Synmastia

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1 Introduction

Synmastia is a rare serious congenital condition that is described as a connection between the breasts with or without macromastia; there is accumulation of fat and glandular tissue between the breasts, which produces a unified appearance of the breast tissue across the chest. Relatively more frequent is acquired synmastia that can occur after augmentation mammaplasty [1].

Although developmental synmastia can occur without surgery, this chapter will put attention only to synmastia correction after breast surgery with implant uses.

Synmastia after breast augmentation has been categorized as "crossing of the midline, even if it is only on one side"; "central webbing of the breasts"; "disruption of the midline sternal attachments"; "medial confluence of the breasts"; and "displacement of one or both implants beyond the midline." This is previously described as moderate (bicapsular synmastia), when some muscle fibers and/or soft tissue connect the midsternal skin to the underlying sternum on one side or severe (monocapsular synmastia) when there is communication between the two periprosthetic capsules [1–8].

For our convenience we consider the definition of synmastia when the breast implant crosses the midline. A lot of surgical techniques for repair are described in literature [6]. As reported in the literature, iatrogenic acquired synmastia is characterized by any kind of previous breast implant positioning for aesthetic augmentation or reconstructive purposes [9].

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We describe our surgical approach for synmastia correction that consist in implant removal, capsulectomy, pectoralis major muscle repositioning, change the plane from subpectoral to prepectoral positioning, and subdermal-perichondral stiches to maintain and reinforce the parasternal medial line bilaterally.

Our described technique is fast, simple, and reproducible for reliable, stable, and firm long last results.

2 Preoperative Evaluation and Planning

The first essential step to a correct planning of the synmastia correction procedure is a preoperative consultation conducted by the plastic surgeon combined with the patients' clinical exams. The anamestic data are recorded and the patient is investigated about her previous breast surgeries including information about breast implant brand and size; other general information are requested such as health status, smoking habits, pregnancies and lactations, and weight history including fluctuation, major changes, and surgical weight loss. Breast health evaluation should include past history of breast cancer, abnormal mammograms, as well as a summary of previous surgeries, if any. Surgeon should also ask the patient for self-awareness of any pre-existing breast asymmetry and assess asymmetry grade by clinical exam and preoperative photo-documentation. All these assessments will help in achieving the desired aesthetic goals and avoiding patient's dissatisfaction [10].

Preoperative markings on the skin are made with the patient in the standup position. Firstly, the surgeon should outline the new standard breast landmarks: sternal notch, chest midline from sternal notch to xyphoid apophysis, breast lateral-lines, and infra-mammary folds (IMF). Moreover it is important to mark the parasternal vertical midlines at 1.5–2 cm parallel to the chest midline according with the emitorax width also considering the right positioning of the new breast mound. We always use the previous scar to avoid any additional one. Implant volume is determined for each patient in accordance with the desired cup size and the breast/thoracic measurements (width and height of breast base, thoracic circumference, jugular-to-nipple distance, nipple-to-nipple distance, and nipple-to-IMF distance). When pinching test is less than 2 cm we use the prepectoral approach in any way performing hybrid breast augmentation, so we use autologous fat graft to improve implant tissue coverage as well described before in Literature.

3 Surgical Technique

Procedure is performed under general anesthesia, with the patient in a semi-seated position and abducted arms. We recommend the following sequence for optimal repair. The skin incision is conducted by retracing the previous scar. First, capsulectomy is performed trying to remove implant and capsule integrally. If the pectoralis major muscle is relatively close to the sternum, is preferable repositioning and repair it from posteriorly to the more medial and inferior position as possible, we

recommend 2/0 polyglactin 910 (Vicryl, Ethicon J&J sutures) as a running suture. At this point, we feel strongly that placing another implant under the muscle will likely condemn the patient to the same problem in the future. Many patients came to us after multiple attempts at repair returning the implants to the retromuscular position. So we always prefer to change the plane and place the new implant under the gland in a prepectoral positioning.

Previous implant sizers uses we choose the definitive smaller one, anatomical or round, according with preop pinching test, emithorax width and height and patient cup desires as well described in our previous studies [10]. At this time of the surgery we always prefer to reinforce the new pocket with single subdermal to periosteum 2/0 polyglactin 910 (Vicry, Ethicon J&J sutures) single stiches avoiding any possibilities of revisional surgery. The single stitches are located at the parasternal level 1.5–2 cm laterally and bilaterally to the midline and, according to the needs, will be one up to three for each side; the evident pinching cutaneous effect in the immediate postop period will disappear in 3–6 months leaving a pleasant and effective long last result. When pinching test is less than 2 cm we use the prepectoral approach any way performing hybrid breast augmentation, so autologous fat graft is used to improve implant tissue coverage as well described before in Literature [10, 11].

4 Postoperative Care

A compression dressing with gauze and cotton is applied immediately after the surgery. Then, within 24 h postoperatively, the dressing is replaced with a sports bra which the patients are advised to continue wearing for 6 weeks. Patient is discharged with a prescription for oral analgesics and a full course of oral antibiotic prophylaxis after 1 or 2 nights of hospital stay. Drains are left in place until the first follow-up visit, usually scheduled 3–5 days after the surgery. Antibiotic prophylaxis is discontinued after the drain removal at the first follow-up visit if the amount of fluid collected is <50 mL within the 24 h. Further follow-up visits and photograph are scheduled at 1, 3, 6 months, and 1 year postoperatively. A complete case is reported as shown in Figs. 1, 2, 3, 4, 5, 6, 7, 8, and 9.

5 Discussion

Synmastia was first described in 1983 as the medial confluence of the breast mounds. It exists in 2 forms: congenital and iatrogenic. Although literature is present regarding congenital synmastia, with the rise in breast augmentation over the past few decades, the mechanisms by which iatrogenic synmastia appears have been investigated more thoroughly. 2 Iatrogenic (or acquired) synmastia after breast augmentation has been attributed to displacement of implants over the sternum, disruption of midline sternal fascia, and over-dissection of the medial major pectoralis muscle attachments to the sternum [1, 3–5].

Fig. 1 Preoperative synmastia frontal view, 32-year-old nulliparous woman after 1 year subpectoral breast augmentation with 375 round texturized implant

Fig. 2 Postoperative 14 days frontal view after subglandular synmastia correction by using 300 cc texturized anatomical implant, the single subdermal to periosteum 2/0 polyglactin 910 (Vicry, Ethicon J&J sutures) stiches are still visible

Fig. 3 Postoperative 12 months frontal view

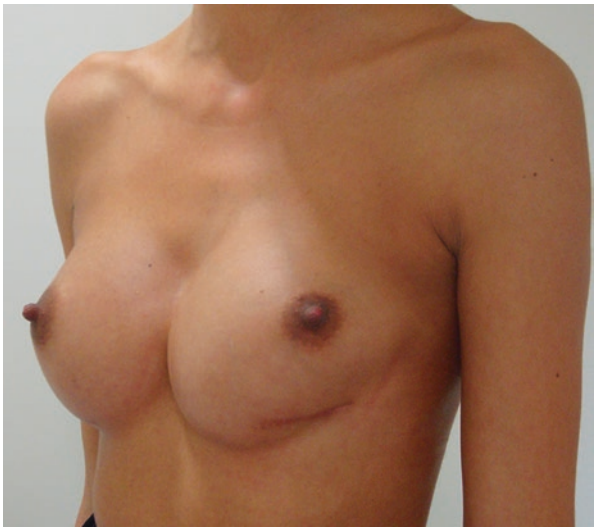

Fig. 4 Preoperative three quarter left view

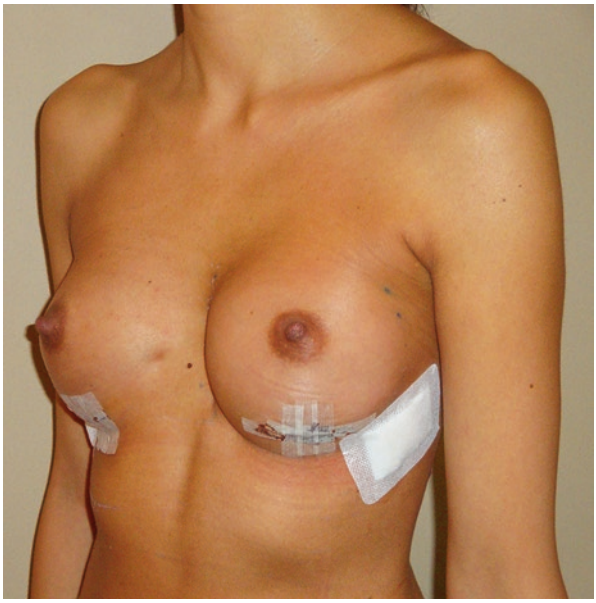

Fig. 5 Postoperative 14 days three quarter left view

Based on our experience and literature review, postaugmentation synmastia is present with high range of patients that had undergone more than one breast surgery and the majority of them had undergone secondary surgeries to augment the breast size; many of them had large implants, arbitrarily defined by us as greater than 450 cc or with a diameter of 14 cm or more. Some of the patients had associated chest wall skeletal deformities, and some had undergone simultaneous mastopexy at the time of their breast enlargement. The last but not the least, postaugmentation

Fig. 6 Postoperative 12 months three quarter left view

Fig. 7 Preoperative three quarter right view

synmastia is quite always reported when the implants were located in a subpectoral pocket [12]. Sanchez et al. showed in their anatomical dissections that in some cadavers the pectoralis major muscles can be as thin as 3–4 mm at the origin along the sternum from the second to fifth ribs [13, 14]. Kalaria et al. believe that patients who have this thin origin are at risk of tearing their sternal muscle origin of the pectoralis major muscle after subpectoral bilateral augmentation mammaplasty. In a previous cadaveric dissections study it is revealed that the pectoralis major and pectoralis minor muscles frequently have inconsistent origins from their costal attachments at the sternum. They declare that during subpectoral breast

Fig. 8 Postoperative 14 days three quarter right view

Fig. 9 Postoperative 12 months three quarter right view

augmentation, the pectoralis major is often inadvertently elevated due to the proximity of the origins and unclear muscle plane of separation [15].

Likewise, anomalous pectoralis major slips such as the chondroepitrochlearis can cause medial force vectors when they are overlying the lateral edge of the implant. Literature conclude that overzealous dissection of the medial internal

mammary artery perforators and their associated perivascular fibers in the face of an unsuspected thin sternal pectoralis major origin results in sternal muscular dehiscence and reduced medial implant pocket restraint [16].

Thus, it is postulate that the acquired synmastia is due to subpectoral breast augmentation rather than subglandular pocket dissection and that the above events either individually or together contribute to synmastia in virtually all cases. In fact, once begun by dehiscence, the process of Synmastia continues because of the force vectors of the lateralized pectoralis major muscle [15].

Finally, we present our approach based on understanding of the anatomic basis of synmastia putting in evidence our correction that is based on implant pocket exchange from subpectoral positioning to prepectoral one. The subglandular new pocket allows a safe positioning avoiding eventual failure of the repair; we reinforce the new medial limit of the pocket by using single subdermal to periosteum single stiches as described; moreover the new pocket is performed respecting the smaller implant size.

Literature presents a lot of techniques for synmastia repair such as reattaching muscle and pectoralis fascia to the sternum periosteum with or without the use of acellular dermal matrices (ADM) as added support; ADM, as described, is used to repair the medial capsulorrhaphy line protecting the pocket from the maximum weight of the implants [9]. Others suggest using the previous capsule as additional support and creating a neosubpectoral pocket by capsule flaps feeling that the implant should remain under the muscle; in such situations, the capsular flaps are used to prevent migration of the implant after defining of the midline with capsulorrhaphy [3–7, 9, 17, 18].

We report our experience performing synmastia repair as described; we underline the safeness of the technique due to pleasant and long last results; moreover until now, we have seen no recurrences or major complications after our currently recommended and postoperative care.

6 Conclusion

We present our approach for synmastia repair after breast augmentation. The method is simple, reliable, fast, and easy to reproduce allowing pleasant long last results without perioperative major complications or recalcitrant cases.

As elsewhere in surgery, for the management of postaugmentation synmastia, an ounce of prevention is worth a pound of cure. Stated in literature that iatrogenic synmastia is quite always reported after submuscular breast augmentation, we advocate primary breast augmentation by using subglandular implant positioning with a proper implant selection and an accurate pocket dissection.

Our previous studies in the field of breast surgery [19] put in evidence the reliability and efficacy of the prepectoral implant positioning leaving the submuscular pocket only in selected really skinny and undernourished patients.

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