CASE REPORT

An unusual cause of Grey Turner's sign

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SUMMARY

A woman in her late 70s presented to the acute general surgical take with a 3-day history of worsening right leg pain and swelling. She had undergone right revision total hip arthroplasty 20 months previously and reported chronic postoperative right thigh pain attributed to a femoral deep venous thrombosis for which she had been warfarinised. On examination, Grey Turner's sign (bruising of the flanks indicating retroperitoneal haemorrhage) was present, as well as a large tender mass in the right iliac fossa and pitting oedema throughout the right lower limb. Urgent CT scan with intravenous contrast revealed a right retroperitoneal haematoma secondary to a right acetabular screw protruding into the right external iliac vein. The patient was successfully managed with warfarin reversal and surgical removal of the relevant acetabular screw. At 2-month follow-up, the patient's symptoms continue to resolve.

BACKGROUND

This is a rare cause of Grey Turner's sign, requiring coordinated input from general and vascular surgery, radiology, haematology and orthopaedic surgery.

CASE PRESENTATION

A woman in her late 70s presented to the acute general surgical take with a 3-day history of increasing right leg pain and swelling exacerbated by weight bearing and movement. There were no associated neurological symptoms. Clinical examination revealed bruising in the right flank and a mass in the right iliac fossa (figure 1)

Nineteen months previously the patient had undergone revision right hip surgery, replacing the acetabular component of a 20-year-old total hip replacement that had failed due to aseptic loosening. The revision surgery involved the insertion of a cementless acetabular shell (Pinnacle, De Puy Orthopaedics, Inc, Warsaw, USA) with 2 supplementary fixation screws.

The patient had been hypotensive postoperatively with a haemoglobin (Hb) level of 8.7 g/dl and was therefore transfused 2 units of packed red blood cells.

The immediate postoperative hospital stay was uncomplicated other than the patient experiencing severe right thigh pain from the first postoperative day. The patient was transferred to a community hospital at 9 days postprocedure where a Doppler scan confirmed 'evidence of a partially resolved right femoral DVT'. She commenced warfarin therapy with covering subcutaneous low-molecular-weight

heparin until the international normalised ratio (INR) was therapeutic.

At 8 week follow-up, the patient's mobility was good and the wound well healed, but the right thigh pain persisted and was attributed to the post-operative deep venous thrombosis (DVT).

At the 6 and 18 month review, the patient continued to complain of right groin and leg pain, still attributed to the femoral DVT.

The patient finally presented at 19 months post-operatively to the acute general surgical take complaining of increasing right leg pain and swelling. On examination, there was bruising in the right flank and iliac fossa, pitting oedema throughout the right lower limb, tenderness bilaterally in the thighs and calves and palpable pedal pulses. Blood results revealed a negative D-dimer, INR 3.7 (treatment target 2.5), Hb 9.3 g/dl and mean corpuscular volume (MCV) 94.0 fL.

CT with intravenous contrast demonstrated a right-sided retroperitoneal haematoma. Hb levels 20 h postadmission had fallen to 7.1 g/dl. Warfarin treatment was withheld and its effects reversed with 4 units of fresh frozen plasma following discussion with haematology.

The CT scan was scrutinised with a Consultant Radiologist the following morning who found that a screw from the right acetabular component was protruding into the right external iliac vein and was the likely cause of the retroperitoneal haematoma (figures 2 and 3). The patient was transferred to the care of the trauma and orthopaedic team that day with Hb level 11.1 g/dl, platelets (Plts) $155 \times 10^9/l$ and INR 1.0.

INVESTIGATIONS

Admission bloods: D-dimer negative, INR 3.7, Hb 9.3 g/dl (MCV 94.0 fL).

CT abdomen and pelvis with intravenous contrast: There is a right retroperitoneal abnormality

Figure 1 Grey Turner's sign.

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Figure 2 Pelvic x-ray showing a screw breaching the medial acetabular wall.

with some bulkiness of the right iliacus and psoas. In view of the falling haemoglobin, this may represent a retroperitoneal haematoma. There is no abdominal aortic or iliac aneurysm demonstrated.

Conclusion: Probable right retroperitoneal haematoma, although the cause for this is not apparent.

Verbal addendum: Screw from the right acetabular component is protruding into the external iliac vein and is the likely cause of the haematoma.

TREATMENT

The two acetabular screws were removed using a posterior approach to the hip with vascular surgery support available (figure 4). The acetabular component was felt to be stable post-screw removal, so a new polyethylene liner was simply inserted. The patient remained haemodynamically stable postoperatively with her anticoagulation therapy withheld until her discharge 2 weeks after presentation. Warfarin was then restarted in the community.

Figure 3 CT scan showing retroperitoneal haematoma and a screw in the right external iliac vein.

OUTCOME AND FOLLOW-UP

The patient was followed up in the outpatient clinic 2 months after discharge. At this time the wound was well healed, her pain and mobility were improving and there was decreased swelling of the right leg. The patient was discharged back to routine follow-up.

DISCUSSION

Vascular injury is a not uncommon occurrence with the placement of acetabular screws, particularly in revision hip surgery. However, this normally declares itself either intraoperatively or in the early postoperative period through haemodynamic instability or ischaemia.¹ Late presentation appears to be uncommon.²

Published cases of retroperitoneal haematoma secondary to total hip arthroplasty have presented with femoral nerve palsy or pain. There are no reported cases to date of patients presenting with Grey Turner's sign secondary to retroperitoneal haematoma following total hip arthroplasty.

Documented causes for vessel injury during hip arthroplasty and subsequent haematoma formation include intraoperative complications: drill breaching of the medial acetabular wall presenting with femoral nerve palsy 8 days post-operatively³; pseudoaneurysm of a screw extension fixing the hardware presenting with femoral nerve palsy at 6 months postrevision surgery.⁴ Postoperative complications causing haematoma formation

Figure 4 Postoperative x-ray; no acetabular screws.

include: screw migration following a fall presenting with pain at 13 years postoperatively²; acetabular cup irritation of the iliopsoas tendon presenting with pain⁵; and a migrating prosthesis causing a false aneurysm of the superior gluteal artery.⁶ Of the seven cases reviewed by K Uchida *et al*, five of the patients, as in our case, were also anticoagulated.²

Learning points

- ▶ Grey Turner's sign is a rare but important indicator of vascular injury.
- ▶ Presentation of iatrogenic vascular injury as a result of total hip arthroplasty may be delayed.
- ▶ Persistent postoperative leg pain and swelling with radiographic evidence of medial acetabular wall screw penetration should prompt early investigation.
- ▶ Prompt and efficient coordination between haematological, radiological, vascular and orthopaedic teams resulted in quick and successful treatment in this case.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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