Transcatheter arterial embolisation for haemorrhage from the inferior epigastric artery after acupuncture: a case report

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ABSTRACT
We report a rare case of haemorrhage from the inferior epigastric artery, which was injured after acupuncture. The haemorrhage was successfully controlled by transcatheter arterial embolisation. To the best of our knowledge, this is the first report describing the use of transcatheter arterial embolisation for inferior epigastric artery haemorrhage following acupuncture.

INTRODUCTION
Along with herbal medicine, acupuncture has been a mainstay of traditional Asian medicine for thousands of years. Acupuncture is generally considered safe and can be performed by practitioners after a short training period. Although reported complications are rare, serious complications such as infection, bleeding and pneumothorax can occur if acupuncture is performed by practitioners with limited anatomical knowledge.1 2 Recently, we encountered a case of large right abdominal wall haematoma with active extravasation caused by acupuncture. In this case, we successfully performed transcatheter arterial embolisation from a branch of the right inferior epigastric artery.

CASE REPORT
A 71-year-old woman presented at the emergency department of our hospital with acute, lower right side abdominal pain. Approximately 5 h previously, she had undergone acupuncture treatment in the lower quadrant of the abdomen for chronic abdominal pain at a private hospital. Her history was notable for angina, hypertension and diabetes mellitus. The patient had undergone balloon angioplasty and coronary artery stenting 6 months previously and was taking clopidogrel 75 mg and aspirin 100 mg once a day. Her vital signs were as follows: blood pressure, 140/80 mm Hg; pulse rate, 76 beats/min; respiration rate, 20 breaths/min; body temperature, 36.7°C. Her haemoglobin level was 11.2 g/dl, and haematocrit was 33%.

The patient displayed sustained abdominal pain and had a palpable mass in the lower right quadrant of the abdomen. Abdominal CT showed a smooth-shaped mass in the layers of the anterior abdominal wall with signs of active bleeding from a branch of the right inferior epigastric artery (figure 1). The patient’s haemoglobin decreased to 9.4 g/dl, while her haematocrit level decreased to 27.8%. Since active bleeding was suspected, the patient was immediately transferred to the angiography suite to determine the source of bleeding. Subsequently, therapeutic transcatheter arterial embolisation was performed to stop the bleeding. The patient provided informed consent for this procedure.

Selective catheterisation of the right inferior epigastric artery was performed via a left femoral artery approach, and angiography revealed extravasation from a branch of the right inferior epigastric artery (figure 2A). This was embolised using n-butyl cyanoacrylate glue (Histoacryl; B. Braun Medical Inc.) (figure 2B). Leakage of contrast media was not observed after the procedures. The patient’s haemoglobin and haematocrit levels were 9.0 g/dl and 27.1%, respectively, at 1 day after the embolisation procedure. No procedure-related complications were observed, and the patient was discharged from hospital 14 days after the procedure.
DISCUSSION
The inferior epigastric arteries originate from the external iliac artery and pass over the inguinal ring to the umbilicus. The inferior epigastric arteries are located in a relatively superficial layer of the abdominal muscle, running along the transversalis fascia and linea semicircularis and terminating in between the rectus abdominis muscle and posterior lamella.\(^3\) Therefore, these arteries are particularly susceptible to injury during invasive abdominal procedures.

The aetiology of inferior epigastric artery injury is iatrogenic and may include inadvertent puncture during femoral artery catheterisation, placement of peritoneal dialysis catheters, surgical trauma including the use of retention sutures in the abdominal wall, subcutaneous injection and paracentesis.\(^4\)\(^-\)\(^6\) When inferior epigastric arteries or preformed pseudoaneurysms are injured, a pulseless, tender, abdominal mass and significant change in haematocrit levels are commonly noted, suggesting vessel injury and haematoma. However, in most cases, specific signs indicative of bleeding are not observed and haematomas are commonly misdiagnosed because of non-specific abdominal pain.

Doppler ultrasonography (US), abdominal CT and transcatheter angiography are useful in the diagnosis of inferior epigastric artery injuries, including pseudoaneurysm. Doppler US may be used exclude the presence of a pseudoaneurysm by obtaining information on the origin and velocity of blood flow. Abdominal CT is more useful for assessing the size and status of a haematoma or haemoperitoneum, and for excluding other complications. Transcatheter angiography, which is usually performed after non-invasive imaging such as abdominal CT or Doppler US, achieves the twin goals of diagnosis and treatment. Diagnosis of atypical cases or small-sized pseudoaneurysms is difficult, particularly when any of these modalities are used in isolation. Therefore, Doppler US, abdominal CT and transcatheter angiography are commonly used in parallel to aid accurate diagnosis.\(^7\)

Injuries to the inferior epigastric arteries have been treated previously through surgery\(^8\)\(^-\)\(^9\); transcatheter

Figure 1  Contrast-enhanced CT demonstrates a large right abdominal wall haematoma with active extravasation (arrow) caused by acupuncture.

Figure 2  (A) Angiography image demonstrates active extravasation from an injury to a branch of the right inferior epigastric artery. (B) Image from a digital subtraction angiogram from the same patient after histoacryl glue embolisation of the vessel demonstrates successful occlusion of the artery.
embolisation with gelfoam, coil, or n-butyl cyanoacrylate glue; US-guided thrombin injection; and US-guided compression. The embolic agent used in this case, n-butyl cyanoacrylate glue, is a liquid and a permanent adhesive material that can be injected through a catheter with a narrow lumen because of its low viscosity. n-Butyl cyanoacrylate glue is widely used in the treatment of intra-abdominal arteriovenous fistulas and pseudoaneurysms, and pseudoaneurysms of the lower extremity.

The patient described in this case report had undergone coronary artery stenting and was taking medication to prevent clotting. We believe that persistent bleeding resulted from medication-related changes in haemostasis. Although acupuncture is deemed a safe procedure, medical history and medications taken must be considered before performing the procedure to prevent adverse effects. This is particularly pertinent because the number of patients using anticoagulant or antiplatelet agents has increased in recent years.

CONCLUSIONS

Despite a previous report of rectus sheath haematoma after acupuncture, to the best of our knowledge, the present study is the first to describe the use of transcatheter arterial embolisation for injury of the inferior epigastric artery after acupuncture. Acupuncture practitioners must be aware of their patients’ history, and in particular, prior prescription of anticoagulant or antiplatelet agents. Great care and skill is needed to minimise the risk of potential injury to vessels during acupuncture.

Contributors Both authors were involved in the preparation of this manuscript. KHK revised the manuscript, written by SWM.

Competing interests None.

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