



Excision of Giant Juvenile Fibroadenoma through Circumareolar Incision

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Abstract

Fibroadenomas account for approximately 5% of breast tumors. Giant juvenile fibroadenoma is a classification of tumors that measure greater than 5 cm in diameter, 500 g in mass, or replace 80% of the breast tissue volume. Typically, giant juvenile fibroadenomas occur in young females in the second and third decades of life. These tumors do not generally progress to malignancy. However, they can cause pain, grow rapidly, and result in asymmetry. Given the importance of cosmesis in breast surgery, particularly in younger populations, we explored a surgical technique to excise a large breast lesion while achieving a cosmetic result. This case involved a 23-year-old female who presented with a large palpable right breast mass. Magnetic Resonance Imaging (MRI) of the breast demonstrated a 12.1 cm × 7.5 cm × 6.3 cm mass centered in the lateral aspect of the right breast that was characteristic of a fibroadenoma. Using a circumareolar incision, we were able to excise the mass completely with excellent cosmetic results. Over the next 18 months we followed the patient to observe the cosmetic results through this healing period. This case demonstrates a surgical technique to remove large, benign lesions while maintaining cosmesis.

Introduction

Giant juvenile fibroadenoma is defined as a fibroadenoma larger than 5 cm in diameter, 500 g in mass, or replace 80% of the breast tissue volume. Fibroadenomas account for 75% of breast tumors in young females [1], and of these 0.5% to 2% can be classified as giant juvenile fibroadenomas [2]. They primarily occur in females in the second to third decade of life [3]. Juvenile fibroadenoma is the most common breast tumor in young women. This type of tumor typically presents as a unilaterally enlarged, firm and painless mass [4]. Many are associated with changes due to rapid tumor growth that can cause compression of the skin, despite the fact that these tumors do not typically adhere to the skin or invade nearby structures [4]. They are benign and simple enucleation is considered curative. Many techniques have been described for the excision of breast lesions. For this case we elected to perform a circumareolar incision to achieve cosmesis allowing for removal of a large tumor.

Case Presentation

This patient is a 23-year-old female who presented to the surgeon's office with a palpable right breast abnormality that had progressively enlarged over the prior year. At the time of presentation, the mass replaced most of the native breast tissue. Ultrasound demonstrated a 6 cm oval mass at the nine o'clock position in the right breast. It was isoechoic on ultrasound and appeared to be a fibroadenoma, although some characteristics were suspicious for malignancy. Follow up MRI of the breast demonstrated a 12.1 cm × 7.5 cm × 6.3 cm mass centered in the lateral aspect of the right breast, consistent with fibroadenoma (Figure 1). The mass was further evaluated with ultrasound guided biopsy for definitive diagnosis. Final pathology revealed tissue consistent with a benign fibroadenoma. The patient presented for excision and a 340 g; 11 cm × 10 cm × 6 cm mass was removed through a circumareolar incision (Figure 2, 3). It was easily dissected free from surrounding normal breast tissue using blunt dissection. Postoperatively, the patient was followed in office over an 18-month period. Photographs were taken to document the cosmetic results (Figure 4).

Discussion

Giant juvenile fibroadenomas primarily occur in females in the second to third decade of life. These are speculated to be caused by breast tissue hypersensitivity to normal circulating hormone levels [3]. The differential diagnosis of these masses includes fibrocystic mass, lipoma, giant hamartoma, cystosarcoma, phyllodes, and malignancy [4]. It is important to obtain a preoperative

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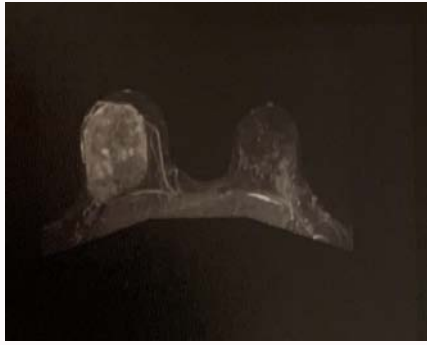


Figure 1: MRI showing 12.1 cm x 7.5 cm x 6.3 cm mass centered in the lateral aspect of the right breast, consistent with fibroadenoma.

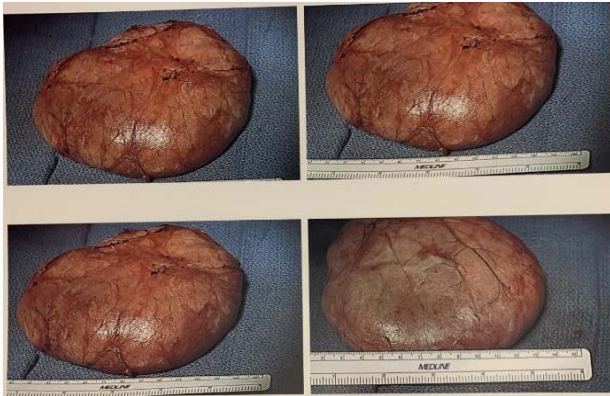


Figure 2: Demonstrates the smooth contour and pseudocapsule of the fibroadenoma. It was excised in one piece without disruption of the capsule, and was well demarcated from surrounding breast tissue.

biopsy of any adolescent breast lesion to rule out phyllodes tumor and carcinoma [2]. Phyllodes tumors and fibroadenomas both arise from intralobular fibrous tissue, and the histology of the early benign phyllodes tumor and fibroadenoma are difficult to differentiate even by core biopsy [5]. Phyllodes tumors can be differentiated based on a leaf-like growth pattern, cellular atypia, increased mitotic rate, pleomorphism, and infiltration of surrounding breast tissue [6]. It is important to make this distinction in diagnosis because the extent of resection required dictates operative approach, and subsequently, the cosmetic outcome in these young patients.

As giant juvenile fibroadenoma tumors are benign, simple enucleation is considered curative. Many techniques have been previously described for the excision of large breast lesions. An ellipse incision can be used to access nearly any area of the breast [7]. These can usually be hidden adequately along skin lines. The lower breast can be addressed using a triangle or trapezoid mastopexy for correction of ptosis or via the inframammary crease, which does not change the shape of the breast [8]. Other incisions that have been described include the donut incision, which entirely encircles the areola with excision of a donut-shaped circle of skin. This approach does denervate the nipple areolar complex, but it preserves the vascular pedicle to the nipple [9].

In this case report we focus on the circumareolar incision. This is more easily hidden along the edge of the areola and enables access to the entire breast. The circumareolar incision provides access to the superior breast with less disruption of breast tissue when compared



Figure 3: Shows the circumareolar incision, mass being removed through the incision and after closure of the incision.

to the inframammary incision [10,11]. In fact, this option allows good access to the entire breast with a well-hidden scar [12]. The crescent incision is an adaptation that follows the upper border of the areola and is used to correct breast ptosis. A batwing or Hemibatwing incision allows greater access when the areola is small or the lesion is too large to excise through a crescent incision [8,9].

Another important element of the case presented is the use of blunt dissection to free the mass of surrounding tissue. Surgeons must consider the stage of breast development when operating on younger populations. Blunt dissection can prevent disruption of developing breast tissue [13]. In the young or small breast, it is difficult to hide an inframammary incision. It is also important to note an increased incidence of fibroadenoma in the African American population. These patients are at higher risk for keloid and hypertrophic scar formation [7]. Through a small circumareolar incision, large fibroadenomas can be excised using a Swiss-roll technique with repeated oblique incision of tissue surrounding the mass and rotation of the specimen until it is entirely outside of the incision [10].

Other specific considerations apply following resection of these breast masses [10,11]. We recommend that drains not be placed at the time of surgery. Giant juvenile fibroadenomas can grow very large and cause significant breast deformity, but the breast usually returns to symmetry with the contralateral breast once the tumor is removed. It is important to delay reconstruction and further surgeries in this young age group since the immature breast will continue to remodel once the tumor is removed. Primary closure of the evacuated cavity with drainage suction can produce unnatural breast deformity that may be permanent. Other options for improved cosmesis include the placement of an implant or a tissue expander at the time of excision of the tumor [14]. If a tissue expander is placed, it can be gradually deflated and removed at subsequent surgery to facilitate healing and natural skin shrinkage [15]. In the case of a patient who continues to experience asymmetry, pain, or new masses, reconstruction or re-excision should be considered [16].

Exceptions to the less invasive, cosmetically-oriented approach described here include masses that grow rapidly, causing overlying skin ulceration due to pressure. Disruption of the skin, although not adherent to the tumor, may impede the minimally invasive approach described above. Alternate surgery must be considered in order to repair large defects or considerably deformed breasts. This approach is most helpful in younger patients, in whom further breast



Figure 4: Serial photographs showing preoperative photographs showing asymmetry of right breast. Followed by 6 and 18 month follow up to document cosmetic outcome of the procedure.

development and remodeling can be expected over time. In older women, correction of ptosis and loose skin may require alternate surgical techniques. Finally, each patient's individual priorities and risk profile should be considered when selecting a surgical approach.

Conclusion

Important considerations in adolescent patients presenting with giant juvenile fibroadenomas include cosmesis and conservation of breast tissue. These tumors are benign and simple enucleation is considered curative. A circumareolar incision provides a small, less visible scar. Stretching of the areolar surface area caused by these giant tumors allows a longer incision which will contract well postoperatively for a smaller scar. There is a low risk of recurrence with enucleation of the tumor, and blunt dissection through a small incision can help to prevent disruption of developing breast tissue. Finally, we advocate a conservative resection for these tumors as simple excision is curative. Generally, further reconstruction or augmentation is not required to achieve symmetry following this procedure.

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