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Mastoptosis Aesthetic Surgery: Thread Lifting Techniques

Marlen Sulamanidze, George Sulamanidze, and Constantin Sulamanidze

Introduction

Glandular mammaria ptosis is a well-known aesthetic problem, which gives a woman unpleasant sensations, bringing the need for cosmetic surgery in this area to consistently increase over the last several years. The central problem raised by the surgeon is the achievement of long-term shape stability and high glandular mammaria position after performing the operation.

There are hundreds of different surgical techniques and devices for handling this problem, which are based on more or less significant solution of skin continuity, surgical release of glandular mammaria, cutting out its parenchymatous tissue in the form of grafts, subcutaneous purse-string for the purposes of getting flexible stroma, cephalic redistribution of glandular tissue, and anchoring to structures, such as fascia of glandular mammaria musculus or rib periosteum. In addition, it is necessary to elevate the nipple-areola complex to a new higher location, as well as breast skin cutout according to the modified "excipient" for receiving durable dermal lift.

Unfortunately, these approaches are quite often found to be unsuitable and do not clear away the problem of gravity postoperative ptosis over a long-term period. Suspensory skin sags, overcast seams decrease, and on the back of the remaining nipple-areola complex in the high position the whole stroma of the glandular mammaria sinks down gradually, making the previously achieved rather good results ineffective [1–8].

In this case there occur a relative isolation of the glandular mammaria top hemisphere, an overflow of the lower hemisphere, and a flattening of the glandular mammaria and its spreading on the chest wall. Visible scars aggravate the aesthetic failure of the performed operation (Fig. 38.1).

The same negative manifestations can often be found during hypertrophic mastoptosis treatment as well, when there is a need in reduction mammoplasty with subsequent mastopexy, and also during augmentation mammoplasty process, when, in postoperative period, as a result of capsular contracture or without one, secondary ptosis manifestation is observed (bilateral, unilateral, glandular, or "implanted"). Such results can satisfy neither the surgeon nor the patient and make us doubt the worthiness of the classic mastopexy surgery in most cases of mastoptosis.

Long experience, watching the patients in the postoperative period, and analysis of the
performed surgeries made it possible to reveal the following reasons of the poor results:

1. Weakness of architectonics to which the pulled glandular mamma is attached (fascia of glandular mamma, muscular, rib periostium)
2. Weak effectiveness of the devices which are aimed at supporting the pulled glandular mamma from the bottom and the sides

A logical decision was prompted that it is necessary to fix the pulled glandular mamma to more durable stable architecture and provide a strong, steady cradle of the formed glandular mamma in the lower and lateral portions. Such ideas were put into practice. The original technology was worked out: for the stable anchorage of the glandular mamma, the technique of hanging the glandular mamma on the collarbone with the use of special suture material was used, as for the improvement of a glandular mamma, form, strengthening and supporting of the pulled glandular mamma in the remote postoperative period, cellular endoprosthesis, or sutured underrunning of the gradual mamma was used [6, 8, 9].

The method, which the authors called “hypo- dermic bodice,” has been successfully used since May 2002 for treating mild glandular mamma ptosis. The suggested techniques of aesthetic mammoplasty gives an opportunity to get a satisfactory form of a glandular mamma without
postoperative cicatrices or with scarcely noticeable cicatrices in natural places and also to reach the long-standing strength of its form and high castastasis. The same method, when applied simultaneously with classical mastopexy and reductive and augmentation mammoplasty, also provides positive and reliable results.

**Materials**

1. Aptoos Needle DRN 60 is a blunt-ended reflexive needle with an adherent polypropylene needle USP 0, 100 cm long. This tool is employed for inserting of the needle around the collarbone and stable anchorage of the glandular mammaria (Fig. 38.2).

2. Aptoos Needle 2/0 is a double-edged needle with a smooth retention suture of Prolene 2/0, 100 cm long, fixed to the needle in the middle part of it. This unit has a knack for a double-sided patency; it allows to insert the needles under the skin and to perform subdermal suturing of soft tissues according to the broken or the lengthen boundary without skin dimpling with the result of the even pulled boundary (Fig. 38.3).

**Technique**

The methods of minimally invasive breast mastopexy consist of anchoring the breasts (with the use of a cellular implant or underrunning the breasts with sutures) and the follow-up mastopexy and hanging the breast on the clavicle.

**Operative Technique of Suturing Around the Clavicle**

The operation is performed under general anesthesia. The patient was placed in a semi-sitting position. Two incisions, of 2–3 mm long, are made along the midclavicular line: one is above the clavicle to its periosteal coverage and the second is lower at the level of the second intercostal space to the fascia of the greater pectoral muscle. The soft tissues are separated by a thin fastener like "mosquito," and hydropreparation of the soft tissues around the clavicle is performed as well (normal saline with epinephrine in amount of 20 mL).

A clavicular needle (Aptoos Needle DRN 60) is used with a heavy needle holder. It is inserted in the lower incision by its blunt end, inserted upward subcutaneously toward the clavicle, and exited through the upper incision together with the suture. The suture is pulled with the needle, but the "tail," 10 cm in length, is left in the lower wound. The needle is turned in the upper wound and the end of the needle is inserted around the collarbone, not separating from the bone. The needle with the suture is exited in the lower wound, where the knot with the left "tail" is tied.

Therefore, the path of the clavicular needle went from the lower wound subcutaneously through the adipose layer in front of the clavicle, and then the path went behind it (retroclavicular space) and next under the fascia of the internal surface of the greater pectoral muscle to the view of the lower wound, where the needle is exited to the wound through the fibers, thereby creating a
stable stay suture, which the lifted breast is subsequently fixed.

The most important stage of the whole operation is inserting the needle behind the clavicle. In order to do it without any complications, it is necessary to perform the following actions:

1. Make hydrodissection of the tissues behind and under the clavicle. This will allow moving the attached pectoralis musculus from the bone and enlarge the retroclavicular space.

2. Turn the patient’s head to the opposite side from where the operation is to be performed. The pectoral arch with upper extremity turn down and forward maximally what will allow putting the clavicle forward and provide comfortable position for performing the operation.

3. Use only the recommended needle for inserting the suture, the bending and the length of which are aimed at the safe performance of the operation.

4. Move the end of the needle exactly along the bone without stopping the process; the surgeon can achieve it if he/she performs the semicircular movement of the needle holder carefully.

**Technique of Ligature Sewing of the Breasts (Method of Thread Lifting of the Breast)**

The respective marking is made beforehand (Fig. 38.4). The operation is performed under general anesthesia with the patient in the semi-sitting position.

The midclavicular line is drawn from top to bottom through the nipple to the inframammary fold, marking points on that line: on the level of the second intercostal space (point A) and the upper and lower edges of the areola. The distance from the upper edge of the areola is divided in halves to point A and marked this point (B), received lines below and upper this point are also divided in halves and marked by points (C and D). By analogy points A1, B1, C1, and D1 are marked below the areola. Oval lines are drawn through these points which outlined the breast in different levels.

![Fig. 38.4 Breast markings for subcutaneous pursestring and lifting (the thread method of the breast lifting)](image)

The operation is started with bayonet incisions, 1–1.5 cm in depths, at points A, B, C, D, which are widened by blunt method with the use of the “mosquito.”

Subcutaneous pursestring of the breasts is performed with Aptos Needle 2/0. To perform this, the point of the needle is inserted in the wound in point A and the thread is taken under the skin according to the marking. The needle is partially taken out and turned if it is needed, moving it further according to the line of the marking until reaching the point of insertion, and it is taken out in point A. Then the thread is pulled out with its 5–7 cm ends left out and taken to the holder.

Subcutaneous pursestring of the breasts according to the rest of the lines that had been drawn through points B-B1, C-C1, and D-D1 of marking is done by analogy. Therefore, the breasts are fringed with threads in four levels. After that the threads are lifted and the ends are bound together alternately in the form of knots starting from point A to point E.

Then, with the use of the same blunt-pointed needle, the thread for running under the clavicle (Aptos Needle DRN 60) is tied to the thread from point A to the thread from point C, the thread from C to point B, the thread B to the thread A, and the thread from this point to the thread which is fixed unto the clavicle.
In this way, the breasts are lifted to the aesthetically acceptable form and position. The important features of this operation are the following:

1. Selection of the patients by indication.
2. Insertion of the needle hypodermically at the necessary depths without visualization of the thread through the skin.
3. Subcutaneous pursestring of the breasts in the way that in the area of the entrance and the exit of the turn of the needle, there are no retractions of the breasts left.
4. Even lifting of the threads and their tying together at the same level with the control of the required form.

**Combination of Classical Mastopexy with the Method of Ligature Sawing of the Breast and Its Suspension unto the Clavicle**

In many instances of mastopotomy, when there are no indications to a separate ligature mastopexy operation, classical mammoplasty is inevitable (mastopexy or reductive mammoplasty). Such cases of aesthetic pathology of the breast manifest themselves as conspicuous skin excess, significant skin ptosis, laxity of the stroma, hypertrophy of the mammary glands, etc. The authors always complement these operations with the techniques of subcutaneous pursestring and suspension of the breast unto the clavicle.

Point A is marked on the skin in the area at the middle of the clavicle and point B on the level of the second intercostals space. Bayonet incisions are performed at each point, the incisions subsequently widened by blunt method with the use of the “mosquito.”

The essential stages of classical mastopexy are then performed: incisions and creation of a parenchymatous flap and pocket above the upper section of the breast for its subsequent transfer.

Manipulation pertaining to suspension of the flap under the clavicle is then performed. To this end, the upper side of the flap, a blunt-pointed needle is run subcutaneously in several passages and a knot placed, letting a 7–10 cm end of the thread hang loose. The needle is then pulled out from the wound opening at point B, inserting around the clavicle (see above for a description of this manipulation’s technique) and returning to point B and on into the wound at the side of the flap’s upper edge, where, after moderate lifting, it is tied to the remaining bit of the thread. This reliably fixes the flap in a more elevated position, thus filling the upper slope of the breast.

In the long run, however, this method alone does not necessarily ensure the stability of the entire breast in its new position. There were cases when, after the stable condition of the flap and the nipple-areola complex was provided, the breast slid down from the upper side and laterally, thereby creating an aesthetically unacceptable enlargement of the lower and lateral sections of the breast. Similar undesirable aesthetic manifestations were registered after classical reductive mammoplasty.

To avoid this, the authors almost always complement classical mastopexy or reduction mammoplasty with subcutaneous pursestring of the breast with Aiptos Needle 2/0 and suspension to the clavicle. That part of the operation, as in the case of the ligature sawing of the breast, is performed without classical mastopexy (see above for the technical description of this manipulation), the only difference being that each passage of the thread was always done through one and the same incision (point B). It was sometimes sufficient to make less than 4 usual passages of the thread. In this way a stable aesthetically acceptable shape is acquired and position of the mammary gland.

**Combination of Augmentation Mammoplasty and Ligature Sawing Method with Suspension of the Breast to the Clavicle**

In case of augmentation mammoplasty, a mastopexy (often performed following the classical techniques, such as incisions, excisions of cutaneous excesses, mobilization and distribution of parenchymatous flaps) is often necessary. In certain cases such invasive techniques can be
dispensed with and confine to an operation of augmentation mammoplasty in combination with the hypodermic bodice method. Such a combination must be selected for patients running the risk of a postoperative relapse of the glandular mamma potasis.

The usual stages of augmentation mammoplasty (incision, creation of a pocket for the implant, hemostasis) are performed, after which the Apta Needle 2/0 is passed (classical method) and the ends left at the fasteners, at the same time taking care that during the subcutaneous passage of the needle it does not appear in the opening of the pocket so that the thread is always passing within the parenchymal layer. Then the implant is inserted and wound closed. The threads are pulled up and tied successively with its ends to each other into knots and then suspending the whole construction to the clavicle (see above for the technical description of this manipulation).

Such a combination of operations made it possible to ensure the stability of both the implant itself and the glandular mammary as a whole in the long run.

The key steps of the given simultaneous operation, along with aforesaid conditions, are as follows:
1. Selecting the patient strictly upon indications and with the correct operation result forecast
2. Subcutaneous passage of the needle at the required depth without the visualization of the needle both from the side of the skin and from the wound surface of the implant pocket

Discussion

An overwhelming majority of the colleagues regard the methods of thread lifting of the breast as doubtful, keeping in mind the expression of Aufricht that "placing hope in ligatures is like hanging the mozzarella cheese on a wire" [2]. The comparison is, of course, primitive and incorrect, but a carelessly uttered phrase of a well-known specialist has for a long time turned away the surgeons from the mere thought of examining this statement in practice. Recently though, aesthetic surgeons, including quite distinguished experts whose opinions are respected, have begun, albeit with caution, to review the established dogmas. They have begun to pay more attention to the champions of the thread lift methods, some of them even encouraging their colleagues to get involved into serious efforts to study these techniques [6].

In any plastic surgery when it is necessary to reduce the area of the skin, one of the two well-known methods is used. The first one is resection of the necessary amount of skin in the process of operational intervention, and the second one is that excess skin tissue is not removed but is redistributed as a result of minimally invasive intervention and then awaiting its retraction, which is made possible by the well-known ability of the skin to shrink after being lifted. The second method in particular lies in the basis of some of endoscopic aesthetic operations and methods of thread facelift. The same characteristic of the skin is taken into account and applied in the operation of "hypodermic bodice."

Having been long working with the thread methods which require soft tissue lifting without excising excess skin and perfecting the Apta methodology of facial soft tissue uplift, the authors have noted the long-term lift effects. Moreover, in the process of performing invasive aesthetic surgery (facelift, platysmaplasty) on the patients who had previously undergone thread lifting manipulations, it was noted that the threads stayed in the same subcutaneous positions they were originally placed in, were reliably fastened, and supported the tissues in the elevated position. Clinical results were backed up by morphological research that showed in the tissues surrounding the threads the collagenosis process increasing that was evident by the expansion of the fibrous tissues and formation of conjunctive tissue chords which, going deeper toward the fatty tissue and outwards to the derma, intertwine with conjunctive fibers of these layers. Also noted was the improvement of the hemodynamic indicators, which morphologically manifests itself in the increase of the number of blood vessels against the vasculature density [10].

Years of positive experience of applying ligation methods to the face and the neck prompted
the authors to use threads for lifting various parts of the body including ptosis-deformed breast. The authors have defined the indications and designed the Aptos thread mastopexy operational technique, the very first applications of which showed promising results. The indications for undergoing such operations are considered to be:

1. A small or a moderate ptosis of the milk glands (I–II degree)
2. A small size of the milk glands (relative size 1–2.5)
3. A small or a moderate excess of skin
4. A small extent of involuntary changes of the breast tissues

Originally such operational intervention was performed in case of primary ptosis or a breast ptosis relapse in postoperative period and in the process of excising rough postoperative cicatrix often detected after classical mammoplasty operations. The clinical indications of the threads were subsequently expanded for aesthetic surgery of the breast and designed techniques of Aptos lifting for improving the results of classical mastopexy and reductive and augmentation mammoplasty. Rejection of classical mastopexy in favor of the thread method of the breast lifting in moderate cases of primary ptosis or its relapse is dictated by the possibility of reducing operational invasion, lack of major incisions, and corresponding cicatrices.

The necessity of ligature lifting simultaneously with classical mastopexy is evident, because the parenchymal flap, which fills the upper slope of the breast for enlargement of the glandular projection, often slides down during the postoperative period causing risks of a ptosis relapse for the lower slope of the breast. For the very same reason, in cases of classical augmentation mammoplasty when the downward sliding of the implant or an occurrence of fibrous ptosis (the implant’s position being stable) was expected, the authors also combined a breast-enlargement operation with the method of “hypodermic bodice.” The same combination was used with reductive mammoplasty as well. By using such intervention combinations, we managed to achieve a stable position of the breast on the frontal surface of the chest in the long run.

As for the number of the sutures around the breast, in most cases of separate operations of hypodermic bodice, four sutures were enough. In some others when the authors opted for a thread mastopexy of glandulae mammariae above size three, a fifth suture was part of the original planning. Where simultaneous operations were planned (classical mastoectomy or reductive mammoplasty plus Aptos method), 3 or even 2 thread sutures were sufficient for a stable fixation of the gland in its new elevated position.

The operational interventions were performed easily without extra trauma, the postoperative period in most cases did not show any after effects, while the aesthetic results were good and stable. In all cases the abovementioned method provided consistent, long-lasting mastopexy (Figs. 38.5, 38.6, 38.7, 38.8, 38.9, 38.10, 38.11, 38.12, 38.13, 38.14, 38.15, 38.16, 38.17, 38.18, 38.19, 38.20, and 38.21).

During the whole period of performing the operations, the following complications and unpleasant evidences occurred:

1. Unpleasant sensations in the clavicle area possible within 2–3 days, especially when moving the thoracic girdle; such pains easily restricted by injection courses of Sol. Lidokaini 0.5 % – 5 mL in the clavicle area.
2. A case of incompetence of the subcutaneous knot at point C on the left side on the third day after operation (Fig. 38.22). The result is a ptosis relapse of the left breast and obvious asymmetry of the mammary glands. Under infiltration anesthesia, the wound was opened in the said location, ends of the threads found, and a new stable suture applied. Postoperative period was without complications and the final result satisfactory.
3. A case of acquiring an atrophic indrawn scar, which was resolved with the method of lipofilling (Fig. 38.23).
4. Some cases of skin indentation in the places of the needle turns or of the skin-deep needle conduction (Fig. 38.24). The defects were eliminated with the help of massage and the method of lipofilling.

Patients are seen regularly after surgery with these methods, as long as the methods are new
and require special attention. The following issues in the postoperative period are observed: the condition of the milk gland near the reticule, the invasion of the reticule by the fibrous tissues, the condition of the clavicle and its stability, and the condition of the milk glands during menses, pregnancy, labor, and lactation and during the following period. There have been two cases of pregnancy, delivery, and further lactation and no problems were observed (Fig. 38.25).
Fig. 38.6 (a) Preoperative. (b) Two weeks after thread lifting of the breast
Fig. 38.7  (a) Preoperative. (b) One and a half years following thread lifting of the breast
Fig. 38.9  (a) Preoperative. (b) Four years and nine months after thread lifting of the breast
Fig. 36.11 (a) Preoperative; (b) Five years after thread lifting of the breast
Fig. 38.7 (a) Preoperative; (b) One and a half years following thread lifting of the breast
Fig. 38.13  (a) Preoperative. (b) Wound at time of removal of sutures. (c) Two years following classical mastopexy and thread lifting of the breast.
Fig. 38.14 (a) Preoperative. (b) Three years following classical mastopexy and thread lifting of the breast

Fig. 38.15 (a) Preoperative. (b) Two, Five years after classical mastopexy and thread lifting of the breast
**Fig. 38.16** (a) Preoperative. (b) Eight days after augmentation mammoplasty, reduction of the left side, and thread lift of both mammary glands.

**Fig. 38.17** (a) Preoperative. (b) Four months after reduction mammoplasty and thread lift of the breast.
Fig. 38.18 (a) Preoperative. (b) Four months following reduction mammoplasty and thread lift of the breast
Fig. 38.20  (a) Preoperative, (b) Preoperative marking. (c) Twenty days after augmentation mammoplasty and thread lift of the left breast.
Conclusions

An 8-year period of performing mastopexy using “hypodermic bodice” method by subcutaneous pursestring of the breasts, numerous examples, and accumulated experience have shown that the method has justified the hopes. During the postoperative period, no patient has shown abnormal changes of the milk glands, the substructure, and the clavicle. The shape of the mammary glands, their position, and the parenchymal turgor have been virtually unchanged in the postoperative period over many years. It is only in the cases of weight loss and the corresponding shrinking of the mammary glands and the underlying fatty tissue, hormonal changes, and pregnancy that a minor decrease of the aesthetic condition of the breast was noted (Fig. 38.9).

The hypodermic bodice method as a separate operation as well as in combination with other mammoplasty operations for uplifting the mastoposis is regarded as a promising area in aesthetic surgery of minimal invasion, and they require further examination and accumulation of experience.

References