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The 'Saw Tooth' operation for giant fibroadenomas

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ABSTRACT

Fibroadenomas are the most common benign breast lesions affecting adolescents and young women. Cosmesis is an important factor when considering surgical management for these masses.

Giant fibroadenomas (>5 cm), because of their size, may require larger incisions resulting in significant scarring and scar complications in these young women. Several approaches have been employed, usually involving large incisions, when performing a lumpectomy for giant fibroadenomas. In this report, we highlight a new technique for removal of these masses, which allows the removal of large fibroadenomas through a relatively small, cosmetically acceptable, circumareolar incision.

1. Introduction

This paper documents a new technique, the saw tooth technique, and its results. It is compliant with the process criteria [1]. Fibroadenomas most commonly occur in women ages 15–30 years [2]. In the Caribbean, the incidence is high especially in this age group [3]. In Trinidad, fibroadenomas account for 67% of breast lumps in women aged 11–30 years and 78% in teenagers [3,4]. Giant fibroadenomas are a subgroup where lesions are greater than 5 cm as seen in our case [5]. These large masses may cause distortion, asymmetry, pain, discomfort and qualify, by their size alone, for surgical excision. However, in these young women it is essential to use techniques that minimize significant complications such as scarring, nipple ischemia, loss of sensation and injury to the ductal system. Several incisions have been described for the removal of such breast lumps including the round block, inverted T, vertical scar and periareolar [6–8]. We present a new technique by which a giant fibroadenoma can be removed through a small circumareolar incision. This method has been used in 5 consecutive patients over the past 15 years without nipple ischemia or sensation loss and achieved excellent cosmesis.

2. Index case

A 14-year-old female presented with a painless left breast lump. The sub-areolar, supero-lateral left breast lump, first noted by the patient on self- examination, was confirmed on ultrasound scan, to be a well-circumscribed, sub-areolar 2.2 × 2.3 cm mass. This was treated expectantly as a fibroadenoma with patient reassurance. However, in the following 10 months there was a rapid increase in size of the lump which was associated with a constant vague discomfort of the ipsilateral breast. This resulted in some asymmetry of her breasts. Repeat ultrasound scan and needle core biopsy confirmed a fibroadenoma, 11 × 8 cm. Lumpectomy, using the 'Saw Tooth' technique, allowed delivery of the entire mass through a 4 cm circumareolar incision. The other 4 cases were similar: age range 13–16 and lump size 10–13 × 6–9 cm.

3. Technique

The 'Saw Tooth' approach is a novel technique which can be used for the excision of moderate to large fibroadenomas through a relatively small incision. A 4 cm curved circumareolar incision is made avoiding the ductal system identified preoperatively. The incision is deepened down to the lump. The mass is mobilized in its entirety by blunt finger dissection. When mobilization is complete, the lump can be partially delivered into the wound, using a towel clip to provide traction (Fig. 1). The lump can then be fully delivered by 'walking' it out of the wound, facilitated by making alternate incisions along the medial and lateral or the superior and inferior surfaces of the lump. By rotating the fibroadenoma medially and laterally as the incisions are made, it can be delivered through an incision that is significantly smaller than the lump. The incisions on the mass are made from the most superficial to deep, with the towel clips migrating in the same direction providing progressive traction until complete delivery. It must be noted that the lump is not completely incised through its axial plane and the incisions along the opposing surfaces are alternating and are 2–3 cm apart. This incomplete division of the lump ensures that it is delivered in its entirety without leaving remnants in the breast. Hemostasis within the cavity is achieved and the areola skin is closed with a continuous, 3-0 non-absorbable, monofilament suture (Fig. 2). In

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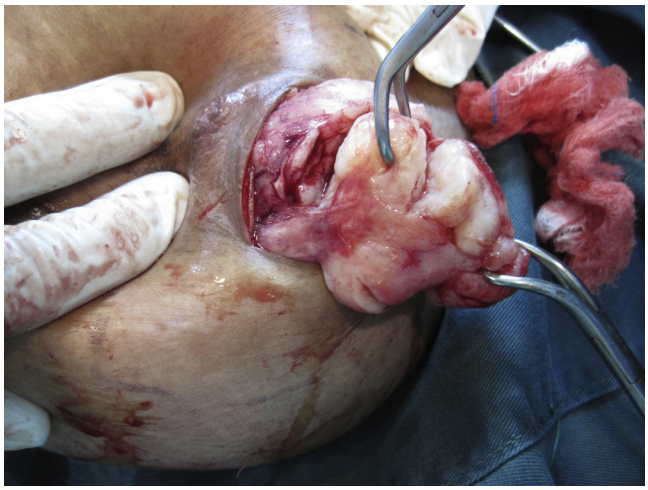

Fig. 1. Progressive delivery of fibroadenoma using alternate incisions and traction.

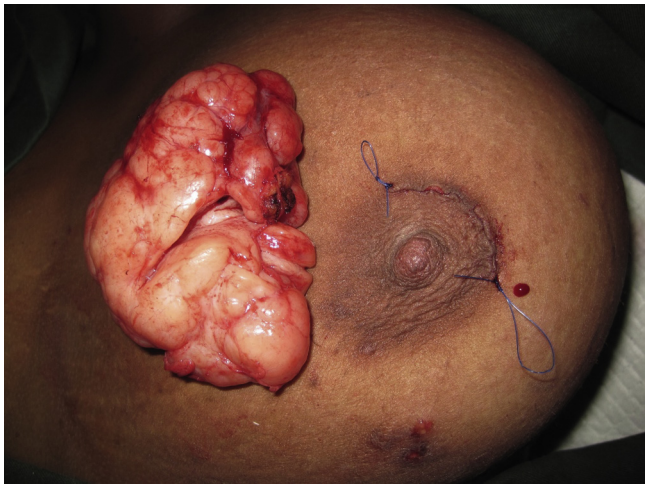

Fig. 2. Excised mass compared to skin incision.

the index case the lump was 11 × 8 cm, and appeared like that of a 'Saw Tooth'.

4. Result

The patient recovered without complications, with an acceptable cosmetic result.

5. Discussion

Fibroadenomas are the commonest breast lump in young women [2–4,9]. Surgical intervention must consider the benign pathology, cosmesis and the preservation of breast structure and function. A subgroup, the giant fibroadenoma, is a lesion greater than 5 cm, weighs more than 500 g or accounts for at least 80% replacement of breast volume [5]. Giant fibroadenomas pose a challenging problem, since removal of these large tumors can result in significant complications in young women. Many techniques have been used to remove these masses. Vertical, inframammary, round block and inverted T have been used for the treatment of giant fibroadenomas [6–8]. The above-mentioned incisions may be more technically challenging, require longer operative time and can be associated with significant complications compared to the circumareolar using the 'Saw Tooth' technique. For example, the inframammary, vertical and inverted T incisions are sufficiently long to deliver the intact fibroadenoma but these longer incisions produce more visible scars. Even the inframammary incision may be quite evident in the young breast that is not pendulous. In our coloured population, keloid development in these scars may be quite unacceptable. Also, inframammary incisions for tumors in the upper half of the breast require dissection through or around much breast tissue and may be associated with unnecessary damage to the normal breast. In our technique, the incision is taken directly down to the mass, avoiding the preoperatively identified ductal system and minimizing injury to the breast parenchyma.

Hung-Wen Lai et al. documented necrosis of the nipple areola complex using the round block technique for a giant fibroadenoma [7]. Incisions made around the nipple areola complex may also be associated with altered sensitivity [10]. Another major draw-back is that many of the techniques described may not be applicable in our local setting. There is an increased tendency for Caribbean women to develop hypertrophic scars and keloids [11]. Regardless of where the incision is placed on the breast these scars can be unsightly and devastating for the patient; hence, the smaller the incision the less likelihood of scar complications.

6. Conclusion

Saw tooth operation is a simple but unique technique for removal of giant fibroadenomas through a 4 cm circumareolar incision. Using this technique it was possible to remove a mass almost 3 times the size of the incision. The major advantage of this technique is that a simple, prudently planned, cosmetically acceptable, circumareolar incision provides adequate access and exposure. The position of the lesion does not limit the applicability of this technique as the incision can be placed anywhere along the circumference of the areola, avoiding the ductal system. The scar is also hidden in the areola skin. The concept this technique is based on the principle that it is better to incise the lump rather than the patient, recognizing that it is benign disease. There is potential for injury to the ductal system when a circumareolar incision is made. Preoperative localization of the ductal system, by ultrasound scanning, or clinical examination (by palpation) or a combination of both can guide the placement of the incision. Thus, far we have no evidence of ductal injury in our cases.

Conflicts of interest

There is no conflicts of interest amongst the authors in publishing this case series.

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Ethical approval

Ethical approval was granted by the institutional ethics committee.

Consent

This is to certify that consent was obtained from all parents as the is patient younger than 18 years.

Author contribution

All authors have contributed significantly in this case series. The first author have performed the surgery and rest of the authors helped in collecting data, designing, organizing to write the

manuscript as well as assited in critical analysing of the manuscript. All authors have approved the final version of this manuscript.

Registration of research studies

It is not a clinical trial.

Guarantor

The corresponding author and the first author (Professor Vijay Naraynsingh) will accept the full responsibility for the work.

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