



Management of an inguinal hernia in patients with pseudomyxoma peritonei

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Abstract

Background: Pseudomyxoma peritonei is a disease that results from a perforated mucinous neoplasm of the appendix so that mucinous ascites and mucin-producing tumor cells are widely disseminated in a characteristic pattern throughout the abdomen and pelvis. The intra-abdominal mucus can accumulate in the inguinal canal and by physical examination be indistinguishable from the usual inguinal hernia. **Methods:** A database of patients with pseudomyxoma peritonei was used to identify patients who had an inguinal hernia prior to or at the time of cytoreductive surgery (CRS) and perioperative hyperthermic chemotherapy (HIPEC). At the time of CRS, care was taken in all patients to remove the peritoneal lining of the inguinal canal. Patients who had the inguinal hernia repaired prior to definitive treatment with CRS and HIPEC had all tissue and mesh associated with prior herniorrhaphy resected.

Results: In 178 pseudomyxoma peritonei patients, 17 had a new onset or previously repaired inguinal hernia that required extraction of mucus and mucinous tumor from the hernia site. No repair of the open inguinal canal was attempted at the time of CRS. No recurrent inguinal hernias were recorded and no patients required an inguinal incision at a later time to resect progressive disease within the inguinal canal.

Conclusions: Inguinal hernias caused by mucinous ascites and tumor were definitively treated by cytoreductive surgery plus HIPEC. Extraction of tumor and peritoneum from the inguinal canal facilitates fibrous closure of the hernia defect so that hernia recurrence was not observed.

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Introduction

Pseudomyxoma peritonei is a rare disease characterized by mucinous ascites and tumor distributed in a characteristic pattern within the abdomen and pelvis. The primary site is a mucinous appendiceal neoplasm.¹ Inguinal hernias caused by mucinous ascites and tumor cells accumulating within the inguinal canal are a common finding in patients at the time of diagnosis of pseudomyxoma peritonei and inguinal hernia may be the initial complaint or symptom in these patients.² It is not surprising that mucinous fluid and tumor would enter the inguinal canal causing an increasing bulge with the

characteristic appearance and feel of an inguinal hernia. As a standard of care, the disease is definitively treated by CRS within the abdomen and pelvis using peritonectomy procedures and the necessary visceral resections. Also, cleansing the abdominal and pelvic surfaces with a chemotherapy solution is considered a part of the standard of care.^{3,4}

An optimal management plan for mucinous tumor causing an inguinal hernia has not been previously presented. The strategy proposed here involves an extension of the pelvic peritoneal resection circumferentially around the inguinal canal.^{5,6} Then the contents of the inguinal canal including its peritoneal lining are extracted as deep into the inguinal canal as is possible. The results of this treatment strategy are reported in this manuscript. Special emphasis was placed on the management of the defect

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created by extraction of the hernia sac or resection of mesh from a prior inguinal hernia repair.

Methods

The management of a single patient was presented to illustrate the uniform plan of management of a mucinous appendiceal neoplasm that had resulted in the formation of an inguinal hernia.

Patient presentation

A 59 year old male was diagnosed with a new onset right inguinal hernia with increasing symptoms and hernia size during the final months of 2015. In January of 2016, he was scheduled for a laparoscopic repair. At the time of laparoscopic exploration of the right inguinal region, copious mucinous fluid was visualized. A specimen of mucinous ascites was taken for cytological study and the laparoscopy was discontinued. A CT was obtained which showed a thin layer of ascites between the liver and right hemidiaphragm. A low density septated mass in the right iliac fossa which was 11 cm in length and 4.7 cm in diameter was imaged and thought compatible with a mucocoele of the appendix (Fig. 1). There was a small amount of low density ascites in the rectovesical space just superior to the seminal vesicles. The right inguinal canal was dilated to the level of the symphysis pubis (Fig. 2). The patient was referred to a peritoneal surface malignancy center. A diagnosis of pseudomyxoma peritonei causing a new onset hernia was made and the cytological specimens obtained at the time of laparoscopy confirmed this clinical diagnosis. Physical examination was normal except for the obvious right inguinal mass.

In April of 2016, the patient underwent a 7-h cytoreductive surgery through a long xiphoid to pubis midline



Figure 1. CT cut through lower abdomen. In the right iliac fossa there is a low density septated mass compatible with the primary mucinous appendiceal neoplasm.



Figure 2. CT cut through inguinal region. The right inguinal canal is dilated by low density mass to the level of the symphysis pubis. This is compatible with the inguinal canal distended by intraabdominal mucus from pseudomyxoma peritonei.

incision which included the laparoscopic port site and adjacent umbilicus. The peritoneum and mucinous tumor from the undersurface of the right hemidiaphragm and right paracolic sulcus was stripped from the underlying muscle using a ball tip electro-surgical handpiece on high voltage (Fig. 3). The proximal appendix was normal but the tip was greatly enlarged by the primary appendiceal adenoma. An appendectomy was performed that included the meso-appendix with lymph nodes contained within (Fig. 3). Frozen section analysis of a single appendiceal lymph node was negative for malignancy and a right colon resection was not performed.⁸ The pelvic peritoneum was coated by mucinous tumor that could not be cleared by gauze debridement so pelvic peritonectomy sparing the rectum was performed. Copious mucinous fluid and several tumor nodules adherent to the cord structures were extracted from



Figure 3. Photograph of the appendectomy specimen from a patient who had a right inguinal hernia as the presenting sign for the diagnosis of pseudomyxoma peritonei.

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