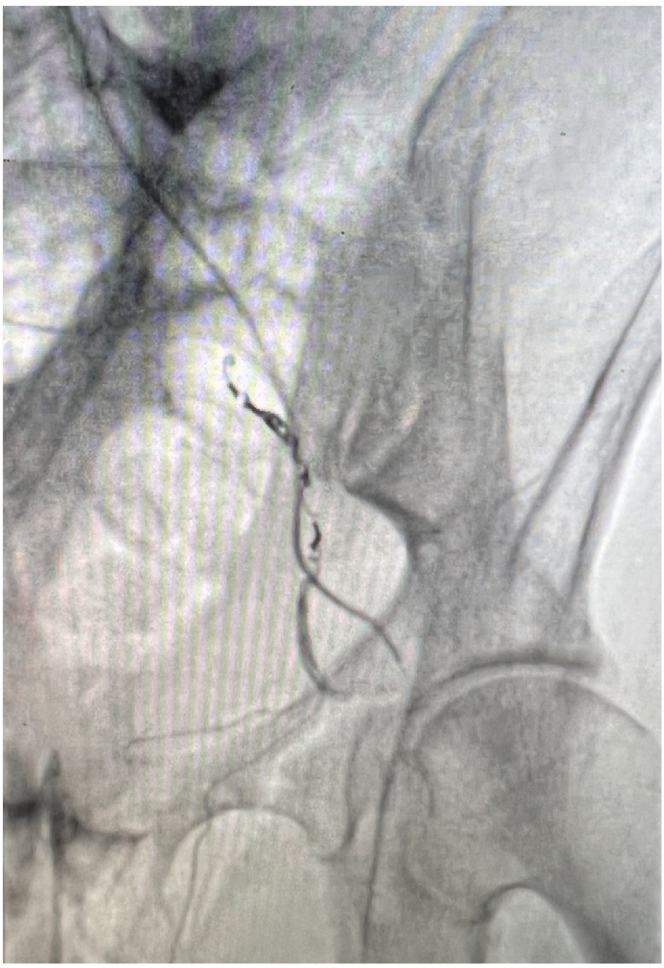

Fig. 5. Successful embolization of left inferior epigastric artery.

4. Conclusion

Inferior epigastric bleeding should alway be considered in patients with port site bleeding with instability following a RALP. For patients who are unstable, resuscitation should be started immediately. Following the port site bleeding algorithm (Fig. 2), for patients who are stabilized following resuscitation, CT angiography (CTA) can be performed. Pending CTA results, either interventional radiology vs. operative room interventions can be carried out. Our case report illustrates the importance of understanding port site bleeding and having an algorithmic approach to help immediately identify and guide intervention.

CRediT authorship contribution statement

Brandon M. Tompkins: Writing – review & editing, Writing – original draft. **Upahvan Rai:** Writing – original draft. **Roy Miller:** Writing – review & editing. **Richard Sarle:** Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

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