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Inferior epigastric artery false aneurysm following incisional hernia repair

C.N. Parnaby[a,*], D. Nicholls[b], J.G. Docherty[a]

[a] Department of Surgery, Raigmore Hospital, Inverness IV2 3UJ, Scotland, United Kingdom
[b] Department of Radiology, Raigmore Hospital, Inverness IV2 3UJ, Scotland, United Kingdom

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ABSTRACT

INTRODUCTION: We report a case of IEA false aneurysm following a mesh repair of a large incisional hernia. We emphasize the importance to consider the diagnosis to help avoid inappropriate interventions which could increase patient morbidity.
CASE REPORT: A 68-year-old male patient, who 4 weeks previously had had a mesh repair of a large incisional hernia, presented with a painful left iliac fossa swelling. This was found to be an IEA false aneurysm. This was treated successfully with percutaneous thrombin injection.
CONCLUSIONS: We feel an inferior epigastric artery false aneurysm must be included in the differential diagnosis when investigating the cause of any lateral swelling following incisional hernia repair. This would help reduce the chance of a missed diagnosis and avoid any inappropriate interventions which may cause increased patient morbidity.

1. Introduction

A false (pseudo) aneurysm can be defined as a vessel-associated contained blood collection. Inferior epigastric artery (IEA) false aneurysms are recognised complications following abdominal surgery or trauma. However, these are rare as <20 cases have been reported in the literature (PubMed search). Due to its rarity the diagnosis may be missed. If left untreated potential complications include: painful persistent swelling, abscess formation or rupture.

Abdominal incisional hernia repair represents a potential cause of an IEA false aneurysm. The inferior epigastric artery can be at risk of injury during dissection or mesh placement.

We report a case of IEA false aneurysm following a mesh repair of a large incisional hernia. We give an overview of the literature and emphasize the importance to consider the diagnosis to help avoid inappropriate interventions which could increase patient morbidity.

2. Case report

A 68-year-old male was admitted electively for abdominal wall reconstruction and reversal of his loop ileostomy. Fourteen months earlier he had had a left hemicolectomy for a diverticular related colo-vesical fistula. Post operatively he had a small anastomotic leak. This was salvaged using a defunctioning loop ileostomy. At the time it was not possible to primarily close the abdomen and he was left with a large laparostomy wound. This was subsequently covered with a split-skin graft. There was no other relevant past medical history.

The patient underwent abdominal wall reconstruction using sublay placement of 30 cm × 30 cm PROCEED™ (Ethicon Ltd, Edinburgh, United Kingdom) mesh. The edges of the PROCEED were secured in the retro-rectus plane using prolene sutures. A further on-lay placement of 30 cm × 30 cm prolene (Ethicon Ltd, Edinburgh, United Kingdom) mesh supplemented the repair. The previous split-skin graft was excised and the skin was closed with clips over suction drains in the subcutaneous space. The loop ileostomy was reversed at the same time.

Four weeks after surgery the patient complained of left iliac fossa pain. On examination there was a tender non-pulsatile swelling in the left iliac fossa. Serial haemoglobin measurements were stable. A fluid collection or early recurrence was suspected. An abdominal computed tomography (CT) (venous phase) scan was arranged (Fig. 1). Differential diagnosis included abdominal wall haematoma, mesh related collection or the suspicion of a false aneurysm related to the inferior epigastric artery. The false aneurysm was confirmed after performing a CT angiogram (Figs. 2 and 3). This was treated successfully with ultrasound guided thrombin injection. On review, after 4 weeks, the left iliac fossa pain and swelling had completely resolved.

3. Discussion

This case report highlights the need for a correct diagnosis to avoid inappropriate intervention or complications related to the false aneurysm (e.g. rupture, continued pain or development of an abscess).

A false aneurysm of the inferior epigastric artery is uncommon. The literature was limited to case reports. Causes of inferior

* Corresponding author at: 47 Old Edinburgh Road, Inverness IV2 3PG, Scotland, United Kingdom. Tel.: +44 07834704560.
E-mail address: craigparnaby@aol.com (C.N. Parnaby).

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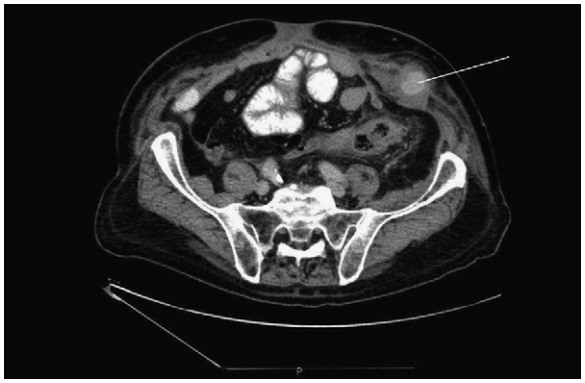

Fig. 1. Venous phase axial abdominal computed tomography (CT) scan demonstrating the left lateral wall swelling (arrow).

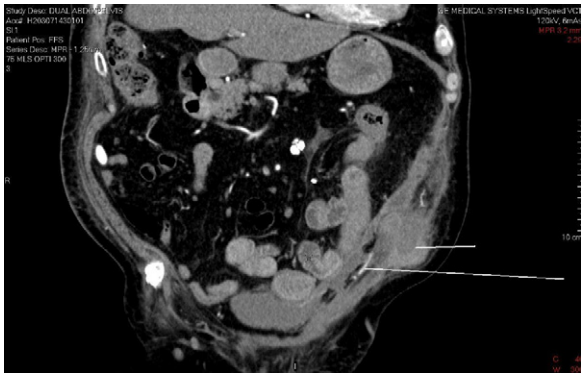

Fig. 2. Arterial phase coronal CT showing contrast in the inferior epigastric artery (long arrow) and the adjacent false aneurysm (short arrow).

epigastric artery false aneurysm have included: retention suture placement,[1,2] standard abdominal wall closure sutures,[3] percutaneous abdominal paracentesis,[4] laparoscopic port placement[5] and blunt trauma.[6] Incisional hernia repair represents a potential risk of inferior epigastric artery injury. The sublay mesh technique we used involved developing the posterior rectus muscle plane. It is easy to see, at this stage, how the inferior epigastric artery or its branches are at risk to injury. This can be caused by dissection or the suture of the mesh. If inadvertent injury to the inferior epigastric artery does occur, this can occasionally develop into a false aneurysm.

Due to its rarity and lack of characteristic symptoms or signs an inferior epigastric artery aneurysm can be difficult to diagnose. In a literature review of IEA false aneurysms, Georgiadis et al.,[6] reported the clinical findings of 16 patients from case reports. All presented with laterally placed abdominal masses. The masses rarely had distinctive features such as a bruit (3 out of 16) or pulsation (1 out of 16). In the present case report a left iliac fossa swelling following a large incisional hernia repair could be related to a fluid collection or early recurrence.

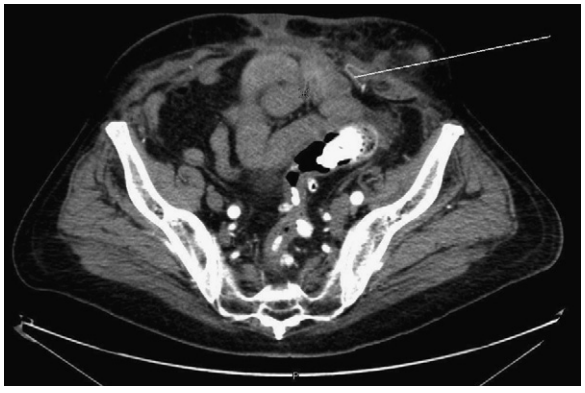

Fig. 3. Arterial phase axial CT demonstrating the feeding vessel (arrow) travelling from the inferior epigastric artery into the false aneurysm.

Contrast enhanced abdominal CT or abdominal ultrasound (US) is the imaging modalities of choice when investigating complications related to incisional hernia repair. This case has shown venous phase CT led to diagnostic uncertainty as the diagnosis of IEA false aneurysm was not suspected. Therefore, it is important for the clinician to be aware of an IEA false aneurysm as a possible diagnosis and then seek to exclude this pathology with a radiologist. A further arterial phase CT helped to confirm the diagnosis in the present case. Colour Doppler US is also useful in detecting false aneurysms. Typical findings include swirling red and blue pattern or the jet of the feeding vessel into the aneurysm sac.

Open surgery, endovascular embolization or more recently US guided thrombin injection have been described as possible therapeutic options in the treatment of IEA false aneurysms. US guided thrombin injection for false aneurysms has been described as an easy, safe, successful and well tolerated procedure. Schneider et al.[7] reported the efficacy of thrombin injection in 274 patients with post-catheterisation femoral false aneurysms. The procedure was successful in 97% of patients. There were no complications in terms of arterial thrombotic events or allergic reactions. Successful percutaneous thrombin injection has also been described in a spontaneous IEA false aneurysm.[8] For the present case this technique was deemed the most suitable option and resulted in resolution of pain and swelling within 4 weeks.

Based on our experience and previous case reports, our current management of a lateral abdominal wall swelling following incisional hernia repair would include a standard venous phase CT scan. If an IEA false aneurysm could not be excluded further imaging should be performed. According to radiologist preference, colour doppler US[9] or CT angiogram[6] can accurately make the diagnosis. We favour US guided thrombin injection to treat the false aneurysm. Reasons include: well tolerated, easy, effective and minimal complications.

4. Conclusion

This case report has shown an inferior epigastric artery false aneurysm must be included in the differential diagnosis when investigating the cause of any swelling following incisional hernia repair. This would help reduce the chance of a missed diagnosis and avoid any inappropriate interventions which may cause increased patient morbidity.

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None.

Conflict of interest statement

The authors have no conflicts of interest to disclose with regard to this case report

Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author's contributions

All authors have contributed to the case report. C.N. Parnaby wrote the draft and performed the literature search; D. Nicholls provided radiology input; J.G. Docherty supervised the project and helped with the final draft.

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