Case 15575

Eurorad

Iatrogenic haemorrhage following laparoscopic treatment of endometriosis

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Section: Genital (female) imaging
Area of Interest: Genital / Reproductive system female
Procedure: Diagnostic procedure
Imaging Technique: CT
Special Focus: Haemorrhage Case Type: Clinical Cases
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Patient: 41 years, female

Clinical History:

A middle-aged G0 female patient, with unremarkable medical history apart from previous appendectomy, was hospitalised to undergo elective laparoscopic treatment for pelvic endometriosis including a 6-cm right-sided ovarian endometrioma. Within 48 hours after surgery, she experienced progressive hypotension and haemoglobin drop. Physical examination revealed pelvic tenderness and blood discharge from drainage tubes.

Imaging Findings:

Laparoscopy was performed using umbilical Trocar and placement of three pararectal and suprapubic accesses. Intraoperative findings included: normal-sized uterus, obliterated Douglas' pouch, and adhesions between uterus, rectosigmoid colon, right ovary and salpinx. Procedure included rupture and removal of endometrioma, adhesiolysis, mobilisation of rectosigmoid colon, "shaving" of an ileal serosal implant, and drainage tube placement.
Urgent postoperative CT (Fig. 1) showed development of minimal haemoperitoneum and a large pelvic haematoma, with evidence of active bleeding from the right uterine venous plexus in the venous-phase acquisition.
Since transfusions were not sufficient to manage impending shock, emergency laparotomic surgery was performed on the 3rd day after laparoscopy. Intraoperative findings confirmed large subperitoneal and adnexal haematoma, ongoing venous blood oozing from the right mesosalpinx and uterine veins. Repeated CT (Fig. 2) showed disappeared haemoperitoneum and decreased pelvic haematoma after laparotomic drainage, and the patient ultimately recovered.

Discussion:

Corresponding to the presence of endometrial glands or stroma outside the uterine cavity, endometriosis is a very common disorder in women of reproductive age (3-6% prevalence) and causes pelvic pain, dysmenorrhoea, dyspareunia and subfertility. Albeit noninvasive treatments (such as gonadotropin-releasing hormone analogues, levonorgestrel-relasing intrauterine systems and danazol) are now available, laparoscopy is widely considered the treatment of choice for moderate to severe endometriosis as it consistently achieves improvement or resolution of symptoms and increased pregnancy and birth rates. Laparoscopic surgery aims to remove all visible lesions and to restore the normal anatomy and fertility via excision of endometriomas and ablation (using either dissection, electrocautery or argon-plasma energy delivery) of peritoneal deposits. Cooperation of general surgeons may be required to manage extensive adhesions and bowel (mostly rectal and ileal) involvement. [1-4]
Despite growing experience, endometriosis surgery is considered rather challenging and may occasionally result in significant injuries to the abdominal wall or internal organs, developing during peritoneal cavity access using Veress

needle, Trocar insertion, manipulation of organs, extraction of specimens, haemostasis or closure. Albeit some large reviews did not collect major post-laparoscopy complications, bleeding may occur in up to 0.3-1% of operated patients and is mostly caused by injury to small perforating vessels of the abdominal wall or laceration of the inferior epigastric artery. As in this patient, haemorrhage clinically manifests with hypotension, abdominal distension ecchymosis and pain, blood from drainage and dropping haemoglobin. [5]
In the vast majority of patients with suspected postsurgical abdominal and pelvic bleeding, multidetector CT is the preferred imaging technique that reliably shows high-attenuation (50 to 90 Hounsfield units) peritoneal effusion and haematomas in the operated pelvis or retroperitoneum. Similarly to the preoperative setting in female genital emergencies, routine study review along multiple planes is beneficial to elucidate the normal and operated anatomic structures of the female pelvis. Borrowing experience from body trauma, iatrogenic active bleeding is heralded by serpiginous or jet-like extravasation of injected contrast medium, a finding which is best visualised using maximum intensity projection (MIP) reconstructions and requires immediate surgical or interventional treatment. Recently, transcatheter arterial embolisation is increasingly used and highly effective to manage active haemorrhage without reintervention. [6-9]
Differential Diagnosis List: Venous iatrogenic haemorrhage following laparoscopic treatment of endometriosis., Anterior abdominal wall haematoma, Peritonitis from bowel injury, Urinoma from urinary tract injury

Final Diagnosis: Venous iatrogenic haemorrhage following laparoscopic treatment of endometriosis.

References:

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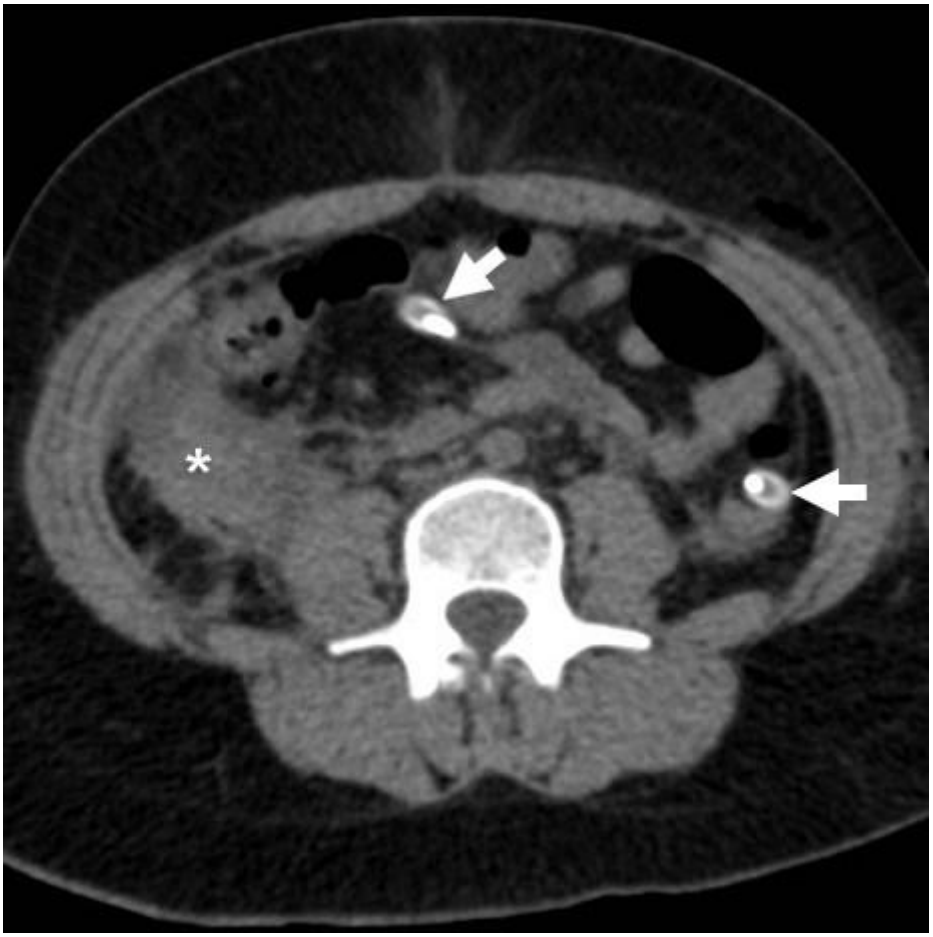
Figure 1

a

Description: Precontrast images showed pelvis with a large (13 cm) fresh haematoma (* in a, measuring 55-60 Hounsfield units attenuation).
Note residual gas bubble (thin arrow). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)

b



Description: Additionally, some blood (* in b) was present in the right parietocolic gutter. Note drainage tubes (thick arrows), displaced right colon. **Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)

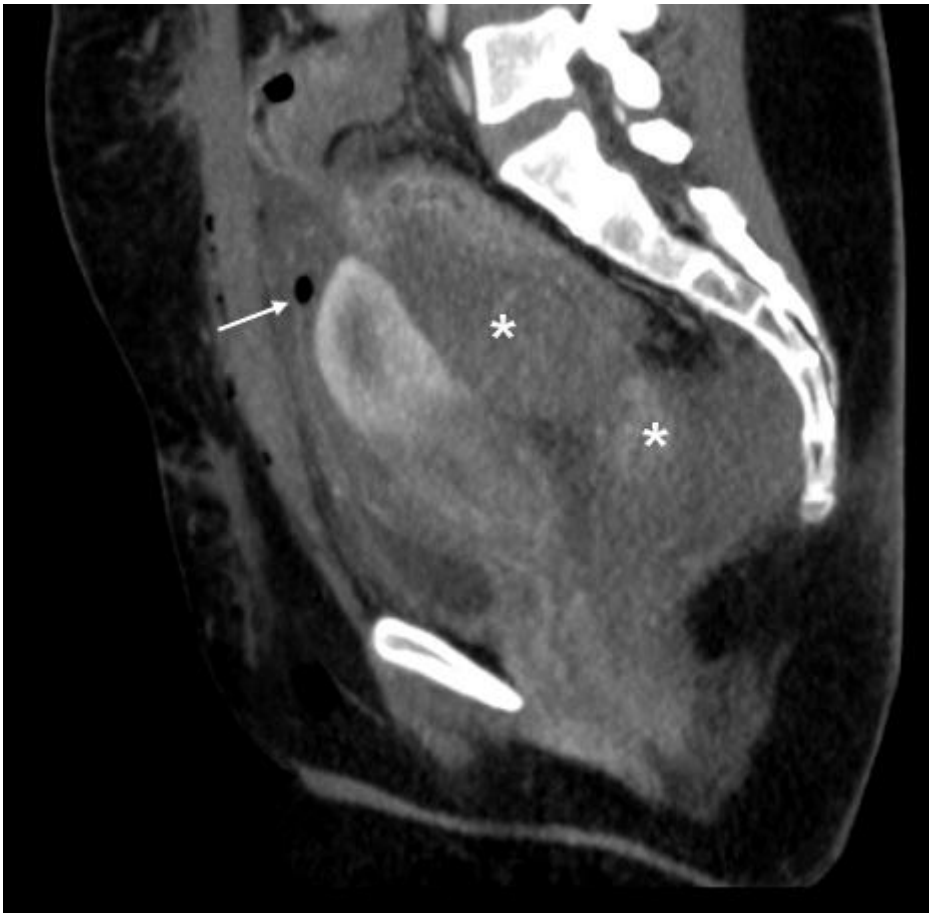
c

Description: Arterial-phase acquisition with maximum-intensity projection (MIP) reconstructions (c, d) did not show contrast medium extravasation indicating active bleeding. Note uterine arteries (arrowheads), drainage tubes (thick arrows). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)

d

Description: Arterial-phase acquisition with maximum-intensity projection (MIP) reconstructions (c, d) did not show contrast medium extravasation indicating active bleeding. Note uterine arteries (arrowheads), drainage tubes (thick arrows). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)

e

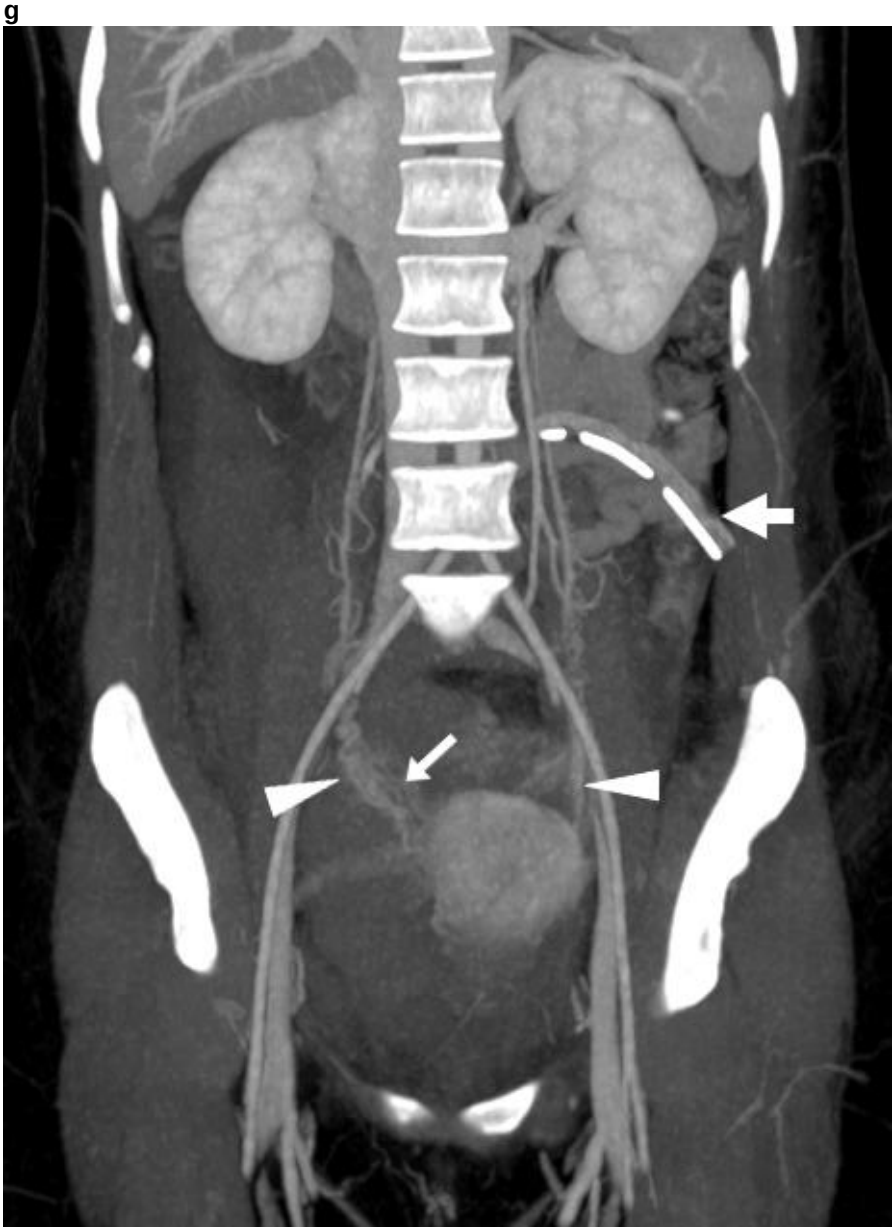


Description: Portal venous phase images (e-h) confirmed pelvic haematoma (*) dorsally to the uterus (in e), residual gas bubble (thin arrow), minimal perihepatic haemoperitoneum (* in f). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)

f

Description: Portal venous phase images (e-h) confirmed pelvic haematoma (*) dorsally to the uterus (in e), residual gas bubble (thin arrow), minimal perihepatic haemoperitoneum (* in f). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)

g



Description: MIP reconstructions on portal-venous phase acquisition (g, h) identified fan-like contrast extravasation (arrows) suggesting active bleeding from the right uterine venous plexus (arrowheads). Note drainage tubes (thick arrows). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)

h

Description: MIP reconstructions on portal-venous phase acquisition (g, h) identified fan-like contrast extravasation (arrows) suggesting active bleeding from the right uterine venous plexus (arrowheads). Note drainage tubes (thick arrows). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)

Figure 2

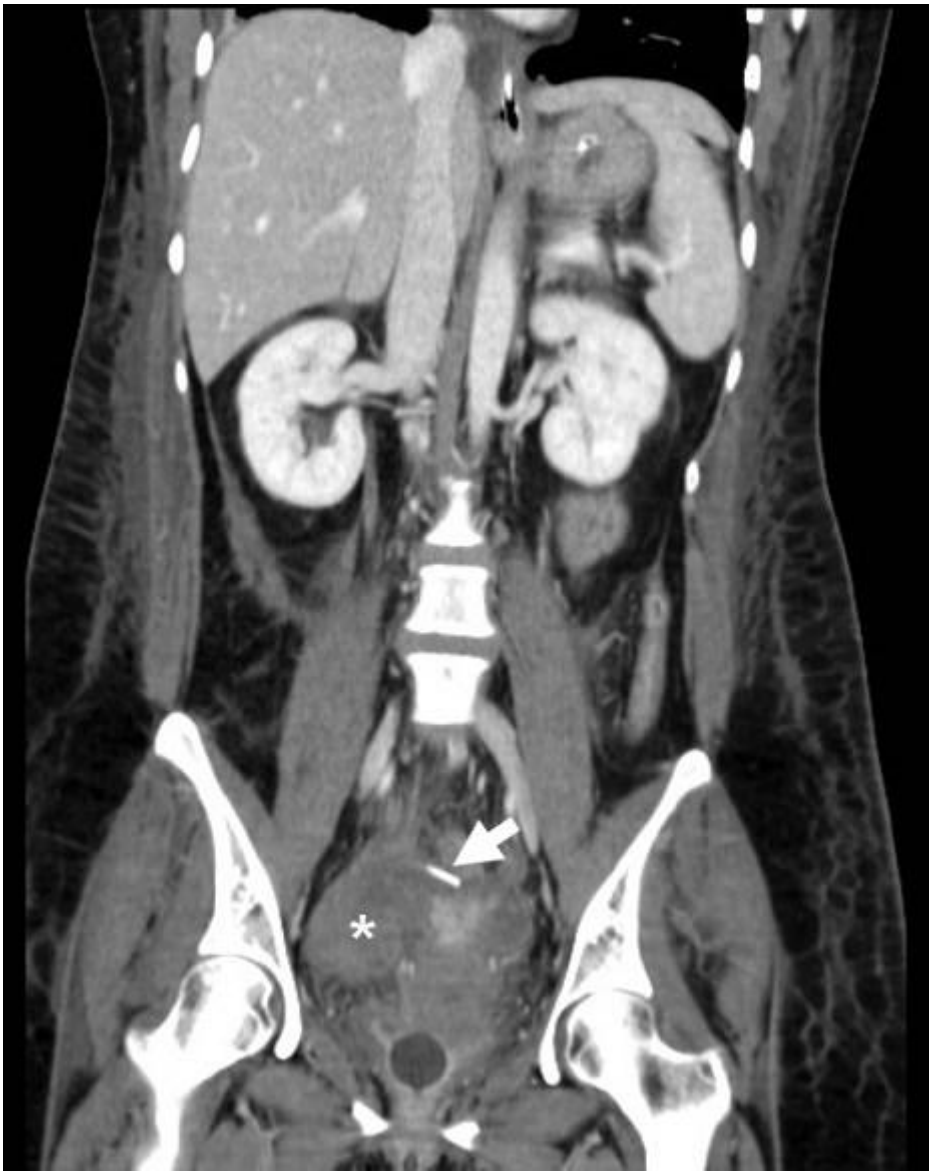
a

Description: Repeated CT (precontrast image a, post-contrast acquisition b and c) showed decreased pelvic haematoma (*). **Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)

b

Description: Repeated CT (precontrast image a, post-contrast acquisition b and c) showed decreased pelvic haematoma (*), disappearance of haemoperitoneum. Note drainage tube (thick arrows).**Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)

c



Description: Repeated CT (precontrast image a, post-contrast acquisition b and c) showed decreased pelvic haematoma (*), disappearance of haemoperitoneum. Note drainage tube (thick arrows).**Origin:** Tonolini M, Radiology Department, “Luigi Sacco" University Hospital – Milan (Italy)