

# Recurrent Upper Gastrointestinal Bleeding after Operation of Femoral Trochanteric Fracture in the Elderly: Report of one Case

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## ABSTRACT

**Keywords:** Upper Gastrointestinal Bleeding; Stress Related Mucosal Disease (SRMD); Electronic Gastroscopy; Laparoscopy; Embolism

## Case Report

The patient, a 91-year-old female, was admitted to the hospital due to "limited right hip mobility due to accidental fall 2 days ago" and was diagnosed with a comminuted fracture of the right femoral trochanter. In the past, she had performed percutaneous vertebroplasty several times, denied chronic diseases such as hypertension and diabetes, denied the history of major trauma surgery, and denied the history of digestive system diseases. Upon admission, relevant examinations and preoperative preparation were completed, and blood routine examination was conducted: hemoglobin 67g/L, Coagulation function test: fibrinogen 4.67g/L, ACT: platelet function 0.3 (normal range>1), other coagulation items were within normal range, and fecal occult blood was negative. Blood transfusion was performed to correct anemia, 40mg enoxaparin daily was used to prevent thrombo-

sis, and other symptomatic treatments were taken. On the 7<sup>th</sup> day of admission, hemoglobin 101g/L was rechecked, coagulation function was within normal range, and vital signs were stable, Sodium LMWH was discontinued 12 hours before surgery. Closed reduction and intramedullary nail fixation of femoral fractures were performed under combined spinal-epidural anesthesia. The surgery lasted for 70 minutes and the process was smooth.

The patient returned to the ward safely after the surgery. On the morning of the 8<sup>th</sup> day of admission, the patient suddenly became delirious, accompanied by a decrease in finger pulse oxygen saturation and blood pressure. Emergency treatment such as mechanical ventilation, volume expansion, and pressure boosting were given, and CT scans were improved to indicate pneumoperitoneum. Immediate general anesthesia under laparoscopy for abdominal exploration in

the general surgery department, with a diameter of 1.0cm visible in the duodenal bulb  $\times$  0.5cm perforation (Figure 1). Under general anesthesia, laparoscopic duodenal bulb perforation repair was performed. During the operation, a Nasogastric intubation was placed. The process was smooth. After the operation, the patient was admitted to the ICU for symptomatic treatment, such as infection treatment, organ support, parenteral nutrition, and stabilizing the Internal environment. After that, the patient improved, and Tracheal intubation was removed to change to high flow oxygen inhalation. On the 15<sup>th</sup> day after admission, the patient complained of abdominal pain. After

25 minutes of nasal feeding of Methylene blue through Nasogastric intubation, the drainage fluid from the abdominal drainage tube turned Teal. The general surgery department performed emergency laparotomy, and a 0.5cm wound was found at the original repair opening  $\times$  0.5 cm perforation, followed by duodenal bulb perforation repair, the procedure was smooth, returned to ICU after the operation, and received symptomatic treatment such as infection treatment, organ protection, parenteral nutrition, and stabilizing the Internal environment.



Figure 1.

Because of repeated duodenal perforation, the nasojejunal tube indwelling operation was conducted under the guidance of bedside gastroscopy on the 19th day of admission. The process was smooth, the depth of nasojejunal tube indwelling was 130cm, and enteral nutrition was started. On the 32nd day of admission, the Tracheal intubation was successfully pulled out again to change to high flow oxygen inhalation. On the 38th day of admission, melena and brown gastric juice appeared, and the stool and gastric juice occult blood test were positive. Symptomatic treatments such as fasting and acid suppression were given. On the 39th day, due to an increase in melena and brown gastric juice, accompanied by a decrease in hemoglobin, emergency gastroscopy was performed at the bedside. There was damage and bleeding at the duodenal repair site (Figure 2), and it was considered that the compression of the nasogastric tube caused

ulcer bleeding. After removing the nasogastric tube and Gastroscopic hemostasis, the condition improved. On the 43rd day after admission, massive gastrointestinal bleeding occurred again. Bedside gastroscopy showed bleeding at the duodenal repair site, and electrocoagulation was given to stop bleeding (Figure 3). Abdominal arteriography was performed under local anesthesia (Figure 4). The catheters were placed in the common hepatic artery, gastroduodenal artery, and Mesentery superior artery for angiography. The contrast agent was diffused in the middle section of the gastroduodenal artery, and gastroduodenal artery embolization was performed. The amount of bleeding decreased day by day after the coil embolization. After 11 days, melena turned yellow and continued to improve in ICU treatment before being discharged.

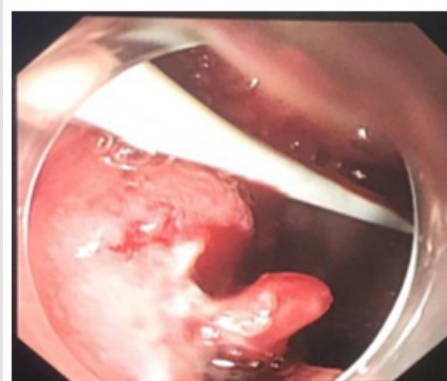


Figure 2.



Figure 3.

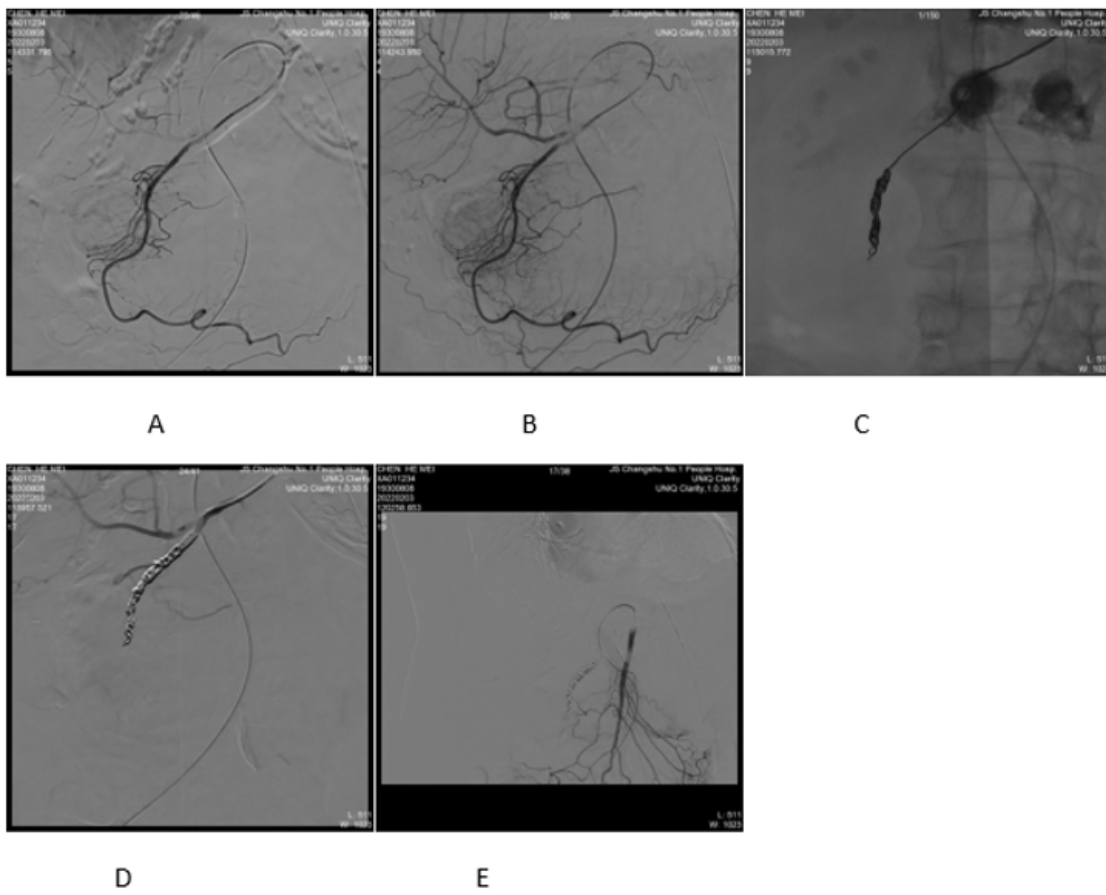


Figure 4:

- A. Contrast of common hepatic artery, interruption of gastroduodenal artery with diffusion of contrast agent
- B. Cannulation into gastroduodenal arteriography
- C. Coil embolization of the gastroduodenal artery
- D. Gastroduodenal artery occlusion after embolization
- E. Superior mesenteric artery angiography showed no obvious abnormalities.

## Discuss

Stress Ulcer (SU) refers to the acute gastrointestinal mucosal erosion, ulcer and other diseases that occur in the body under various kinds of severe trauma, critical disease or serious psychological disease and other stress conditions, and the severe cases can be complicated with gastrointestinal bleeding and perforation [1]. The incidence of Stress Ulcer Bleeding (SUB) in ICU is 1% -17%, with an average of 8%. The incidence of perforation is about 1%. Once bleeding or perforation occurs, the mortality rate can reach 50% -80% [2]. Some research results show that [3], the incidence of SUB in different populations is different, for example, the incidence of SUB in patients with craniocerebral injury can reach 44.1% [4], the incidence of SUB in patients with severe disease fluctuates between 0.6% and 6.8% [5], while the incidence of SUB in patients with knee or hip Joint replacement is less than 1% [6,7]. Insufficient visceral blood flow perfusion (or gastrointestinal mucosal ischemia) is the main cause of SU in critically ill patients [8]. According to the clinical risk scoring system for gastrointestinal bleeding caused by Irritability mucosal lesions [9], this patient scored 4 points when the first perforation of the digestive tract occurred, which belongs to low risk. However, perforation of duodenal ulcer occurred on the first day after intramedullary nail fixation for closed reduction of femoral fracture [10]. Considering that the stress source of the patient is trauma, the combined risk factor is to use enoxaparin to prevent DVT, and the patient is an elderly female, Increased risk of perforation of SB.

At that time, the patient underwent emergency Laparoscopy for digestive tract perforation of unknown reason, and was found to have duodenal bulb perforation, which was repaired. The patient's second occurrence of digestive tract perforation was one week after laparoscopic repair of duodenal bulb perforation. Studies have shown that the incidence of duodenal stump leakage is 7.7%. The presence of duodenal ulcers, intraoperative contamination, preoperative hemoglobin reduction, and duodenostomy are independent related factors for duodenal leakage [11]. In clinical practice, there is a lack of effective and precise localization methods for arterial bleeding in the lower digestive tract. DSA angiography is the best choice, and some cases can make localized and qualitative diagnosis [12]. The signs of DSA diagnosis include contrast agent overflow, abnormal accumulation of contrast agent in the intestinal cavity, vasospasm, and delayed contrast agent emptying. The goal of arterial embolization therapy is to reduce blood flow pressure at the bleeding site and form stable blood clots without causing tissue ischemic necrosis [13]. Compared with drug infusion therapy, its advantage lies in the fact that the operation can be completed quickly without any adverse reactions caused by drugs, and the accuracy of embolization techniques is also relatively high.

Arterial embolization therapy can permanently and completely stop bleeding in most patients, while in a few cases, although it cannot permanently stop bleeding, it can create conditions for medication and surgical hemostasis. The patient in this case underwent

continuous infusion of hemostatic drugs after the first angiography, and there was a temporary improvement in the patient's condition; After a few days of embolization, the amount of bleeding decreased but remained large. After 3 days, continuous intravenous infusion of hemostatic drugs was continued. The patient's bleeding gradually decreased and remained at 100-550ml for a period of time, and the bleeding gradually stopped. During interventional therapy, for lesions that cannot be treated, coils or other markers can also be placed in the target blood vessels to provide reliable guidance information for surgical procedures [14]. Most scholars believe that the embolic site should be above the anastomosis of the final arcuate artery. Emphasis should be placed on avoiding embolization of the straight artery, as there is no anastomotic branch between them, which may lead to intestinal infarction after embolization. The most ideal location is the terminal vascular arch closest to the blood supply artery of the bleeding site, and it is best to avoid damaging the distal communicating artery arch and the intestinal vascular network [15,16].

Another view is that the branches of the straight artery after entering the intestinal wall anastomose with each other to form an intramural vascular network, and the main reason for intestinal ischemic damage is not that the straight artery has been embolized, but that the embolic site is too close to the main Great vessels, resulting in a long range of intestinal ischemia, so that the collateral circulation cannot effectively reach the entire ischemic region [17]. However, overall, it is the tendency of most surgeons to accurately locate the distal arcuate artery embolism and minimize the extent of the embolized intestinal canal. Gastrointestinal bleeding caused by vascular lesions is effectively treated with steel and micro steel coils for embolization, which is easy to use and has a low incidence of intestinal necrosis. However, sometimes due to incomplete embolization or collateral vessel formation, gelatin sponge is needed together [18]. In this case, due to the large amount of gastrointestinal bleeding, long duration, poor patient's basic condition, and long-term use of steroids, spring coil embolization was chosen.

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