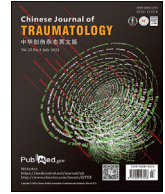


Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

# Chinese Journal of Traumatology

journal homepage: <http://www.elsevier.com/locate/CJTEE>

## Case Report

# Isolated blunt iliac artery injury successfully treated with endovascular stent

Ee Peng Lee, Tan Jih Huei\*, Tan Chor Lip Henry, Bakin Salinawati, Mohamad Yuzaidi, Imran Alwi Rizal

Department of General Surgery, Hospital Sultanah Aminah, Johor Bahru, Malaysia

## ARTICLE INFO

### Article history:

Received 29 March 2021

Received in revised form

12 May 2021

Accepted 11 July 2021

Available online 21 August 2021

### Keywords:

Iliac artery

Stents

Blunt injuries

## ABSTRACT

Common or external iliac artery injury due to blunt trauma is unusual without an associated pelvic fracture. Here we report on a 62 years old man that sustained left external iliac artery thrombosis due to blunt trauma following fall from motorbike. There was no immediate circulatory compromise. Contrast CT of abdomen revealed an associated left lower abdominal wall traumatic hernia. The iliac artery was intervened with an endovascular stent to restore luminal flow and the hernia was repaired electively. The entire clinical course and management dilemma are described in this article.

© 2021 Chinese Medical Association. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## Introduction

Blunt trauma resulting in iliac artery injury is an exceedingly rare entity. These injuries to the iliac artery can manifest as ischemic limb, fistula, aneurysm or pseudoaneurysm which may eventually cause rupture with hematoma formation. Accepted treatment strategies for such injuries include surgical exploration with bypass procedures or via endovascular techniques. Herein we report on a 62 years old man that sustained left external iliac artery thrombosis due to intimal injury from blunt trauma following fall from motorbike. Despite having no immediate circulatory compromise, the subsequent investigations with details entailing to an insertion of endovascular stent is described in this article.

## Case report

A 62 years old man presented to casualty after a road traffic accident. The patient was the motorbike rider who was hit on the right by an oncoming car which led to his fall on the left. Initial assessment on the casualty revealed tenderness over the left lower abdomen with a bruise over the groin. Vital monitoring and early blood investigations were within normal limits. Detailed examination revealed a hematoma over the left iliac fossa that was tender on palpation. There were neither peritonism nor any evidence of bony fractures on secondary survey. The neurological examination

over the affected limb revealed normal power and sensation. Pulses of affected limb were all palpable, and peripheries were warm to touch, with a capillary refilling time of less than 2 seconds. With the suspicion of blunt traumatic vascular injury, an urgent contrast enhanced computed tomography (CECT) of the abdomen and pelvis was performed. CT scan revealed herniation of a loop of bowel with its mesentery through a defect of the anterior abdominal wall measuring 3 cm, localized at the left iliac fossa (Fig. 1). Incidentally adjacent to this hernia, there is a small filling defect of the left external iliac artery with perivascular streakiness without contrast of extravasation. (Fig. 2).

In spite of having no clinical signs of ischemic limb with readily felt peripheral pulses coupled with triphasic signal on Doppler examination, endovascular stenting was offered to prevent future complications of ischemic limb. Furthermore, it was essential for this patient as he is the sole breadwinner which required him to work actively.

Pre-run angiography performed on post-trauma day 3 showed a short segment stenosis with thrombosis of the left external iliac artery measuring 1.3 cm in length just proximal to the left inferior epigastric artery. Right common femoral artery and right radial artery were the access vessels with the 5 Fr arterial sheaths. Femoral sheath was exchanged to a 9 Fr sheath and Cobra Catheter advanced into left superficial femoral artery. Terumo guidewire was changed to Armplatz guide wire to facilitate stent deployment (fluency plus vascular stent graft 9 mm × 40 mm). Post stent angiography revealed that the left inferior epigastric artery was covered while preserving blood flow to femoral artery (Fig. 3).

\* Corresponding author.

E-mail address: [huei\\_87@hotmail.com](mailto:huei_87@hotmail.com) (T.J. Huei).

Peer review under responsibility of Chinese Medical Association.

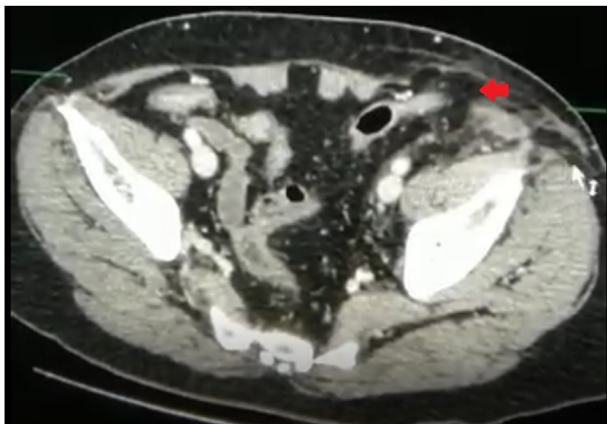


Fig. 1. CT axial view showing left iliac fossa traumatic hernia.

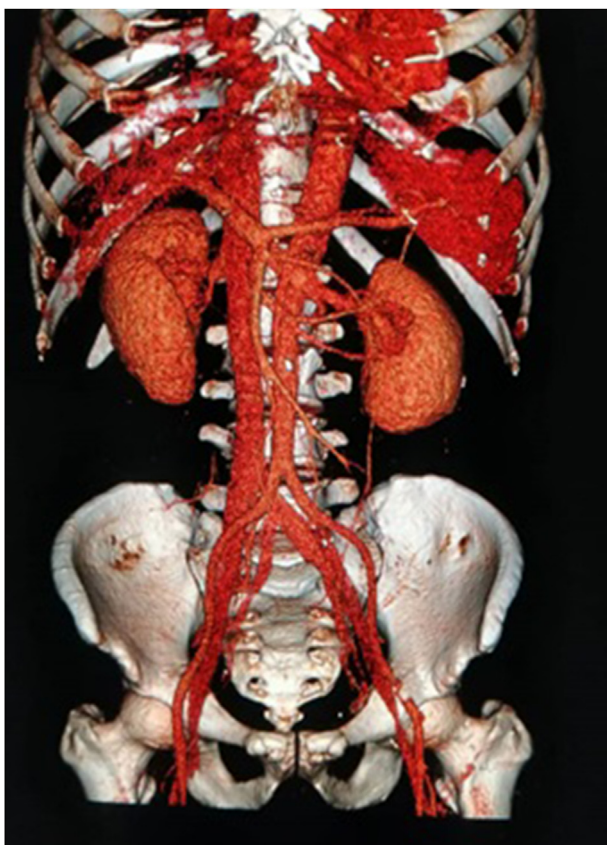


Fig. 2. CT reconstructed view showing filling defect at left external iliac artery.



Fig. 3. Angiogram image of stent placement over left external iliac artery.

He was initiated on dual antiplatelet therapy (aspirin and clopidogrel) for 3 months and was discharged home the next day following stenting. Upon subsequent clinic review 3 months later, the patient was well with no clinical signs of limb ischemia and all distal pulses were triphasic on Doppler examination. The traumatic abdominal wall hernia was scheduled for repair on an elective date.

### Discussion

Blunt traumatic injury to the common and external iliac artery is rare as it is anatomically protected by the pelvic bone. When injury

to the iliac artery occurs, it is regularly accompanied by concurrent pelvic fractures.<sup>1</sup> However, in this case the iliac artery sustained intimal damage without any pelvic fracture which is unusual. Without strong suspicion due to bruise over the groin, this would indefinitely have led to a delay in diagnosis.<sup>2</sup> This is reported by Byun et al.<sup>2</sup> that led to a iliofemoral bypass at 3 months following injury which caused a gradual occlusion of the external iliac artery. Uniquely, iliac artery injury was identified incidentally on CT scan for other diagnostic suspicion of intraabdominal injury due to persistent left iliac fossa pain. Coincidentally, the external iliac intravascular thrombus was identified with findings of a traumatic abdominal wall hernia. Iliac vessel injuries either to the vein or artery are infrequent from blunt trauma. The treatment approach was diversified to endovascular or surgical bypass.

Prior to the advent of endovascular treatment, vast majority of injury to iliac artery injury is approached via open surgical techniques. As they are often exclusively associated with pelvic fractures, these injuries are identified early and outcomes are good with immediate surgical intervention. In cases of blunt traumatic vascular injury, the mechanism of injury was postulated to occur due to arterial hyperextension that led to intimal damage.<sup>1</sup> The approach to gain access to the iliac artery for repair is often via extraperitoneal route which gives better outcome in control and reduced bleeding.<sup>1</sup> This is reported by the largest series of 24 patients with blunt common or external iliac artery injuries. The authors found that 68% of such injuries benefitted from open repair and 50% ultimately required amputations. Mortality rate is as high of 40% with increased injury severity and associated pelvic fractures.

In this case, there was a predicament whether to intervene or give a trial of conservative management as this patient had neither distal circulation compromise nor any associated pelvic fracture. Previous series have largely described iliac artery intervention when there is an associated pelvic fracture.<sup>3</sup> However, isolated blunt external iliac artery injury without associated fracture has

been reported to result in total occlusion after 3 months of injury by Byun et al.<sup>2</sup>

It remains contentious whether endovascular stent would be beneficial as there is no immediate vascular compromise. However, considering the possibility of future complications of claudication, chronic limb ischemia and patients need to return to work, an endovascular stent was placed to restore external iliac luminal flow. This patient as of current is scheduled for an elective repair of the traumatic abdominal hernia.

External iliac artery endovascular stent is an emerging option for isolated external iliac artery injury due to blunt trauma. The potential benefit of endovascular stent requires larger series to imply a better evidence. Intervention of blunt isolated iliac artery injury should involve a two-way communication involving the patient and multidisciplinary team to weight its risk and long-term benefits.

### Funding

Nil.

### Ethical statement

We have obtained consent from the patient for publication of this case.

### Declaration of competing interest

We declare no competing interest.

### Author contributions

The conceptualization of the case report, data curation, and writing of original draft was done by Lee EP, Tan JH and Henry TCL involved in review and editing of original draft. Bakin Salinawati in provision of images. Yuzaidi Muhammad and Rizal Imran Alwi in review and editing of final draft. All authors read and approved of the final manuscript.

### References

1. Carrillo EH, Wohltmann CD, Spain DA, et al. Common and external iliac artery injuries associated with pelvic fractures. *J Orthop Trauma*. 1999;13:351–355. <https://doi.org/10.1097/00005131-199906000-00005>.
2. Byun CS, Park IH, Do HJ, et al. Left external iliac and common femoral artery occlusion following blunt abdominal trauma without associated bone injury. *Korean J Thorac Cardiovasc Surg*. 2015;48:214–216. <https://doi.org/10.5090/kjtcs.2015.48.3.214>.
3. Pascarella R, Del Torto M, Politano R, et al. Critical review of pelvic fractures associated with external iliac artery lesion: a series of six cases. *Injury*. 2014;45:374–378. <https://doi.org/10.1016/j.injury.2013.10.011>.