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GIANT UNILATERAL BREAST JUVENILE FIBROADENOMA – THE AESTHETIC OUTCOME OF SURGICAL TREATMENT SHOULD BE CONSIDERED

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INTRODUCTION

Fibroadenomas are among the most common breast lesions, particularly in young women (Townsend et al. 2001). Approximately 90% of fibroadenomas are unilateral (Park et al. 2006). They are benign lesions with epithelial and stroma components and are not considered to have malignant potential. However, because they contain epithelium, a risk of neoplasia exists. The risk of a breast carcinoma occurring within a fibroadenoma is about 0.3% or less (Ozello & Gump 1985). Multiple or complex fibroadenomas also may indicate a slightly increased risk for breast cancer. The relative risk of patients with such fibroadenomas is approximately twice that of patients of similar age without fibroadenomas (Ozello & Gump 1985).

Most breast fibroadenomas stop growing after they reach 2-3 cm. They may involute in postmenopausal women, and coarse calcifications may develop (Ozello & Gump 1985). Conversely, fibroadenomas may grow rapidly during pregnancy, during hormone replacement therapy, or during immunosuppression, in which case they can simulate malignancy.

Spot compression mammogram of the outer part of the breast demonstrates a new mass as smooth, margined, and oval (Figure 1). The findings are consistent with a fibroadenoma, a cyst, or a malignancy. In this patient, the diagnosis was a rapidly growing fibroadenoma.

Fibroadenoma variants include juvenile fibroadenomas, occurring in female adolescents, and myxoid fibroadenomas, occurring in persons with Carney complex. Carney complex is an autosomal dominant neoplasia syndrome that includes skin and mucosal lesions, myxomas, and endocrine disorders (Zahedi et al. 2006).

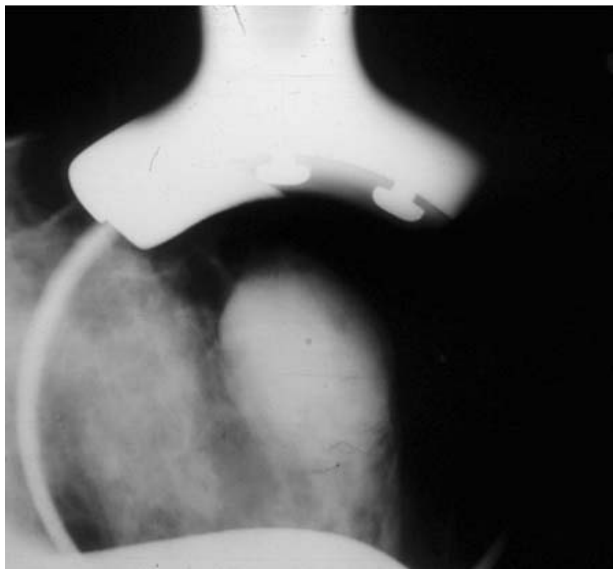

Figure 1. Mammogram

In a review of the literature since the 1960s of breast masses in adolescence, fibroadenomas constituted 30-50% of breast masses in medical series and 44-94% in surgical series (Jayasinghe & Simmons 2009). Discovery of a breast mass in an adolescent may raise fears in the patient or her family of malignancy, but it can also cause concerns about breast development and body image.

Most common type of fibroadenomas seen in adolescent women are simple/typical ones. But, typical for the adolescent period are giant fibroadenomas that account for 0.5-2% of all fibroadenomas and are the most common cause of unilateral macromastia and breast asymmetry (Dolmans et al. 2007). Although they are not a distinct entity in World Health Organization breast classification, they are defined as any fibroadenoma over 500 g, of greater than 5-10 cm, or replacing at least

four fifths of the breast and can double in size in 3-6 months (Wolfram et al. 2009). Because of their increased size and vascularity, these lesions can compress adjacent tissue, distort lobular architecture and create skin stretching, enlarged nipple-areola diameter, distended veins, ulceration and inflammatory signs. It is postulated that growth may be due to end-organ hypersensitivity to gonadal hormones. The differential diagnosis includes fibrocystic change, lipomas, hamartomas, juvenile hypertrophy, phyllodes tumor and inflammatory processes.

Diagnostic modalities for breast fibroadenoma include: history, physical examination and radiology evaluation. Mammography in patients younger than 35 years is less informative because of the increased density of the normal breast tissue. Ultrasound is felt to be ideal imaging method for differentiating the common breast diseases in adolescent age group. Unfortunately sonographic distinction of juvenile fibroadenoma and phyllodes tumor with malignant potential is uncertain. Magnetic resonance, tough expensive, is useful in evaluation of the breast masses since it allows the exact evaluation of size and location and is able to differentiate vascular lesions from normal breast tissue. However, final diagnosis is to be confirmed after surgical core biopsy.

Despite the lack of malignant potential, surgical treatment of these lesions is indicated when the mass effect leads to skin ulceration, musculoskeletal effects (back pain), or significant psychological trauma. This approach is, however, associated with scaring and contour deformities of the breast. Therefore, respectful surgical approach from the aesthetic point of view is important.

CASE REPORT

We present the case of a 16 years old girl with massive enlargement of her left breast within a period of six month, compared to the normal-sized contra-lateral breast. The skin of the enlarged breast appeared stretched with some dilated superficial veins (Figure 2). Palpation reveals smooth, rubbery, mobile and well circumscribed large mass of the left breast. Axillary and supraclavicular lymph nodes were negative on palpation and no galactorrhea could be demonstrated. Ultrasound scan demonstrated large well circumscribed iso/hypoechoic homogeneous left breast mass, with some posterior acoustic transmission. An incision biopsy reported a giant fibroadenoma.

After inverted “T” incision a reduction mammaplasty technique of the left breast was preformed to remove the tumor. Glandular tissue and nipple-areola complex were relocated to achieve symmetry with contra-lateral breast (Figure 3).

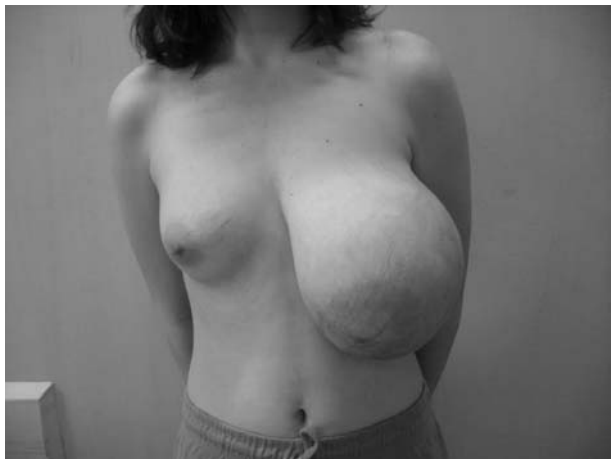

Figure 2. Preoperative presentation of a giant juvenile fibroadenoma of the left breast

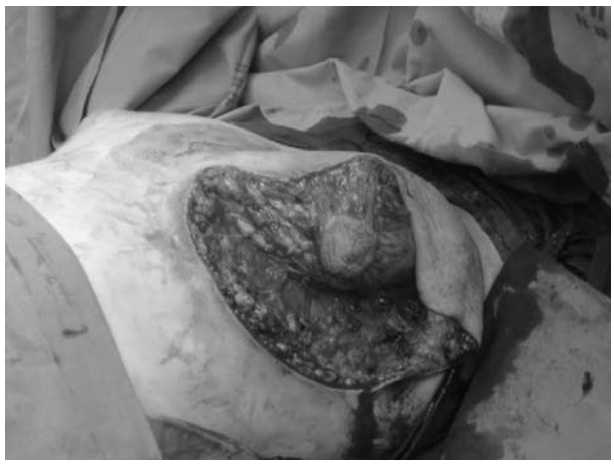

Figure 3. Intraoperative glandular tissue and nipple-areola complex relocation

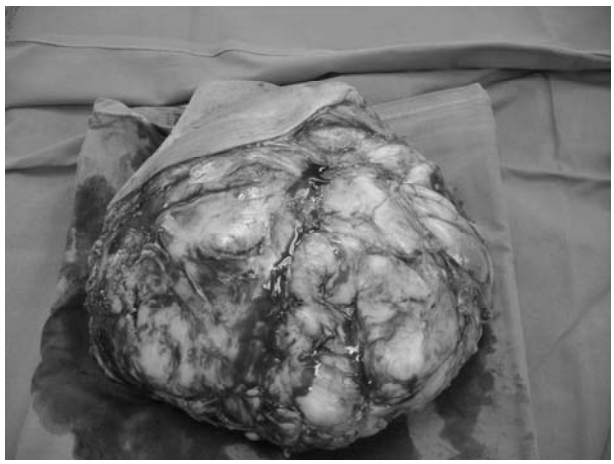

Figure 4. Excision giant juvenile fibroadenoma specimen

The tumor mass size was 20 cm x 20 cm x 15 cm and 1700 g of weight. It was yellow-brownish meat consistency tumor (Figure 4). Histologically, tumor mass was described as glandular ductal systems surrounded by fibro-connective and lipoid stroma. No mitotic activities of stromal cells were present and

there were no cells atypia and no infiltration of surrounding breast tissue (Figure 5).

The postoperative course was with no complications. The drain was removed on the first postoperative day and patient was discharged from hospital on the third postoperative day. A planned and satisfactory aesthetic outcome was achieved (Figure 6). The patient and her parents informed consent was obtained for case report publishing, as well as approval of institution Ethics Committee.

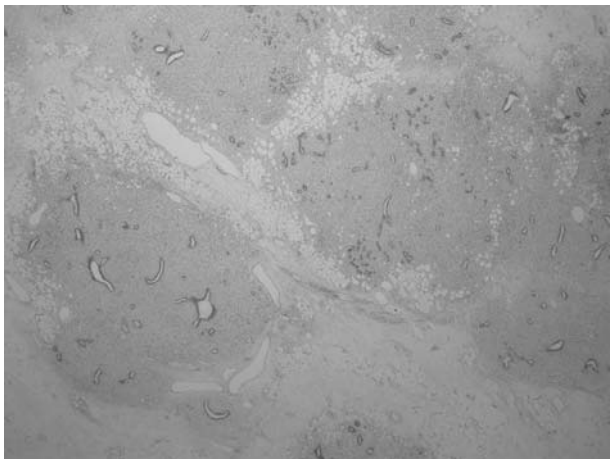

Figure 5. Patohistological presentation of giant juvenile fibroadenoma specimen (hemalaun-eosin 20x)

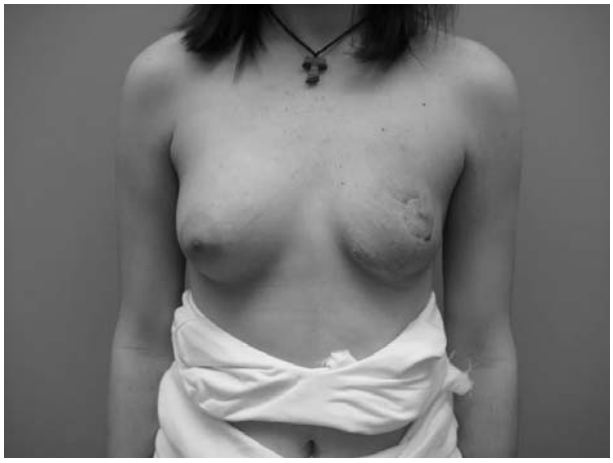

Figure 6. Postoperative result from inverted "T" incision, excision and relocation of gandular tissue and nipple-areola complex two months after the surgery

DISCUSSION

Since a respectful and communicative approach is a key component of care of a adolescent woman with a large breast mass, in most cases, it is appropriate for parents to be included in the decision making process. Any concerns regarding abnormal development or possible malignancy should be carefully explored. When malignancies are ruled out with giant fibroadenoma diagnosis, complete excision of the lesion with a thin rim of normal breast tissue is the most common operative treatment.

Approach to the tumor mass should be with minimal dissection through the ducts and lobules preserving the ability of the breast tissue to continue to develop and to preserve the ability to lactate later in life. Also, surgical technique emphasizing minimal thermal injury to the breast helps prevent injury to the developing breast tissue (Kozomara et al. 2010). Sensitive approach to the cosmetic aspect of the breast incision is also important in this group of young patients.

Reported approaches include inverted "T" incisions, inframammary and periareolar approach (Yamamoto & Sugihara 1998, Biggers 2009). The inverted "T" incision provides excellent exposure for removal of any breast mass, also allowing breast reduction or mastopexy. On the other hand it is associated with major scaring comparing to the other mentioned approaches, but acceptable to the patients if indications are properly discussed preoperatively. Inframammary approach provides good exposure for removal of the tumor, but violates the inferior pedicle and limit the correction of additional deformities. The periareolar incision is simple and leaves the least visible scar. Unfortunately, it is associated with loss of the sensation of the nipple-areola complex (Park et al. 2006).

It has been reported that there is no breast hypertrophy in standard cases of giant fibroadenoma and that compressed glandular tissue will expand to fill in part of surgical void and reestablish the shape of the breast (Jacob 2000). So, in most of the cases after enucleation of the fibroadenoma no additional procedures or simple mastopexy will be required. Sometimes, due to disposition of nipple-areola complex, these procedures must be accompanied with its repositioning, as it was in case that we reported. The use of tissue expander after removal of a giant breast tumor with gradual reduction to a desired size have been described, offering the benefit of permanent adjustment of the size while allowing tissue to reestablish natural shape and size (Kamie & Torii 2000). Mostly the later exchange of the expander with implant is necessary, unless there were no complications in with expander (Adkinson et al. 2015).

If, after removal of the mass a patient has persistent hypertrophy, reduction mammaplasty will be necessary. Augmentations of contra-lateral breast are described in these cases, too (Dolmans et al. 2007). If, after resection of large giant fibroadenoma masses remaining breast parenchyma is hypoplastic to contra-lateral breast, a breast reconstruction with prosthesis implant will be appropriate. So, versatility exists using various pedicles and skin patterns or prosthesis to reconstruct all breast shapes and defect locations (Losten et al. 2007).

Mastectomy in the therapy of fibroadenoma is not recommended and should be reserved for cases of recurrent giant fibroadenoma. If mastectomy is com-

pleted, the young patients should be offered breast reconstruction in order to minimize psychological trauma. The reconstruction can be preformed with prosthesis or autologous tissue reconstruction.

CONCLUSIONS

Since each patient presents with different breast features, it is difficult to establish a standard treatment for all giant breast fibroadenomas. Therefore, it is important to use the best judgment in order to determine the specific approach for each individual patient, always taking into consideration the vulnerable psychological status of adolescent women. Often relatively simple procedures, if carefully planned, result in satisfactory aesthetic outcome as they did in this case report.

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Contribution of individual authors:

All authors have made substantial contributions to the conception of the article. Davorin Kozomara wrote the first draft and gave definition of important intellectual content. Nikica Šutalo gave part in manuscript design and revision of intellectual concept. Gordan Galić have given final approval of the version to be published. Sanja Jurišić gave part in literature based data acquisition and analysis. Zoran Trninić participated in literature searches and interpretation of data.

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