Mersilene Tip Implants in Rhinoplasty: A Review of 98 Cases

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Reshaping the nasal tip is the most difficult part of a rhinoplasty, particularly in certain types of nasal tip deformities, such as the recessed tip, the thick-skin tip, the boxy tip, the asymmetrical tip, the thin-skin tip, the bifid tip, the turned-up tip, and the turned-down tip. A new approach is introduced regarding the use of Mersilene tip implants. Guidelines for preoperative evaluation and surgical technique are outlined. The so-called “PEPSI” rule (pocket, experience, positioning, shape and size, and incision) is emphasized. The advantages and disadvantages of the Mersilene tip implant are discussed. The Mersilene implant was used in the tip region in a total of 98 patients, and the results are satisfactory.

Nasal tip surgery is probably the most sophisticated aspect of rhinoplasty, particularly in the case of recessed and thick-skinned tips. Various studies have been published on the use of autogenous and alloplastic implants to reshape and augment the nose, with varying degrees of success.1–9 This paper discusses a new approach to tip augmentation using Mersilene mesh. The indications, surgical technique, and results are presented. Advantages and disadvantages are discussed in comparison with cartilaginous tip grafts and other alloplastic implants.

MERSILENE MESH IMPLANTS

Mersilene mesh is a multifilament dacron. It is a polyester fiber mesh constructed from polyethylene terephthalate. The mesh is supplied by Ethicon Company as a white sheet measuring 30 × 30 cm (12 × 12 inches). The mesh is nonabsorbable and highly flexible, yet it retains a certain degree of body when handled. It is easily cut and does not unravel.

Mersilene mesh has two important properties:

First, the soft, pliable nature of the implant allows it to be easily shaped. It also makes it difficult to detect the implanted mesh by skin palpation. Second, the meshy form of the implant allows the surrounding connective tissue to invade it, consequently fixing the implant firmly in place and preventing its displacement.

INDICATIONS FOR MERSILENE TIP IMPLANTS

RECESSED TIP

The bulk of the implant increases the projection of the tip. The degree of increase is directly related to the volume of the implant.

THICK-SKIN TIP

Resection of the alar cartilage has a limited effect on this type of nasal tip, since the thick skin does not shrink as much as thin skin. Consequently, thick skin has a tendency to retain its bulky shape regardless of how much alar cartilage is resected (in fact, too much cartilaginous resection may further increase the bulkiness of the tip by inducing a keloid-like reaction in the dead space). A Mersilene implant* projects the central point of the tip, conferring the illusion of a finer and more tapered tip.

BOXY TIP

Resection of the wide, heavy alar cartilages is not enough to correct this type of tip deformity, since the extra skin at the domes tends to flatten. A Mersilene implant remedies the situation by producing a pointier tip.

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*By Instrumentarium, B. P. 120, Terrebonne, P.Q., Canada, J6W31.5.
Asymmetrical Tip

A tip implant is used as a filler to raise the depressed side.

Thin-Skin Tip

Very thin skin reveals any irregularity of the underlying cartilage. The implant is used as a buttress to compensate for the lack of subcutaneous tissue.

Bifid Tip

The implant is simply used as a filler to obliterate the interdomal cleft between the two domes.

Turned-Up Tip

In this situation, the tip implant is placed below the actual level of the domes, giving the illusion of a downward rotation of the tip.

Turned-Down Tip

Here, the implant is placed above the actual level of the domes, giving the illusion of an upward rotation of the tip.

TECHNIQUE

Preparation of the Implant

The Mersilene mesh is generously wetted in water or saline for easy handling. The dripping mesh is then spread on a waterproof paper towel. The surgeon uses both hands to fold the edge of the mesh upon itself seven times to form a pad seven layers thick and about 1 cm wide. The folded edge is then secured by the application of three or four mosquito clamps along its length. This folded strip is called the pad strip and is thus considered one pad, or seven layers, thick. Later, if a tip implant, say, three pads thick is needed, the pad strip is used to supply three pieces of 1 cm each piled on top of the other to form an implant that is three pads, or 21 layers, thick. The implant is then shaped like a lozenge with a pair of Mayo scissors (Fig. 1, A). The lozenge \( \triangle \) should measure about 7 x 7 mm. The choice of a lozenge shape is based on the principles of the "light reflex" theory to ensure a natural-looking tip.\(^{10,11}\)

After it is shaped, the implant is held between two mosquito clamps. A 4-0 chromic transfixion suture is placed in the center to keep the layers together.

Choice of Implant Volume

The volume of the tip implant ranges between one and four pads (7 to 28 layers), depending on the existing degree of tip recession, and volume is estimated as follows:

1. **No tip recession**: One to two pads are used. An example is the case of a thick-skinned tip in which the implant is used only to define the tip and make it look pointier, rather than to increase its projection.
2. **Mild to moderate tip recession**: Two to three pads are used. This is the most commonly used thickness.
3. **Severe tip recession**: Four pads are used.

In unusual cases, up to six pads may be used to augment an extremely recessed nasal tip.

Operative Steps

1. An outline of the implant is drawn on the nasal tip preoperatively. The left and right angles of the implant (a and b) are horizontal (Fig. 1, B).
2. A large right rim incision 2 cm long is made along the caudal border of the right alar cartilage with a no. 15 blade (Fig. 1, C).
3. Dissection of a large subcutaneous pocket (twice as large as the implant) is performed with Stevens scissors (Fig. 1, D).
4. The implant is soaked in a concentrated antibiotic solution (bacitracin).
5. The implant is held horizontally with a curved mosquito clamp so that the tip of the clamp rests on point b of the implant (Fig. 1, E).
6. The double sharp hook is used to pull the right alar rim up, while the opened Stevens scissors are used to press the dome area down (Fig. 1, E). The subcutaneous pocket is now wide open and ready to receive the implant.
7. The implant is introduced with the curved mosquito clamp in such a way as to enable the surgeon to feel the tip of the clamp under point b of the skin (Fig. 1, E and B). The mosquito clamp is tilted slightly up or down to ensure that the line ab of the implant is horizontal.
8. The upper and lower parts of the implant are held in place with the fingers gently pressing over the skin while the mosquito
clamp is widely opened and slowly retracted (Fig. 1, F).
9. One suture of 4-0 chromic catgut is placed in the middle of the incision.
10. Two grams of IV cephalosporin sodium (Ancef) is presently given to all Mersilene patients intraoperatively after excluding allergy to penicillin.

RESULTS
The Mersilene tip implant was used in 98 patients. The follow-up period ranged from 4 months to 3 years, with an average of 11.4 months. Thirty-five patients had a reasonable long-term follow-up for over 12 months (of these, 11 patients were followed up for over 24 months). All patients were given 1 week of postoperative broad-spectrum antibiotics. No intraoperative antibiotics were given to the patients in this series, but they have been given routinely to new patients since. Figures 2 to 6 show patients with preoperative tip deformities and their postoperative results.

COMPLICATIONS

Infection
This is the most crucial and significant complication. Eight cases of rejection (8.2 percent) were
encountered. All occurred during the first 7 months, except one at 14 months. All started with an infection, except in one patient in whom the implant was seen during a follow-up examination to be extruding into the vestibule through a tiny hole without any signs of inflammation. Infection usually presents itself as a swelling and redness of the nasal tip skin with a purulent
discharge into the vestibule. Treatment is started immediately with a high dose of oral antibiotics, and the patient is booked for a simple removal of the implant as soon as possible under local anesthesia. After a local infiltration of about 3 cc of lidocaine 1% with epinephrine 1:100,000, a rim incision as large as the original incision is performed and the implant is easily removed,
since no invasion of tissue is possible in the event
of infection. If the infection is neglected (as hap-
pened when one patient failed to call the office
until 3 weeks after the onset of the swelling), the
infection may drain through the external skin by
means of a small opening. In all cases of infection,
removal of the implant will be followed by a
rapid disappearance of the infection. A new im-
plant can be reintroduced under local anesthesia
2 or 3 months later.

In this series, three of the eight rejection pa-
tients underwent a repeated implant insertion,
and all took well. In the other five rejection patients, the shape of the tip did not change sufficiently to justify a second surgery. This may possibly be attributed to a fibrous capsule persisting around the site of the removed implant.

Note: Over the last 9 months, a series of over 45 patients not included in this study was given 2 gm IV cephalixin sodium (Ancef) intraoperatively on an experimental basis to reduce the infection rate. The results have been most surprising and extremely encouraging. So far, no infections have been encountered.

Fig. 5. (Above, left) Preoperative frontal view of a severely bulbous thick-skin tip with very poor definition. (Above, right) Postoperative result 1 year following the use of Mersilene tip implants (five pads). (Below, left) Preoperative profile view. (Below, right) Postoperative profile view.
Fig. 6. (Above, left) Preoperative frontal view of an American black patient with a scarred, thick-skinned, ill-defined, and recessed tip, together with a dorsal saddling secondary to a previous rhinoplasty done elsewhere. (Above, right) Postoperative result 8 months following a revision rhinoplasty and the use of Mersilene implants in the tip (five pads) and dorsum (three pads). Cartilage grafts were used in the nasolabial angle. A blepharoplasty also was performed. (Below, left) Preoperative frontal view. (Below, right) Postoperative frontal view.

Asymmetry

No cases of asymmetry were noted in this series. This complication is easily eliminated by exercising extra care in positioning the implants.

Incorrect Implant Volume

One case of insufficient tip implant was corrected under local anesthesia simply by adding a second implant on top of the old one. The same
result could be achieved by removing the original implant and introducing a new and larger one. However, this latter option is technically more difficult.

If excess implant volume is the problem, the original implant may either be removed and replaced with a smaller one or resected to the proper size with a heavy pair of dorsal scissors or a blade. In all cases of implant adjustment, whether it be resection or addition, the main thing to remember is to ensure that the incision and the subcutaneous dissection are both as large as the original ones.

**DISCUSSION**

**The "PEPSI" Rule**

The so-called "PEPSI" rule is a list of five important guidelines essential to the success of any alloplastic mesh implant:

1. **Pocket**: The subcutaneous pocket should be large, at least twice the size of the implant. This is crucial, since the pocket always shrinks postoperatively. Too small a pocket will result in implant extrusion.
2. **Experience**: The surgeon inserting the implant should be equally prepared to remove it should problems arise.
3. **Positioning**: Erroneous placement of the implant (e.g., too high, too low, too lop-sided) will be reflected in the results. The implant should be at least 3 mm from the incision.
4. **Shape and Size**: The shape should be in the form of a lozenge, as previously described. The thickness ranges from one to five pads. The most frequently used thickness is two to three pads.
5. **Incision**: The rim incision should be long enough (2 to 3 cm) to allow good exposure and easy introduction of the implant.

The two most important points of the "PEPSI" rule are represented by the first and last letters: P for large pocket and I for large incision.

The insertion of the Mersilene implant may be done after the usual nasal tip surgery on the alar cartilages (resection through delivery) as long as the left rim incision is approximated with two or three sutures before the introduction of the implant from the right side.

**Advantages of Mersilene Tip Implants**

Although cartilage tip grafts have virtually no risk of infection and enjoy a very safe long-term record, they are more limited in their aesthetic results and their versatility when compared with Mersilene implants. Their disadvantages include the following: resorption, displacement, sharp edges beneath the skin, predetermined shape, limited volume, and curling.

The advantages of the Mersilene tip implants are many. Mersilene shows no resorption; therefore, the aesthetic result is much more predictable. Mersilene is available in any desired shape, and it is also available in any desired volume without additional surgery. Mersilene also shows no curling or displacement, and it has a natural appearance. It feels natural with a fleshy consistency and has no sharp edges.

The main disadvantage of Mersilene is infection. Intravenous antibiotics given at the time of surgery to patients not included in this study have markedly decreased the infection rate, but the extent of that decrease remains to be determined in the future. In spite of the risk of infection, the Mersilene implants have a much more predictable and more refined aesthetic result than cartilage implants.

The other alloplastic implant that closely resembles Mersilene is Supramid mesh. I used it extensively in the past. It has a lower infection rate than Mersilene, but its one real disadvantage is shrinkage of the implant by 15 to 25 percent within the first year or two. Silastic nasal implants tend to have a very low infection rate, but they are slippery and hard to position properly. They also feel and look unnatural and tend to be mobile under the skin.

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**REFERENCES**


