

Case Report

Iliopsoas abscess formation as a complication of abdominal stab wound: a case report

Di Sun¹, Ying Qin², Yujia Chen³, Weina Ju⁴, Baochang Qi⁵

Departments of ¹Colorectal and Anal Surgery, ²Neurosurgery, ³General Surgery, ⁴Neurology, ⁵Orthopaedic Traumatology, First Hospital of Jilin University, Changchun, China

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Abstract: Stab wounds are commonly encountered in clinical practice. However, iliopsoas abscess formation after an abdominal stab wound is relatively rare and its treatment is not well-documented. We report a case of a 20-year-old man who developed an iliopsoas abscess 10 days after an abdominal stab wound. In collaboration with orthopedic surgeons, wound debridement was performed twice, followed by vacuum sealing drainage (VSD), and implantation of antibiotic-loaded bone cement beads. Abdominal CT performed one month after surgery showed resolution of the abscess and acceptable recovery. No recurrence of symptoms was observed thereafter. Interdisciplinary collaboration is important for surgical treatment of complicated stab wounds. Use of VSD and implantation of antibiotic bead chain was found effective in treating the iliopsoas abscess.

Keywords: Abdominal injuries, stab wound, iliopsoas abscess, vacuum drainage, antibiotic

Introduction

Abdominal stab wounds are associated with a high risk of postoperative infection and other complications [1]. However, iliopsoas abscess formation as a complication of abdominal stab wounds is a rare occurrence. Primary and secondary iliopsoas abscess is associated with a mortality rate of 2.4% and 19%, respectively [2]. The optimal strategy for treatment of iliopsoas abscess is yet to be defined. Here we report a case of iliopsoas abscess in a 20-year-old man detected ten days after sustaining an abdominal stab wound. The abscess appeared to consist of multiple pockets of pus, therefore the conventional method of percutaneous drainage of pus was not deemed adequate. In collaboration with orthopedic surgeons, debridement and vacuum sealing drainage (VSD) was performed and antibiotic-loaded bone cement beads were implanted and satisfactory results were achieved.

Case report

A 20-year-old man with a bleeding stab wound in the right lower quadrant of the abdomen and exposed bowel loops was admitted to our hospital, two hours after injury. The patient had no

other comorbidities. The wound was about 5 cm long with protruding small intestine. Abdominal CT showed a small amount of gas shadow (**Figure 1A**).

The patient was administered tetanus human immunoglobulin injection and urgent laparotomy was performed. The volume of intraabdominal bleeding was approximately 2000 mL. There were three 2-cm long rupture wounds in the intestine at 220 cm to 230 cm from the Treitz ligament. Another two wounds were observed in the small intestinal mesentery with ischemia of the corresponding bowel segment. A penetrating wound in the small intestine 2 cm from the ileocecal junction, a ruptured appendix, and a right retroperitoneal hematoma were also noticed.

Abdominal debridement with partial ileocecal resection with ileocolic anastomosis was performed. Intraoperative blood loss volume was about 2500 mL and six units of packed cells (RBC) was administered. Post-operative treatment included i.v. fluids, antibiotics (cefminox 2 g iv bd), and symptomatic treatment.

The patient recovered well and WBC counts gradually decreased to the normal range (**Figure**

Iliopsoas abscess after abdominal stab wound

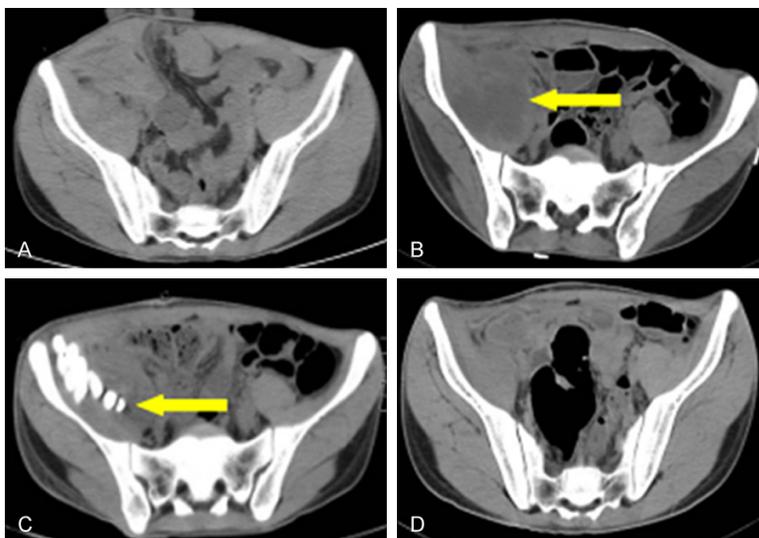


Figure 1. A: Abdominal CT at the time of admission; B: Abdominal CT at day 15 post-surgery showing iliopsoas abscess (indicated by arrows); C: Abdominal CT after clearance of the abscess, VSD drainage, antibiotic bead chain (indicated by arrow) three days after implantation; D: Abdominal CT after second debridement showing resolution of the iliopsoas abscess; VSD drainage and antibiotic bead chain was removed after one month of implantation. CT, computed tomography; VSD, vacuum sealing drainage.

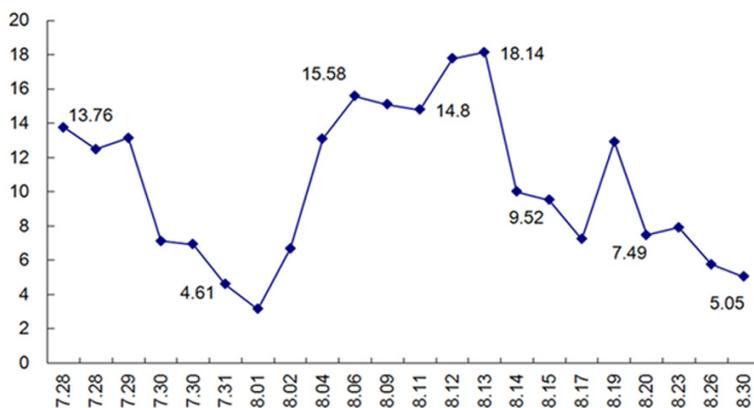


Figure 2. Graph showing WBC counts at different time-points after admission. The X-axis indicates the date of the patient had blood test and the Y-axis shows his WBC value ($\times 10^9/L$). On admission, the WBC counts were increased (1.37 fold increase over normal level). After surgery, WBC counts gradually decreased to normal. On post-operative day 5, WBC counts began to gradually increase again. After debridement of iliopsoas surgery, post-operative WBC counts first increased followed by return to normal range. After the second debridement, WBC counts increased again and then gradually returned to normal. No further relapses occurred. WBC, white blood cells.

2). From the fifth post-operative day, the WBC count started increasing gradually and reached $15.5 \times 10^9/L$ by the tenth post-operative day. The patient was shifted to cefepime 2 g iv twice a day without much symptomatic relief. On day 15 post-surgery, the patient developed fever (up to $39.5^\circ C$).

On repeat abdominal CT, the rectus abdominis showed a striped pattern of low density areas interspersed with nodular high density areas (**Figure 1B**). With a provisional diagnosis of iliopsoas abscess, and in consultation with orthopedic surgeons, surgical debridement was performed. A 10 cm long incision was made into the ilio-inguinal muscles along the iliac and retroperitoneal space, and copious amount of pus was drained. A sample was taken for bacterial culture. Debridement was followed by implantation of bo-ne cement chain of beads containing vancomycin and meropenem.

Three days after debridement, the WBC counts fell to the normal range (**Figure 2**). Repeat abdominal CT at this stage (**Figure 1C**) showed annular shaped high density areas with small fluid like consistency in the pelvis. Bacterial culture of debrided material revealed *Escherichia coli* infection. Intravenous levofloxacin, 0.2 g twice a day, was initiated. Six days after the first debridement, the WBC were found elevated again, so a second debridement operation was performed with VSD and antibiotic bead chain implantation, although no significant intra-operative pus was observed. Three days later, VSD was removed and regular dressings performed along with

extraction of one bead chain daily until its complete removal.

One month after the second debridement, the wound completely healed. Blood test results were normal and abdominal CT (**Figure 1D**) showed no abscess. At the follow-up examina-

Iliopsoas abscess after abdominal stab wound

tion at three months, the patient reported a return to normal life with no recurrence of symptoms.

Discussion

The incidence of infection after stab wounds is high in clinical practice. However, formation of iliopsoas abscess as a complication of abdominal stab wounds is not commonly encountered. Based on the symptoms, the cause of iliopsoas abscess in our case is most likely penetrating wound into retroperitoneal space. Thus, a conventional percutaneous drainage method was deemed unlikely to be efficacious. The VSD system ensures that the wound is closed while inducing a negative pressure, which reduces the chances of contamination of the wound from external flora [3].

In 1979, Klemm et al. for the first time used gentamicin-loaded bone cement beads to temporarily fill the dead space after bone debridement for infection [4]. Since then, using local antibiotics delivery such as bone cement beads for the prevention of infection in open fractures and for the treatment of osteomyelitis is well accepted [5]. Local antibiotic delivery after surgical debridement is crucial for the long-term resolution of abdominal wound healing. We believe that antibiotic cement is an effective method of local delivery of adequate concentration of antibiotics. In our case, the patient was able to return to his routine daily activities at the most recent follow-up with no pain or other residual complaints.

In conclusion, VSD combined with implantation of antibiotic bone cement chain beads is an effective therapeutic modality for treatment of infectious complications. Interdisciplinary consultation and collaboration is recommended to provide the optimal treatment options for patients.

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Disclosure of conflict of interest

None.

Address correspondence to: Baochang Qi, Department of Orthopaedic Traumatology, First Hospital of Jilin University, 71 Xinmin Street, Changchun 130021, China. Tel: +86-13843144350; Fax: +86-431-88580578; E-mail: qibaochang1@163.com; Weina Ju, Department of Neurology, First Hospital of Jilin University, 71 Xinmin Street, Changchun 130021, China. Tel: +86-13756303856; Fax: +86-431-88580578; E-mail: erna198644@126.com

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