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## Case Report

# Corona mortis injury causing delayed presentation of pelvic pseudoaneurysm

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## ABSTRACT

Pseudoaneurysms are rare complications in urological surgery. Typically, they would present with pain, haematuria or anaemia. We report a 60-year-old patient who was found to have a chronic pseudoaneurysm via a corona mortis vascular variant, 3 months after a robotic-assisted prostatectomy. Unlike other rare reports of delayed vascular complications after minimally invasive urological surgery, the patient was entirely asymptomatic.

Apart from careful intraoperative dissection, a high index of suspicion and low threshold for imaging are also required in the follow up period. Percutaneous trans-arterial embolization is safe and effective in dealing with post-surgical pseudoaneurysms.

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## Introduction

Minimally invasive surgical techniques (laparoscopic or robotic) are widely employed in the curative treatment of prostate cancer. Robotic surgery now constitutes a large amount of radical prostatectomies. The advantages of minimally invasive techniques, apart from a smaller incision, are based on perioperative outcomes such as reduced blood loss. Delayed vascular complications remain rare but are increasingly reported.

## Clinical case

A 60-year-old man underwent a robotic-assisted laparoscopic prostatectomy (RALP) along with extended pelvic lymph node dissection (ePLND) due to a Gleason 4+3 T2b N0 M0 prostate carcinoma. His background included type 2 diabetes, erectile dysfunction, and a mild history of lower tract urinary infections, managed with tamsulosin. The procedure was uneventful, and the patient was discharged the following day.

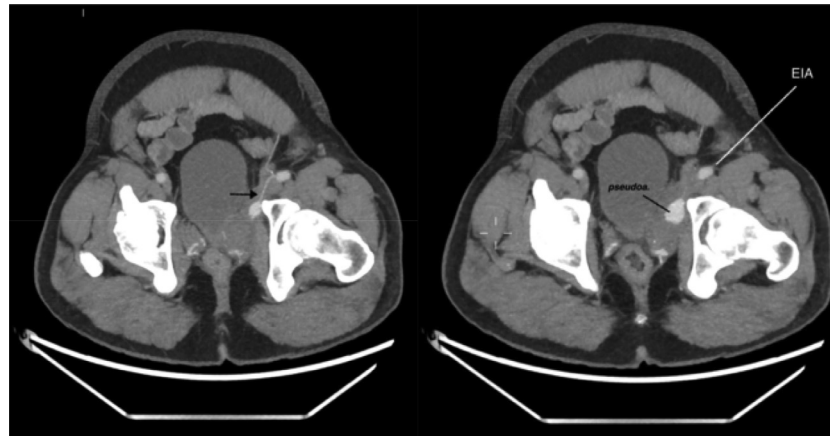
At routine follow-up some low back pain along with a superficial wound infection in the right iliac fossa was highlighted. The prostate specific antigen (PSA) was found to be

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**Fig. 1** – Maximum Intensity Projection (MIP) axial reformats showing the relationship between the external iliac system and the left hemipelvis. The aberrant vessel arises from the EIA (external iliac artery) and gives origin to the pseudoaneurysm (black line) and OA (not shown).



**Fig. 2** – 3D reconstruction of the abnormal vessel on the left side.

0.8 ng/mL, concerning for residual disease. The urinary function was normal. With the aim to also exclude a possible collection, a CT with contrast of chest, abdomen and pelvis was performed. Now 12 weeks from the intervention, the cross-sectional imaging demonstrated a multilobulated collection in the left anterior hemipelvis, the largest component reaching  $5.8 \times 4.1 \times 5.4$  cm. It featured a thick rim and a central enhancing region. Despite the scan being performed in the venous phase, a communication with the left external iliac artery was visible, in keeping with a pseudoaneurysm (Figs. 1 and 2). Also, a filling defect in the posterobasal segmental pulmonary artery of the right lower lobe, reflective of a subclinical pulmonary embolism (PE), was detected.

It was decided to proceed with percutaneous embolization of such pseudoaneurysm. A 5 Fr sheath was inserted in the left common femoral artery. A 5 Fr Bern catheter (Cordis Corp., Hialeah, FL, USA) was used to cannulate the culprit vessel.

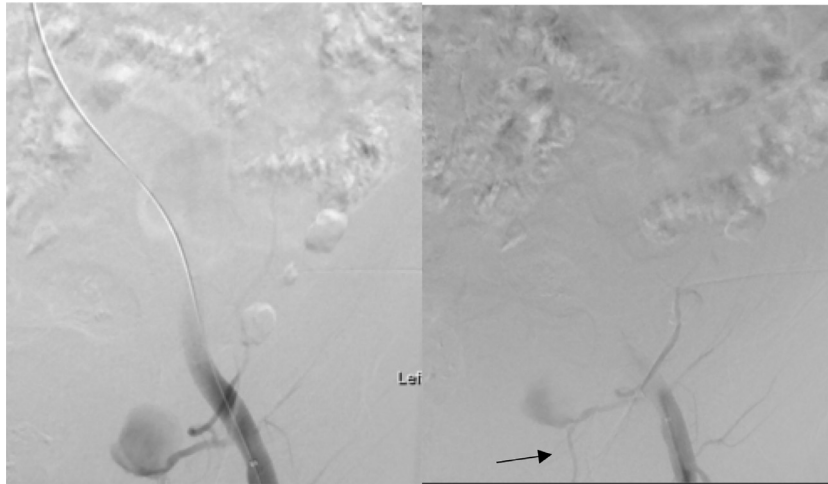
Catheter angiography demonstrated this branch gave origin to the inferior epigastric artery (IEA), the pseudoaneurysm cavity, and the obturator artery (OA), typically a branch of the internal iliac artery (IIA).

A 2.4 Fr Progreat (Terumo Medical Corp., Somerset, NJ, USA) microcatheter was advanced into the OA; the ‘back door’ of the pseudoaneurysm was therefore occluded with two  $2 \times 5$  mm coils (Figure 8-18, Boston Scientific, Natick, MA, USA). The entry, or ‘front door’ of the lesion was taken care of with  $3 \times 50$  mm and  $3 \times 100$  mm detachable and  $4 \times 40$  mm pushable coils (Terumo Azur 18 and Boston Scientific Vortx-18). Completion angiography confirmed exclusion of the pseudoaneurysm, along with sparing of the inferior epigastric artery (IEA) (Figs. 3 and 4). The patient was discharged 2 days after embolization with a regimen of low molecular weight heparin, after a formal CT pulmonary angiography (CTPA) confirmed a low burden PE.

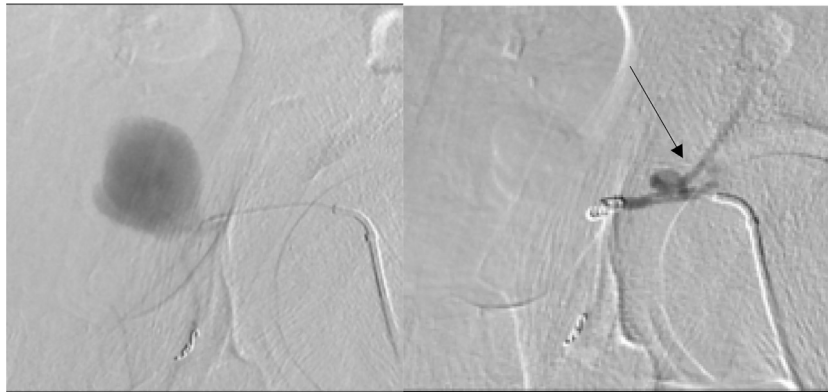
## Discussion

The term *Corona Mortis* is widely used in surgical and radiological anatomy to describe vascular variants where a communication between the external and the internal iliac system exists; the estimated prevalence is high, with venous connections occurring more commonly than arterial communications (41.7% vs 17% in prevalence) [1]. These variants can be responsible of severe haemorrhage in the context of trauma as well as hernia repairs, orthopaedic, urological and gynaecological procedures [2].

There are rare reports of delayed vascular complications arising from surgical dissection during RALP [3–6]: in those cases, pain, haematuria and anaemia are helpful clues. Usually the vessel involved is the internal pudendal artery [3,4,6], one of the branches of the anterior division of the internal iliac artery.



**Fig. 3 – Digital subtraction angiography from sheath and via microcatheter, showing course of the abnormal vessel, which feeds the pseudoaneurysm, and continuation into OA (arrow).**



**Fig. 4 – Coil embolization of OA distally and at the origin of the pseudoaneurysm (back and front doors). The inferior epigastric artery (arrow) has been spared during the embolization procedure.**

In our case, the patient's presentation suggests that the corona mortis pelvic pseudoaneurysm, detected nearly 3 months from the original surgery, was entirely asymptomatic and incidental.

There is no consensus regarding the management of traumatic and post-surgical chronic pseudoaneurysms; decision on when or how to undertake operative management, either surgical or percutaneous, is typically on an individual basis. On the present occasion the benefit of the intervention outweighed the bleeding risk of a conservative approach, given the size of the pseudoaneurysm and the need for anticoagulation to treat the coexistent PE.

### Teaching points

The corona mortis variant is a common pelvic vascular configuration. It can be responsible of catastrophic post-traumatic or post-surgical haemorrhage, but also of delayed vascular

complications. Early diagnosis to allow prompt treatment is of paramount importance.

### Patient consent

Patient consent has been obtained. Authors have made efforts to ensure that the patient's anonymity is maintained throughout.

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