Anthropometrically correct traditional brachioplasty in females: a novel technique

Ahmed Abdelmoez

INTRODUCTION

Brachioplasty is a popular plastic surgery procedure. According to the American Society of Plastic Surgeons, more than 18000 Brachioplasty were done in the US in 2017 [1].

Traditional/simple/wedge excision Brachioplasty will be the target of our novel technique. Literature is relatively unsatisfying dealing with traditional Brachioplasty numerical marking and design. Current and common various techniques are based on either surgeon’s sense preoperatively, or tailor tacked design intraoperatively. A method is needed to define how much skin and soft tissue should be excised precisely, or what can be a reference point to use to design a Brachioplasty mathematically.

METHODOLOGY

Anthropometry as a science can help design what can be called an ‘Anthropometrically Correct Traditional Brachioplasty’ or (ACTB). Anthropometry, classically, could bind the upper arm/biceps circumference with forearm circumference to make postoperative results more harmonious and natural.

EXCLUSION CRITERIA OF STUDIES

1. Three studies were found fulfilling the above criteria. Mean values of Forearm circumference (A) and (mid-) upper arm circumference (B) were compared and A/B ratio was produced in the following table.

RESULTS

Three studies were found fulfilling the above criteria. Mean values of Forearm circumference (A) and (mid-) upper arm circumference (B) were compared and A/B ratio was produced in the following table.

Ahmed Abdelmoez, Specialist of Plastic and Reconstructive Surgery, Al Hokail Academy, Eastern Province, Kingdom of Saudi Arabia

Correspondence: Ahmed Abdelmoez, Specialist of Plastic and Reconstructive Surgery, Al Hokail Academy, Eastern Province, Kingdom of Saudi Arabia, Tel: +966507393374; Email: a9791986@gmail.com

Received: July 26, 2019; Accepted: August 09, 2019; Published: August 17, 2019

OPEN ACCESS

This open-access article is distributed under the terms of the Creative Commons Attribution Non-Commercial License (CC BY-NC) (http://creativecommons.org/licenses/by-nc/4.0/), which permits reuse, distribution and reproduction of the article, provided that the original work is properly cited and the reuse is restricted to noncommercial purposes. For commercial reuse, contact reprints@pulsus.com
Table 1: Three studies were found fulfilling the above criteria. Mean values of forearm circumference (A); and (mid-) upper arm circumference; (B): were compared and A/B ratio was produced.

<table>
<thead>
<tr>
<th>Study</th>
<th>A: forearm circumference (in inch)</th>
<th>B: (mid-) upper arm circumference (in inch)</th>
<th>A/B ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSIS [10]</td>
<td>8.7</td>
<td>10.1</td>
<td>0.861386</td>
</tr>
<tr>
<td>Drinkwater DT [11]</td>
<td>9.1535</td>
<td>10.7322</td>
<td>0.8529</td>
</tr>
<tr>
<td>Polymeris A et al. [12]</td>
<td>9.0944</td>
<td>9.37</td>
<td>0.970588</td>
</tr>
</tbody>
</table>

Application

1. 85% as an approximate ratio was chosen to be applied for the following reasons:
2. Easy to remember and use
3. Matches results of most of the studies found; two out of three
4. Applying the ratio of 85% in actual surgeries was complication-free and achieved harmony with the forearm [10-14]

Design (Figure 1):

1. With the upper limb in 90 abducted and supinated, measure forearm circumference (A) as shown above
2. Multiply forearm circumference (A) by 100/85 to get the ideal (mid-) upper arm circumference (B’)
3. Draw a line (L) starting from the most dependent point of the redundancy proximally near axilla, following the base/lowest point of the redundancy till the elbow
4. Draw six to ten circumferential lines around arm (B1, B2, B3, …) perpendicular to the long axis of the arm
5. Calculate the difference (D) between each current (mid-) upper arm circumference (B) and ideal (mid-) upper arm circumference (B’)
6. Divide (D) by 2 (D/2)
7. Mark the circumferential lines by the distance (D/2) anterior and posterior to the line (L)
8. Connect anterior marks together and posterior marks together to define the excisable excessive tissues

Figure 1: Illustration of Anthropometrically Correct Traditional Brachioplasty (ACTB); A: Forearm circumference; L: A line starting from the most dependent point of the redundancy proximally near axilla, following the base/lowest point of the redundancy till the elbow; B1, B2, B3, …: circumferential lines around arm; D: difference between each current arm circumference (B) and ideal (mid-) upper arm circumference.

Figure 2: Intraoperative view of the closed wound.

Figure 3: Case 1 (right side), Surgery is done using ACTB principle. The postoperative photo was taken immediately after surgery.
Figure 4: Case 2 (left side), Surgery is done using ACTB principle. The postoperative photo was taken 14 days after surgery.

Figure 5: Case 3 (right side), Surgery is done using ACTB principle. The postoperative photo was taken immediately after surgery.

Figure 6: Case 4 (right side), Surgery is done using ACTB principle. The postoperative photo was taken immediately after surgery.

Figure 7: Case 4 (left side), Surgery is done using ACTB principle. The postoperative photo was taken immediately after surgery.
CONCLUSION

85% as an average ratio of forearm circumference to upper arm/biceps circumference could be calculated by reviewing several anthropometric studies. The excess skin is marked in a way that makes the skin left enough to make the arm in its preoperatively calculated anthropometrically correct circumference.

The study/innovation is simple with a small sample of patients. However, it can be expanded to serve the following expectations:

1. The reviewed studies only contained female samples. Another study addressing male samples that should take the arm muscle mass and measurements in consideration as a significant factor can be interesting.
2. Another study related to thigh lift using the same principle can be interesting.
3. More interest should be given to the ideal place of the brachioplasty scar considering:
   - Vital structures threatened
   - Skin thickness variation and relation to scarring (Literature wasn’t satisfying regarding that point)
   - Position of the scar and if there is a variation in impact on brachial lymphatic circulation
   - More accurate technology to define the site of the least noticeable Brachioplasty scar using advanced videography techniques
4. Combining the current study with the previous point results can lead to a perfect Brachioplasty technique.
5. The study leads to a better understanding of the arm aesthetics and can lead to more accurate algorithm of Brachioplasty procedures containing options more than liposuction and skin excision.

CONFLICT OF INTEREST

None

REFERENCES

4. https://cread.jd.com/read/startRead.action?bookId=30132102&readType=1