Surgical Therapy: Mastoplasty

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Chest wall contouring is material in male to female (MtF) transsexual treatment since the patient's social rehabilitation goes through the acceptance of body image; thus, breast is the main external indicator of gender. After a period of hormonal therapy (at least 12 months [1, 2]), during which the patient has to live in her new sex identity, she will be candidable for sex reassignment surgery (SRS). The hormonal therapy induces mammogenesis [3] and the breast appears like a puberal female breast, but a complete development is rarely reached [4]. Maximum volume growth is usually obtained after 18–24 months and is permanent. General side effects are gaining weight, galactorrhea, decreased red cell mass, lower libido, and infertility [5]. Some patients achieve a good mammary size (cup B), but not all of them are satisfied with this volume [6]. In those cases it is necessary to perform breast augmentation mammoplasty, selecting the appropriate technique among those described for genetic female patient [1] based on patient's anatomical condition. In breast reshaping, the surgeon has to take into account the differences between male and female anatomy. The female figure is generally characterized by rounded shapes and flowing contours, with a more represented fat component above the muscle edges [7]. The female chest is shorter with a conical shape, and the breast prominence extends from the II or III rib to the VI or VII. The nipple is usually located at the level of the most projected portion, at the midpoint of the humerus length. According to Ramselaar [8], the cross-sectional shape of the female breast can be represented ideally by a cone with a spherical surface. The sagittal shape is that of a drop with a concavity in the upper level up to the areola and a convexity that runs from below the areola until the inframammary fold. An axillary tail extends backward along the outer margin of the pectoralis muscle. The entire shape of the breast is also very dependent on age, volume of the breast, attachment to the parenchymal-muscle interface, and mobility of the gland [9]. The male breast consists predominantly of fat and supporting tissue with very little glandular tissue; the nipple areola complex (NAC) is in the same position of the female breast [4] if it is not ptotic; and it is qualitatively identical [10] and differs only in size [11]. Before changing the breast shape from male to female phenotype, it is very important to be able to produce high-quality aesthetical and functional results [12]. This is the only way to reduce risks for the patient and costs of treatment [10].

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16.1 Surgical Issues

Timing of augmentation mammoplasty in the history of this kind of surgery has often been arbitrary and depending on the different theories of various authors. It could be performed either concurrently with genital surgery or in a precedent or subsequent procedure [7]. In our gender team guidelines, the procedure of gender reassignment begins, after the disorder identity gender diagnosis confirmation, with penovaginal surgery that is usually performed before the mammoplasty augmentation because it is covered by the National Health Insurance. In order to perform breast augmentation, the plastic surgeon can implement several techniques. Many types of injectable substances have been used in the past with adverse effects and complications, and in the literature there are not long-term evidence-based medicine studies about permanent fillers. Lipofilling technique can be used in cases of moderate volume augmentation, but several surgical operations are required. Moreover, the effects and the presence of stem cells in the injected centrifuged adipose tissue are still debated. More significant augmentation with fewer surgical procedures can be obtained combining lipofilling with the Brava system.

Nowadays the gold standard technique in MtF mammoplasty is implant breast augmentation.

Generally speaking, surgical planning deals with skin incision, implant selection, and positioning for breast augmentation.

16.2 Skin Incision

The emiperiareolar incision is one of the approaches in breast augmentation. Despite its popularity, it is not recommended as the incision of the gland increases the risk of infection, and pocket dissection and implant positioning are challenging due to the small dimension of the male NAC.

Furthermore, also the axillary incision is not a valuable option. The strong muscle and the conformation of the inferior pole of the male breast cause a difficult submuscular dissection and risk of implant displacement. With a little incision and an endoscopical approach, it is not possible to detach the gland from the muscular plane. In addition, the little scar, the vertical or the s shaped even more, is visible when raising the hands and also wearing any kind of bra.

The access route preferably selected for the insertion of the prosthesis is at the level of the inframammary fold as it allows good visibility, easy dissection of all pocket location (subglandular, submuscular, and combination of both), and placement of all kinds of implant, silicon texturized as well.

The scar normally is linear and is hidden in the inframammary fold, and it is not visible wearing the bra, even with arms laying down.

In any case, scar becomes much more visible if pathological scarring occurs.

16.3 Implant Selection

With reference to prosthesis selection, saline ones are not frequently used, as they do not give a natural feeling like gel-filled implants. Their insertion is easier because the saline solution is inflated in a second time, but the implants become more rigid and the risk of loss of volume of the implant and skin wrinkling is higher.

Nowadays, smooth implants are not a good choice as well because their surface does not integrate to the surrounding tissue.

For all of these reasons, silicone gel-filled implants with textured surface are the most frequently used. Moreover, gel cohesivity prevents gel leakage in case of implant rupture.

The main complaint of MtF patients after surgery is an insufficient breast volume, as their aim is to achieve a clearly feminine appearance.

For this reason, where possible, consider a prosthesis that is slightly bigger than the one chosen by the patient preoperatively (usually by 250 cc) [3].

The male chest is usually larger than the female's, so this often involves obtaining an aesthetic result which is not satisfactory with the prosthesis sizes commonly used in female patients. The transsexual patients often require

more extensive prostheses to reach a higher-level filling medially, but however this may result in symmastia and other complications.

Because of male chest conformation and lateral position of the NAC, it is often difficult to fill the wide cleavage between the two breasts and this point has to be stressed with the patient.

It is also important to pay attention to the positioning of the NAC that must be placed centrally above the prosthesis to avoid the divergence of the nipples. This is the reason why prosthesis selection is very important. The implant size has to be related to the nipple-inframammary fold distance in order not to risk scar malpositioning or shape alteration of the breast.

The distance between the inframammary fold and the lower edge of the areola increases after surgery. This effect seems to be related to skin tightening and the recruitment of skin from the abdominal region and inframammary fold. Therefore, it is preferable to make the incision for the insertion of the prosthesis 7 cm below the lower edge of the areola. Immediately after the surgery, the scar can be positioned lower relative to the fold and could appear too low, but after a few months, the scar goes back toward the inframammary fold.

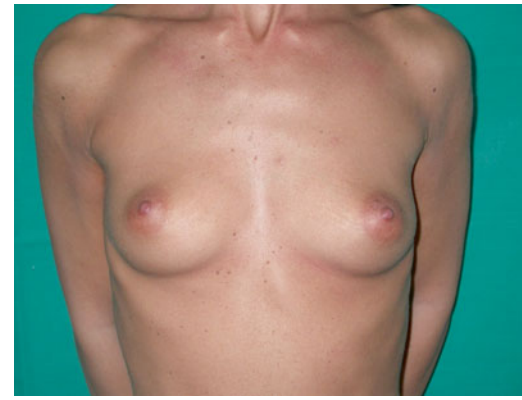

Fig. 16.1 Preoperative view

Fig. 16.2 Postoperative view

16.4 Implant Position

Surgical technique and pocket selection have to be planned also in light of the glandular amount. A subglandular pocket can be harvested if there is enough glandular tissue in order to provide a complete coverage of the implant.

If doable, this is the best technique as it increases the control of breast shape and inframammary fold position and postoperative recovery is more rapid.

The implants placed in subglandular position can give problems often related to the lack of glandular tissue and fat. In fact, these being underrepresented give limited protection and poor coverage of the prosthesis, with greater risk of visibility and palpability and a more evident capsular contracture (Figs. 16.1 and 16.2).

The pinch test in the upper pole of the breast can also give additional information in choosing between subglandular or submuscular pocket. If the pinched tissue of upper pole is less than 2 cm, a submuscular dissection should be performed. In MtF patients, total and partial submuscular pocket is not indicated. The stiffness and the strength of the pectoralis muscle due to its development under the influence of testosterone can cause implant displacement in a lateral position or upward when inferior pectoralis origins across the inframammary fold are not divided, even if the risk of capsular contracture is lower than in the case of subglandular pocket. With partial retropectoral (only pectoralis major) or total submuscular (pectoralis major and serratus) location,

there is also more postoperative tenderness and a more prolonged recovery.

In order to ensure that greater force does not push the prosthesis below and parenchymal attachment does not give shape distortion like "double-bubble" deformity, it is necessary to detached the lower portion of the pectoralis from the chest wall combined with a subglandular dissection, as described in dual-plane technique [13].

Dual-plane breast augmentation usually allows greater coverage in a wide range of breast in women and gives better cosmetic result in terms of volume and projection. The possibility of the implant going downward is preserved too.

In male patients it is more difficult to identify the muscular plane and prepare the pocket, because the planes are less defined. Bleeding can be a problem. It is also important to fix the space between the two breasts to extend the subglandular pocket more medially toward the sternum.

In our clinical experience, when the gland is firm and more conspicuous, dual-plane type I is more indicated; if it is mobile on the muscular surface (rarely in male), we should choose a type II.

The difference between these two techniques is that in type I, the surgeon creates the pocket only dissecting the muscle at the inframammary fold while in type II, also the glandular tissue is mobilized to the NAC.

In MtF patients, the gland, even if adequately represented, is usually firm on the muscle; this is the reason why dual-plane II is rarely performed.

In MtF the lower pole is often not well represented so the suggested technique is dual-plane type III, in which the mammary gland is elevated from the pectoralis major muscle more cranially. This allows a better downward mobilization of the gland ensuring an adequate coverage of the lower pole of the implant (Figs. 16.3, 16.4, 16.5, and 16.6)

To redistribute the parenchyma and widen the base of this kind of breast, radial or concentric parenchymal scoring is often required. To put pressure on the scored parenchyma and to expand the lower pole, more projecting anatomical implants have to be used.

In those cases of dual-plane type III where the inferior pole of the prosthesis has an insufficient coverage, the use of acellular dermal matrix should be considered. This matrix is sutured in its upper part to the inferior border of the muscle and in its inferior part to the chest wall at the inframammary fold. This technique provides

Fig. 16.3 Preoperative view

Fig. 16.4 Intraoperative detail: type III dual plane

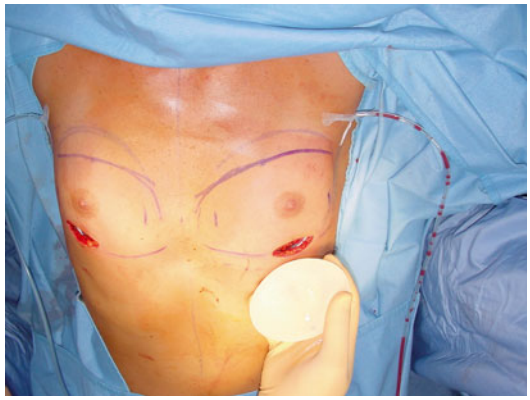

Fig. 16.5 Intraoperative detail: before prosthesis implantation

Fig. 16.6 Intraoperative detail: after prosthesis implantation

good coverage and protection of the prosthesis and a better cosmetic outcome as the skin flaps become thicker, preventing skin wrinkling.

16.5 Surgical Approach

In subglandular technique, pocket plane is created through a dissection on top of the pectoralis major beyond the gland.

In subpectoral technique, the dissection is below the pectoralis major but above the pectoralis minor and does not disrupt the inferior attachments of the pectoralis if total subpectoral dissection is performed.

In dual plane, pectoralis is released along the inframammary fold in addition to subpectoral dissection; three types of dual-plane technique can be used; the difference is represented by the grade of pectoralis separation from the parenchyma (no separation in type I, to the level of inferior NAC in II, and to the level of superior NAC in type III). Subpectoral coverage of upper pole, less implant displacement at rest and during pectoralis contraction, increases implant-parenchymal interface, which expands the lower pole and prevents double-bubble deformity.

In all of these cases, after pocket dissection, the surgeon performs careful hemostasis and inserts a suction drain in the pocket. A sizer is used before definitive implant positioning in order to see the definitive result in a laying but also in a standing position (the patient is secured to the operating table adequately to be put in a sitting position during surgery). After that, subcutaneous and cutaneous tissues are sutured and a compressive medication is applied.

In light of all these considerations, our team developed an algorithm for the planning of augmentation mammoplasty in MtF patients (Fig. 16.7).

Particular techniques have been described for the treatment of MtF affected by Poland's syndrome or tuberous breast [14, 15].

16.6 Results and Complications

The literature does not provide for specific results of breast augmentation in MtF patients.

Patients who undergo this kind of surgery must be properly informed about the risks and complications related to the procedure.

The most frequent complications are capsular contracture, implant rupture (that in 90 % of cases is intracapsular), hematoma, seroma, infection, implant exposure, chronic pain, skin flaps, and NAC necrosis and wound dehiscence.

The risk of developing breast cancer due to long-term hormonal therapy is unclear, even if many studies confirm that this risk in biological women and MtF patients is the same. In light of these considerations, transsexual women should undergo regular screening examination by mammography and ultrasounds [6].

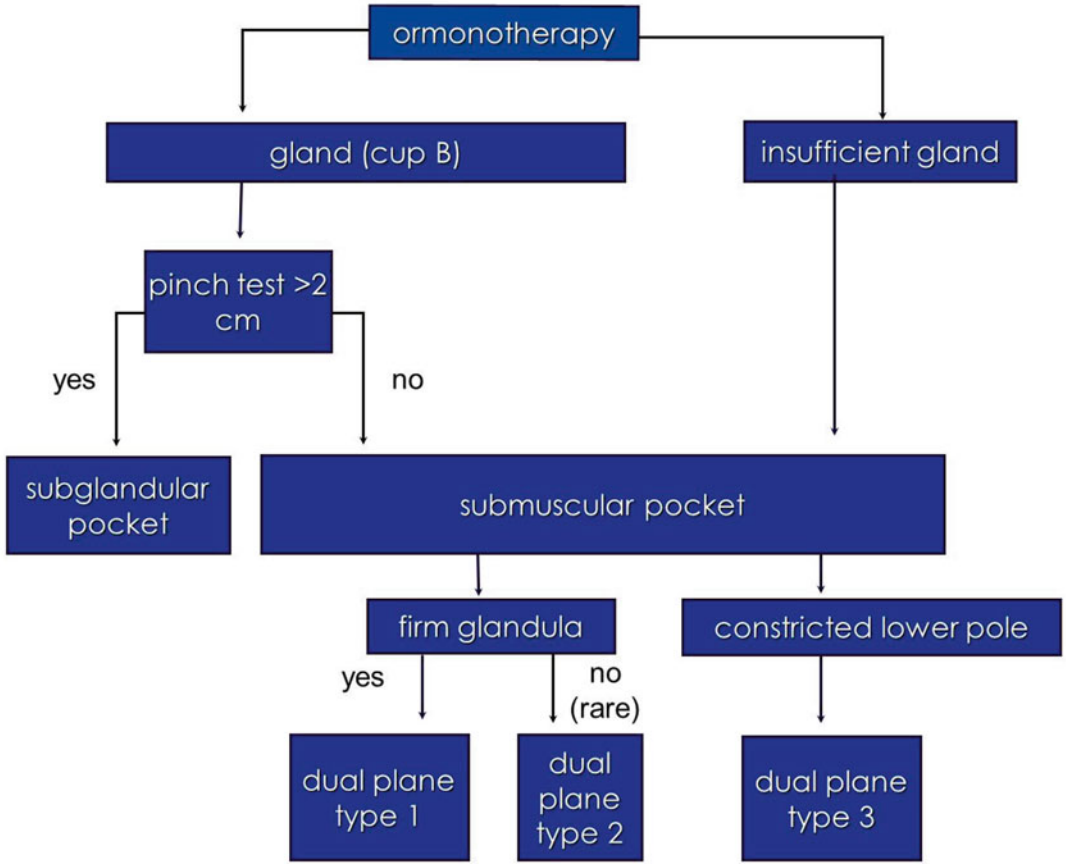

Fig. 16.7 Flow chart of the algorithm for the surgical approach

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