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A Case of Mesenteric Desmoid Tumor Causing Bowel Obstruction After Laparoscopic Surgery

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Abstract. *Background: A desmoid tumor is a rare neoplasm that is derived from soft tissues. Although it shows benign characteristics pathologically, local recurrence can occur. Case Report: We herein report the case of a patient with an intraabdominal desmoid tumor that developed 3 years after laparoscopic appendectomy for acute appendicitis. A 59-year-old male visited our emergency room with complaints of abdominal pain and fullness. Abdominal computed tomography revealed distention of the small intestine with a point of obstruction by an intraabdominal tumor-like region. Pathological findings showed that the tumor was compatible with desmoid fibromatosis. Conclusion: In cases with an intraabdominal tumor after laparoscopic surgery, it is important to consider the possibility of a desmoid tumor, since it is difficult to diagnose it accurately before surgery.*

A desmoid tumor, also known as a type of fibromatosis, is a rare tumor that involves the accumulation of collagen produced by fibroblasts in soft tissues (1, 2). Although it has a benign-like morphology in pathological findings, it is clinically considered to be a borderline malignancy, because of its infiltrative and locally recurrent characteristics. We herein report a case of an intraabdominal desmoid tumor that caused bowel obstruction after laparoscopic surgery.

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Key Words: Bowel obstruction, fibromatosis, mesenteric tumor.

Case Report

A 59-year-old male visited our emergency room with complaints of abdominal pain and fullness that had persisted for four hours. He had undergone a laparoscopic appendectomy for acute appendicitis three years prior. His body temperature was 35.6˚C, and his vital signs were normal. He had abdominal distention, but there was no evidence of peritonitis. His white cell count was 10,600 cells/μl and his C-reactive protein level was 1.08 mg/dl. The results of other serum biochemical tests, including liver and renal function tests, were normal. Abdominal computed tomography showed distention of the small intestine with obstruction by an intraabdominal tumor-like region that was located directly below the umbilicus (Figure 1A). The tumor showed a heterogeneous enhancement pattern and invasion into the small intestine. The distal intestine with the tumor had collapsed. These findings suggested bowel obstruction due to the intraabdominal tumor. After the symptoms improved with conservative therapy, surgical resection of the intraabdominal tumor was planned.

We initially attempted a laparoscopic approach using a small incision in the upper abdomen, however, we converted into laparotomy surgery due to the difficulty in separating the tumor from the abdominal wall. Laparotomy revealed a large hard tumor that had invaded the small intestine and abdominal wall of the umbilicus (Figure 1B). We resected the tumor with a sufficient margin including small intestine. Macroscopic findings showed that the lesion was a clearly demarcated solid hard mass with a white-gray appearance and hemorrhagic change (Figure 2A). Histological findings revealed the proliferation of short spindle- to stellate-shaped tumor cells with stromal hemorrhage (Figure 2B). No mitotic cells were observed. Immunohistochemical findings showed that the tumor cells were positive for β-catenin and c-kit, and negative for S-100, DOG1, desmin, and CD34 (Figure 2C).

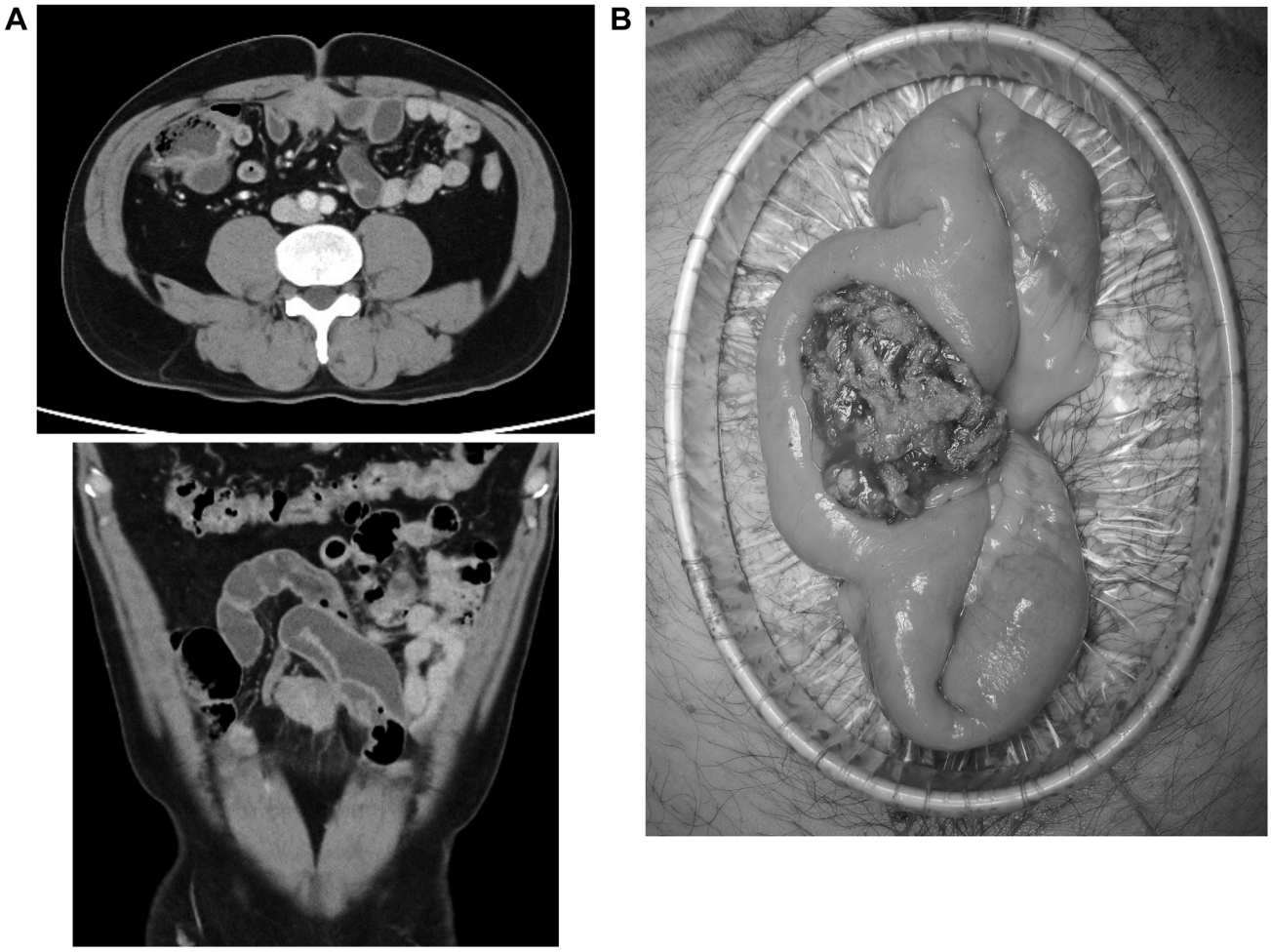

Figure 1. *Computed tomography and laparotomy findings. (A) Enhanced computed tomography findings of the intraabdominal tumor located directly below the umbilicus (upper panel:axial imaging; lower panel: coronal imaging). (B) Laparotomy findings of the intraabdominal tumor.*

These features were compatible with desmoid fibromatosis. The patient resumed oral intake on postoperative day three, and after an uneventful postoperative course, he was discharged on postoperative day six. Informed consent was obtained from the patient for the publication of this case report.

Immunohistochemistry. For immunohistochemistry, paraffin sections (3 mm thick) were treated with the following antibodies: anti-β-catenin (clone E5, Santa Cruz, Dallas, TX, USA), anti-c-kit (DAKO, Glostrup, Denmark), anti-DOG1 (clone SP31, Nichirei, Japan), anti-desmin (DAKO), anti-CD34 (clone QBEnd10, DAKO), and anti-S100 (Nichirei). Immunohistochemistry was performed according to a routine protocol described previously (3).

Discussion

The first desmoid tumor was reported by MacFarlane in 1832, it was derived from muscular fascia and musculoaponeurotic tissues. In 1967, a desmoid tumor was clinicopathologically defined to be a tumor with fibroblast proliferation, the presence of intracellular collagen, infiltrative growth, no malignancy, and possibly local recurrence, but not appearing distant metastasis (4). It has an estimated incidence of 2.4% to 4.3% per one million population, and is categorized into three types according to its anatomical distribution: abdominal wall (49%), extra-abdominal wall (43%), and intra-abdomen (8%) desmoid tumors (5). Although the causes of desmoid initiation remain unclear, it is well known that familial adenomatous polyposis (FAP) and

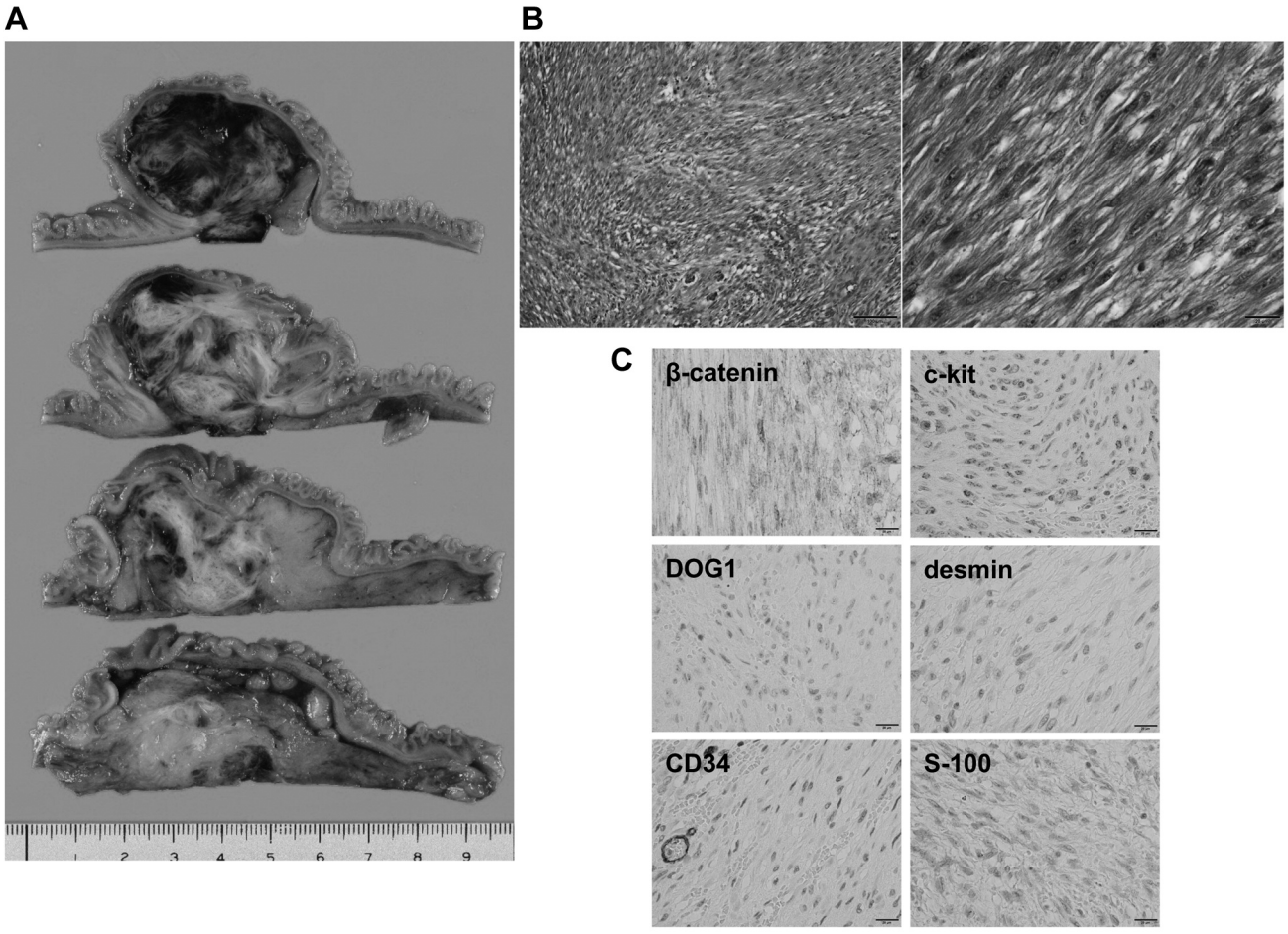

Figure 2. *Pathological findings of the mesenteric nodule. (A) Macroscopic findings. (B) Hematoxylin and eosin staining of a tissue section (left panel: ×100; right panel: ×400). (C) Immunohistochemistry for β-catenin, c-kit, DOG1, desmin, CD34, and S-100.*

Gardner syndrome are associated with desmoid tumors, suggesting that a mutation in the APC gene might be a cause of desmoid initiation (6, 7). An observational study suggests that the APC gene mutation S45F might be a risk factor of local recurrence after resection (8). Clinical evidence suggests that pregnancy, delivery, and estrogen intake could be triggers of desmoid initiation, indicating an association between estrogen and desmoid initiation (9). Other clinical evidence indicates that past surgery and trauma could also be triggers of desmoid initiation (10).

Since 1) our case did not suffer from FAP or Gardner syndrome, 2) the tumor was not seen in the computed tomography images taken before the laparoscopic surgery that was performed three years prior, and 3) the tumor was located directly below the umbilicus, where the wound from the previous laparoscopic surgery was located, the previous laparoscopic surgery may have been a trigger of desmoid tumor initiation. Although laparoscopic surgery was performed for acute appendectomy in our case, laparoscopic surgery is more often performed for malignant tumors. Since local recurrence can occur at the port site after laparoscopic surgery for a malignant tumor, it is important to differentiate between port-site recurrence and a desmoid tumor arising at the location of the surgery wound.

In conclusion, we experienced a case of desmoid tumor that developed after laparoscopic surgery. Early diagnosis and intervention are important to avoid the need for cancer therapies, such as chemotherapy.

Conflicts of Interest

All Authors declare that they have no conflicts of interest in relation to this study.

Authors' Contributions

Performing the surgery: KA, TU, and SU. Drafting of the manuscript: KA and YK. Performing the perioperative management of the patient: KA, TU, KY, SU, and NH. Drafting supervision: NH and HB. All authors read and approved the final manuscript.

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