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CASE REPORT

Juvenile Gigantomastia in a 12-Year-Old Girl: A Case Report

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Abstract Juvenile gigantomastia is a rare, massive breast enlargement. It appears in adolescence and can affect one or both breasts of otherwise healthy girls. This report describes a case of a bilateral and symmetric gigantomastia in a 12-year-old girl.

Keywords Juvenile · Gigantomastia · Macromastia · Reduction mammaplasty

Juvenile gigantomastia is a rare, massive enlargement of one or both breasts in otherwise healthy adolescent girls. The etiology of this disorder remains unclear [1]. The exact diagnosis is established after other causes of gigantomastia have been excluded. Many surgical techniques have been performed to date, but the optimal surgical technique for reduction mammoplasty to manage gigantomastia remains controversial [2, 3]. We report a 12-year old girl with bilateral and symmetric gigantomastia who was treated successfully using a modified Pitanguy reduction mammoplasty.

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Case Report

A 12-year-old girl from the Philippines weighing 45 kg was referred to the plastic surgery department due to progressive, massive, bilateral, and symmetric breast enlargement during a 10-month period consistent with juvenile gigantomastia (Fig. 1). The girl had no family history of gigantomastia and was otherwise healthy. She was not receiving any drugs. Her blood count examinations were normal as were her hormonal tests of the hypothalamic-hypophysial axon. A pregnancy test was negative.

Urine 17-ketosteroid and 17-hydroxysteroid exhibited normal levels. Neither X-rays of the spine or sella turcica nor bone age showed any abnormality (Fig. 2). A breast ultrasound demonstrated fibrocystic disease. Chromosomal analysis described a normal 46 XX karyotype.

After definite diagnosis and because of the profound physical and psychological effects to the patient, she underwent surgery. We performed a bilateral reduction mammoplasty with preservation of the nipples and some areolar tissue to retain sensibility and future breastfeeding. We used the modified superior pedicle (Pitanguy method), thus preserving the normal embryologic relationship between the skin and the underlying gland, the nipple–areolar complex, on a transverse superior dermoglandular pedicle [2–4]. A standard Wise pattern marking was drawn with the patient in the standing position (Fig. 3).

After the deepithelialization, the glandular parenchyma was resected in an inverted keel form. Due to the higher incidence of malignant tumors at the superolateral breast quadrant, we removed more glandular parenchyma from that part. To provide a better aesthetic result in the standing position, more tissue was removed from the lower versus the upper part of the breast. Incisions were made to the

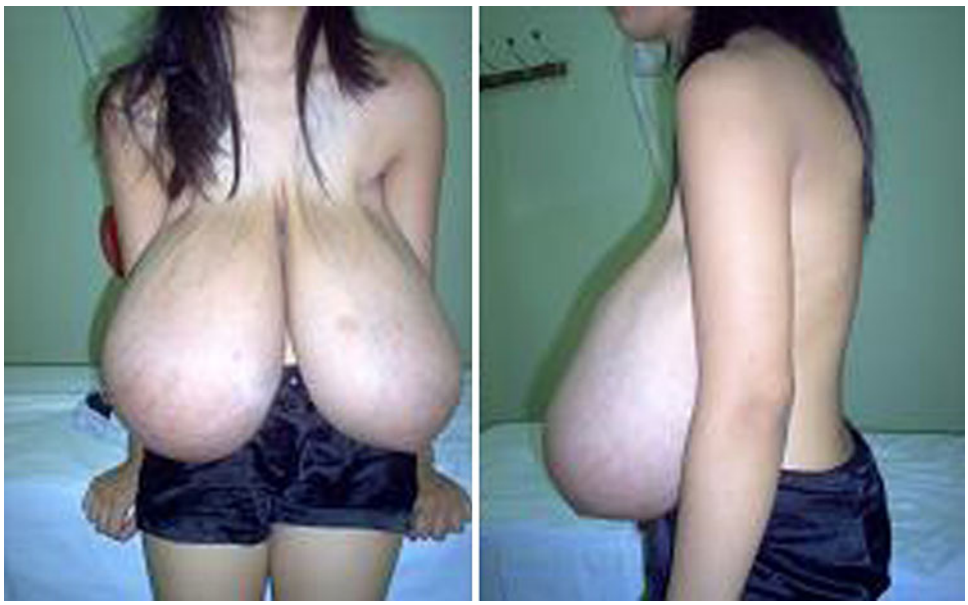

Fig. 1 Anterior view and profile of the reported patient

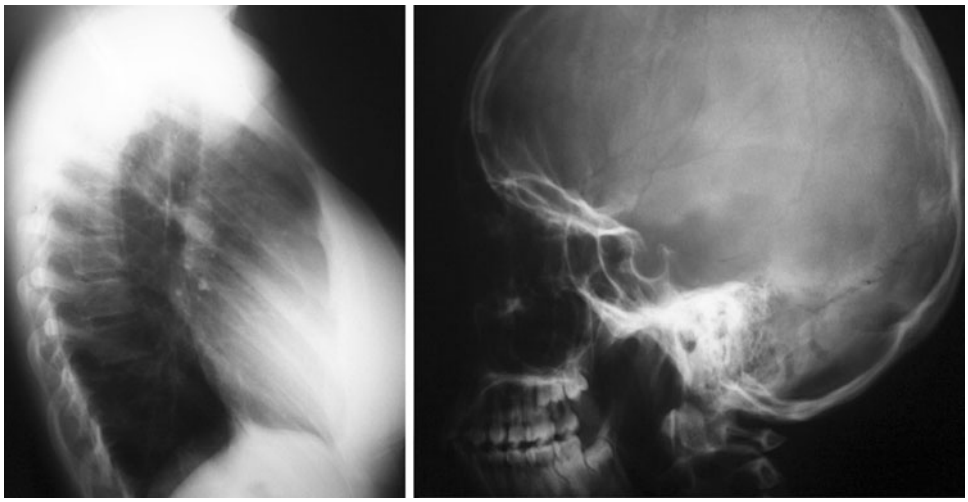

Fig. 2 The X-rays of the spine and sella turcica did not show any abnormality

dermis of the vertical lines of the Wise pattern, with care taken not to harm the feeding vessels.

With the resection, two pillars were created (medial and lateral), which when approximated allowed a mild tension closure of the breast around the superior pedicle (Fig. 4). Point A was 21 cm from the sternal notch. The total amount of breast tissue removed was 7.7 kg. No blood transfusion was needed. Suction drains were used and then removed 4 days later.

The histology showed parts of breast parenchyma with broad lesions of gigantomastia, well-defined lobes, focal lesions of fibrocystic disease with metaplasia, and low to medium epithelial hyperplasia (common ductal type) without atypia as well as focal lymphocytic mastitis.

The patient was discharged from the hospital on postoperative day 8 without receiving any hormonal therapy. The cosmetic result was satisfactory 12 months postoperatively (Fig. 5). A follow-up period of 2 years showed no recurrence.

Discussion

Gigantomastia, a rare and massive enlargement of one or both breasts, can be symmetric or asymmetric. Normal breast development begins with the formation of the mammary ridge from the ectoderm on the 20th embryonic day and is completed late in the fetal period. The nipple and areola arise from the mammary pit and infolding of the epidermis, its surrounding connective tissue, and mesenchyme [2].

Until puberty, the size of the breasts remains unchanged. Normal breast development takes place over a period of 3–5 years and involves all tissues of the breasts. The ductal

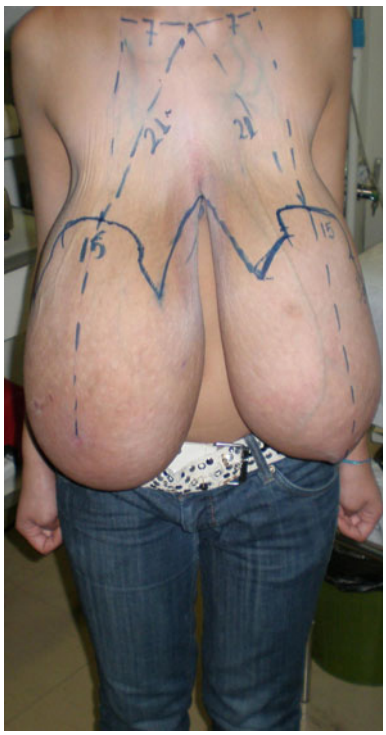

Fig. 3 Wise pattern marking with the patient in the standing position

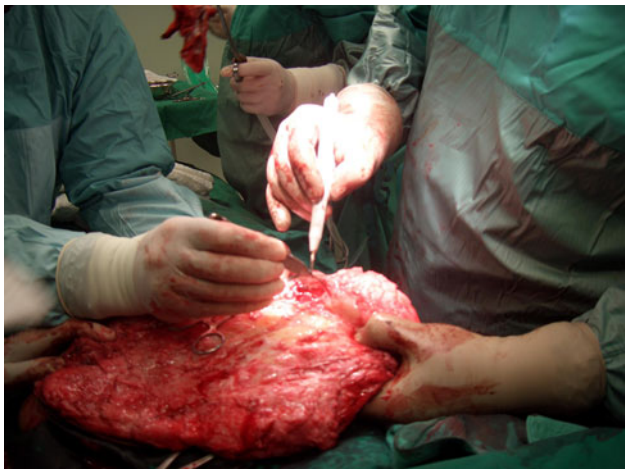

Fig. 4 Dermoglandular tissue of the breast to be removed

growth is influenced by anterior pituitary hormones such as luteinizing hormone, growth hormone, adrenocorticotropic hormone, and estrogen as the major triggering factor. Lobuloalveolar development is influenced by progesterone and prolactin. Corticosteroids and prolactin affect breast development independently. At the end of puberty, breast development is completed. The reason why breasts rarely take enormous size during adolescence without underlying pathology remains unknown [1, 2].

The main symptoms of macromastia are breast pain, hygienic difficulties, intertriginous lesions at the inframammary folds, shoulder grooving from brassiere straps, orthopnea, skin necrosis, kyphosis, lumbar lordosis, and psychological disorders, as with our patient, who appeared with depression and tension to suicide.

To establish the definite diagnosis, all the other causes of gigantomastia must be excluded. Drug-induced gigantomastia by D-penicilamine, neothetazone, cycloprosin, or protease inhibitors can be excluded easily by receiving a careful history of the patient when physical examination is performed to rule out trauma paniculitis, intertriginous lesions at the inframammary folds, skin necrosis, and palpable masses.

If pregnancy tests and serum levels of estrogen, progesterone, prolactin, and gonadotropins are normal, pseudoprecocious puberty, ovarian granulose cell tumor, ovarian follicular cysts, and hormone abnormalities are excluded. Urine levels of 17 keto, hydroxysteroids, rule out adrenal dysfunction.

Juvenile gigantomastia is not related to hormonal disorders. To our knowledge, only one published case report describes a patient who had juvenile gigantomastia with mild hypothyroidism [4]. Chromosomal analysis showing a normal 46 XX karyotypehas been described. Imaging studies can rule out tumors such as fibroadenoma, juvenile cystosarcoma phyllodes, and malignant breast carcinoma including lymphoma or sarcoma. Gravid hypertrophy is excluded by the age of the patient, appearing in 20- to 30-year-olds, but usually in juveniles 11–14 years of age. Pseudogigantomastia is associated with obesity.

Imaging procedures (magnetic resonance imaging [MRI] of the brain; ultrasound of the breasts and upper and lower abdomen) rule out enlargement of sella turcica, hypophysial enlargement disorders, benign or malignant disorders of breasts, and abdomen [2, 5–7].

To date, many surgical techniques have been performed for juvenile gigantomastia such as breast reduction, mastectomy and reconstruction, hormonal therapy, or a combination of these. Although breast reduction with or without hormone therapy usually is the first option for the treatment of the juvenile gigantomastia, often it is not definitive, and recurrences may take place.

Future pregnancy has been suggested as a reason for recurrence [2]. According to some authors, older girls near the end of puberty have more opportunities to respond to the breast reduction alone without hormone therapy. On the other hand, mastectomy and reconstruction also are related to problems associated with implants, their less natural aesthetic result and possible psychological side effects, and inability to breastfeed. However, the most optimal treatment remains controversial [2–4].

In our patient, we performed a bilateral reduction mammoplasty using the modified Pitanguy method, with preservation of the nipple–areolar complex and some

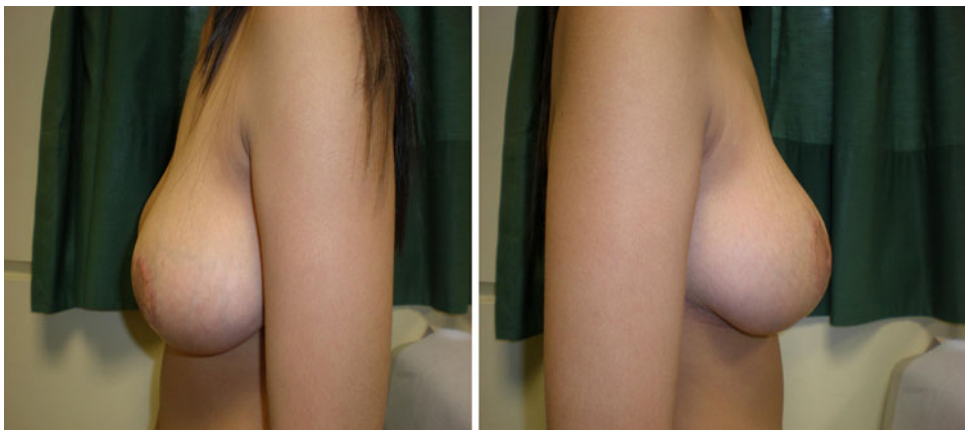

Fig. 5 Postoperative view 12 months later

breast tissue mainly below the areola to retain sensibility and future breastfeeding. No complementary hormonal therapy was received. The cosmetic result was satisfactory. A follow up period of 2 years showed no recurrence.

Conflict of interset The authors declare that they have no competing interests.

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