

# Desmoid Tumor of the Rectus Abdominis: Surgical Management and Abdominal Wall Reconstruction

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## 1. Abstract

Desmoid tumors are rare benign fibroblastic neoplasms characterized by locally aggressive behavior and a high risk of recurrence, despite the absence of metastatic potential. They most commonly arise from musculoaponeurotic structures of the abdominal wall and are frequently associated with hormonal factors, prior surgical trauma, or genetic syndromes such as familial adenomatous polyposis.

Management is challenging, particularly in large tumors requiring extensive resection and complex abdominal wall reconstruction. We report a case of a large desmoid tumor of the rectus abdominis muscle in a 41-year-old woman treated with wide surgical excision and mesh reconstruction. The patient had an uneventful postoperative recovery and showed no recurrence after one year of follow-up.

## 2. Introduction

Desmoid tumors, also referred to as aggressive fibromatosis, are rare soft tissue tumors originating from fibroblasts within musculoaponeurotic structures. The term “desmoid” is derived from the Greek word *desmos*, meaning tendon-like, reflecting the firm fibrous consistency of these lesions.

Although histologically benign and lacking metastatic potential, these tumors are locally infiltrative and prone to recurrence after surgical removal. They represent approximately 3% of all soft tissue tumors, with an estimated incidence of 2–4 cases per million individuals annually.

The abdominal wall is a common site of involvement, particularly in women of reproductive age. Hormonal influence, especially estrogen sensitivity, is supported by tumor occurrence during pregnancy and potential regression after menopause. Additional risk factors include previous trauma, surgical scars, and association with familial adenomatous polyposis (Gardner’s syndrome).

Clinically, desmoid tumors present as slow-growing, firm, and often painless masses. However, they may cause pain, functional impairment, or cosmetic deformity due to infiltration of surrounding muscle and fascial planes. Their unpredictable behavior makes management complex and individualized.

## 3. Case Report

A 41-year-old woman of African descent presented with progressive abdominal pain and a palpable mass in the left upper abdomen. She had a history of a previous uncomplicated cesarean section. The patient reported a noticeable increase in the size of the abdominal mass over a three-month period.

Physical examination revealed a large, firm, and poorly mobile mass located in the epigastric and left hypochondriac region, without signs of inflammation or infection.

Magnetic resonance imaging (MRI) demonstrated a well-defined 12 × 9 cm heterogeneous lesion involving the upper and middle portions of the left rectus abdominis muscle and confined within the rectus sheath. The imaging findings were consistent with a desmoid tumor.

Given the lesion’s size, growth pattern, and infiltrative characteristics, surgical management was indicated.

## 4. Surgical Management

The patient underwent elective surgery with complete en bloc resection of the tumor. The procedure included removal of the affected segment of the left rectus abdominis muscle along with its anterior and posterior fascial sheaths. A macroscopic safety margin of approximately 2 cm was achieved. Partial peritoneal opening occurred during deep dissection.

Following tumor excision, reconstruction of the abdominal wall was required due to the resulting defect. The peritoneum was closed primarily, and reinforcement of the abdominal wall was performed using a lightweight polypropylene mesh (15 × 12 cm). The mesh was securely anchored to the anterior abdominal fascia and linea alba, restoring structural integrity and abdominal wall continuity.

## 5. Pathological Findings and Outcome

Histopathological examination confirmed the diagnosis of desmoid tumor (deep fibromatosis) with clear resection margins. No features of malignancy were identified.

The postoperative course was uneventful. The patient recovered without complications and was discharged on the fourth postoperative day. At one-year follow-up, she remained asymptomatic with no clinical or radiological evidence of recurrence, and abdominal wall function was preserved.

## 6. Discussion

Desmoid tumors are rare benign but locally aggressive lesions arising from fibroblastic proliferation. Despite their non-metastatic nature, their tendency for local invasion and recurrence presents significant therapeutic challenges.

Abdominal wall desmoids are most commonly seen in women of reproductive age, supporting a hormonal role in tumor development. Estrogen dependence is suggested by increased incidence during pregnancy and occasional regression after menopause or oophorectomy. Prior surgical procedures, such as cesarean section, are also recognized risk factors.

Although spontaneous stabilization or regression may occur, surgical excision remains the primary treatment for symptomatic or enlarging tumors. The main goal is complete resection with negative margins, as incomplete excision significantly increases recurrence risk.

However, wide excision of abdominal wall tumors often results in large defects that require reconstruction. Various techniques are available, including primary closure, mesh reinforcement, or complex flap reconstruction. In the present case, the use of a lightweight polypropylene mesh provided adequate reinforcement with good functional and aesthetic outcomes.

Long-term surveillance is essential, as recurrence rates remain significant even after complete resection, particularly in cases with aggressive biological behavior.

## 7. Conclusion

Desmoid tumors of the abdominal wall are rare lesions that require individualized surgical management due to their infiltrative nature and high recurrence potential. Wide excision combined with mesh-based reconstruction can provide effective and durable results when performed with appropriate surgical planning. Careful long-term follow-up remains essential to monitor for recurrence and ensure optimal outcomes.

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