

Case Report

Implantation of metastatic mucinous adenocarcinoma in the hernial sac: a case report

Siye Men^{1*}, Wusong Xue^{1*}, Wen Yu¹, Yuyue Liu², Huiliang Liu¹, Shaohui Zhang¹, Baoqing Liu¹, Wei Wu¹, Chengcheng Yang¹

¹Department of General Surgery, East Hospital of Beijing Chinese Medicine University; ²Department of Pathology, East Hospital of Beijing Chinese Medicine University. *Equal contributors.

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Abstract: Malignant tumors may appear in inguinal hernias. We report a rare case of a metastatic mucinous adenocarcinoma in the inguinal canal in a patient presenting clinically with an inguinal hernia. The clinical details, histological findings and surgical management were described.

Keywords: Mucinous adenocarcinoma, malignant masses, inguinal hernia

Introduction

Inguinal hernia is a common disease among the middle and old aged persons and rarely malignant masses may appear in inguinal hernias [1]. Most intrasaccular malignant masses are colonic in origin, particularly from the sigmoid colon and incarcerated inguinal hernia may be manifested as the presenting feature of carcinoma of unknown primary site [2]. Here, we report a case of metastatic mucinous adenocarcinoma of an unknown origin treated with surgical resection alone.

Case report

A 74 male patient was admitted on March 25, 2013 because of pain and irreducible in the right inguinal region for one year. The patient was diagnosed with inguinal hernia at another hospital in 2012 but did not seek treatment. In March, 2013, the pain was aggravated.

Physical examination revealed only a large, painful irreducible mass in the right groin. Blood testing revealed a leukocyte count of $12.0 \times 10^9/L$ and a hemoglobin value of 86 g/L. Pre-admission ultrasound examination revealed a right inguinal mass 3.3 cm \times 0.9 cm in size (**Figure 1**). On March 29, 2013, tension-free repair of right inguinal hernia was performed under regional anesthesia using the

anterior approach, and the hernial sac was dissociated, which was smooth and approximately 3.3 cm \times 0.9 cm in size. The inferior epigastric artery was located medial to the hernial sac neck, confirming an oblique hernia. The hernial sac was felt firm and dissected for further exploration, which revealed yellow whitish jelly-like substances and no intestines or the greater omentum was observed. The medial wall of the hernial sac neck became adherent, hypertrophic and narrowed, but retained communication with the peritoneal cavity. Metastatic mucinous carcinoma was suspected intraoperatively. The hernial sac and its contents were sent for pathological examination. The right lower peritoneal cavity was explored, which revealed no abnormality. The peritoneum was continuously sutured using proline and the peritoneal cavity was closed. Space was created anterior to the peritoneum and the space was filled with polypropylene patches and the abdominal wall was sutured layer by layer. The patient was discharged from the hospital 4 days post surgery without any apparent discomfort. The pathological report came back one week after the surgery, indicating the presence of sac wall like tissues, with one side smooth and the other side roughened and jelly-like with a thickness of 0.1 to 0.3 cm. H&E staining revealed patches of mucinous areas ($> 1/2$) and numerous extracellular mucinous pools (**Figure 2A**) and cancer

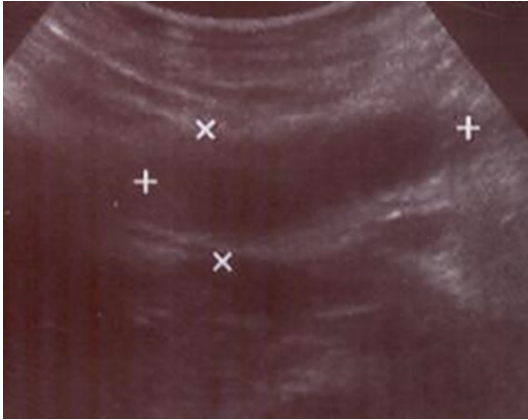


Figure 1. Preoperative ultrasound examination of a 74 year old man reveals a hypoechoic mass, 3.3 × 0.9 cm in size, in the right inguinal region. The mass is compressible and no blood flow signal is detected.

cells were arranged in chains or scattered in the mucinous pools. The cancer cells were abundant in cytoplasm and the nuclei were predominantly oval and mitotic figures were not frequent (**Figure 2A**). Mucinous pools were also seen in dense fibrous interstitia (**Figure 3**). A diagnosis of mucinous adenocarcinoma was entertained. At the follow up examination, no abnormality in tumor markers was demonstrated and abdominal contrast CT and colonoscopy revealed no primary tumor site. No metastatic implantation was noticed in the surgical wound. The patient declined PET-CT scan. Follow up at 3 months postoperatively showed no apparent discomfort.

Discussion

Metastatic cancer found within the hernia sac contents is a rare clinical manifestation and is often not included in the differential diagnosis of inguinal hernia. It remains theoretically plausible that the appearance of peritoneal tumors results in peritoneal metastasis and implantation in the hernial sac. Literature review indicates implantation of mucinous adenocarcinoma in the peritoneal cavity is rare in the peritoneal cavity [3] and malignant tumor in the inguinal hernial sac also remains uncommon during repair of inguinal hernia [4]. Malignant masses in inguinal hernias appear in less than 0.5% of excised sacs [5]. Patients with inguinal hernia may not seek medical attention for variable reasons and the hernial sac content may become malignantly transformed as in colorec-

tal cancer. Primary tumor in the hernial sac such as Sertoli-Leydig cell tumour and metastasis of peritoneal tumors to the inguinal hernial sac are occasionally reported [6-8]. These [9] metastatic tumors mostly come from the colon, ovary, appendix, prostate and the gall bladder. But implantation of mucinous adenocarcinoma in the hernial sac as in the current case has not been previously reported.

The best surgical approach depends on the patient's anatomy, surgical findings and the experience of a surgeon. Currently, the anterior approach to inguinal hernia often uses filling patches in the peritoneal space to avoid regional peritoneal defect or local bulging of the peritoneum and increase of tension. In most cases, the hernial sac is not incised nor ligated at high point. After dissociation of the intact hernial sac, the sac is returned to the peritoneal cavity. Occasionally, abnormality is found in the hernial sac or its contents. Mostly, they are adhesions and hypertrophy due to repeated frictions with surrounding tissues. It has been suggested that if gross abnormality is seen, microscopic examination of the abnormality should be performed so as not to miss occult metastatic cancer [8]. The hernial sac content in the current case was hard and the sac was hence incised. The patient underwent tension free repair of inguinal hernia by the anterior approach and no tumor implantation was seen in the surgical wound. But it remains unknown whether filling materials should be used if malignant tumor was found in the sac remains unknown as no publication was available. If the current case chose TAPP, further exploration of the peritoneal cavity can be carried out to search for the primary foci and if TEP is used, it remains to be seen what to do intraoperatively.

In conclusion, inguinal hernias may rarely contain mucinous adenocarcinoma, which should be considered in patients presenting with an irreducible mass in the inguinal region.

Disclosure of conflict of interest

None.

Address correspondence to: Dr. Chengcheng Yang, Department of General Surgery, East Hospital of Beijing Chinese Medicine University, 6 Fang Star Park Zone 1, Fengtai District, Beijing 100078, China.

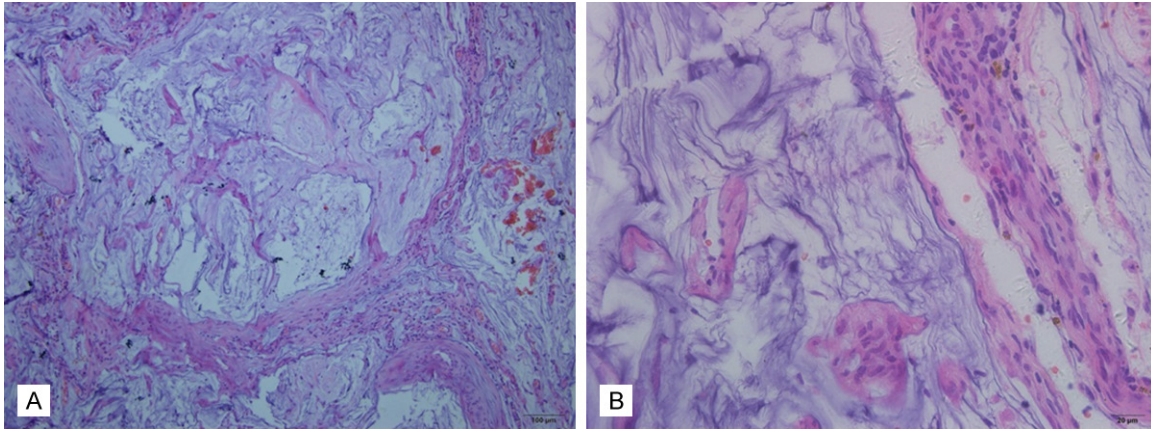


Figure 2. H&E staining reveals patches of mucinous areas ($> 1/2$) and numerous extracellular mucinous pools (A). Cancer cells are observed to be arranged in chains or scattered in the mucinous pools. Magnification: 10×2 . The cancer cells are abundant in cytoplasm and the nuclei are predominantly oval and mitotic figures are not frequent (B). Magnification: 40×1 .

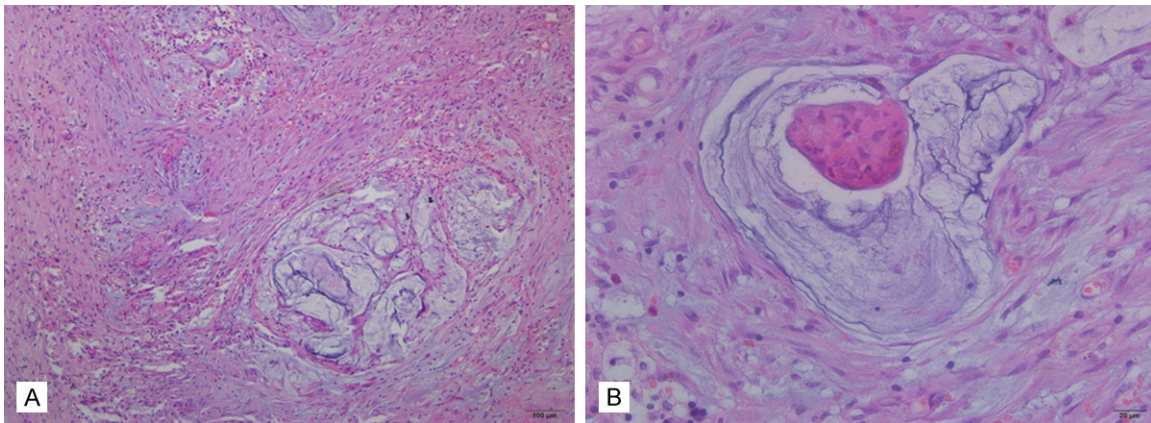


Figure 3. Mucinous pools are also seen in the dense fibrous interstitia and contain invading cancer cells (A). Magnification: 10×2 . Under higher magnification, cancer cells show no distinct border and disarrayed in arrangement (B). Magnification: 40×1 .

Tel: +86-10-67689724; Fax: +86-10-67668298;
E-mail: 13681239621@163.com

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