Laparoscopic Excision of Anterior Abdominal Wall Tumors: A Case of Desmoid-Type Fibromatosis Arising in the Rectus Muscle

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Purpose: Laparoscopic approaches to the anterior abdominal wall are difficult because of the inherent limitations of laparoscopic surgery.

Methods: A 25-year-old young female visited to our hospital with an incidentally-found palpable abdominal mass. Computed tomography revealed a 7-cm round enhancing mass arising from the left posterior rectus sheath. The patient underwent laparoscopic excision of the inner mass arising from the anterior abdominal wall.

Results: The operation lasted for 45 minutes and there was no measurable bleeding during the procedure. Pathological assessment revealed that the tumor was a DTF 7.0 cm in size. The patient was discharged on the second postoperative day in good condition, and is currently being followed on a routine basis for surveillance without adjuvant therapy.

Conclusion: Laparoscopic approach for the anterior abdominal wall tumor could be feasible in select patients. This minimally-invasive approach helps to ensure good cosmetic outcomes and quality of life.

Keywords: Laparoscopy, Minimally invasive, Abdominal fibromatosis, Abdominal wall

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INTRODUCTION

Benign fibrous tumors originating from the musculature and fascial structures frequently involve the rectus sheath (64%).^{1,2} Wide excision with clear margins is the gold-standard treatment option.^{3,4} Surgical excision is generally performed using an open laparotomy approach resulting in a large postoperative scar despite the benign characteristics of the tumor.

Laparoscopic approaches to the anterior abdominal wall are difficult because of the inherent limitations of laparoscopic surgery, i.e., the limited range of motion of straight instru-

ments without joints and movement via the fulcrum effect.⁵ We describe the successful laparoscopic excision of a desmoid-type fibromatosis arising from the posterior rectus sheath in a young woman with no operative or trauma history.

MATERIALS AND METHODS

A 25-year-old young female visited our hospital with an incidentally-detected palpable abdominal mass. The mass was hard, round, and unfixed, but its deep location suggested that it originated from either the abdominal wall or intra-abdom-

Fig. 1. Computed tomography (CT) revealed an 8-cm oval-shaped enhancing mass arising from the left posterior rectus sheath at the umbilical level and involving the rectus muscle.

inal organs. Computed tomography (CT) revealed an 8-cm oval-shaped enhancing mass arising from the left posterior rectus sheath at the umbilical level and involving the rectus muscle (Fig. 1). The CT findings suggested fibromatosis, with a differential diagnosis of well-differentiated sarcoma. The patient was young and unmarried; therefore, we decided to use a laparoscopic approach.

The patient's body mass index (BMI) was 22.41 kg/m². A 12-mm camera port was introduced at the right flank and two 5-mm working trocars were added at the right upper quadrant and the right suprapubic area to allow straight laparoscopic instruments to approach the tumor in the oblique direction (Fig. 2). A round bulging mass was identified on the peritoneum. The resection margin was demarcated around the tumor with electrocautery and an incision was made including the posterior rectus sheath. The tumor was then retracted using the incised sheath. The tumor involved the rectus muscle, which was resected using a Harmonic scalpel (Ethicon, Sommerville, NJ, USA). The tumor was completely removed and the focal defect of the fascia was approximated with V-Loc™ (Covidien Medtronic, St. Paul, MN, USA) by intracorporeal suturing. The specimen was retrieved using a plastic bag through a small extension of the lower 5-mm trocar site, which was hidden by inner wear (Fig. 2). An indwelling drain tube was not placed.

RESULTS

The operation lasted for 45 minutes and there was no measurable bleeding during the procedure. The largest wound was only about 2.5 cm. Pathological assessment revealed that the tumor was a desmoid-type fibromatosis 8.0 cm in size. The tumor was completely removed without fragmentation, but it

Fig. 2. A 12-mm camera port was introduced at the right flank and two 5-mm working trocars were added at the right upper quadrant and the right suprapubic area to allow straight laparoscopic instruments to approach the tumor in the oblique direction.

was focally exposed through the surgical margin on the rectus muscle. Postoperative recovery was uneventful and the patient was discharged on the second postoperative day in good condition. She is currently being followed on a routine basis without adjuvant therapy.

DISCUSSION

Fibromatosis are benign soft-tissue tumors and they are classified as superficial or deep according to location.^{6,7} Superficial-type fibromatosis commonly arise at palmar, plantar, and penile locations,⁷ while deep fibromatosis occur in the deep extra-abdomen, abdomen, and intra-abdomen, which also represent subclassifications.^{2,8} These deep types are called desmoid-type fibromatosis, and are defined as clonal fibroblastic proliferations arising in the deep soft tissue by the World Health Organization.⁸ Therefore, desmoid-type fibromatosis (DTFs) can occur in any part of body with musculo-aponeurotic structure. The present case describes an abdominal DTF. Abdominal DTFs commonly arise from the rectus or internal oblique muscle or aponeurosis in young women. For this reason, open surgical excision has been the common operative strategy, because the straight laparoscopic camera and instrument have inherent limitations in reaching and manipulating lesions located on the same side. To overcome such drawbacks, we inserted the trocars on the opposite side from the lesion and as laterally as possible from the center of abdomen. Tumor traction was facilitated by initial excision of the surrounding peritoneum and fascia. With these techniques, we successfully removed an anterior abdominal wall tumor and

reconstructed the fascial defect.

The etiology of DTF has been suggested to be multifactorial, including germline mutations, hormones, trauma, and sporadic.^{1,9} Our case was a sporadic occurrence without any specific risk factors such as physical trauma or genetic disorders such as familial adenomatous polyposis syndrome or Gardner syndrome. The mainstay of treatment for sporadic DTF is complete surgical resection. Even when clear surgical margins are achieved, the local recurrence rate is quite high (8~31%).^{3,10} Salas et al. evaluated the risk factors associated with sporadic DTF in a retrospective review, which suggested that age <37 years old, tumor size >7 cm, and extra-abdominal type were high risk of recurrence.¹¹ Adjuvant options including radiotherapy and systemic therapies have been administered in patients with a poor prognosis; however, evidence regarding the efficacy of adjuvant therapy is sparse.³

While DTFs are benign neoplasms, large skin incisions are required for wide excision to minimize local recurrence. A laparoscopic approach to abdominal-type DTFs arising in the anterior abdominal wall and protruding into the abdominal cavity could be feasible in select patients. This minimally invasive approach improves cosmetic outcomes and quality of life, especially in young women.

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