



Fascia-preserving, Less Invasive Surgery for Abdominal Wall Desmoid: A Retrospective Study of 7 Cases

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/119418>

Case Report

Received: 07/05/2024
Accepted: 09/07/2024
Published: 15/07/2024

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 musculoaponeurotic fibromatosis are rare tumors. They have an incidence rate of approximately 2-4 cases per million individuals and represents about 0.03% of all neoplasms and 3% of all soft

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Cite as: Jatal, S. N., Sudhir Jatal, Ajay Punpale, and Sachin Ingle. 2024. "Fascia-Preserving, Less Invasive Surgery for Abdominal Wall Desmoid: A Retrospective Study of 7 Cases". *Asian Journal of Research in Surgery* 7 (2):220-28. <https://journalajrs.com/index.php/AJRS/article/view/215>.

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 commonest site is the anterior abdominal wall, with an incidence of 50% approximately 5-10% of cases are associated with familial adenomatous polyposis and gardener syndrome.

In our study, we are reporting three female patients in between the age of 30-50 years. Diagnosis confirmed on CT imaging and wide surgical excision with clear margin was performed. We performed Fascia-Preserving, less invasive surgery for abdominal wall desmoid.

Keywords: Desmoid tumor; desmoid fibromatosis; familial adenomatous polyposis; gardner syndrome.

1. 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 known to simulate fibroblast proliferation in these tumors and which may regress after menopause. 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 [1-4].

Clinically, desmoid tumors are usually well circumscribed, palpable mass, painless and firm in consistency. Diagnosis of desmoid tumors may use ultrasonography, CT and MRI. MRI is generally 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.

Histologically it is characterized by the proliferation of uniform spindle cell or fibroblast cells [2,5,6,7].

On immunohistochemistry, desmoid tumors stains positive for B-Catenin, Vimentin, Cox2, tyrosine kinase PDGFRB, androgen and estrogen receptor beta. Desmoid tumor stains negative for desmin, S- 100, B-Caldesman, CD 117 and CD 34 [1,2,3,6].

1.1 Objective

This retrospective study, involving 7 cases, aims to evaluate the treatment outcomes of fascia-preserving, minimally invasive surgery for

abdominal wall desmoids, focusing on success rates and disease recurrence.

2. MATERIALS AND METHODS

The study was conducted at our private centre from Jan 2000 to Jan 2024. The total numbers of patients were 7 cases and all were females between the age group of 20-50 years. Diagnosis based on clinical, radiological and histopathological criteria.

3. 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 patients experienced a recurrence of the disease. Primary closure of the abdominal wall was achieved 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 abdominal wall. This procedure is safe and can provide a definitive cure without functional limitations for patients with desmoid tumors of the anterior abdominal wall.

3.1 Follow Up

Disease-free status was recorded for all patients and confirmed through outpatient clinical observation. Recurrences typically manifest within 3 years, with nearly all occurring by 5 years. In our study, follow-up was maintained for 36 months, with no patients lost to follow-up and no disease recurrence observed. Notably, no infections or mesh-related complications were reported. A limitation of this study is the relatively small sample size.

3.2 Case Presentation

Case I - A 20-year-old female patient presented to our center on July 9, 2019, with a painless mass located on the left side of the umbilicus, extending into the left lumbar and iliac fossa regions. 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, measured 8x6x6 cm. It was non-tender, rounded, with a smooth surface, and had a firm consistency.

Imaging Studies: Ultrasonography revealed a large, solid, heterogeneous hypoechoic mass located 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, a complete excision of the tumor was performed, ensuring a 2 cm margin. The mass was 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. The excised mass weighed 350 grams and exhibited a gristly texture with a glistening white appearance on cut section.

Histopathology: Histopathological examination confirmed the diagnosis of a desmoid tumor with negative surgical margins.

Postoperative Course: The patient's recovery was uneventful, and she was discharged on the 10th postoperative day. After a follow-up period of five years, there was no evidence of recurrence or incisional hernia [Figs. 1-6].



Fig. 1. CT Abdomen Photograph showing a mass occupying left rectus sheath

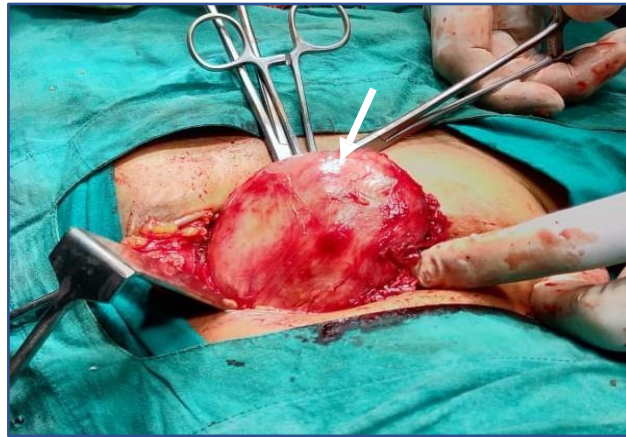


Fig. 2. Intraoperative photograph showing a rounded solid mass



Fig. 3. Intraoperative photograph showing a rounded solid mass

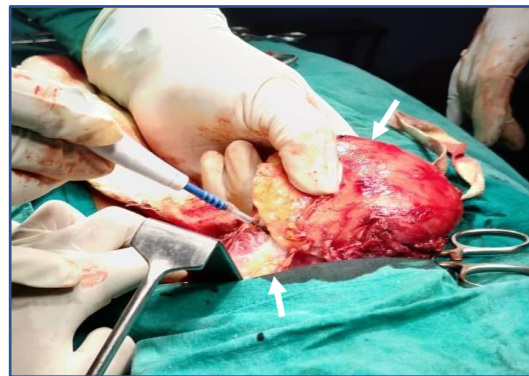


Fig. 4. Intraoperative photograph showing an excision of rounded solid mass and fascia sparing surgery

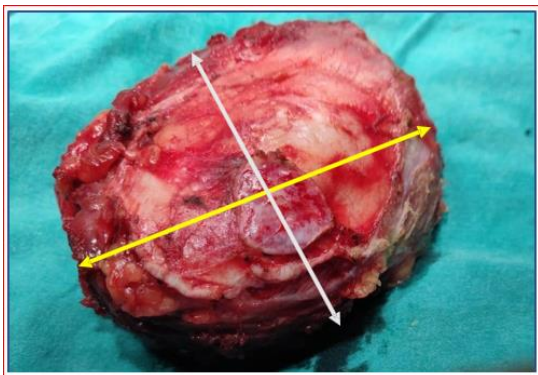


Fig. 5. On gross, rounded mass measuring 8x6x6 cm & weighing 350 grams

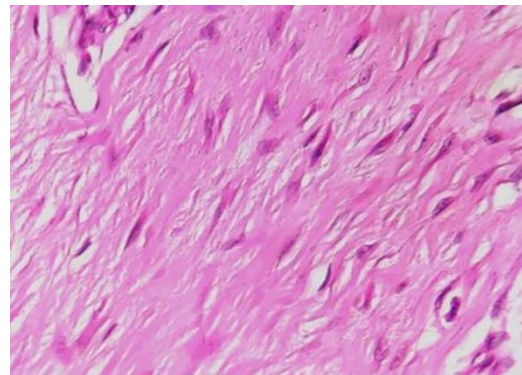


Fig. 6. Microphotograph showing the tumor cells are spindle shaped with homogeneous collagenous frame (HE, x200). HE: hematoxylin and eosin

Case II- A 45-year-old female was admitted to our center on October 12, 2015, with a complaint of a 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 and extended across the midline to the right side. There was no evidence of abdominal ascites or lymphadenopathy.

Surgical Intervention: The patient underwent a complete surgical excision of the tumor with a 2

cm margin. The anterior abdominal wall was involved, but the peritoneum remained intact. The left rectus abdominis muscle and the posterior wall of the rectus muscle were not compromised, so no mesh repair was required. The excised mass, weighing 750 grams, displayed a gritty texture and a glistening white appearance on cut section. **Histopathology:** Histopathological examination confirmed the diagnosis of a desmoid tumor with negative surgical margins.

Postoperative Course: The patient's recovery was uneventful, and she was discharged on the 10th postoperative day. After five years of follow-up, there was no recurrence or development of an incisional hernia [Figs. 7-12].

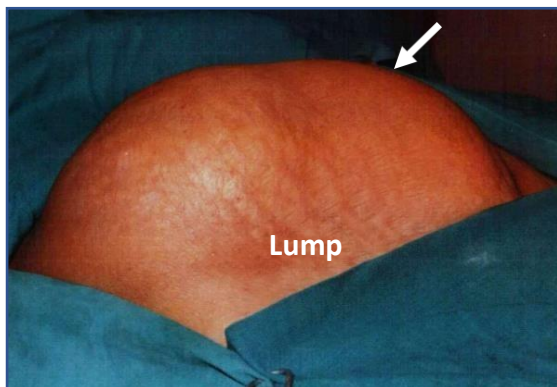


Fig. 7. Photograph showing anterior abdominal lump crossing the midline

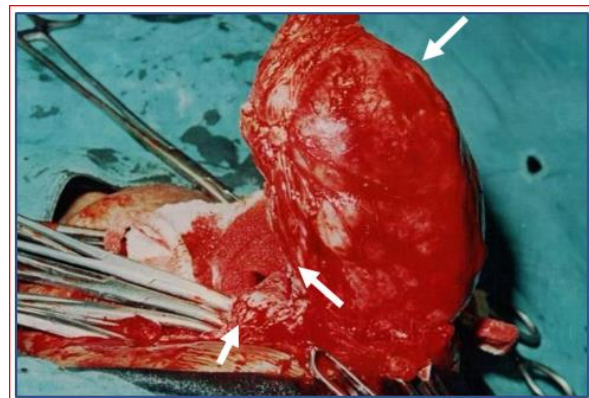


Fig. 8. Intraoperative Photograph showing an ovoid mass with fascia sparing surgery

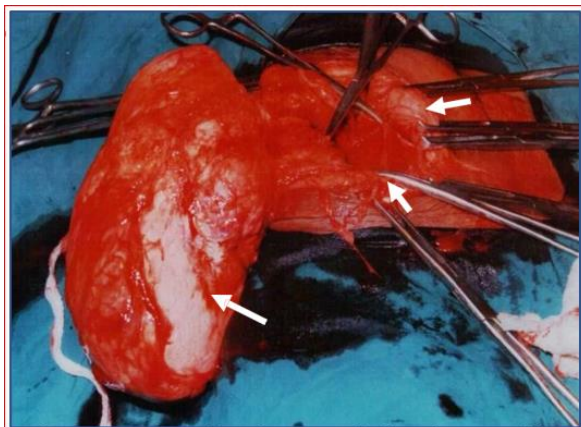


Fig. 9. Intraoperative Photograph showing an ovoid mass with fascia sparing surgery

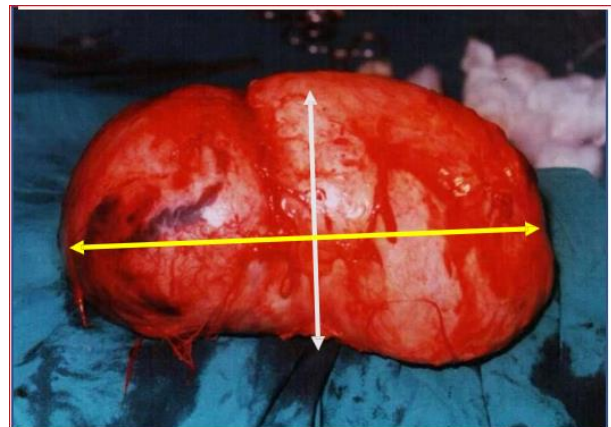


Fig. 10. On gross solid mass measuring 15x8x6 cm and weighing 750 grams

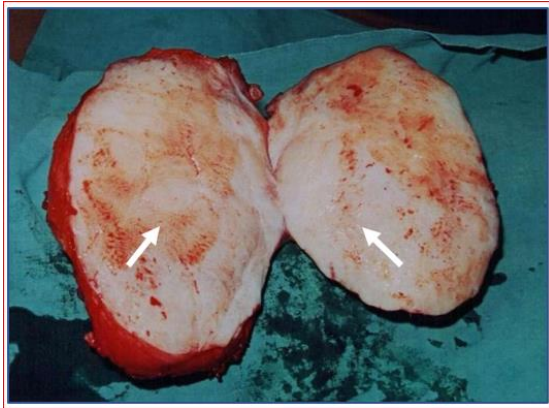


Fig. 11. On gross specimen glistening white appearance on cut section

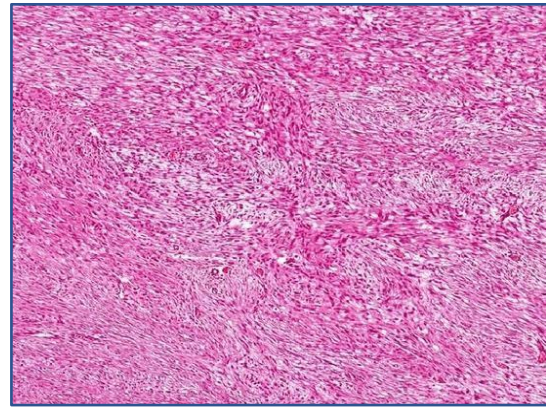


Fig. 12. Histopathological examination showing spindle cells, features are consistent with desmoid-type fibromatosis

Case III- 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 revealed a firm, non-tender mass fixed to the anterior abdominal wall. The mass had been gradually 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 defined margins located in the left lower anterolateral abdominal wall. CT scan confirmed a well-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 anterior wall of the rectus abdominis muscle, allowing for primary suturing without the need for mesh or flaps.

Postoperative Course: The patient's recovery was uneventful, and she was discharged on the 8th postoperative day. Histopathological examination confirmed a spindle-cell tumor with negative margins. After five years of follow-up, there was no evidence of recurrence [Figs. 13-18].

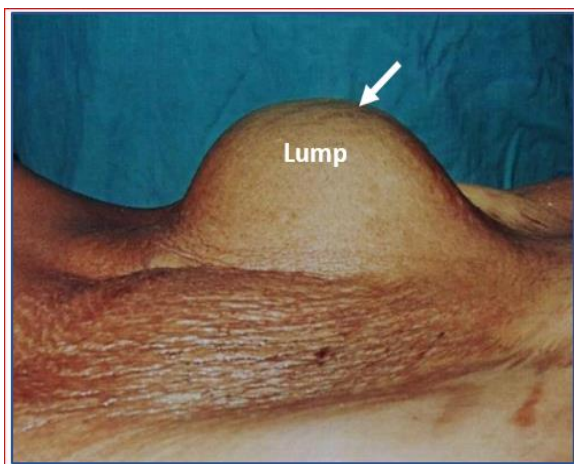


Fig. 13. Photograph showing left anterior abdominal lump

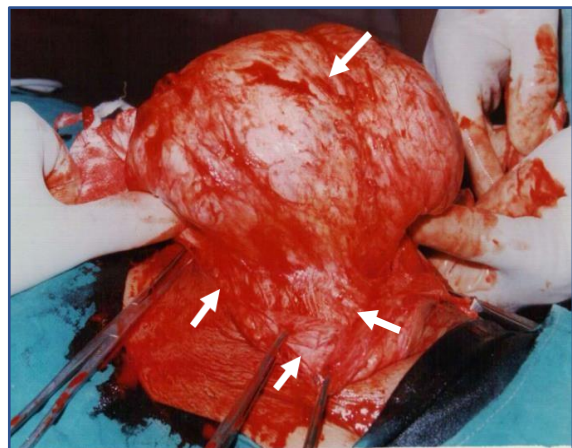


Fig. 14. Intraoperative Photograph showing rounded and solid mass with fascia sparing surgery

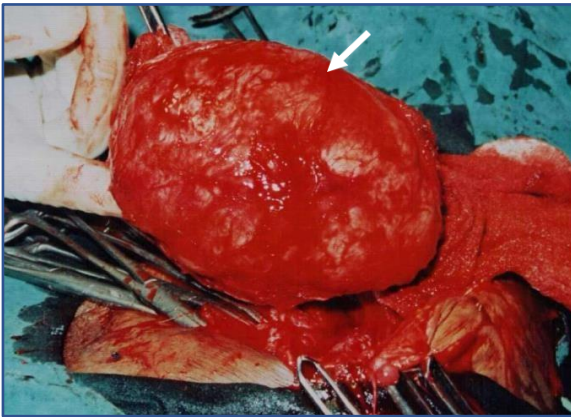


Fig. 15. Intraoperative photographs showing complete excision of a rounded solid mass

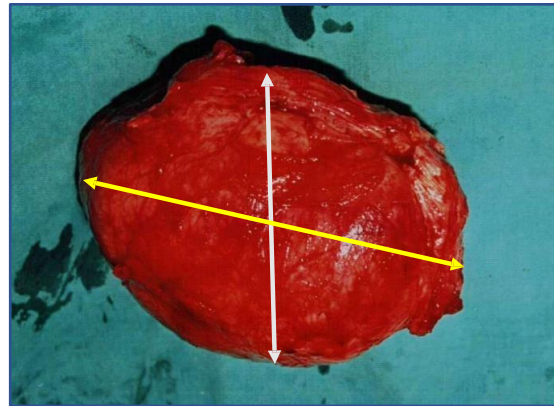


Fig. 16. on gross rounded solid mass measuring of size 8x6x6 cm

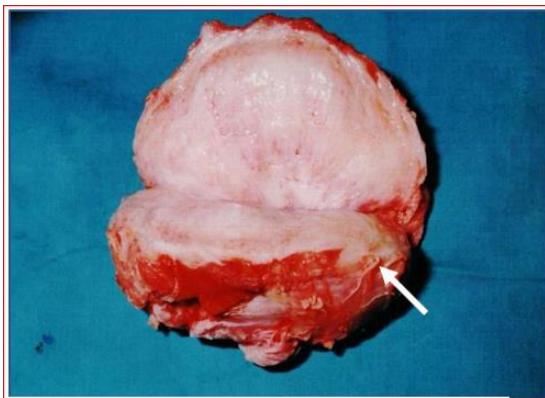


Fig. 17. On gross specimen glistening white appearance on cut section

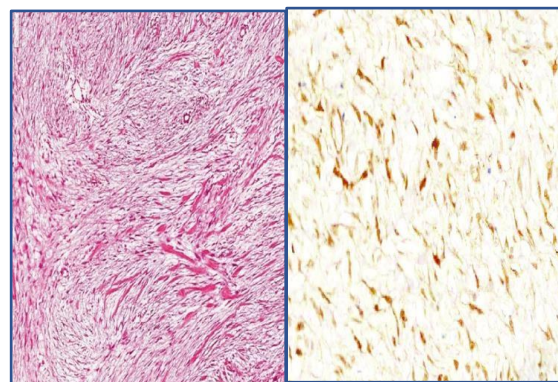


Fig. 18. Histopathological examination showing spindle cells, with Beta-catenin positive for desmoid tumor

4. DISCUSSION

“Desmoid tumor is a proliferative disease of fibroblast-like spindle cells that is classified as an inter-medical tumor according to the world health organization classification, it tends to infiltrate surrounding tissue, but does not metastasize. The recurrence rate has also been found to be higher in 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” [1,2,5].

“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 pelvic surgery or history of trauma. These masses have a firm or gritty texture. The cut surface, they are glistening white and coarsely trabeculated, resembling scar tissue. These tumours have no distinct capsule and margins are ill-defined. Abdominal wall desmoid tumors have significant lower rate of recurrence 20-30%” [1,2,3].

4.1 Surgical Management

“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 direct suturing, no

mesh is used. Although abdominal wall integrity after full-thickness surgery can be restored with direct suturing” [2,3,7].

“Fascia was preserved after the removal of tumor and tumor detached from fascia although the post-operative results of abdominal wall desmoid are good. Fascia preserving surgery is acceptable for desmoid arising in the abdominal wall. We recommend less invasive, fascia-preserving surgery rather 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” [1,2,4,8].

Radiotherapy, chemotherapy and endocrine therapy are use in patients with inoperable tumors, local recurrence or incompletely excised lesions. In women 20% desmoid tumors can spontaneously regress if tumors are small with myoplasm or ovariectomy and surgeons are using “ wait and seen” strategies [2,6,9-11].

5. CONCLUSION

Desmoid tumors are rare benign tumors, arising from musculoaponeurotic connective tissue, 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.

Fascia preserving less-invasive surgery for desmoid tumors as a great success in the treatment of 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.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Ascari F, Segattini S, Varoli M, Beghi M, Muratori S, Scotto B, Gasperoni M. Abdominal wall reconstruction for desmoid tumour surgery: Case report. *Int J Surg Case Rep.* 2019;64:6-9. DOI: 10.1016/j.ijscr.2019.09.010. Epub 2019 Sep 20. PMID: 31586888; PMCID: PMC6796622.
2. Nishida Y, Hamada S, Sakai T. et al. Less-invasive fascia-preserving surgery for abdominal wall desmoid. *Sci Rep.* 2021;11:19379. Available:https://doi.org/10.1038/s41598-021-98775-2
3. Howard JH, Pollock RE. Intra-Abdominal and Abdominal Wall Desmoid Fibromatosis. *Oncol Ther.* 2016;4:57–72. Available:https://doi.org/10.1007/s40487-016-0017-z
4. Erdogan Osman, Parlakgumus A, Kulahci O1, Irkorucu O. Abdominal wall reconstruction for desmoid tumors following radical resection from the abdominoplasty incision: Case report. *Nigerian Journal of Clinical Practice.* 2021;24(7):p 1100-1102 DOI: 10.4103/njcp.njcp_246_20
5. Mohamed Yassine Mabrouk, Laila Bouzayan, Samia Malki, Rachid Jabi, Amal Bennani, Mohammed Bouziane, Desmoid tumor of the anterolateral abdominal wall: A rare case report, *Annals of Medicine and Surgery.* Available:https://doi.org/10.1016/j.amsu.2021.102804.
6. Mahim Koshariya, Samir Shukla, Zuber Khan, Vaibhav Vikas. Giant desmoid tumor of the anterior abdominal wall ina young female: A case report, *Hindawi Publishing CorporationCase Reports in Surgery.* 2013, Article ID 780862, 4 pages Available:http://dx.doi.org/10.1155/2013/780862
7. Economou A, Pitta X, Andreadis E et al. Desmoid tumor of the abdominal wall: a

- case report. J Med Case Reports. 2011; 5:326.
Available:<https://doi.org/10.1186/1752-1947-5-326>
8. Erica Choe, Anna Kata, Lakshmi Shree Kulumani Mahadevan, Parag Bhanot, Abdominal wall intramuscular desmoid fibromatosis: A case report. Journal of Surgical Case Reports. 2022(9).
Available:<https://doi.org/10.1093/jscr/rjac401>
9. Arshad Ahmad, Basiron Normala. Surgical Management of Large Desmoid Tumour of the Anterior Abdominal Wall. Asian journal of surgery / Asian Surgical Association. 2008;31:90-5.
DOI:10.1016/S1015-9584(08)60065-2.
10. Zhao J, Cheng F, Yao Z, Zheng B, Niu Z and He W. Surgical management of a giant desmoid fibromatosis of abdominal wall with vessels invasion in a young man: A case report and review of the literature. Front. Surg. 2022;9:851164.
DOI: 10.3389/fsurg.2022.851164
11. Kaoutar Achehboune et al. Desmoid tumor of the abdominal wall: Case report. PAMJ - Clinical Medicine. 2020; 4:78.
DOI: 10.11604/pamj-cm.2020.4.78.22201]

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