# Fascia-Preserving,lessinvasivesurgeryforabdominalwalldesmoid :Aretrospectivestudyof7 cases

**Abstract**

Desmoid tumors are benign, tumors arising from connective tissue within musculoaponeurotic structures. Classically these tumors do not metastatic but locally invasive and high rate of recurrence. Desmoid tumors, also known as aggressive fibromatosis, deep fibromatosis or musculoaponeuroticfibromatosisareraretumors.Theyhaveanincidencerateofapproximately2-4 cases per million individuals and represents about 0.03% of all neoplasms and 3% of all soft tissue tumors. The highest incidence is between the age of 30 - 40 years with a strong prevalence among fertile aged women and female to male ratio in 2:1. They are uncommon during menopause.

Desmoid tumors could be extra abdominal, intra-abdominal and abdominal wall. The commonestsiteistheanteriorabdominalwall,withanincidenceof50% approximately5-10%of cases are associated with familial adenomatosis polyposis and gardener syndrome.

Inourstudy,wearereportingthreefemalepatientsinbetweentheageof30-50years.Diagnosis confirmed on CT imaging and wide surgical excision with clear margin was performed. WeperformedFascia-Preserving,lessinvasivesurgeryforabdominalwalldesmoid.

**Keywords**

Desmoidtumor,Desmoidfibromatosis,Familialadenomatouspolyposis,Gardnersyndrome.

## Introduction

The term desmoid tumor was first introduced by muller in 1938.Desmoid tumors are rare benign, non-metastatic tumors that originates from musculoaponeurotic connective tissue.These tumor were most commonly seen in young women, especially during or after pregnancy, estrogen knowntosimulatefibroblastproliferationinthesetumorsandwhichmayregressaftermenopause. Although their exact etiology is not known. Factors such as pregnancy, oral contraceptive use, trauma, abdominal, pelvic surgery, familial adenomatous polyposis and gardener's syndrome a considered the high-risk factors.[1,2,4,7]

Clinically, desmoidtumors are usuallywellcircumscribed, palpablemass, painless and firm in consistency.Diagnosisofdesmoidtumorsmayuseultrasonography,CTandMRI.MRIisgenerally more sensitive to abdominal wall tumours. Ultrasound examination is the first line imaging technique to evaluate a palpable mass. Biopsy of the tumor to make a definitive diagnosis. Histologicallyitischaracterizedbytheproliferationofuniformspindlecellorfibroblastcells. [2,3,5,6]

On immunohistochemistry, desmoid tumors stains positive for B-Catenin, Vimentin, Cox2, tyrosine kinagePDGFRB,androgenandestrogenreceptorbeta.Desmoidtumorstainsnegativefor desmin,S- 100, B-Caldesman, CD 117 and CD 34. [1,2,4,5]

**Objective**

This retrospective study, involving7 cases, aims to evaluate thetreatment outcomes of fascia-preserving,minimallyinvasivesurgeryforabdominalwalldesmoids,focusingonsuccessratesand disease recurrence.

**Materialandmethods**

Thestudywasconducted at our privatecentre fromJan 2000toJan 2024.The totalnumbers of patientswere7casesandallwerefemalesbetweentheagegroupof20-50years.Diagnosisbasedon clinical, radiological and histopathological criteria.

**Results**

All patients were female and underwent a fascia-preserving, less-invasive surgical procedure successfully. Follow-up for 36 months post-surgery was maintained for 7 patients. None of the patientsexperiencedarecurrenceofthedisease.Primaryclosureoftheabdominalwallwasachieved in all cases, not using mesh reconstruction or muscle flap reconstruction. There was no evidence of incisional hernia or tumor recurrence.

We successfully met our primary objective of preserving the function and structure of the abdominalwall.Thisprocedureissafeandcanprovideadefinitivecurewithoutfunctionallimitations for patients with desmoid tumors of the anterior abdominal wall.

**Followup**

Disease-free status was recorded for all patients and confirmed through outpatient clinical observation.Recurrencestypicallymanifestwithin3years,withnearlyalloccurringby5years.In our study, follow-up was maintained for 36 months, with no patients lost to follow-up and no diseaserecurrenceobserved.Notably,noinfectionsormesh-relatedcomplicationswerereported. A limitation of this study is the relatively small sample size.

**Case Presentation**

**Case I** -A 20-year-old female patient presented to our center on July 9, 2019, with a painless masslocatedontheleftsideoftheumbilicus,extendingintotheleftlumbarandiliacfossaregions. The mass had been gradually enlarging over the previous 12 months. The patient had no history of abdominal surgery or trauma.

Clinical Examination: On physical examination, a single large mass was observed in the left lumbar, umbilical, and left iliac regions. The mass, which was fixed to the anterior abdominal wall, measured8x6x6cm. Itwasnon-tender,rounded,withasmoothsurface,andhadafirmconsistency.

ImagingStudies:Ultrasonographyrevealedalarge,solid,heterogeneoushypoechoicmasslocated in the left lumbar and left iliac fossa. A subsequent CT scan confirmed the presence of a large mass originating from the left rectus abdominis muscle, extending from the left lumbar to the left iliac fossa, without crossing the midline. The mass measured 8x6x6 cm and was superficial to the left rectus abdominis muscle, with no signs of enlarged lymph nodes or ascites. These findings were indicative of a benign desmoid tumor arising from the anterior abdominal wall.

Preoperative Workup: Laboratory investigations were normal. The patient was scheduled for surgery following a comprehensive preoperative assessment. Surgical Intervention: Under general anesthesia,acompleteexcisionofthetumorwasperformed,ensuringa2cmmargin.Themasswas located anterior to the rectus abdominis muscle and did not involve the peritoneum. The left rectus muscle remained intact and did not require mesh repair. The abdomen was not opened during the procedure. A vacuum suction drain was placed beneath the subcutaneous tissue, and the skin was

closed.Theexcisedmassweighed350gramsandexhibitedagristlytexturewithaglisteningwhite appearance on cut section.

Histopathology:Histopathologicalexaminationconfirmedthediagnosisofadesmoidtumorwith negative surgical margins.

PostoperativeCourse:Thepatient'srecoverywasuneventful,andshewasdischargedonthe10th postoperative day. After a follow-up period of five years, there was no evidence of recurrence or incisional hernia. **[ Fig 1-6]**

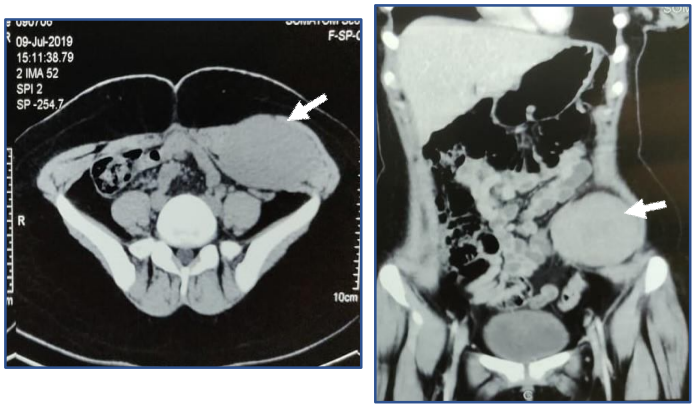


**Fig-1CTAbdomenPhotographshowingamass occupying left rectus sheath**

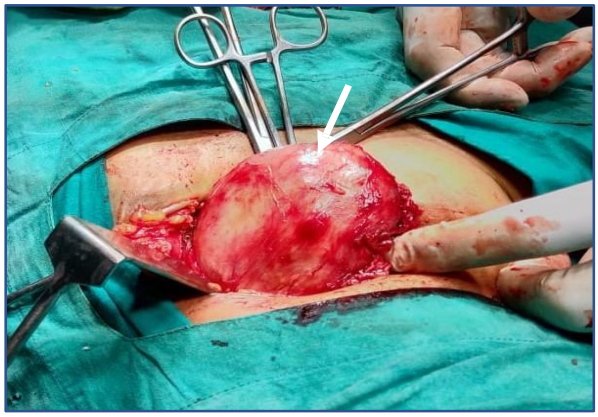

**Fig-2Intraoperativephotographshowingarounded solid mass**

**Fig-3Intraoperativephotographshowingarounded solid mass**

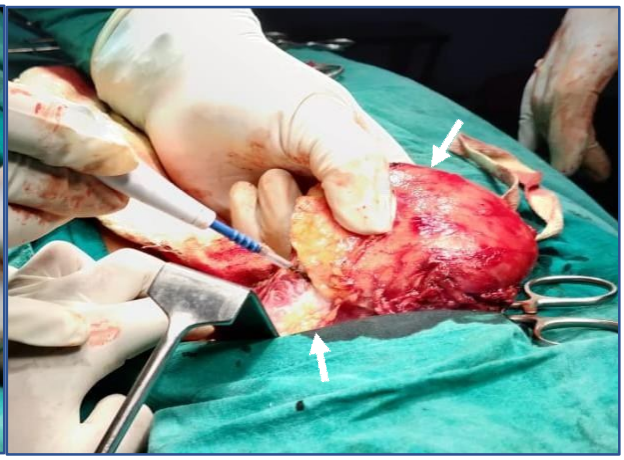

**Fig-4Intraoperativephotographshowingaexcision of rounded solid mass and fascia sparing surgery**

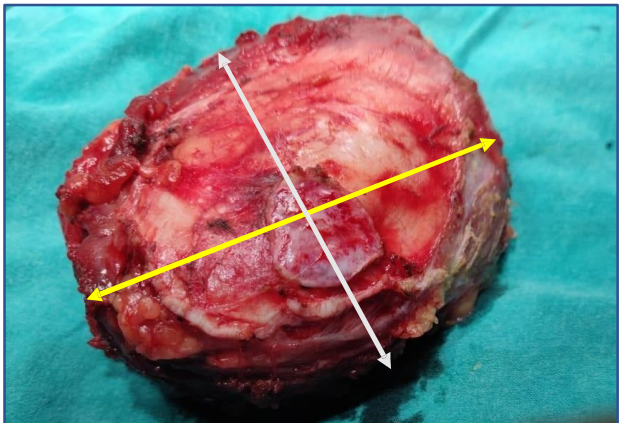

**Fig-5Ongross,roundedmassmeasuring8x6x6cm& weighing 350 grams**

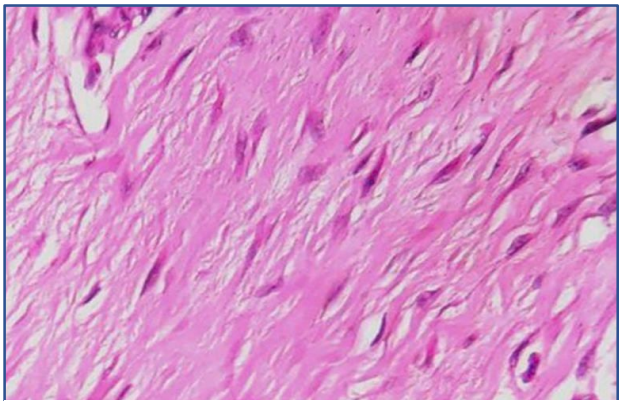

**Fig-6Microphotographshowingthetumorcellsare spindleshapedwithhomogeneouscollagenous frame (HE, x200). *HE:* hematoxylin and eosin.**

**CaseII**

A45-year-oldfemalewasadmittedtoourcenteronOctober12,2015,withacomplaintofa painless lump in the anterior abdominal wall, located below the umbilicus. Physical examination revealed a tough, fixed mass crossing the midline and situated below the umbilicus. Routine blood tests were normal.

Imaging Studies: Ultrasonography showed a solid mass with heterogeneous echogenicity involving the left rectus abdominis muscle and extending across the midline. CT imaging confirmed a well-circumscribed, large mass measuring 15x8x6 cm, with an attenuation similar to that of muscle tissue. The mass originated from the left rectus abdominis muscle andextendedacrossthemidlinetotherightside.Therewasnoevidenceofabdominalascites or lymphadenopathy.

Surgical Intervention: The patient underwent a complete surgical excision of the tumor witha2cmmargin.Theanteriorabdominalwallwasinvolved,buttheperitoneumremained intact. The left rectus abdominis muscle and the posterior wall of therectus muscle were not compromised, so no mesh repair was required. The excised mass, weighing 750 grams, displayed a grittytexture and a glistening white appearance on cut section.Histopathology: Histopathological examination confirmed the diagnosis of a desmoid tumor with negative surgical margins.

PostoperativeCourse:Thepatient'srecoverywasuneventful,andshewasdischargedon the 10th postoperative day. After five years of follow-up, there was no recurrence or development of an incisional hernia**. [Fig 1-6]**

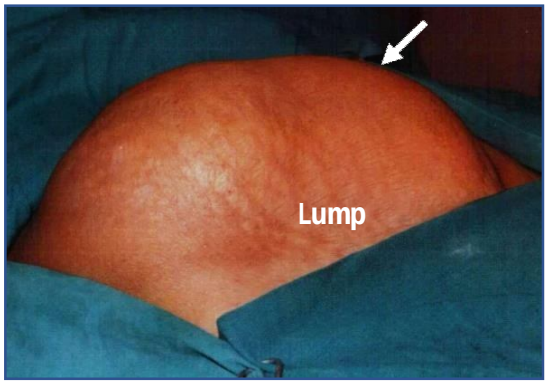


**Fig-1Photographshowinganteriorabdominallump crossingthemidline**

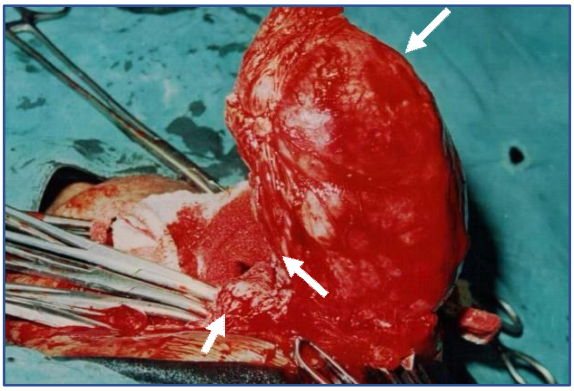

**Fig-2IntraoperativePhotographshowinga ovoid masswithfasciasparingsurgery**

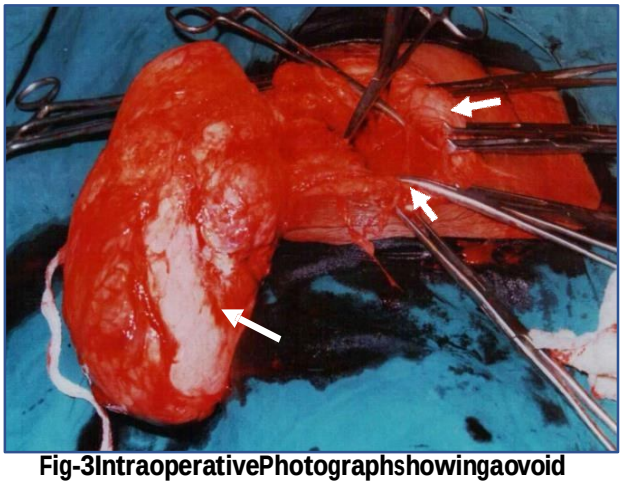

**Fig-3IntraoperativePhotographshowingaovoid masswithfasciasparingsurgery**

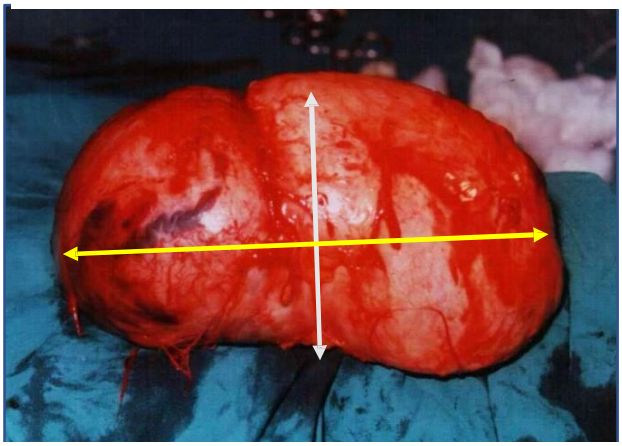

**Fig-4Ongrosssolidmassmeasuring15x8x6cmand weighing750grams**

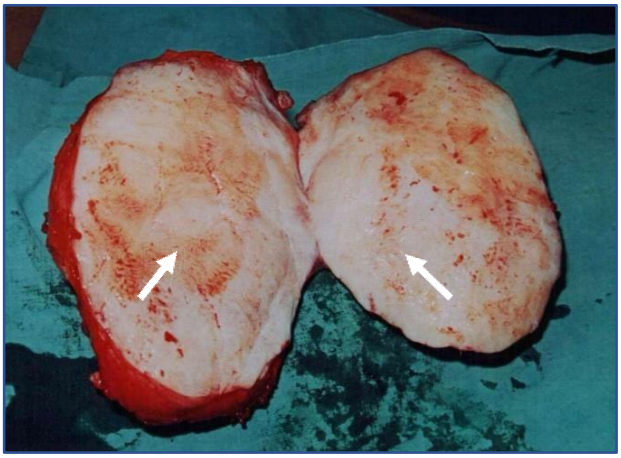

**Fig-5Ongrossspecimenglisteningwhiteappearance on cut section**

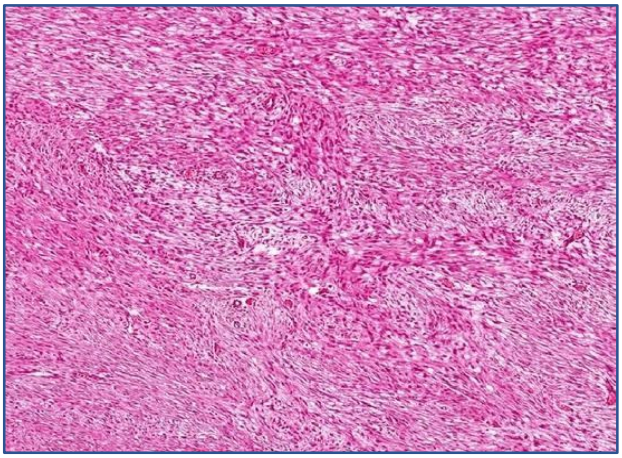

**Fig-6Histopathologicalexaminationshowingspindlecells, features are consistent with desmoid-type fibromatosis.**

**CaseIII**

A 50-year-old female was admitted to our center on February 1, 2017, with a complaint of a painless mass on the left side of her lower abdomen, present for one year. Physical examination revealedafirm,non-tendermassfixedtotheanteriorabdominalwall.Themasshadbeengradually increasing in size. Blood tests were within normal limits. The patient had a history of abdominal tubectomy performed 20 years earlier.

Imaging Studies: Ultrasonography showed a large, heterogeneous mass with smooth, sharply definedmarginslocatedintheleftloweranterolateralabdominalwall.CTscanconfirmedawell-circumscribed mass measuring 8x6x6 cm, with attenuation similar to muscle tissue. The mass originated from the left rectus abdominis muscle.

Surgical Intervention: Following a preoperative workup, the patient underwent surgery, which involved a complete wide excision of the tumor with a 2 cm margin. The mass was fixed to the anterior wall of the rectus abdominis muscle. Both the anterior and posterior walls of the rectus muscle were preserved, and the peritoneum was not involved. The ovoid mass was restricted to the anteriorwalloftherectusabdominismuscle,allowingforprimarysuturingwithouttheneedformesh or flaps.

PostoperativeCourse:Thepatient'srecoverywasuneventful,andshewasdischargedonthe8th postoperative day. Histopathological examination confirmed a spindle-cell tumor with negative margins. After five years of follow-up, there was no evidence of recurrence**. [Fig 1-6]**

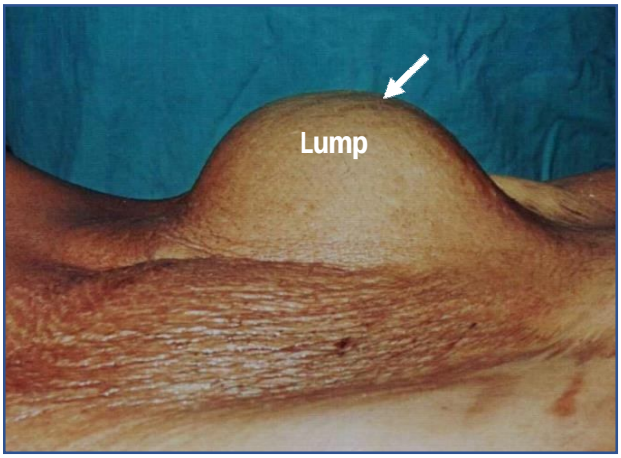


**Fig-1Photographshowingleftanterior abdominal lump**

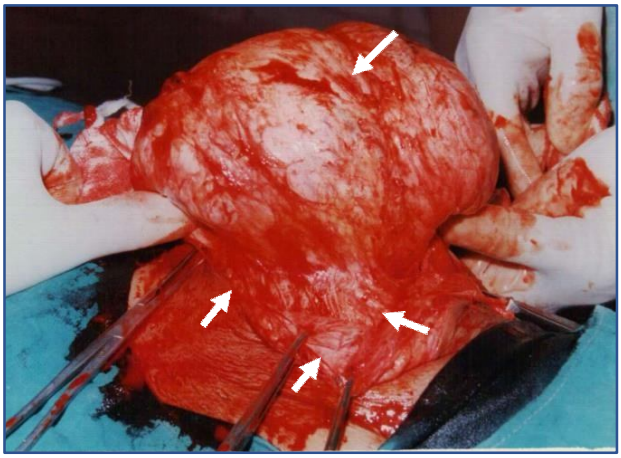

**Fig-2IntraoperativePhotographshowingrounded and solid mass with fascia sparing surgery**

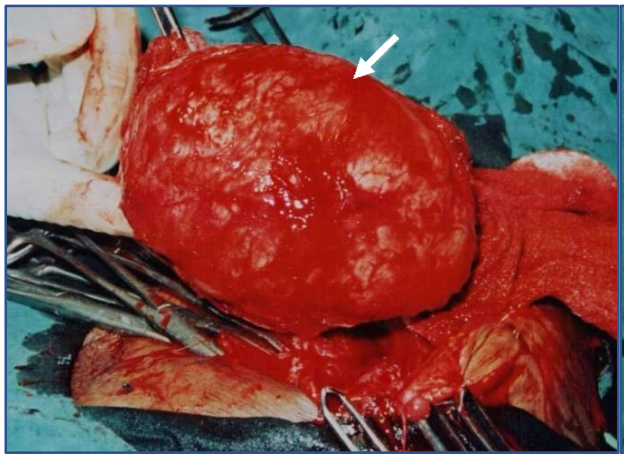

Fig-3Intraoperativephotographsshowingcomplete excision of a rounded solid mass

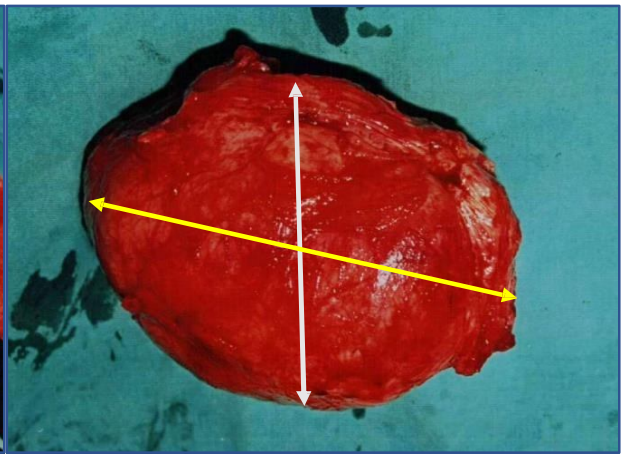

Fig-4ongrossroundedsolidmassmeasuring of size 8x6x6 cm

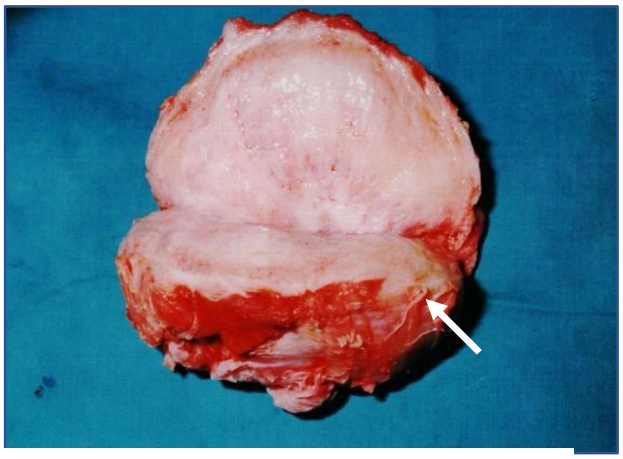

Fig-5Ongrossspecimenglisteningwhite appearance on cut section

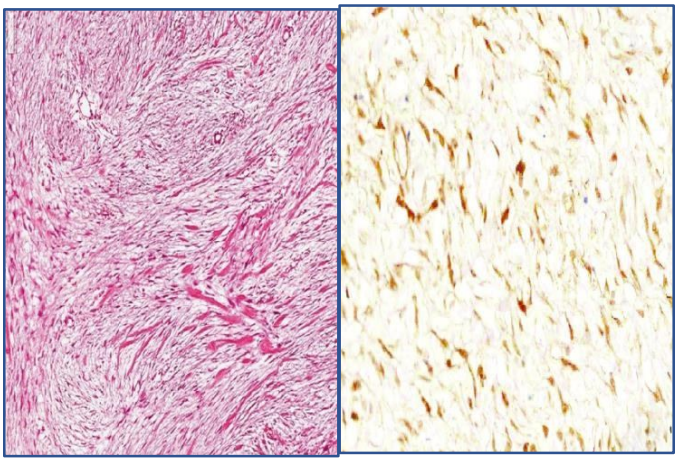

Fig-6Histopathologicalexaminationshowingspindle cells, with Beta-catenin positive for desmoid tumor

**Discussion**

"Desmoid tumor is a proliferative disease of fibroblast- like spindle cells that in classified as an inter-medicaltumoraccordingtotheworldhealthorganizationclassification,ittrenchestoinfiltrate surroundingtissue,butdoesnotmetastasize.Therecurrenceratehasalsobeenfoundtobehigherin children and adolescents. Regarding surgical treatment and it has been reported that the recurrence rate is particularly low for abdominal wall desmoids. Abdominal wall desmoid tumors arise from musculoaponeurotic structures of the abdominal wall". [1,2,3]

"Especially the rectus abdominis muscle and internal oblique muscles and their fascial coverings and occasionally cross the midline. Less commonly, they originate from external oblique muscle and the transversalis muscle or fascia. There is well known association in patients with history of abdominal or pelvis surgery or history of trauma. These masses have a frim or gritty texture. The cut surface, they are glistering white and coarsely trabeculated, resembling scar tissue. These tumours havenodistinctcapsuleandmarginsareill-defined.Abdominalwalldesmoidtumorshavesignificant lower rate of recurrence 20-30%" [1,2,4]

**Surgicalmanagement**

"Radical tumours resection with 2 cm free margin has been recommended as the first line treatment. We use less-invasive fascia-preserving surgery for abdominal wall desmoid is different from surgery with a marginal margin. Unlike excision, the tumor is macroscopically exposed and detached from the fascia and muscle and the fascia is preserved as much as possible. On the other hand, since the fascial defect is minimal after tumor resection, wounds can be generally closed with directsuturing,nomeshisused.Althoughabdominalwall integrityafterfull-thicknesssurgerycanbe restored with direct suturing".[2,4,6]

"Fasciawaspreservedaftertheremovaloftumorandtumordetachedfromfasciaalthoughthepost-operative results of abdominal wall desmoid are good. Fascia preserving surgery is acceptable for desmoidarisingintheabdominalwall.Werecommendlessinvasive,fascia-preservingsurgeryrather than systemic treatment for the abdominal wall desmoids. The rate of recurrence of abdominal wall desmoid is very low 6-2% even with low invasive fascia-preserving surgery and to propose a new treatment modality". [1,2,7,8]

Radiotherapy, chemotherapy and endocrine therapy are use in patients with inoperable tumors, localrecurrenceorincompletelyexcisedlesions.Inwomen20%desmoidtumorscanspontaneously regress if tumors are small with myoplasm or ovariectomy and surgeons are using " wait and seen" strategies. [2,5,9]

**Conclusion**

Desmoidtumorsarerarebenigntumors,arisingfrommusculoaponeuroticconnectivetissue,and are locally aggressive wide surgical resection with negative margin and the goal of surgery. We recommended, less invasive, fascia-preserving surgery rather than systemic treatment for the abdominal desmoids.

Fasciapreservingless-invasivesurgeryfordesmoidtumorsasagreatsuccessinthetreatmentof abdominal wall desmoid tumors are does not require reconstruction. We recommend fascia-preserving, less-invasive surgery rather than systemic treatment for abdominal wall desmoids. In a small study of 7 cases group we achieved good surgical results with no recurrence and morbidity.

Consent:
Asperinternationalstandardsoruniversitystandards,patient(s)writtenconsenthasbeen collected and preserved by the author(s).

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