

Functional and Aesthetic Thorax Reconstruction after Desmoid Tumor Resection

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Summary: This study describes a case report of a 31-year-old patient who presented with a left thoracic tumor on costal cartilages 5 and 6 that was diagnosed as a desmoid tumor 3 years after receiving retropectoral breast implants for cosmetic reasons. The integral reconstruction of the thoracic wall, functional and aesthetic, was planned for a single surgical period. The defect secondary to the tumor resection, which left the pericardium and lung exposed, was closed using the pectoral muscle as a “pre-expanded” flap by the breast implant, and the breast aesthetic was treated bilaterally with new implants in the retromammary position. After 12 months, the patient remained free from tumor recurrence and had a satisfactory aesthetic result. (*Plast Reconstr Surg Glob Open* 2017;5:e1248; doi: 10.1097/GOX.0000000000001248; Published online 22 February 2017.)

En bloc resection of thoracic wall tumors represents a surgical challenge; ventilatory instability, secondary deformity, and infections are complications that may arise. The reconstruction is usually performed with flaps and according to the location and size of the defect. Furthermore, it may require alloplastic material (synthetic mesh or polymethacrylate plates) and rigid fixation to avoid paradoxical respiration.^{1,2}

If these tumor resections occur in patients who have additionally received breast implants for cosmetic reasons, the surgical treatment should also address the aesthetic appearance.

In this report, the case of a 31-year-old female patient is presented, in whom retropectoral breast implants had been placed and who presented with a thoracic tumor 3 years later, with a hard consistency, located in the left hemithorax, on costal cartilages 5 and 6. This tumor caused deformity and pain and was diagnosed as a desmoid tumor.

She was treated surgically with en bloc resection of the tumor, reconstruction of the thoracic wall using the pectoralis muscle “pre-expanded” by the breast implant, and placement of new breast implants in the retroglanular position.

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CASE REPORT

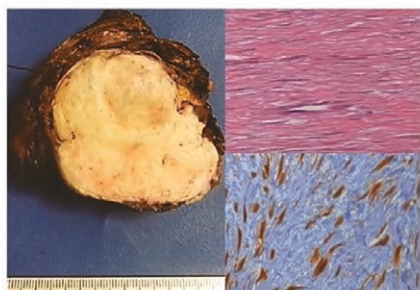
This case is a 31-year-old female patient who had received breast implants for cosmetic reasons (310g, textured, round, moderate profile) in the retropectoral position. Three years after the surgery, the patient noticed increased thoracic volume in the left hemithorax on costal cartilages 5 and 6, of petrous consistency, painful upon palpation, and that caused thoracic deformity. She went to another institution where a biopsy was performed, which was reported as a desmoid tumor.

In the physical examination, the thoracic deformity was evident, displacing the left breast implant laterally. Moreover, the breast implants, which had previously been placed in the retropectoral position, were located in a high position, and the breasts presented light glandular ptosis. The thoracic CT showed a solid mass of previous growth on costal cartilages 5 and 6, compressing the breast implant, distorting and displacing it superolaterally. The tumor did not infiltrate the thoracic cavity, although it was in contact with the parietal pleura. (See **video, Supplemental Digital Content 1**, which displays the CT scan and preoperative clinical images. This video is available in the “Related Videos” section of the Full-Text article on PRSGlobalOpen.com, <http://links.lww.com/PRSGO/A384>.)

She underwent surgery to extirpate the tumor and perform the integral thoracic reconstruction, namely, the thoracic wall and breast aesthetics.

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Supplemental digital content is available for this article. Clickable URL citations appear in the text.



Video

Video Graphic 1. See video, Supplemental Digital Content 1, which displays the CT scan and preoperative clinical images. This video is available in the "Related Videos" section of the Full-Text article on PRSGlobalOpen.com, <http://links.lww.com/PRSGO/A384>.

SURGICAL TECHNIQUE

Through an incision in the inframammary sulcus, which was deepened to the lower edge of the pectoralis major and its junction with the anterior rectus abdominis, the breast implant capsule was opened and withdrawn. It was whole, and the desmoid tumor was removed en bloc, leaving a defect that measured 7.5×6.5 cm.

This resection left the lung and the pericardium exposed in the thoracic cavity, but no hemithorax instability was evident when performing Valsalva maneuvers.

The pectoral muscle, "pre-expanded" by the breast implant, was separated from the anterior rectus at its lower edge and its medial edge up to 5 cm superiorly.

The upper edge of the anterior rectus was dissected inferiorly to 3 cm and then sutured to the pectoral, which was advanced inferomedially, closing the thoracic defect. The implant capsule, formed by the retromuscular breast implant, was explored without finding any visible pathology. It was firmly adhered to the tissues, not contractile, and left in place without sectioning. A biopsy was taken for

histopathological study, which did not show malignancy. The capsule stabilized the muscle flap and provided a tissue interface between the flap and the intrathoracic viscera (Fig. 1).

The sealing of the muscle union was ascertained, and we proceeded to remove the right breast implant through an inframammary incision.

Retromammary pouches were created bilaterally, and new implants were put in place (295 g, round, textured, moderate profile).

A pleural tube was left in the left thorax in addition to drainage for the retroglandular implants in both breasts. Antimicrobials (cephalosporins) and analgesics, as well as life support, were employed postoperatively.

The postoperative evolution proceeded without incident, the pleural tube was removed at 4 days, and the patient was discharged. The postoperative clinical results and the radiographic studies at 12 months showed no local recurrence of the tumor. (See video, Supplemental Digital Content 1, available in the "Related Videos" section of the Full-Text article on PRSGlobalOpen.com, <http://links.lww.com/PRSGO/A384>.)

DISCUSSION

Desmoid tumors are rare and account for approximately 3% of soft-tissue tumors. They have an incidence of 2 to 4 cases per 1 million individuals in the general population. Additionally, 5% to 15% of these tumors are associated with familial adenomatous polyposis (Gardner syndrome).³ Desmoid tumors can originate anywhere in the body but are most common in the trunk and extremities.⁴

Although they do not metastasize, desmoid tumors are locally aggressive lesions with a high degree of recurrence, even after they have been completely resected.⁵⁻⁷ Moreover, their etiology is unknown. Recently, a connection has been mentioned between the cicatrization process and fibroproliferative disorders of the mesenchymal tissue because chromosomal cloning has been identified in des-

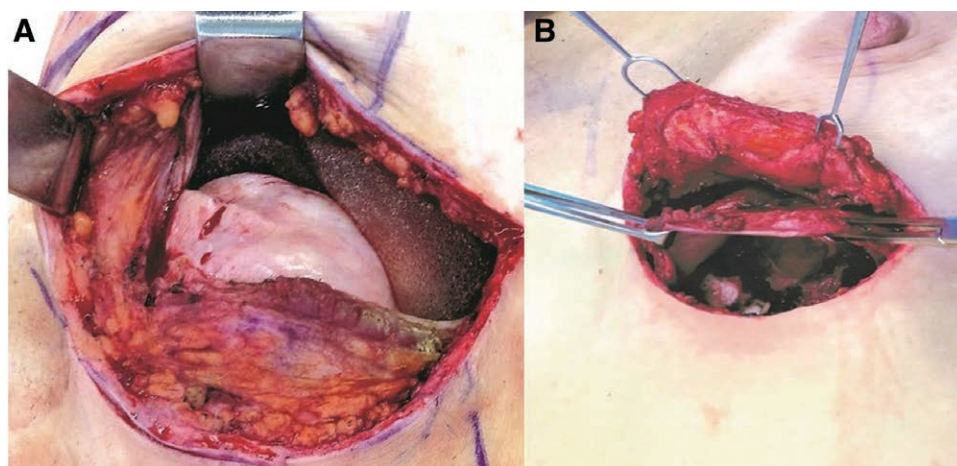


Fig. 1. Intraoperative images. A, Desmoid tumor on chest wall, the pectoralis major is under retractor, and the mammary implant is compressed by the tumor. B, Tumor resected, the pericardium is visible, and the "pre-expanded" pectoralis major with its implant capsula was advanced to close the defect.

moids and a relationship has been found with mutations in the gene for beta-catenin in up to 85% of cases.^{8,9} In this patient, the histopathological studies, H&E, and immunohistochemistry confirmed the diagnosis of desmoid tumor without evidence of malignancy. (See video, Supplemental Digital Content 1, available in the “Related Videos” section of the Full-Text article on PRSGlobalOpen.com, <http://links.lww.com/PRSGO/A384>.)

A computed axial tomography scan defines the tumor invasion, and a biopsy helps to distinguish between benign and malignant processes.

Because the range of recurrence is close to 30%, patients with desmoid tumors should be monitored long-term.

The recommended surgical treatment is en bloc resection with negative margins. Skeletal defect, according to its size and location, requires flap reconstruction plus an interface between the flap and the thoracic viscera, such as synthetic mesh or methyl methacrylate, and in some cases intercostal rigid fixation to avoid paradoxical respiration.²

In this case, after the wide resection of the tumor, a surgical treatment oriented to integral thoracic reconstruction was performed. In the reconstructive aspect, the “expansion” of the pectoralis major, given by the previous breast implant, permitted its medial inferior decrease with minimal dissection and without tension, plus the implant capsule served as a tissue interface between the flap and the thoracic cavity; thus, no synthetic material was placed when closing the defect secondary to the tumor resection, without air leaks or thoracic deformity.

Consequently, with the placement of the new implants in the retroglanular position, the aesthetics of the breasts were improved, thus achieving an integral aspect of the thoracic reconstruction. After 12 months, the patient remains free from local recurrence and has a satisfactory aesthetic result. (See video, Supplemental Digital Content 1, available in the “Related Videos” section of the Full-

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