ANGIOEMBOLISATION OF CREMASTERIC ARTERY FOR SCROTAL HAEMATOMA FOLLOWING HERNIAL REPAIR

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ABSTRACT:
Cremasteric artery is a branch of inferior epigastric artery supplying the cremaster muscle and coverings of the cord. The possible consequence of injury to this artery is scrotal haematoma. We present a case of haemorrhage from unexpected cresmastric artery injury post-hernioplasty treated with angioembolisation. To the best of our knowledge, this has not been reported in literature.

A 66-year-old gentleman with a left indirect inguinal hernia underwent a left inguinal hernioplasty in our institution with no immediate complications. However, he presented to the emergency department the day after the procedure with complaints of rapidly worsening painful left scrotal swelling accompanied with symptoms of intestinal obstruction. Emergency laparotomy and re-do left hernioplasty was performed, revealing a strangulated inguinoscrotal hernia. Post-operatively, there was non-resolving scrotal swelling with a drop in the haemoglobin level; from 11.9g/dl to 8.5g/dl requiring packed cell transfusion. CT angiogram revealed active contrast extravasation from the left cremasteric artery. Angiographic run confirmed the finding and the left cresmatric artery was superselectively cannulated with a 1.9Fr microcatheter and embolization done with 0.5mm microcoil. Ultrasound scan 24-hour post-procedure showed patent proximal vessel. Clinically there was a reduction of the left scrotal swelling and the haemoglobin remained stable.

Cremasteric artery courses laterally deep into the fascia transversalis entering the cord deep to the internal spermatic fascia to supply the cremaster muscle and coverings of the cord. This course renders the artery to be prone for injury during procedure such as hernioplasty; one of the possible consequences is scrotal haematoma. This artery is usually small in caliber and its identification is important for efficient and effective treatment.

Angioembolisation is able to treat this injury with superior precision owing to its ability for localization and selective cannulation of the offending vessel.

Keywords: scrotal haematoma, cremasteric artery, embolisation

INTRODUCTION:

Cremasteric artery injury is a rare but potentially serious complication of hernioplasty surgery. The cremasteric artery is a branch of the inferior epigastric artery that supplies blood to the cremaster muscle and the coverings of the cord. If this artery is damaged during surgery, it can lead to a scrotal haematoma and other complications. In this case report, we present the unique case of a 66-year-old man who developed a haemorrhage from an unexpected cremasteric artery injury following hernioplasty surgery, which was successfully treated with angioembolisation. To the best of our knowledge, this case has not been reported in the literature.

CASE PRESENTATION:

A 66-year-old man with a left indirect inguinal hernia presented to our institution for left inguinal hernioplasty surgery. The patient had no significant medical history, and the surgery was performed under general anaesthesia without any complications. However, the following day the patient complained of rapidly worsening, painful left scrotal swelling and symptoms of intestinal obstruction.

An emergency laparotomy and re-do left hernioplasty were performed, revealing a strangulated inguinoscrotal hernia. The patient's post-operative course was complicated by non-resolving scrotal swelling and a drop in haemoglobin levels, from 11.9 g/dL to 8.5 g/dL, requiring a packed cell transfusion. The patient was initially treated with conservative measures, including elevation of the affected leg and scrotal support, but the swelling and bleeding persisted.

A CT angiogram was ordered to investigate the cause of the persistent swelling and bleeding and revealed large left scrotal haematoma secondary to active haemorrhage (Fig 1). Angiography of the left inferior epigastric artery was performed, and an active contrast extravasation from distal vessel that was the left cremasteric artery was seen. The left cremasteric artery was superselectively cannulated with a 1.9 Fr microcatheter (Carnelian; Tokai Medical Products, Aichi, Japan) and embolised using a 0.5 mm microcoil (Hilal Embolization Microcoil; Cook Medical, Bloomington, Indiana) (Fig 2A,B). An ultrasound scan 24 hours post-procedure showed a patent proximal vessel (Fig 3). Clinically, there was a reduction in the left scrotal swelling and the haemoglobin levels remained stable. The patient was discharged from the hospital on post-operative day 5 with instructions to follow up with the surgeon in a week's time.

DISCUSSION:

Complications of inguinal hernia surgery include injury to bladder, bowel, vas deferens, and vasculature of the inguinal canal (1). Vascular injury during inguinal hernia repair usually presents as scrotal haematoma and can occur by damage to any of the following vessels: rectus muscle vessel, inferior epigastric vessels, venous plexus at the pubic symphysis, aberrant obturator vein, testicular vessels, and iliac vessels (1).

CT angiography should ideally be performed first, and the pelvic vasculature is studied to identify the offending vessel, in this case, the cremasteric artery.

The cremasteric artery is a small vessel that courses laterally deep into the fascia transversalis, entering the cord deep to the internal spermatic fascia to supply the cremaster muscle and coverings of the cord(2). This course makes the artery vulnerable to injury during procedures such as hernioplasty, which can lead to a scrotal haematoma(3). The cremasteric artery is typically small in caliber and its identification can be challenging, especially in cases where it is damaged and bleeding. Figure 4 illustrates the anatomy of the cremasteric artery.

Cremasteric artery injury is a rare complication of hernioplasty surgery, with only a few cases reported in the literature. The most common symptoms of cremasteric artery injury are persistent scrotal swelling and bleeding, which can occur immediately after surgery or several days later(4). In some cases, the bleeding may be concealed, making it difficult to diagnose(5). The management of cremasteric artery injury may vary

depending on the severity of the injury and the presence of other complications. Treatment options for cremasteric artery injury include surgical ligation of the artery, surgical repair of the damaged artery, and endovascular techniques such as angioembolisation (1,3).

Angioembolisation is a suitable treatment option due to its ability to accurately localise and selectively cannulate the offending vessel(1). It is also able to map the collateral vessels; in this case the testicular artery (a branch of the aorta) and artery to ductus deferens (branch of superior vesical artery)(1,2). This information is important in determining the safest level of embolisation (distal versus proximal) and the safest embolic agents to use. In view of the rich collateral supply in the inguinal canal and the scrotum, precise superselective catheterisation of the vessel until the point of haemorrhage and the utilisation of microcoils as the embolic agent of choice to protect the collaterals and to avoid complications, particularly testicular ischaemia, are recommended(1). Angioembolisation has several advantages over other treatment options, including its precision, minimally invasive nature and high success rate(1).

In this case, the patient developed a haemorrhage from an unexpected cremasteric artery injury following hernioplasty surgery, which was successfully treated with angioembolisation. The procedure involved superselectively cannulating the left cremasteric artery with a microcatheter and embolising it with a microcoil, resulting in a reduction in the left scrotal swelling and stabilisation of the haemoglobin levels.

CONCLUSION:

Cremasteric artery injury is a rare but potentially serious complication of hernioplasty surgery that can lead to scrotal haematoma and other complications. Accurate identification of the artery is important for efficient and effective treatment. In this case, angioembolisation was used to successfully treat the cremasteric artery injury, demonstrating the precision and effectiveness of this procedure in this setting. Further studies are needed to better understand the incidence and management of cremasteric artery injury following hernioplasty surgery.

CONFLICTS OF INTEREST:

The authors have no potential conflicts of interest to report regarding this presentation.

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INFORMED CONSENT:

Consent had been acquired from the patient's guardian for the publication of images and content.

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FIGURE LEGENDS:

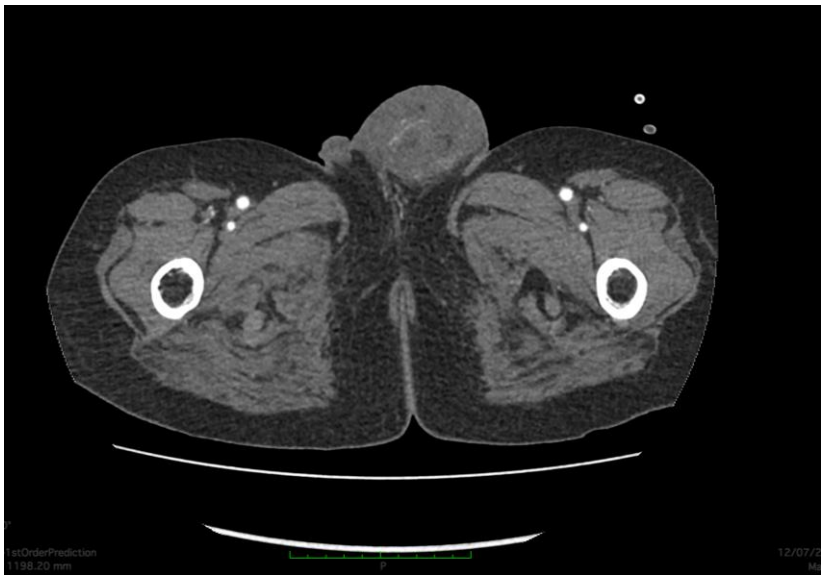

Figure 1: CT Angiography showing contrast extravasation in the left scrotum.

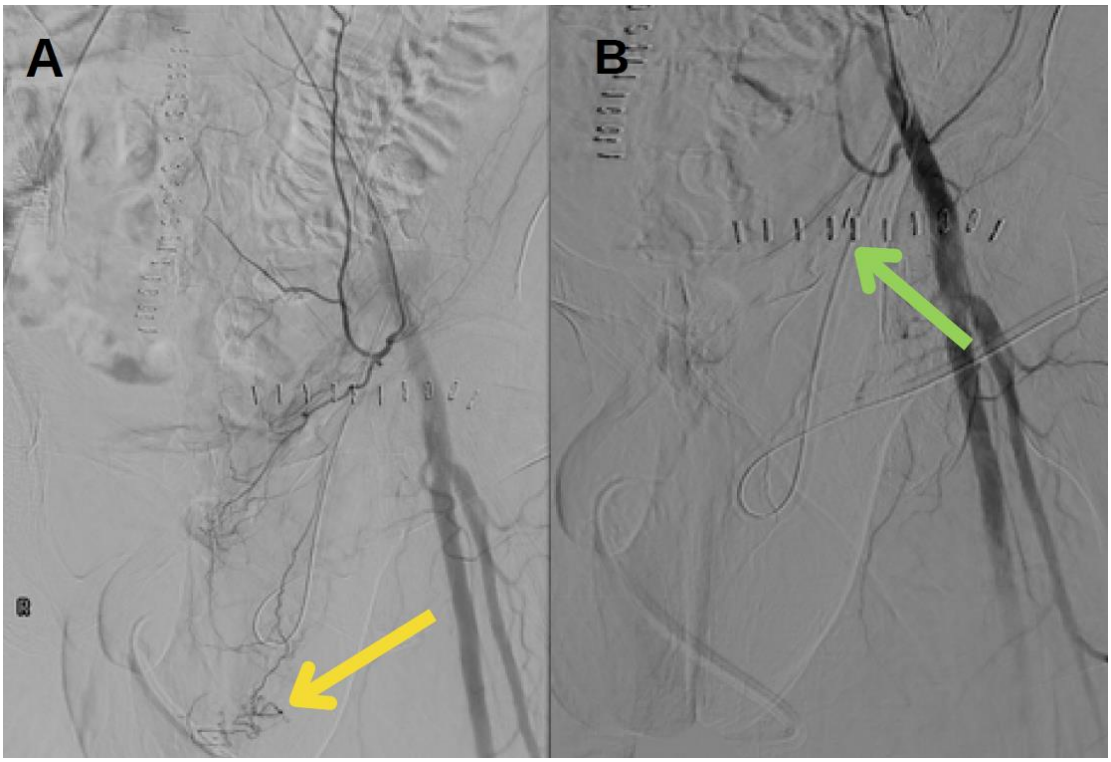

Figure 2: Left inferior epigastric run showing contrast extravsation from cremasteric artery (yellow arrow). Post-embolisation run shows obliteration of cremasteric artery with preservation of inferior epigastric artery (green arrow).

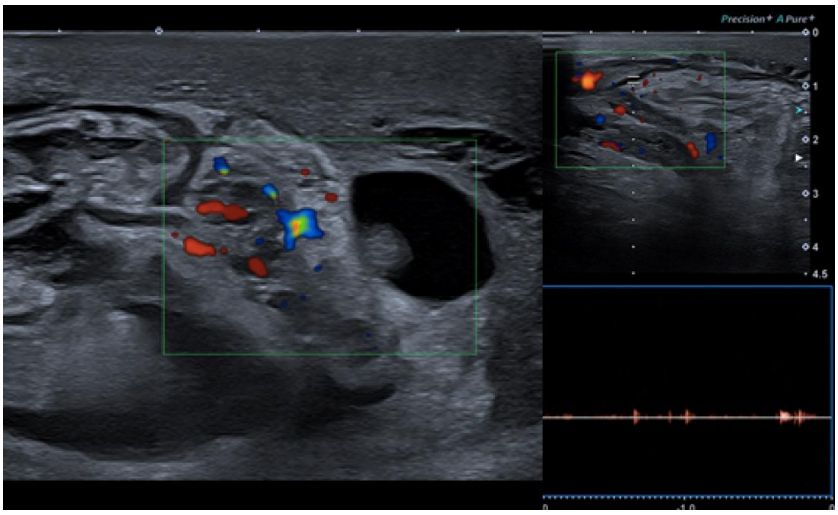

Figure 3: Ultrasound reassessment 24 hours post-embolisation. Images show patency of vessel proximal to the embolisation point.

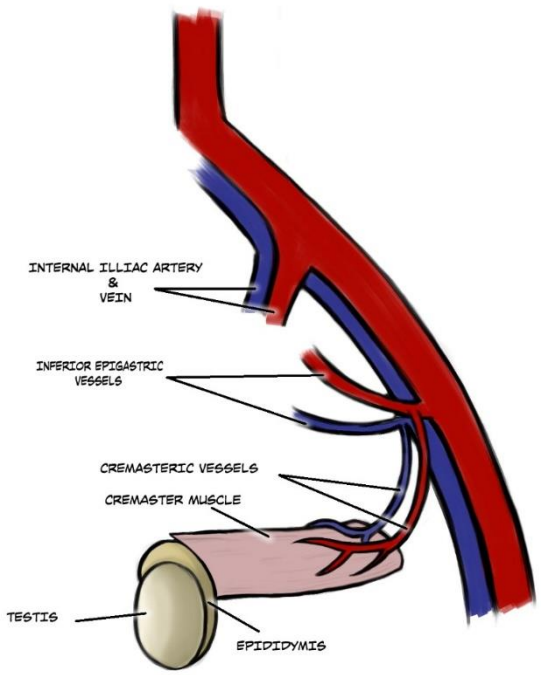

Figure 4: Illustration showing the origin of the cremasteric artery from the inferior epigastric artery.