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## Abdominal wall herniae and their underlying pathology

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## ABSTRACT

We describe a case of pseudomyxoma peritonei presenting as a strangulated inguinal hernia. We review the current literature regarding the incidence of underlying pathology in patients presenting with abdominal wall herniae and discuss the need for histological assessment of the hernia sac in selected patients. We highlight the importance of assessing for and being aware of significant underlying pathology in certain patients.

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## 1. Introduction

Abdominal wall herniae are often seen as a straightforward diagnosis with a relatively straight-forward operative treatment. In a minority of cases, however, these patients have a significant undiagnosed underlying pathology which may be missed if not considered. This case reports consolidates previous reports of undiagnosed pathology in abdominal wall herniae and highlights the need to be vigilant in these patients.

## 2. Presentation of case

A 65 year old male, who was previously fit and well, presented to the Accident and Emergency Department with a painful swelling in the right groin. He reported a history, of at least 6 months duration, of intermittent swelling in the groin as well as a swelling of longer duration around his umbilicus.

The swelling in the groin had been irreducible for approximately 8 h and had become increasingly painful. He was not clinically obstructed. Interestingly he reported no recent change in bowel habit or abdominal distension, but did report recent weight loss.

On examination, there was a tender, irreducible inguino-scrotal hernia on the right. There was a reducible left inguinal hernia and paraumbilical hernia. His abdomen was not distended, although there was a firm fullness on the right. Pre-operative blood tests were generally unremarkable.

The patient was promptly taken to emergency theatre. A large indirect hernia was noted with a thickened sac which was deeply

adherent to the cord structures and scrotum. On opening of the sac, gelatinous deposits were seen throughout the sac and extending into the peritoneal cavity. The sac was excised and sent for urgent histological examination. The hernia was repaired with mesh without complications.

In view of the operative findings, the patient underwent a CT scan of the abdomen and pelvis on day 1 postoperatively. This showed low attenuation material within the peritoneum and throughout the greater omentum which would be in keeping with pseudomyxoma peritonei [Images 1 and 2](#).

Following discharge on day 3 postoperatively, the patient underwent a colonoscopy which incidentally revealed a large rectosigmoid villous adenoma which was snared, as well as bulging at the caecum which was felt to be due to a primary appendiceal mucous adenoma.

Histology subsequently confirmed deposits of a well differentiated mucinous adenocarcinoma throughout the hernia sac. The tumour cells stained positively for CK7, CK20, CDX2 and CEA, thus, favouring a primary bowel malignancy.

## 3. Discussion

Throughout the literature there are reports of diagnoses of intra-abdominal pathology, both benign and malignant, being first identified during either an elective or an emergency hernia repair. In some of these cases, an underlying pathology was not suspected prior to the operation. Although the literature is scattered with case reports of these unusual cases, there are limited numbers of studies highlighting the incidence of further pathologies.

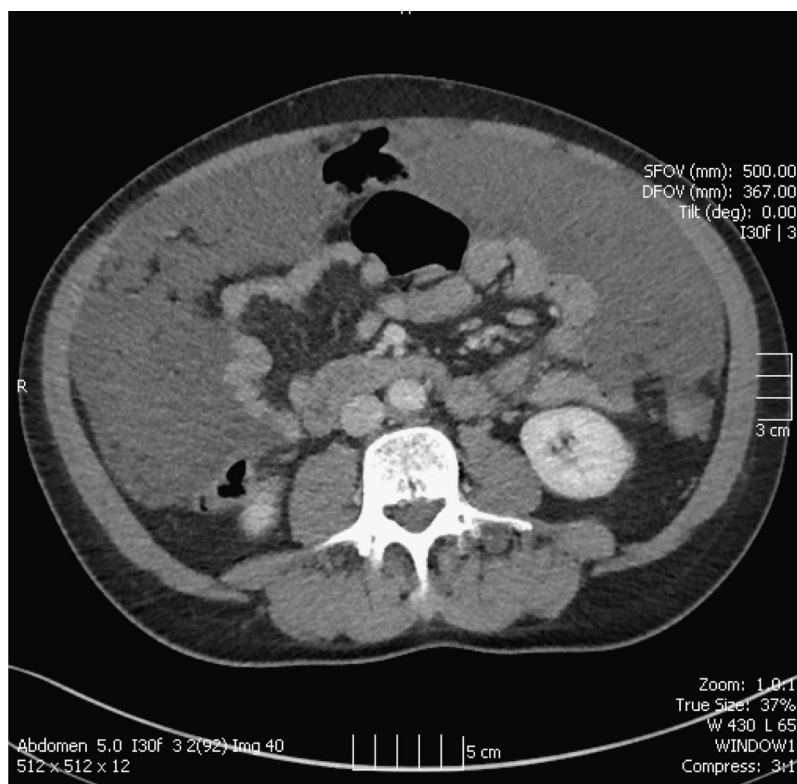
A recent study analysing the hernia sac from 1426 patients found an incidence of malignancy in 0.4% of inguinal hernia and 1.2% of umbilical hernia [\[1\]](#). A proportion of these malignancy diagnoses

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**Image 1.** Computerised topography scan of abdomen showing extensive peritoneal disease in the pelvis.



**Image 2.** Computerised topography scan of the abdomen highlighting extensive peritoneal disease.

are not known prior to the operation, although others had already been diagnosed.

As was the case in our patient, the hernia sac appeared macroscopically abnormal and, thus, prompted further evaluation. In the study discussed above [1], 5 cases (50% of those with a subsequent diagnosed malignancy) had a macroscopically normal sac

and the underlying pathology was only determined by histological assessment of the hernia sac. There is, therefore, controversy as to whether all hernia sacs should be submitted for histological examination.

The college of American Pathologists recommends that all adult hernia sacs are submitted to pathology, yet leaves the decision of

microscopic examination of inguinal hernia sacs to the discretion of the individual pathologist [2]. There are no similar guidelines in the UK or Europe. Given that as discussed above, not all pathologies are macroscopically visible, one could argue that all hernia sac should always undergo histological assessment. This would, however, place a substantial additional burden of work on histopathology departments and it is not clear, as there are no such studies, whether this would be beneficial and even alter management or outcome for the patient.

Pseudomyxoma peritonei (PMP) describes mucinous deposits and/or ascites within the peritoneal cavity. The majority of cases are the result of dissemination of an appendiceal mucinous neoplasm, however, it can also be the result of mucin-producing carcinomas of the colon or pancreas, or can even be the result of non-neoplastic lesions [3]. The tumours produce mucin which accumulates within the peritoneal cavity.

Clinical presentation is variable and typically non-specific. The most common presentation is that of appendicitis (27%) with tumours being found incidentally at laparoscopy or during histological examination of the appendix [4]. 14% of PMP present as abdominal wall hernia [4] as a consequence of the increased intra-abdominal pressure caused by the mucinous deposits in the abdomen and pelvis.

The case we present emphasises that, on occasion, there is significant underlying pathology that may lead to symptomatic hernia or be an incidental finding at operation. In our case, the patient had lost some weight and had a fullness in the right side of the abdomen. In addition, he had three abdominal hernia, two of which were asymptomatic, which indicates increasing intra-abdominal pressure. This should have highlighted the potential for underlying pathology and in such cases even if no additional abnormality was found at operation, then consideration should be given for further investigation post-operatively, or for the submission of the hernia sac to histology.

#### 4. Conclusion

This case highlights the need to be vigilant for underlying significant pathology and the importance of histological examination of the hernia sac when abnormalities are seen. A thorough history

and examination should draw attention to cases in which there may be additional pathology and who may require further investigation. Whether routine microscopic examination of a hernia sac is required remains controversial.

#### Conflict of interest

None.

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#### Ethical Approval

None.

#### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

#### Authors Contribution

None.

#### Guarantor

Emma Upchurch.

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