

A rare case of life-threatening extra-peritoneal bleeding after open inguinal hernia repair requiring damage control surgery

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*“The time spent for hemostasis is not a lost time”
Sergei Spasokukockii (1870-1943)*

SUMMARY: A rare case of life-threatening extra-peritoneal bleeding after open inguinal hernia repair requiring damage control surgery.

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Introduction. *Although inguinal hernia repair is a routine procedure and frequently performed as one-day surgery, we should be particularly aware of the possible complications, which could be life-threatening if not recognized in due course.*

Case report. *We report a case of life-threatening extra-peritoneal bleeding after open inguinal hernia repair requiring damage control surgery.*

Discussion. *Several vessels can be responsible for massive extraperitoneal bleeding - external iliac vessels, lower epigastric artery, crema-*

steric vessels and corona mortis. Although damage control surgery was developed to treat the severe trauma, it can also be a life-saving maneuver in cases as the presented one. Hemodynamic instability with distended abdomen is a primary indication for laparotomy, but in some cases the contrast CT provides valuable information about the location and the size of hematoma and can guide the operative approach - mid-line laparotomy or revision of the wound as in our case.

To the best of our knowledge, this is the first reported case of life-threatening retroperitoneal bleeding after open inguinal hernia repair. The present case is a good example for the application of damage control in pathology considered as one-day surgery.

Conclusions. *Although casuistic, the life-threatening bleeding after open hernia repair should be suspected. The prompt surgical response with damage control can be life-saving maneuver even in the routine hernia surgery. Detailed knowledge of the anatomy and careful dissection are required to avoid this kind of complications.*

KEY WORDS: Open inguinal hernia repair - Life-threatening retroperitoneal bleeding - Damage control surgery.

Introduction

Inguinal hernia repair (IHR) is the most frequently performed surgical intervention worldwide accounting for a large amount of the health care expenditures (1). On the other hand, complications in surgery represents a significant burden on the hospital cost and a major cause of impaired quality of life,

as well (2). Notwithstanding that IHR is a routine procedure and frequently performed as one-day surgery, we should be particularly aware of the possible complications, which could be life-threatening if not recognized in due course.

Herein, we report a case of life-threatening extra-peritoneal bleeding after open IHR requiring damage control surgery – grade IV according to Clavien-Dindo classification (2). The case is reported according to SCARE guideline (3).

Case report

A 89-year-old woman was admitted to Emergency department for incarcerated left groin hernia

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with complaints started six hours before the admission. A severe co-morbidity was presented – anemia, arterial hypertension, ischemic heart disease with permanent atrial fibrillation, absolute arrhythmia, right fascicular block and chronic cerebrovascular disease. The blood analysis was normal except for Hb – 112 g/l, CRP – 159. There was no disturbance of the coagulation. Intraoperatively, incarcerated small bowel with a length of 15 cm was found. Because the bowel was viable resection was not performed and she underwent McVay's repair. On the 2nd postoperative day she complaint of abdominal pain and dizziness. The physical examination revealed distended and painful left part of the abdomen, normal operative wound, unstable hemodynamic (blood pressure 80/40 mmHg, pulse 140) and drop of hemoglobin to 66 g/l. Despite the severe condition, in order to avoid unnecessary laparotomy and under fluid resuscitation a contrast enhanced computed tomography (CT) was performed. The examination revealed a large retroperitoneal hematoma located distally at the level of S3 and proximally reaching the lower pole of the left kidney. The urinary bladder and small bowel loops were found medially dislocated (Figure 1). A contrast

extravasation in the lower medial part of the hematoma was observed (Figure 1). She was immediately taken to the operating room and emergency revision was performed. The protocol for massive transfusion was activated and she received 4 units packed red blood cells (pRBC) and 4 units fresh frozen plasma (FFP). During the revision no bleeding was found in subcutaneous tissue. The McVay's repair was removed and a large retroperitoneal hematoma with fresh blood and clots was found (Figure 2). The localization of hematoma fully corresponded with the preoperative CT. No source of active bleeding was found. Due to the unstable hemodynamic after evacuation of hematoma a tamponade with gauze strips was applied and the patient was transferred to ICU. After stabilization of the condition, 48-hours later, a planned re-operation with thorough inspection was performed. There were no lesions of external iliac vessels, corona mortis was not presented, but the lower left epigastric artery was found cut (Figure 3). It was ligated and subsequent re-McVay repair was completed. The patient had uneventful recovery and was discharged on 8th postoperative day. Informed consent for publication was obtained from the patient.

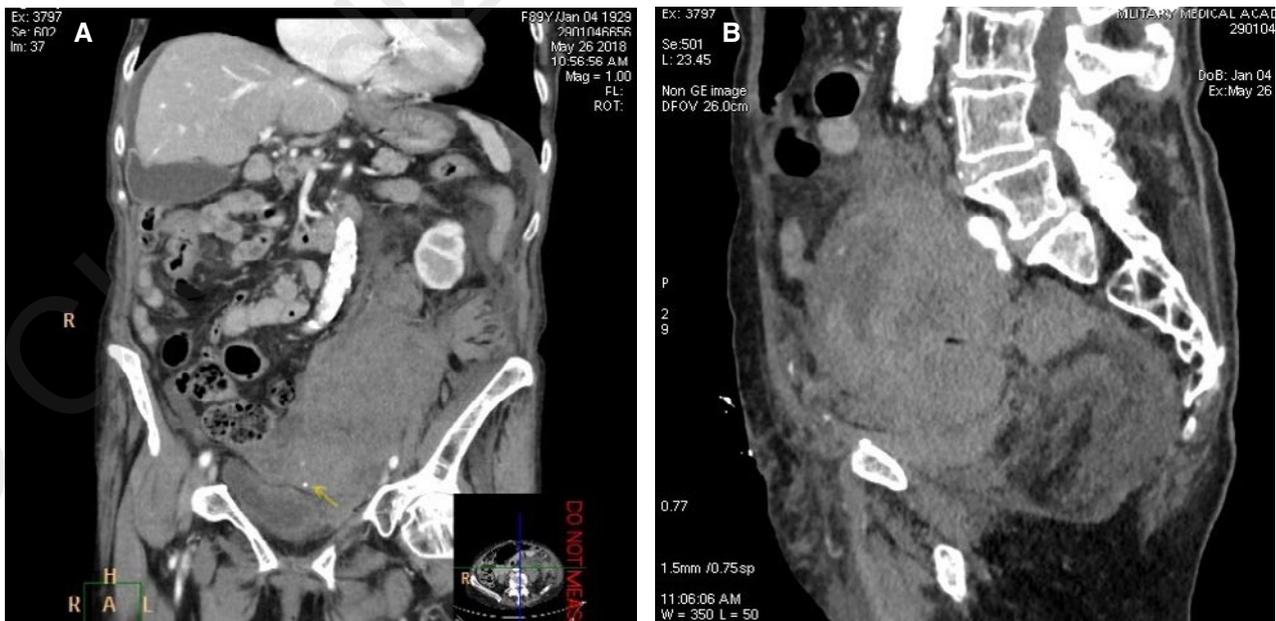


Figure 1A, B - Contrast CT – large retroperitoneal hematoma with medial dislocation of the viscera and active bleeding (arrow).

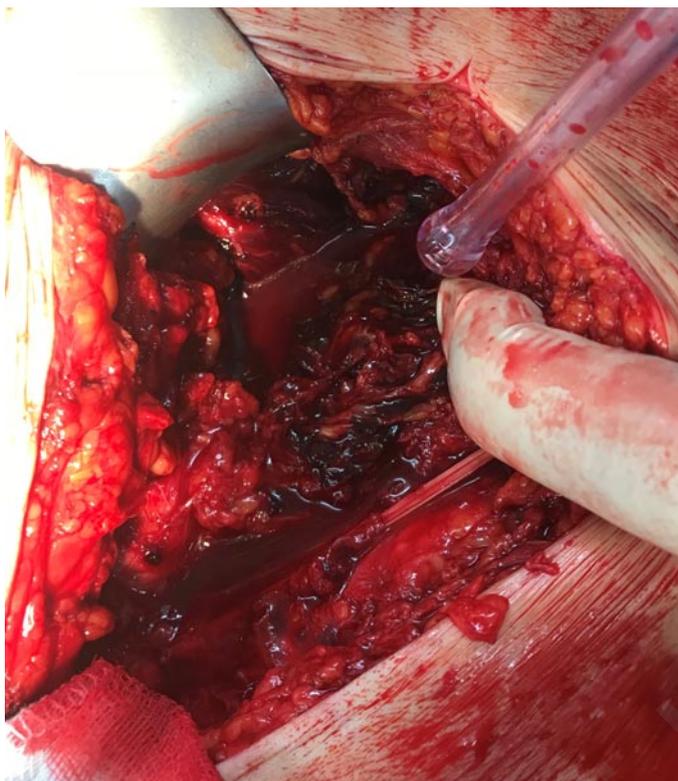


Figure 2 - Intraoperative view from the damage control intervention – retroperitoneal hematoma.

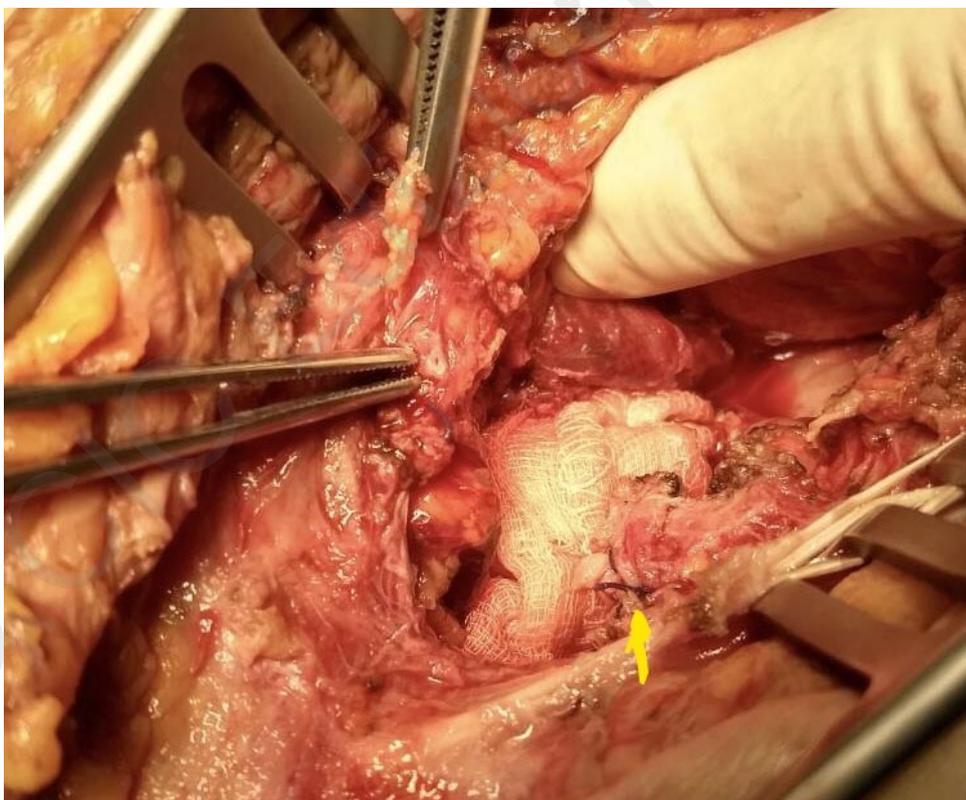


Figure 3 - Intraoperative view from the planned revision – the cut ends of left lower epigastric artery (tweezers), which was ligated (arrow).

Discussion

Although currently IHR is a routine procedure and is performed as one-day surgery, it carries a risk for the complications some of which significantly influence the quality of life and moreover could lead to litigation (4). A randomized controlled trial with 1983 patients reported life-threatening complications in 0.1 and 1.1% in the open and laparoscopic group, respectively, but extropertoneal bleeding was not mentioned (5).

To the best of our knowledge, this is the first reported case of life-threatening retroperitoneal bleeding after open IHR. The search in PUBMED using “open inguinal hernia repair”, “complications”, “bleeding” yielded a total of 58 papers, of which only two were relevant – one from Japan and one from USA (6, 7). These articles, however, described two cases with hemoperitoneum after IHR – bleeding from the internal inguinal ring (6) and from the artery of Sampson (7). No reports of massive retroperitoneal hematoma were found.

Several vessels can be responsible for massive extropertoneal bleeding – external iliac vessels, lower epigastric artery, cremasteric vessels and corona mortis. Although corona mortis was not presented in our case, its prevalence is high (49% of the population) (8). It is observed more often in Asia than in Europe and North America, and venous variant is more frequent than arterial one (8). Injuries of external iliac vessels are extremely rare and in most cases the bleeding is obvious and detected intraoperatively. Although we did not find active bleeding during the both re-operations, the cut ends of the lower epigastric artery suggested that probably it was the culprit for the bleeding. It is the most plausible explanation because of the lack of lesions of the others vessels and because of its origin from external iliac artery with potential to cause such massive retroperitoneal bleeding.

Although damage control surgery was developed to address the severe trauma in civilian and military settings, it can also be a life-saving maneuver in cases as the presented one (9, 10). Recently, Becher et al. in an attempt to define criteria for damage control in non-trauma patients using logistic regression analysis proposed the following indications – severe sep-

sis/shock, male gender, age > 70, acidosis (pH <7.25) and > 3 comorbidities (11). We propose the massive retroperitoneal bleeding as additional indication. Despite the lack of coagulopathy in our case and the conflicting evidence in the literature, we applied pRBC and FFP in 1:1 ratio (12).

Although, hemodynamic instability with distended abdomen is a primary indication for laparotomy, in some cases the contrast CT provides valuable information about the location and the size of hematoma and can guide the operative approach – midline laparotomy or revision of the wound as in our case. In such cases, especially in elderly with severe comorbidity CT can help avoiding the morbidity of unnecessary laparotomy.

The present case is a good example for the application of damage control in pathology considered as one-day surgery.

Conclusions

Although casuistic, the life-threatening bleeding after IHP should be suspected. The prompt surgical response with damage control can be life-saving maneuver even in the routine hernia surgery. Detailed knowledge of the anatomy and careful dissection are required to avoid this kind of complications.

Conflicts of interest

The Authors report no conflict of interest.

Funding

No funding was used for the present work.

Authors' contributions

All Authors contributed equally to the manuscript, read it and approved the final version.

Congresses

The work was not presented at any Congresses.

Acknowledgements

The Authors would like to thank dr. Simon Ajderian.

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