

Case report

Case of a giant gauzeoma diagnosed 21 years after an inguinal hernia surgery

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Abstract

Objectives: Gauze remnants form gauzeomas after surgery, if infection has not occurred. We present a case of gauzeoma diagnosed after surgery.

Patient: A 72-year-old man noticed a mass in his lower abdomen. He had undergone surgery for left inguinal hernia 21 years ago. A retroperitoneal mass was found on computed tomography (CT) and magnetic resonance imaging (MRI), and he was then referred to our hospital. A detailed abdominal ultrasonography, CT, and MRI revealed a cystic mass with a bulkhead-like structure near the bladder. These findings indicated the possibility of a malignant cyst; hence, an open surgery was performed to excise the mass. Macroscopically, the specimen was clearly bound, covered with a capsule, and filled with pus and had a gauze inside.

Results: Based on the patient history and position of the mass, it was diagnosed as gauzeoma, which had strayed into the retroperitoneal cavity during the surgery for inguinal hernia.

Conclusion: The imaging findings of gauzeoma are diverse; hence, it is often difficult to diagnose without surgery. However, gauzeoma can be lethal if the cystic mass is infected; thus, it is important to diagnose it correctly.

Key words: gauzeoma, inguinal hernia surgery, retroperitoneal tumor

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Introduction

Gauze remnants are known to form gauzeomas after surgery, if infection has not occurred¹. The number of cases of gauzeomas has been decreasing because of the improvement in surgical instruments and imaging technology. Most gauzeomas do not present clear symptoms; hence, they are often undetected for long periods^{2, 3}. The morbidity and mortality associated with gauzeomas are quite high^{4, 5}; hence, surgery for its removal is strongly recommended.

It is very important to diagnose gauzeomas correctly because they sometimes have diverse imaging findings; therefore, it is difficult to diagnose them before surgery in many cases. In recent years, with the development in imaging tools, the diagnosis for gauzeomas has become easier. Therefore, examinations, including plain X-ray, ultrasonography (US), computed tomography (CT), and magnetic resonance imaging (MRI), may help diagnose gauzeomas. However, some cases are difficult to diagnose if the surgical history of the patient is unclear.

We present a case of gauzeoma that was diagnosed 21 years after an inguinal hernia surgery.

Case Report

A 72-year-old man with complications of hypertension and hyperlipidemia noticed a mass increasing in size over several years in the lower median abdomen by himself. The patient had a history of left inguinal hernia surgery 21 years ago. A retroperitoneal mass was found on CT and MRI, and the patient was referred to our hospital.

On physical examination, the mass could be felt on his lower abdomen and showed good mobility and no tenderness. He did not have any other symptoms. There were no significant findings on laboratory tests, including biological tumor markers. Urinalysis revealed no hematuria, pyuria, or

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bacterial infection.

In our hospital, a more detailed diagnostic imaging was performed. Abdominal US showed a cystic mass in which a linear high-echo image with a strong acoustic shadow was observed (Figure 1). Although abdominal X-ray was checked, there was no significant finding. Contrasted CT of the abdomen and pelvis revealed a giant, complex cystic mass with a septum in the retroperitoneal space, which was in contact with the bladder, pubis, and peritoneum. There was a slight contrast enhancement only at the margin of the mass (Figure 2). MRI also revealed a cystic mass containing a septum. On the T2-weighted image, the inside of the mass, except the septum, had a high intensity (Figure 3).

From these findings, we could not deny the possibility that the mass was malignant; hence, the patient underwent an open surgery, the details for which were as follows: Under general anesthesia, a midline incision was created in the lower abdomen. A large cyst in the retroperitoneal space was found, which was adhering to the bladder, peritoneum, and previous site of surgery for inguinal hernia. The cyst was removed with the adhered peritoneum and surrounding bladder tissue (Figure 4).

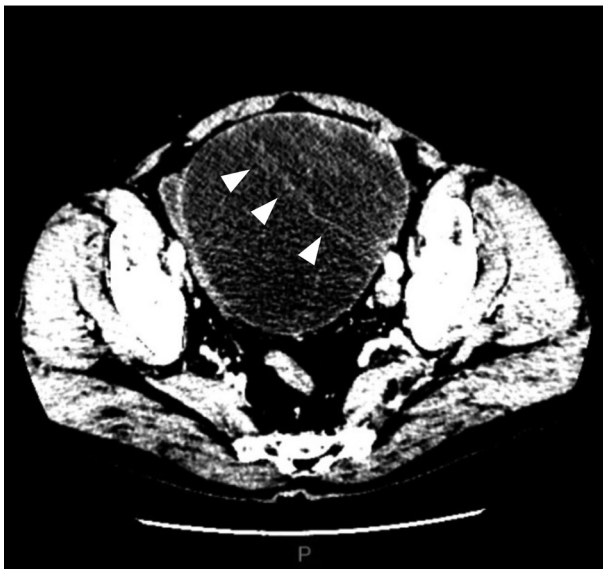
After the surgery, the cyst was incised to reveal pus, including an old gauze inside. It was finally diagnosed as gauzeoma.

This research was performed under an approval of the institutional review board of Anjo Kosei Hospital.



Figure 1 Ultrasonography of the lower abdomen. The cystic mass has a linear high-echo content with strong acoustic shadows.

Axial view



Coronal view

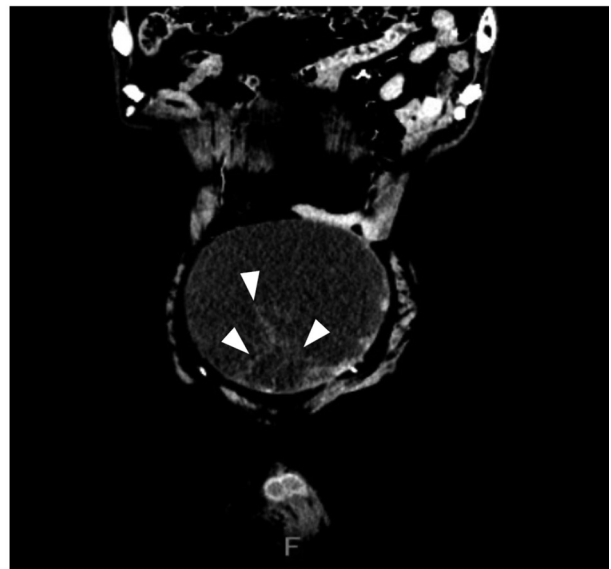


Figure 2 Computed tomography images. A giant cystic mass with a septum (150.0 × 127.0 × 147.6 mm) is shown. The margin of the mass has a slight contrast enhancement. The arrow heads highlight the septum.

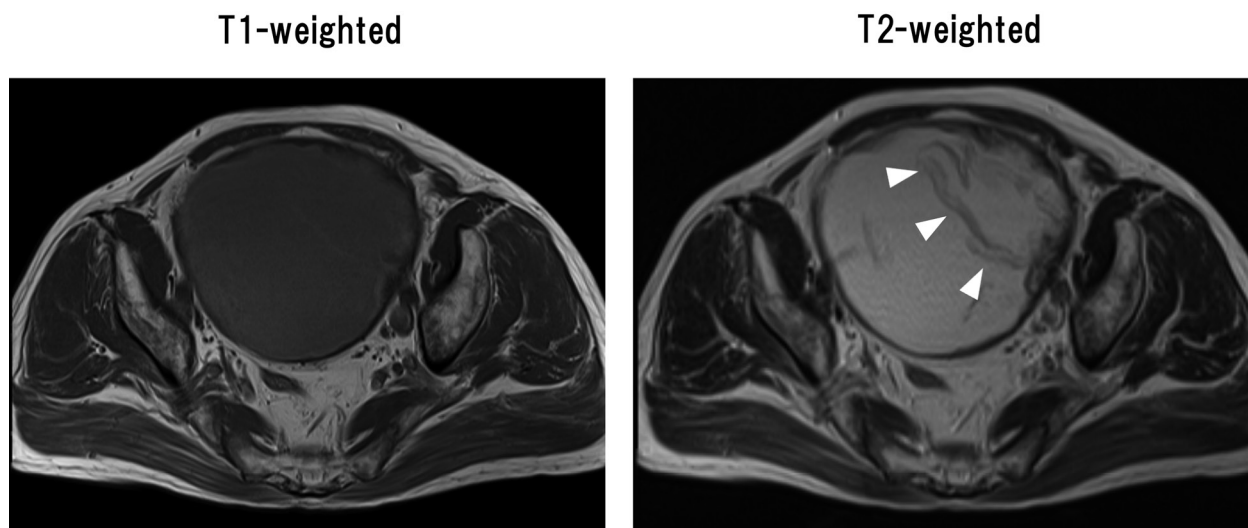


Figure 3 Magnetic resonance images. A cystic mass with a septum is shown. The septum is well observed in the T2-weighted image. The arrow heads highlight the septum.

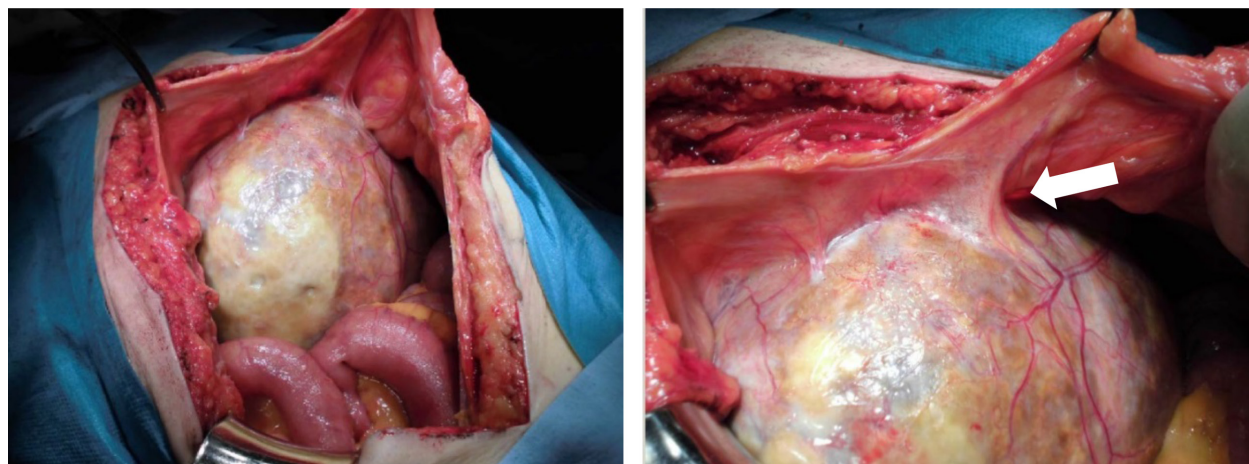


Figure 4 Intraoperative images. The tumor adhered to the bladder, peritoneum, and lesion of the previous inguinal hernia surgery. The arrow highlights the adherence of the tumor to the peritoneum.

Discussion

Although the imaging findings of our patient were characteristic of gauzeoma, particularly on US and MRI, we were unable to diagnose it correctly without the surgery because we did not expect that a gauze from the surgery for inguinal hernia would stray into the retroperitoneal cavity.

Gauzeoma refers to a mass formed by gauzes left in the body after surgery. When a gauze is retained after surgery, there are two types of reactions that could occur in response to the foreign object: an acute exudative response or an aseptic fibrinous response. An acute exudative response

usually results in early symptoms, and the gauze remnants are noticed relatively early after surgery. If infection has not occurred initially, an aseptic fibrinous response occurs, in which the gauze adheres to the surrounding tissue and is encapsulated by a fibrin tissue. Over time, it forms a cystic mass that is asymptomatic or presents with minor symptoms^{6, 7}.

Although gauzeoma without infection is generally asymptomatic, it becomes lethal once infection occurs in the mass^{4, 5}.

Therefore, it is quite important to diagnose an unidentified cyst as gauzeoma before surgery. However, it is not easy

to diagnose gauzeoma because it presents diverse imaging findings, although the diagnosis has become easier because of the remarkable development in radiological investigations in recent years.

On US, gauzeoma presents different imaging findings⁸. In some cases, a cystic mass includes a linear strong echo image, suggesting the presence of a gauze inside. In other cases, a strong echo image with an acoustic shadow is found⁸. This finding indicates that the cystic mass has a highly calcified capsule. On CT, gauzeoma generally presents as a clearly bounded cystic lesion. On constructed CT, only the margin of the cyst is enhanced slightly⁴. Sometimes, the cyst includes gas bubbles that tend to appear as axles; this finding is called the “whirl-like spongiform pattern”. It is a characteristic of gauzeomas but seen only in 1/4th of all cases⁹. On MRI, T2-weighted images present a tumor having a low-intensity capsule and high-intensity contents. Gauze remnants themselves have a low intensity, and if the gauze is folded in the cyst, this finding is called the “fabric folded appearance”^{10, 11}.

In this case, US revealed a typical gauzeoma finding. Furthermore, the bulkhead-like structure indicated that a gauze was floating in the cyst on both CT and MRI. Although we could not find these imaging findings before surgery, including the radiologist’s report, these findings were finally suggestive of gauzeomas after the surgery and histopathological diagnosis.

There have been some reports in which the mesh has strayed into the retroperitoneal space after surgery for inguinal hernia; however, we were unable to find cases in which the gauze has strayed into the retroperitoneal cavity.

It is important to include gauzeomas in the differential diagnosis of unidentified cysts when the patient has a history of surgery, regardless of the site and degree of the surgery. From our experience, a gauze with X-ray contrast threads should be used even in surgeries for inguinal hernia.

Conflict of interest: None declared.

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