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CORRESPONDENCE AND COMMUNICATION

A simplified technique for the management of fat necrosis in autologous breast reconstruction☆

Introduction

Fat necrosis is a relatively minor complication in autologous breast reconstruction, but is one that can cause dissatisfaction with the reconstructed breast and also anxiety about tumor recurrence. Fat necrosis is a clinical diagnosis, usually made by physical exam or ultrasound by either the oncologic surgeon or the reconstructive surgeon.[1] The areas are often multicentric and can either be appreciated as small cystic areas or hard nodules within the transferred fat.

We report on our experience using a simplified technique called "needle aeration", for managing relatively small hard nodules of fat necrosis in a population of patients that had undergone previous pedicled TRAM breast reconstruction.

Methods

For the needle aeration technique, after adequate infiltration of local anesthetic, or under general anesthesia, an 18 gauge needle is used to first percutaneously aspirate the nodule to see if there is any cystic component which can be evacuated. (Figure 1) After aspiration, the needle is then reintroduced 30–100 times (depending on the size of nodule) in multiple different tracks into all areas of the nodule. (Figure 2) This technique was only performed on nodules smaller than 4 × 4 cm in size due to the belief that anything larger would be too large to allow infiltration and remodeling. Care is taken not to enter the pleural space with the needle, which could result in a pneumothorax.

Results

Eighteen patients who had previous breast reconstruction with a pedicled TRAM underwent needle aeration of areas of fat necrosis. Fourteen of these 18 patients who underwent needle aeration had the procedure performed in the operating room along with concurrent procedures, while four of these 18 patients had the procedure performed in the office. A total of 22 nodules of fat necrosis were needle-aerated in these 18 patients. The average size of the nodules that were needle aerated was 6 cm^2 with a range of 2–16 cm^2.

Three of the women who had areas of fat necrosis needle-aerated underwent a second aeration of a single nodule at a later time, giving a persistence rate of 13.6 percent (3/22). All three of these women had single nodules that were at the upper limit of our criteria for needle aeration (4 × 4 cm). Average length of time between the TRAM flap breast reconstruction and the needle aeration was 13.5 months (range, 7–18 months), excluding the second needle aeration in the three patients. Softening of the nodules was seen at the one-month follow-up appointment in all 15 patients who did not require a second needle aeration, and the nodules remained soft at all future follow-ups (range of six months to six years).

Discussion

Traditional management of fat necrosis in autologous breast reconstruction includes initial observation followed

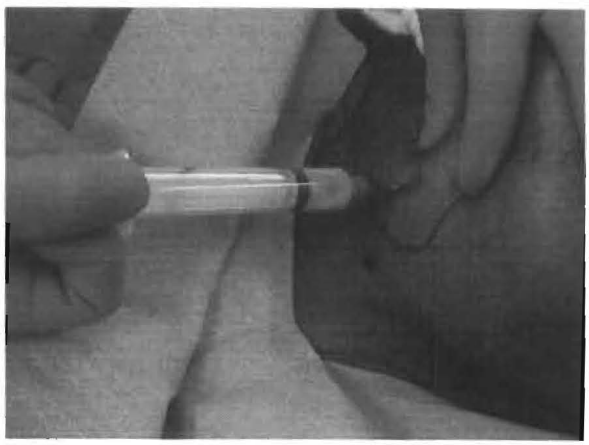

Figure 1 An 18-gauge needle connected to a 10 cc syringe is first percutaneously introduced to aspirate any cystic component to the area of fat necrosis.

☆ This paper has not been presented at a scientific meeting.

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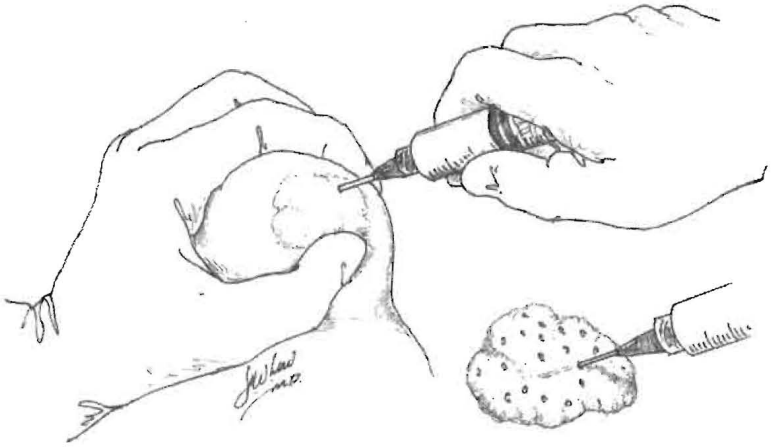

Figure 2 Illustration depicting the needle aeration technique in which the needle is reintroduced 30–100 times (depending on the size of nodule) in multiple different tracks into all areas of the nodule, creating many pores to allow revascularization and tissue ingrowth.

by surgical excision. Fat necrosis often occurs in a patchy nature with small nodular areas interspersed between normal adipose tissue, which makes resection difficult without sacrifice of some normal tissue. The drawbacks of surgical excision include the dissection to reach the nodules, possible new skin incisions, and ultimate loss of tissue within the reconstructed breast mound, which can cause contour deformities. Recently, ultrasound-assisted liposuction and suction-assisted liposuction have been reported as methods to treat fat necrosis nodules.[2] However, as with surgical excision, liposuction removes tissue and can cause contour deformities.

We postulate that with our aeration method, the creation of multiple tracks throughout the nodule allows inflammatory cells, surrounding fat cells, and stem cells, to enter into the necrotic or fibrotic nodule that otherwise would not have been penetrated. This in turn stimulates revascularization of the nodule which helps with removal of necrotic debris. Adipose ingrowth softens the nodule and causes it to disappear on clinical exam over the ensuing weeks.

Conclusions

Fat necrosis is a minor, but bothersome and worrisome complication of autologous breast reconstruction. It has classically been managed by surgical excision or liposuction, which can introduce new scars and cause contour deformities. The great advantage of this new method of needle aeration is that the nodules soften so that they don't have to be surgically removed as in all the other reported methods of treatment, thus maintaining an acceptable breast contour with a minimally invasive, safe, and effective technique.

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Conflict of interest statement

The authors have no conflicts of interest.

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