

# Marginal resection preferred over radical resection for a large abdominal wall desmoid tumor during pregnancy: A case report

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## ABSTRACT

Desmoid tumors are locally aggressive soft-tissue tumors known for their lack of metastatic potential but high recurrence rate after resection. Few cases of desmoid tumors during pregnancy have been reported, making treatment decisions more challenging.

This report presents the case of a woman with an abdominal wall desmoid tumor resected at 17 weeks of gestation. The large mass (13.4 cm × 7.4 cm) was compressing the uterus, which necessitated surgical intervention. Marginal resection of the tumor was performed with microscopically positive margins. The patient's postoperative course was uneventful, and she had a normal vaginal delivery at 38 weeks. No recurrence of the tumor was observed at 24-month follow-up. This case represents the largest pregnancy-related abdominal desmoid tumor (22 cm × 12 cm) resected marginally during pregnancy. The procedure allowed for a vaginal delivery rather than a cesarean section.

Surgical management of desmoid tumors in pregnancy should aim to remove the tumor while preserving function and anatomical integrity. While this approach is feasible for smaller tumors, larger tumors, as in this case, may result in loss of function and anatomical structure. This raises the question of whether marginal resection should be considered when preservation of function and structure is not feasible with radical resection. This case reinforces the fundamental surgical principle that when clear surgical margins cannot be achieved without compromising function and structure, marginal resection should be considered.

## 1. Introduction

Desmoid tumors, also called desmoid fibromatosis, are soft-tissue tumors that are locally aggressive but lack metastatic potential [1]. Due to their unpredictable course, treatment is typically tailored to the individual, based on factors like tumor size, location, and medical history. Management options include active surveillance, medical therapy, radiation, and surgery.

When surgery is indicated, the primary goal is complete tumor removal while preserving function and anatomical integrity. This is often feasible for smaller tumors, but larger or strategically positioned tumors may require reconstruction or result in functional deficits. This report outlines how these challenges were addressed in the case of pregnant woman at 17 weeks of gestation.

## 2. Case Presentation

A 36-year-old woman (gravida 2, para 1) was referred at 7 weeks of gestation. Her previous obstetric history included a full-term pregnancy with normal vaginal delivery. She had no significant medical history and no family history of note. At 33, she was diagnosed with abdominal desmoid fibromatosis and began oral treatment with tranilast (300 mg three times daily) and celecoxib (600 mg three times daily). At age 34, she also started taking pazopanib (600 mg daily). Despite knowing about pazopanib's teratogenic risks, she became pregnant at 36.

Palpation revealed a mass in the lower left quadrant of the abdomen. Ultrasonography revealed a hypoechoic mass (13.4 × 7.4 cm) in the lower abdominal wall, positioned just 1.4 cm from the uterine fundus. Magnetic resonance imaging (Fig. 1) of the pelvis (T2-weighted)

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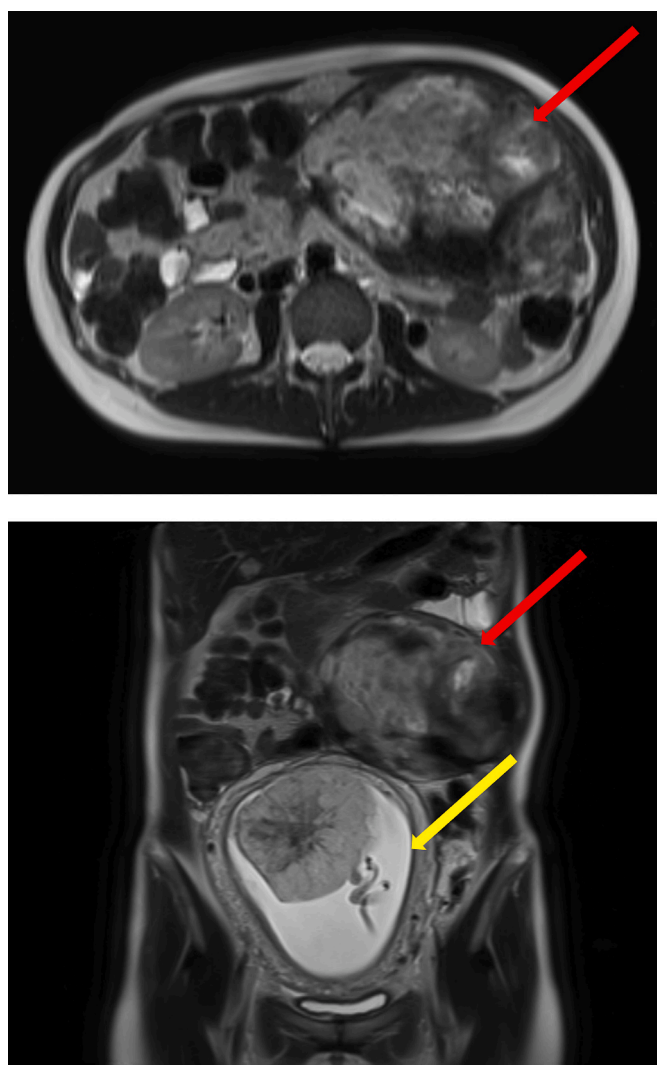
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**Fig. 1.** Magnetic resonance imaging. (A) T2-weighted axial plane. Large abdominal wall desmoid tumor (red arrow). (B) T2-weighted coronal plane. Abdominal wall desmoid tumor (red arrow) adjacent to the gravid uterus (yellow arrow). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

revealed heterogeneous signal intensity, and the mass appeared adjacent to the uterus. No infiltration of surrounding soft tissues or organs was suspected. Pazopanib was discontinued.

At 17 weeks of gestation, the tumor had grown and had started compressing the uterus. Surgical intervention was chosen over conservative surveillance and was performed under general anesthesia.

The tumor originated from the transversus abdominis muscle below the fascia. There was no apparent infiltration into intraperitoneal organs or vessels, though the tumor was compressing the uterus. Marginal resection was performed, with part of the transversus abdominis muscle resected, leaving an 11 cm × 8 cm defect. No mesh or skin flap was used for reinforcement. The surgery lasted 113 min with minimal blood loss. The tumor had grown to 22 cm × 12 cm × 10 cm (Fig. 2) and weighed 970 g. Histopathological diagnosis confirmed desmoid fibromatosis with positive margins (Fig. 3).

The patient's postoperative course was uneventful, and her pregnancy proceeded normally. She delivered a healthy girl vaginally at 38 weeks. The baby weighed 3230 g, with an umbilical artery pH of 7.359 and an Apgar score of 9/10. No apparent malformation was detected despite the systemic pazopanib and celecoxib treatments. There were no postpartum complications, and the patient was discharged 5 days after



**Fig. 2.** Macroscopic appearance.

labor.

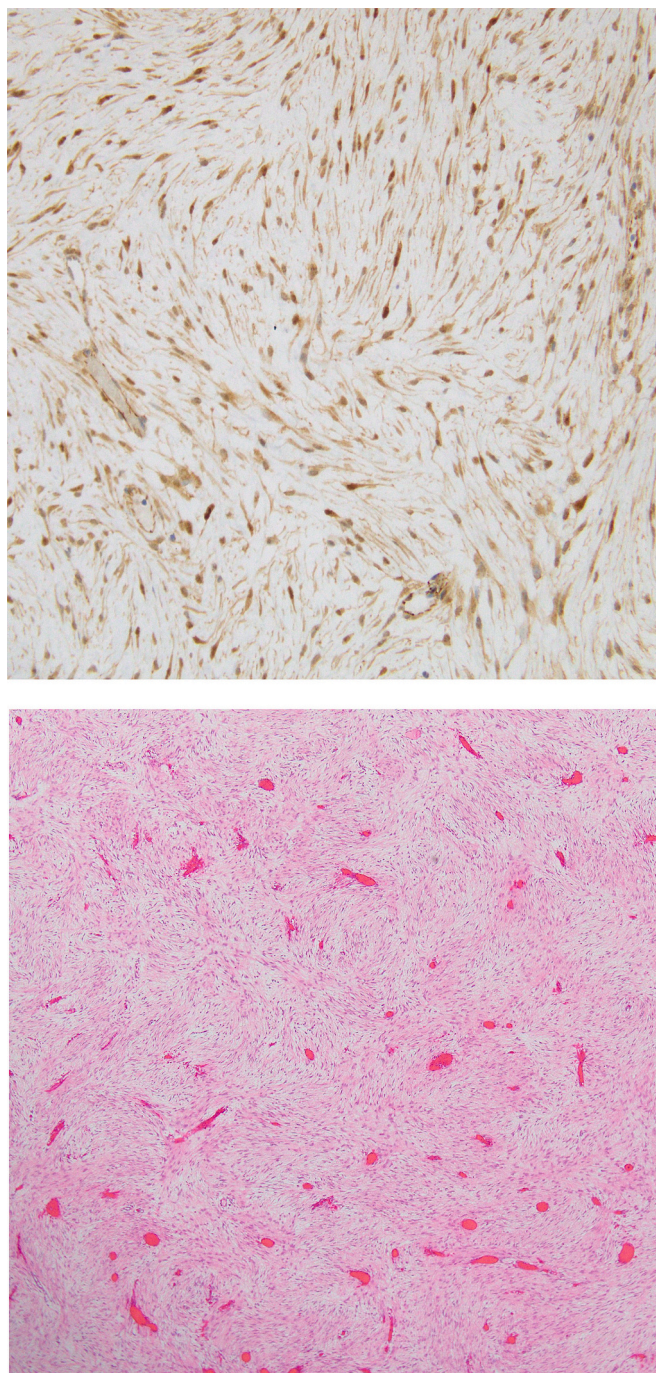
The patient continued follow-up treatment for her desmoid tumor at her previous institution. Postpartum follow-up was uneventful, with no recurrence 24 months after surgery.

### 3. Discussion

#### 3.1. Case Considerations

The goal was to manage the patient's tumor while optimizing her chances of delivering a healthy child. Discontinuation of systemic therapy led to rapid tumor enlargement (from 13.3 cm to 22 cm).





**Fig. 3.** Microscopic findings. (A) Positive  $\beta$ -catenin expression in nucleus (Ki-67 staining; magnification, 200 $\times$ ). (B) Long spindle-shaped cells resembling fibroblasts and myofibroblast (hematoxylin and eosin staining; magnification, 200 $\times$ ).

Further growth risked compressing the uterus, potentially leading to miscarriage or preterm birth. Any further delay could have made resection more complex due to possible vascular and organ involvement. Thus, surgery was performed at 17 weeks, with a marginal approach minimizing abdominal wall defects and facilitating a vaginal delivery at term.

### 3.2. Literature Review

A thorough search of the literature on PubMed and Japanese databases identified 18 cases of pregnancy-related abdominal desmoid

tumors (Table 1). Few involved abdominal wall desmoid tumors treated surgically during pregnancy that led to vaginal delivery rather than cesarean section, as in this case. This case represents the largest documented pregnancy-related abdominal desmoid tumor (22 cm  $\times$  12 cm  $\times$  10 cm) resected marginally, enabling an uncomplicated vaginal birth.

### 3.3. Marginal or Radical Resection?

Desmoid tumors that enlarge during pregnancy may require surgery. Complete resection with negative (R0) microscopic margins has traditionally been the standard intervention when surgery is necessary. While negative (R0) margins remain the conventional surgical goal, the decision must balance oncologic control while preserving function and structure. If this is not feasible, as much of the tumor as safely possible should be excised. If obtaining clear surgical margins compromises function, marginal resection with positive (R1) microscopic margins may be preferable.

The similar recurrence rates between the two surgical methods may support this approach. Desmoid tumors during pregnancy have a recurrence rate of 13 %, even after initial surgery [1]. Drabbe [2] reports no statistical difference in 5-year progression-free survival rates between patients with microscopically negative (R0) margins (78 %) and those with microscopically positive (R1) margins (93 %) ( $p = 0.310$ ) [2]. However, the limitation of this study is that only 30 surgical cases were analyzed. Additionally, these statistics fail to account for confounding variables such as tumor size and location. Larger tumors in deep anatomical locations are likely to have higher recurrence rates than smaller tumors in less challenging locations, regardless of whether they are excised radically or marginally.

In the present case, a marginal resection of a large desmoid tumor was performed, leading to a successful vaginal delivery. At 24-month follow-up, there was no evidence of recurrence, reinforcing the feasibility of this approach for select cases.

## 4. Conclusion

The surgical strategy for desmoid tumors in pregnancy should focus on tumor removal while preserving function and anatomy. While radical resection with negative (R0) margins is traditionally preferred, this case highlights the viability of marginal resection when achieving clear margins would significantly impair function or structure. For large abdominal wall desmoid tumors during pregnancy, marginal resection with positive (R1) margins may be a viable alternative to radical resection with negative (R0) margins.

### Contributors

Riku Watanabe contributed to patient care and drafting the manuscript.

Hiroki Shinmura contributed to patient care, conception of the case report and revising the article critically for important intellectual content.

Yasuyuki Yokoyama contributed to patient care and revising the article critically for important intellectual content.

Takashi Matsushima contributed to patient care and revising the article critically for important intellectual content.

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### Patient consent

Written informed consent was obtained from the patient for

**Table 1**

Cases of pregnancy-related abdominal desmoid tumors reported in the literature.

Reference	Patient Age (Years)	Parity	Time at Diagnosis	Initial tumor size (cm)	Tumor size at treatment (cm)	Mass location	Time of treatment	Treatment	Surgical margin	Mode of delivery	Recurrence
Current case	36	1	33yo	13.4*7.4	22*12*10	abdominal wall	GA17	marginal resection	positive	NVD (GA38)	no recurrence DT remained stable in size
Zubor et al., 2024 [4]	29	1	before pregnancy	8.8*4.8*15.3	10.5*6.2*17.5	abdominal wall	NA	AS	NA	CS (GA38)	no recurrence 7mo
Stemmer et al., 2024 [5]	28	1	GA25	0.9*1.7*1.4	3.0*2.5*3.0	abdominal wall	GA25	resection (radical or marginal unknown)	positive	NVD at full term	no recurrence 7mo
Sulaiman et al., 2022 [3]	late 20s	1	GA13	4*7*10	15*12	abdominal wall	postpartum	AS during pregnancy, surgical postpartum	NA	CS (GA34)	NA
Fujita et al., 2021 [6]	30	1	GA12	5.6*3.9	9	abdominal wall	GA17	marginal resection	positive	CS (GA38)	no recurrence 15mo
Fujinaga et al., 2017 [7]	29	1	9th month of pregnancy	NA	9.5	abdominal wall	postpartum	NA	NA	NVD (10mo)	no recurrence 9mo
Takano et al., 2017 [8]	30	2	GA20	NA	15*10	abdominal wall	postpartum	NA	negative	NVD (GA37)	NA
Manago et al., 2017 [9]	34	0	GA5	3*4	8*10	abdominal wall	postpartum	radical resection	negative	NA	no recurrence 3y
Palacios-Fuenmayor et al., 2017 [10]	28	0	GS5	11*15*18	30*24*6	abdominal wall	postpartum	radical resection	NA	CS (GA39)	NA
Hirano et al., 2016 [11]	31	1	GA8	8*7*5	4*10*12	abdominal wall	GA16	marginal resection	NA	CS (GA37)	NA
Zhou et al., 2015 [12]	31	1	GA34	12*15	35*35*14	abdominal wall	during CS	NA	NA	CS (GA35)	no recurrence 44mo
Leon et al., 2015 [13]	24	0	GA23	11.7*12.3*17	19.5*10.8*13.3	abdominal wall	postpartum	AS	NA	CS (GA38)	NA
Shibuya et al., 2013 [14]	36	2	GA27	4*2.5	5.7*2.5*5.0	abdominal wall	during CS	radical resection	NA	CS (GA37)	no recurrence 6mo
Tadakawa et al., 2013 [15]	38	1	GA16	5.2*3.2*4.2	6.9*5.5*5.4	abdominal wall	GA17	marginal resection	positive	CS (GA37)	no recurrence 1y4mo
Kitamura et al., 2012 [16]	38	1	GA14	NA	4	abdominal wall	GA17	marginal resection	positive	CS (GA37)	no recurrence
Awad et al., 2012 [17]	40	1	GA20	NA	12*9.5*7	abdominal wall	during CS	radical resection	NA	CS	no recurrence 3y
Michopoulou et al., 2010 [18]	37	1	GA16	3*2	20*16	abdominal wall	postpartum	radical resection	NA	CS (GA38)	no recurrence 2 y
Viriyaroj et al., 2009 [19]	17	1	5th month of pregnancy first trimester or pregnancy	NA	28*21*18	abdominal wall	postpartum	radical resection	NA	CS	no recurrence 8mo
Durkin et al., 2005 [20]	29	1		3.5*7.2	18.5*15*9	abdominal wall	GA22	radical resection	negative	NVD (GA39)	no recurrence 2.5y

GA - gestational age, CS - caesarian section, NVD - normal vaginal delivery, AS - active surveillance.

publication of this case report and accompanying images.

*Provenance and peer review*

This article was not commissioned and was peer reviewed.

*Conflict of interest statement*

The authors declare that they have no conflict of interest regarding the publication of this case report.

**References**

- [1] V. Ravi, Desmoid Tumors: Epidemiology, Molecular Pathogenesis, Clinical Presentation, and Diagnosis, UpToDate, <https://www.uptodate.com>, 2022. Accessed November 15, 2023.
- [2] C. D Drabbe, W.T.A. Van der Graaf, O. Husson, J.J. Bonenkamp, C. Verhoef, W. J. van Houdt, Pregnancy-associated desmoid fibromatosis: a Dutch multi-centre retrospective study, Eur. J. Surg. Oncol. 49 (5) (2023) 921–927, <https://doi.org/10.1016/j.ejso.2022.11.009>.
- [3] N. Mohd Sulaiman, F. Mohd Dali, M.S.B. Mohd Hussain, R. Ramli, Abdominal wall desmoid tumour in pregnancy, BMJ Case Rep. 15 (6) (2022) e249966. Published 2022 Jun 16, <https://doi.org/10.1136/bcr-2022-249966>.

- [4] P. Zubor, C.M. Henriksen, M.E. Økstad, et al., Desmoid fibromatosis of the anterior abdominal wall in pregnancy: a case report and review of the literature, *Diseases* 12 (1) (2024) 27. Published 2024 January 17, <https://doi.org/10.3390/diseases12010027>.
- [5] S.M. Stemmer, C. Gomes, E.H. Cardonick, A case of painful growing abdominal wall mass during pregnancy requiring resection in the second trimester, *Case Rep. Obstet. Gynecol.* 2024 (2024) 5881260. Published 2024 January 8, <https://doi.org/10.1155/2024/5881260>.
- [6] M. Fujita, M. Yamamoto, Y. Kaizaki, M. Kato, T. Tsuchida, Treatment of a desmoid tumor that enlarged during pregnancy: a case report and literature review, *Kurume Med. J.* 69 (1.2) (2023) 99–102, <https://doi.org/10.2739/kurumemedj.MS6912004>.
- [7] M. Fujinaga, T. Shono, A case of abdominal wall desmoid tumor that grew during pregnancy, *Nishinihon J. Dermatol.* 79 (5) (2017) 512.
- [8] Y. Takano, Y. Hara, S. Daikyo, A case of abdominal wall desmoid tumor that grew due to pregnancy and childbirth, *J. Jpn. Surg. Assoc.* 78 (2017) 767.
- [9] E. Manago, K. Kuwae, H. Oshima, The treatment of abdominal Desmoid tumors in young women, *J. Jpn. Soc. Plast. Reconstruct. Surg.* 37 (3) (2017) 147–153.
- [10] L.J. Palacios-Fuenmayor, A.M. Naranjo-Isaza, O. Fuentes, et al., Intraabdominal desmoid tumor. Clinical clinical case and literature review. Tumor desmoide intraabdominal. Presentación de caso clínico y revisión de la literatura, *Cir. Cir.* 88 (3) (2020) 361–365, <https://doi.org/10.24875/CIRU.19001011>.
- [11] T. Hirano, M. Tsuchiya, D. Suzuki, A case of abdominal wall desmoid tumor that rapidly grew during pregnancy, *Tochigi Obstet. Gynecol. Rep.* (2016) 42.
- [12] M.Y. Zhou, N.Q. Bui, G.W. Charville, P. Ghanouni, K.N. Ganjoo, Current management and recent progress in desmoid tumors, *Cancer Treat Res. Commun.* 31 (2022) 100562, <https://doi.org/10.1016/j.ctarc.2022.100562>.
- [13] M.G. Leon, H.N. Moussa, M. Movahedian, O.A. Viteri, M. Longo, B.M. Sibai, A rapidly growing abdominal mass: desmoid tumor in pregnancy, *AJP Rep.* 5 (1) (2015) e14–e17, <https://doi.org/10.1055/s-0034-1396028>.
- [14] F. Shibuya, E. Hirano, Y. Suminami, A case of abdominal wall desmoids that increased during pregnancy, *Modern Trends Obstet. Gynecol.* 61 (2) (2013) 157–161.
- [15] M. Tadakawa, A case of abdominal wall desmoid tumor removal during pregnancy resulting in full-term delivery, *J. Jpn. Soc. Perinatal Neonatal Med.* 49 (1) (2013) 369–373.
- [16] M. Kitamura, H. Nishigouri, J. Sugawara, A case of abdominal wall desmoid tumor removal during pregnancy resulting in full-term delivery, *J. Jpn. Soc. Perinatal Neonatal Med.* 48 (2) (2012) 559.
- [17] J. Awwad, N. Hammoud, C. Farra, F. Fares, G. Abi Saad, G. Ghazeeri, Abdominal wall desmoid during pregnancy: diagnostic challenges, *Case Rep. Obstet. Gynecol.* 2013 (2013) 350894, <https://doi.org/10.1155/2013/350894>.
- [18] A. Michopoulou, S. Germanos, D. Kanakopoulos, Management of a large abdominal wall desmoid tumor during pregnancy, *Ann. Ital. Chir.* 81 (2010) 153–156.
- [19] V. Viriyaraj, N. Yingsakmongkol, P. Pasukdee, N. Rermuk, A large abdominal desmoid tumor associated with pregnancy, *J. Med. Assoc. Thail.* 92 (Suppl. 3) (2009) S72–S75.
- [20] A.J. Durkin, D.P. Korkolis, O. Al-Saif, E.E. Zervos, Full-term gestation and transvaginal delivery after wide resection of an abdominal desmoid tumor during pregnancy, *J. Surg. Oncol.* 89 (2) (2005) 86–90, <https://doi.org/10.1002/jso.20189>.