

Brachioplasty After Bariatric Surgery: Personal Technique

Franco Carlo Migliori · Marco Ghiglione ·
Gabriele D'Alessandro · Gian Giacomo Serra Cervetti

Received: 17 February 2008 / Accepted: 7 March 2008 / Published online: 6 May 2008
© Springer Science + Business Media, LLC 2008

Abstract

Background A review of the results of the standard technique for “batwing” deformity after massive weight loss led to the need to optimize the cost/benefit ratio in terms of maximal correction/less visible scars.

Methods Between 2001 and 2007, 29 patients were operated with a new technique based on a careful preoperative evaluation and markings, followed by an intraoperative skillful handling. This technique is not easy and needs plastic surgery experience and a long learning curve.

Results The esthetic results are far better than those obtained with other techniques, especially the arm lower profile.

Conclusion The complication rate is similar to other techniques, even if a potential low risk for ulnar nerve damage is present.

Keywords Arms · Bariatric surgery · Batwing · Body-contouring · Brachioplasty · Cost/benefit ratio · Medial bicipital groove · Profile

Introduction

Within body contouring procedures performed on patients who had previously undergone bariatric surgery, brachioplasty appears to be rather exclusive because the request is definitely less than for other regions (breast, trunk, or legs).

On reviewing the literature [1–8], modest results are usually found, due to modest improvement of the morphological defect, together with notable scars and significant risks for complications.

In this particular anatomical district, the best possible result should be pursued, optimizing cost/benefit ratio in terms of *maximal correction/less visible scars*. If this strategy cannot be applied, brachioplasty should be discouraged.

A technique has therefore been developed, based on a linear scar programmed to be hidden in the medial bicipital groove and aiming to obtain the best possible morphological correction. This does not mean passing from a “batwing” effect (Fig. 1) to a “sweater sleeve” effect (Fig. 2), but to a normal arm profile. A stigmata of this “normality” should be represented by a slight concavity in the lower arm profile proximal to the elbow (Fig. 3).

Materials and Methods

Patients were grouped according with Strauch four-class classification of defects [2]:

1. Minimum or modest subcutaneous fat with minimum cutaneous laxity
2. Generalized accumulation of subcutaneous fat with minimum cutaneous laxity
3. Generalized obesity with extended cutaneous laxity
4. Minimum subcutaneous fat with extended cutaneous laxity.

Post-bariatric surgical patients usually belong to classes 3 and 4.

The anatomical locations of interest for surgery are area 3 (forearm) and area 4 (axilla), according with Strauch [2] anatomical scheme.

F. C. Migliori (✉) · M. Ghiglione · G. D'Alessandro ·
G. G. Serra Cervetti
Plastic Surgery Division, San Martino University Hospital,
Largo Rosanna Benzi, 10, Monoblocco 8^A piano levante,
Genoa, Genoa 16132, Italy
e-mail: franco.migliori@fastwebnet.it



Fig. 1 An example of “batwing” defect

Preoperative Markings

Special care is spent in evaluating the amount of tissue to be excised. Only the anterior aspect of the excision is normally drawn, and the actual quantity of skin to be resected intraoperatively determined. This algorithm is operator dependent, and the compulsory rule is that markings must be drawn by the first surgeon.

With the patient standing in the frontal view, arms abducted at shoulder level and forearms prone (“crucifix” position), the incision line is drawn within the medial bicipital groove, while applying with the contralateral hand slight antero-posterior tension on the medial face of the arm (the same tension will be applied during surgery; Fig. 4). This line continues on the posterior axillary pillar, gently curving at 90° and becoming vertical, just posterior to and extending as axillary hair (4–5 cm; Fig. 5).



Fig. 2 “Sweater sleeve” effect, typical unpleasant result of a brachioplasty

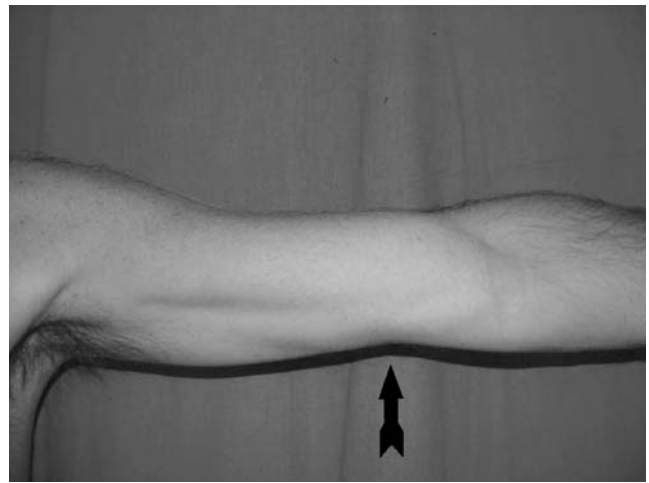


Fig. 3 Normal arm, with lower profile concavity proximal to the elbow

Surgical Technique

After a wide literature review, regarding proposal of any kind of incision shape, no acceptable demonstration was found that a linear incision (from medial epicondyle to axilla along the medial bicipital groove) is worse than other incisions. A deep incision is done on that line, directly on the muscular fascia, which preserves it.

An antero-posterior undermining is gently performed with the tip of a blade, following the fascial surface for almost half the circumference of the arm. All perforating vessels and nerves, long enough to be let loose, are preserved until excessive tissue extension is determined (Fig. 6).

As the undermining is completed, an overcorrective tension is applied to the anterior edge of the incision and to the undermined flap, similar to the one applied while marking.



Fig. 4 Markings performed with tissues under tension

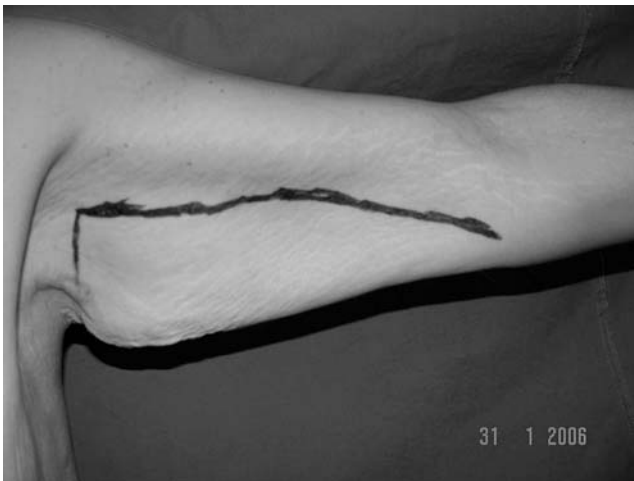


Fig. 5 Final aspect of the drawing: quite a simple one, because other evaluations will be made intraoperatively

The flap is overlapped at the incision edge, whose superficial projection is spot-marked with 3–4 transfix needles and completed with a straight line joining incision tips. The incision is then performed obtaining, in this way, an excised tissue extension which is always rather abundant: only perforating vessels and nerves feeding this area are tied and cut (Fig. 7).

The suture is performed under tension, so great care is spent to provide a precise and tight edge fitting, by at least two suture layers. The first stitch must fix a posterior flap whose medial length is determined by the axillary incision angle (Fig. 8). Suction drains are placed and maintained for 1–2 days postoperatively.

Postoperative Care

Discharge is usually allowed within 2–3 days postoperatively. Elastic tubular bandages (i.e., Tubigrip®) are worn for



Fig. 6 Undermining performed on the fascial layer, preserving vessels and nerves



Fig. 7 Redundant tissue excision completed

about 1 month postoperatively. Drugs (i.e., Dermatrix®) and devices preventing pathological scars are strongly suggested, because hypertrophies and keloids are frequent in this area.

Results

From Nov. 2001 to Dec. 2007, 29 patients who had previously undergone to bariatric surgery, were operated as brachioplasty. The patients were all female, all Caucasian, average age 41 (range 35–48), and were all operated bilaterally. The mean operating time was 135 min (range 115–155). The mean hospital stay was 3 days (range 2–4) after the surgery in the 26 cases without main complications. In three cases (one ulnar nerve compression, two major seromas), mean hospital stay was increased to 10 days (range 8–12). Follow-up time ranged from 6 months to 3 years.



Fig. 8 Flap rotation on axillary incision angle



Fig. 9 Case 1 (woman, 38 years old, gastric bypass) preoperatively



Fig. 12 Case 2 postoperatively

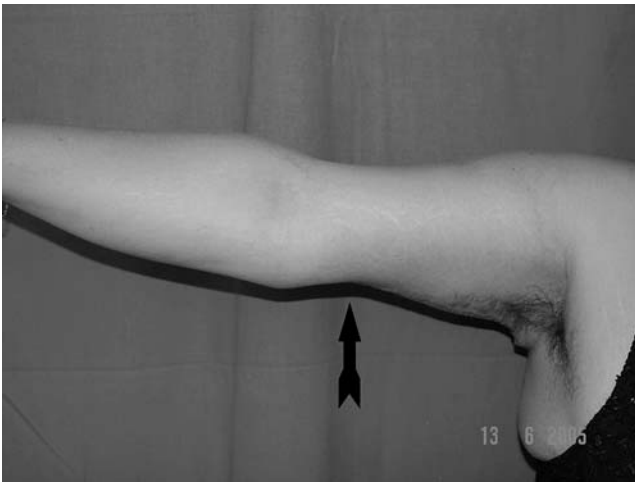


Fig. 10 Case 1 postoperatively



Fig. 13 Case 3 (woman, 42 years old, BPD) preoperatively



Fig. 11 Case 2 (woman, 46 years old, BPD) preoperatively

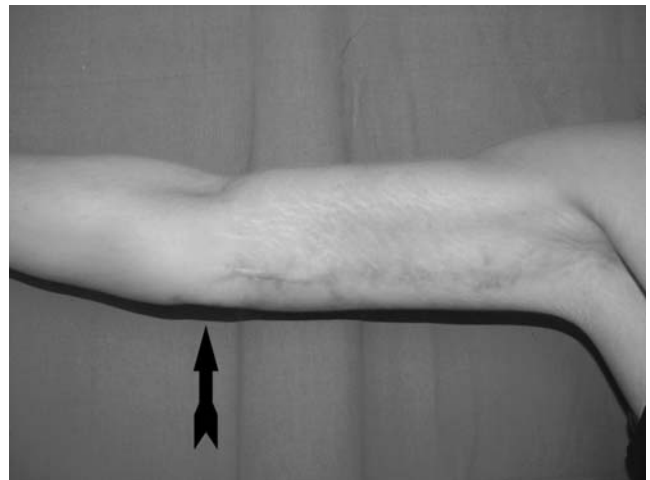


Fig. 14 Case 3 postoperatively

BUT study [9] evidenced 100% improvement of patient discomfort.

Complications

General complications are represented by scar hypertrophies/keloids (40%), edema (15%), seromas (10%), and wound dehiscence (5%). Specific complications include:

1. Compression of the ulnar nerve (1 case) with acute pain and hand motor deficiencies; the symptoms must be promptly recognized and solved by partial suture releasing and sequential delayed closure (1 stitch/day within 1 week)
2. Section of cutaneous branches of the anterior medial brachial nerve (two cases), persisting in small areas of anesthesia (2–3 cm²).

Discussion

As clearly evidenced by images (Figs. 9, 10, 11, 12, 13, 14), this technique confers a natural arm shape and profile, reproducing the inferior concavity proximal to the elbow. These results, compared with average ones published in literature, appear better. Linear scar is long, seldom of high quality, but often well hidden within the medial bicipital groove and not visible in the frontal view as well as in the rear one.

Respect of sensitive cutaneous nerve branches affords lets good preservation of touch within the medial arm face.

This is not a simple technique, requires a long learning curve, and is strongly operator dependant; thus, a good experience in body-contouring plastic surgery is needed. In spite of this, we are strongly convinced that this is the best way to face “batwing” deformity: arm profile defects are not primary esthetic problems in a post-bariatric patients, and optimal results should be aimed for, in order to justify such a quite invasive surgery. In our experience and in the literature, an easy-to-use procedure gives little more safety but much less esthetic improvement.

References

1. Guerrero-Santos J. Brachioplasty. *Aesth Plast Surg.* 1979;3:1–4.
2. Strauch B, Greenspun D, Levine J, et al. A technique of brachioplasty. *Plast Reconstr Surg.* 2004;113(3):1044–8.
3. Bolivar de Souza Pinto E, Erazo P, Matsuda CA. Brachioplasty technique with the use of molds. *Plast Reconstr Surg.* 2000;105(5):1854–60.
4. Lockwood T. Brachioplasty with superficial fascial system suspension. *Plast Reconstr Surg.* 1995;96(4):912–20.
5. Goddio AS. A new technique for Brachioplasty. *Plast Reconstr Surg.* 1989;84(1):85–91.
6. Mahjouri F. A technique in Brachioplasty. *Plast Reconstr Surg.* 2005;116(2):678–9.
7. Abramson DL. Minibrachioplasty: minimizing scars while maximizing results. *Plast Reconstr Surg.* 2004;114(6):1631–4.
8. Teimourian B, Malekzadeh S. Rejuvenation of the upper arm. *Plast Reconstr Surg.* 1998;102(2):545–51.
9. Pecori L, Migliori F, Adami GF, et al. Attitudes of morbidly obese patients to weight loss and body image following bariatric surgery and body contouring. *Obes Surg.* 2007;17(1):68–73.