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Patient Satisfaction with Posterior Versus Posteromedial Brachioplasty Scar

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ABSTRACT

With the increased popularity of brachioplasty, and with postoperative scarring being the major concern for patients, choice between different incision techniques should be carefully considered. The most widely used approaches are the posterior and posteromedial ones. In this work, we utilized the two types of approaches in two patient groups, 8 patients each, and compared patient-perceived results. The overall satisfaction level was slightly higher, on average, in the posteromedial group but this was not statistically significant. However, patients in the posteromedial group had a statistically significant lower scores of perceived scar visibility (p=0.0239). Our data suggest that a posteromedially-placed scar would be the optimal choice for patients undergoing brachioplasty, taking into account individual patient needs.

Key Words: *Brachioplasty – Arm lift – Aesthetic surgery – Plastic surgery – Scar position .*

INTRODUCTION

The demand for brachioplasty is widely on the rise **[1]**. The number of brachioplasties performed annually in the United States was documented to have increased from 338 to 14,505 over eight years; this represents a 4191% increase, and when compared to the 36% increase in breast augmentation surgeries performed in the same years, this shows the great popularity of the procedure and its widespread acceptance by the general population **[2]**. Many refinements and adjuncts have supplemented the technique over the years, but most of the authors agree that postoperative scarring is the major concern for patients **[3,4]**.

Since the initial description of the procedure in 1954, many surgeons have proposed different techniques with different scar positions, claiming superiority of one over the other **[5]**. The rates of wound dehiscence and hypertrophic scarring have been reported to be 9% and 24%, respectively **[6]**. The major cause for patients being unsure about the operation is, subsequently, the nature and visibility of the scarring **[3]**.

There are three major positions commonly chosen for brachiplasty incision: The posterior incision (sometimes referred to as posterior straight incision or brachial sulcus incision), the posteromedial incision, and the bicipital incision (sometimes referred to as the medial incision) **[2,7]**. The bicipital (medial) scar, although less visible, is not preferred by patients in previous surveys, and thus most surgeons opt for a posterior or a posteromedial approach **[2,8]**. No head to head comparison between both approaches has been sought in any previous work and it remains a matter of surgeon's preference.

In this work, we aimed to describe our own experience with brachioplasty scar placement and compare patient's satisfaction with the outcome of the posterior and posteromedial approaches of brachioplasty.

PATIENTS AND METHODS

Patients and setting:

Our study included patients that had presented to the plastic surgery clinic seeking an arm lift procedure for redundant skin and excess subcutaneous fat. All patients were middle aged (30-60 years old), medically free, and had no local pathology to offset the surgery. After explaining the procedure in details and both types of approaches with the aid of images and marking lines, the patients were given a choice between the posterior incision and the posteromedial one.

We used a quota sampling method to include an equal number of patients in each group (8 patients). A written informed consent was obtained for surgery, and a separate consent was obtained for inclusion of arm images, non-identifying data, and questionnaire responses in our study. All surgeries were performed in the same setting, by the

same experienced surgeon, and using the same surgical tools and technique.

Surgical technique:

All patients underwent general anesthesia and were placed in a supine position with the arms abducted 90 degrees and the forearms fully extended. The patients received a prophylactic antibiotic dose of 2g cephazolin intravenously. An infiltrating solution of 0.9% saline and adrenaline 1:1,000,000 was used. Liposuction of all areas was then performed after a period of 15min with 3mm blunt cannulas in a superficial plane. Additional liposuction was allowed at the end of procedure in case proper shape was not considered satisfactory by the surgeon.

Incision of the skin followed the liposuction immediately and was made in line with preoperative markings. For the straight posterior approach, the marking started in the axilla near the posterior axillary fold directed towards the apex, and extended to the level of the olecranon process. For the posteromedial approach, the marking started at the same point but a smooth forward circular bend was made at the mid-arm level, to end just above the medial epicondyle.

Next, skin excision, including a thin layer of subcutaneous tissue, was performed. Conservative skin removal through traction of marked skin off the arm allowed atraumatic dissection of tissue planes. Care was directed towards preservation of the superfcial fascia septa. The superfcial fascia was exposed and plication was performed with polyglactin-910 sutures to achieve circumferential tissue tightening. Subcutaneous interrupted and running intracuticular sutures were also performed. A final check of symmetry was performed. No drains were left. Once final closure was completed and wounds dressed, a compressive bandage was applied to the whole of the arms to be kept in place for one month postoperatively.

Postoperative:

Examination of the wounds was carried out on day one postoperatively, and all patients were discharged within 24 hours of the surgery. They were followed-up at week 1, month 1, month 3 and month 6 postoperatively. Care was taken to detect any wound complications, asymmetry, or recurrence during each visit.

Questionnaire:

On the final visit, a questionnaire was administered to the patients by healthcare providers (other than the performing surgeon) to evaluate the level of satisfaction with the surgery. A numerical scale of 1-10 was employed. The questionnaire was available in both English and Arabic versions, and included questions that assessed general satisfaction with surgical outcome, meeting of expectations, and visibility of the scar.

Statistical analysis:

Statistical analysis was carried out using IBM SPSS statistics (Statistical Package for Social Sciences software version 18.0, IBM Corp., Chicago, USA, 2009). *t*-tests were performed for comparative analysis.

RESULTS

A summary of the patients' demographics is shown in Table (1). The mean age of the patients was 42.5 years (SD: 6.6 years) in the posterior group and 45 years (SD: 8.1 years) in the posteromedial group. The posterior group had an average preoperative mid arm circumference of 37.6 cm (SD: 11.2cm) and an average preoperative arm/forearm circumference of 5.2 (SD: 1.8), while the posteromedial group had an average preoperative mid arm circumference of 39.1cm (SD: 8.7cm) and an average arm/midarm circumference of 4.7 (SD: 2.1). There were no statistically significant differences between the aforementioned characteristics in both groups.

Table (1): Summary and comparison between the major characteristics of the two patient groups.

Variable	Posterior Group (n=8)	Posteromedial Group (n=8)	*p*-value
Age (mean ± SD)	42.5±6.6	45±8.1	0.464
Mid arm circumference in centimeters (mean ± SD)	37.6±11.2	39.1±8.7	0.768
Arm/Forearm Circumference^ (mean ± SD)	5.2±1.8	4.7±2.1	0.617

^At maximal width.

The overall complication rate was 12.5% (n=1) in the posterior group and 25% (n=2) in the posteromedial group. One patient in each group developed postoperative distal edema at week one that resolved on using compressive dressing, and one patient in the posteromedial group experienced dysthesia due to skin tightness at month one and this resolved spontaneously. No scar-related complications were seen in any of the patients (no hypertrophic scars, keloids or dehiscence). The before and after images of a sample patient from

the posterior group and posteromedial group can be seen in Figs. (1,2), respectively.

Overall satisfaction rates with the surgery are compared between both groups in Fig. (3). The mean satisfaction score (on a 1-10 scale) was 6 (SD: 2.1) in the posterior group and 6.5 (SD: 1.8) in the posteromedial group. Although the posteromedial group had a slightly higher mean overall satisfaction, this difference was not statistically significant (p=0.617). When asked about their perception of scar visibility using a 1-10 numeric scale (where 1 represented least visible and 10 represented most visible, hence the lower the number the better the perception), patients in the posterior group had an average score of 5.4 (SD: 1.5), while those in the posteromedial group had an average score of 3.5 (SD: 1.5). This difference between both groups in favor of the posteromedial group was statistically significant (p=0.0239). The detailed scores for the scar visibility perception are depicted in Fig. (4).

Fig. (1): Before (left panel) and after (right panel) images of the abducted arm of a sample patient in the posterior approach group. After image is taken at month 6 postoperative.

Fig. (2): Before (left panel) and after (right panel) images of the abducted arm of a sample patient in the posteromedial approach group. After image is taken at month 6 postoperative.

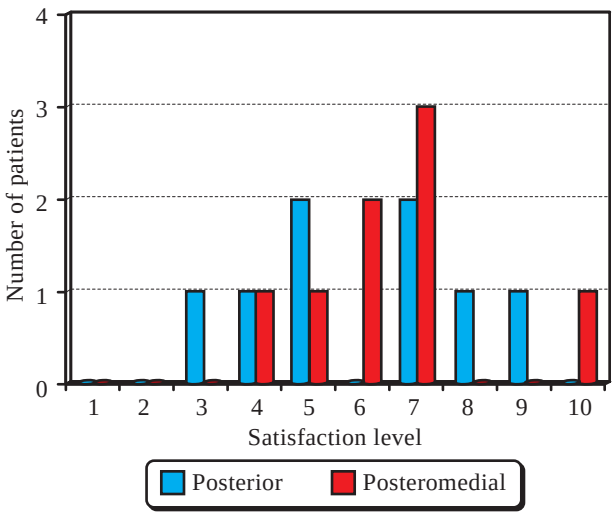

Fig. (3): Patients' overall satisfaction levels among both groups (1 = Least satisfied, 10 = Most satisfied).

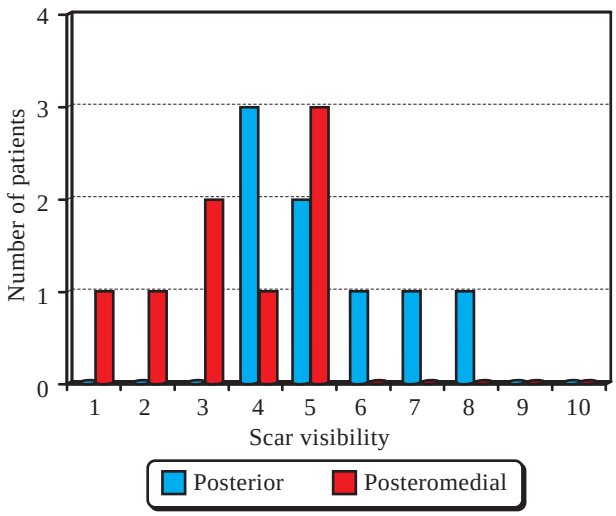

Fig. (4): Patients' perception of scar visibility among both groups (1 = Least visible, 10 = Most visible).

DISCUSSION

This is the first study of its type to present a head-to-head comparison between two types of brachioplasty scars using real life data. Our data shows that overall satisfaction level with the surgery did not differ much between a posteriorly-placed scar and a posteromedially-placed one, although patients perceived the posteromedial scar to be significantly less visible than the a straight posterior scar.

Samra and colleagues **[2]** attempted to simulate brachioplasty scar positions on a model by markings, and surveyed the general public, patients, and plastic surgeons. Most patients were accepting of a longer scar if it meant less deformity, and this gives room for surgeons to be more aggressive in their approach. The sinusoidal scars were preferred more than straight ones (except in the medial group). However, this study is greatly limited by two facts and thus the biased preference for medial scars should not be overlooked. First, the majority of those surveyed were from the general public (117 individuals, compared to only 9 patients surveyed). Second, markings do not accurately simulate the final outcome as regards the appearance and feel of the scar, and thus there is no substitute for real life data when it comes to patient-perception of surgical outcomes.

Makhlouf **[8]** argued that a posteromedial scar is an optimally placed one in his letter. A straight posterior scar would be visible when the arm is down, while one that points towards the medial epicondyle would be visible when the arm is abducted, and thus a middle placement would be the best compromise. This agrees with our findings.

Elkhatib **[9]** has argued for a direct posterior approach to brachioplasty and has reported excellent patient satisfaction results (88.8%). This, however, was a single arm study; there were no comparison groups to demonstrate superiority of the technique over others. Finally, the "J brachioplasty" technique was detailed recently by Bocchiotti and colleagues **[5]**. In this approach, a posteromedial incision is adopted, and the excellent results demonstrated in their work agree with our choice of scar placement.

There has been great promotion in the recent years for minimal or limited scar approaches **[3,10]**. The better aesthetic, however, comes at a cost, and in our own experience most patients are dissatisfied by the limited arm mobility due to early tension, the blunting of the axillary hollow, and the long healing time.

A limitation to our study is the small sample size in each group, and the confounding factors of individual needs and clothing styles. Another limitation is that we only included the two approaches adopted by surgeons at our centers. Many other techniques with different scar shapes and sites are described in the literature and it would be almost impossible to pit them all against each other. Future work should include larger samples in comparative studies to determine which scar site is conclusively optimal.

In conclusion, scar visibility is the major concern for patients undergoing brachioplasty, and thus time should be taken to consult patients and help them choose the best site compatible with their needs. In our experience, a posteromedial scar provides high satisfaction results with the patients' perceiving it as least visible.

REFERENCES

1- Nguyen A.T. and Rohrich R.J.: Liposuction-Assisted Posterior Brachioplasty: Technical Refinements in Upper Arm Contouring. Plast. Reconstr. Surg. Oct., 126 (4): 1365-9, 2010.

2- Samra S., Samra F., Liu Y-J., Sawh-Martinez R. and Persing J.: Optimal Placement of a Brachioplasty Scar. Ann. Plast. Surg. Oct., 71 (4): 329-32, 2013.

3- Reed L.S.: Brachioplasty with Limited Scar. Clin. Plast. Surg. Oct., 41 (4): 753-63, 2014.

4- Guerrerosantos J.: Brachioplasty. Aesthetic. Surg. J. Apr., 24 (2): 161-9, 2004.

5- Bocchiotti M.A., Ruka E., Spaziante L., Morozzo U., Baglioni E.A. and Bruschi S.: “J” brachioplasty technique in massive weight loss patients. J. Plast. Surg. Hand Surg. Jun., (Ahead of Print): 1-6, 2018.

6- Simone P., Carusi C., Segreto F., Iannuzzi R., Buscaglione S., Gizzi A., et al.: Postbariatric Brachioplasty with Posteromedial Scar. Plast. Reconstr. Surg. Feb., 141 (2): 344-53, 2018.

7- Egrari S.: Brachioplasty: A Personal Approach. Aesthetic. Surg. J. Feb., 36 (2): 193-203, 2016.

8- Makhlouf M.V.: Brachioplasty Incision. Plast. Reconstr. Surg. Aug., 128 (2): 97e-98e, 2011.

9- Elkhatib H.: Posterior Scar Brachioplasty with Fascial Suspension. Plast. Reconstr. Surg. Glob Open. Sep., 1 (6): e38, 2013.

10- Hill S., Small K.H., Pezeshk R.A. and Rohrich R.J.: Liposuction-Assisted Short-Scar Brachioplasty. Plast. Reconstr. Surg. Sep., 138 (3): 447e-450e, 2016.