Analysis of Lip Dimensions and Facial Beauty: A Novel Method to Quantify Ideal Lip Size

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OBJECTIVES:
Identifying the aesthetic ideals of lip dimensions is critical as lip augmentation is becoming an increasingly popular office-based procedure. This study’s seeks to determine:
1) ideal lip dimensions of the Caucasian female; and
2) ideal ratios of the upper and lower lips, and the total lip area relative to the lower third of the face.

INTRODUCTION:
Although facial beauty is a popular topic discussed extensively by both the media and academicians, it still remains a elusive quality to quantitatively measure. Florenz Ziegfeld’s maxim, “Beauty in the flesh will continue to rule the world,” represents the popular stereotype that beautiful people have an immediate advantage in a world based on first impressions [1,2]. Facial beauty is an elusive quality that captivates all; which is one reason why plastic surgery has become so prevalent in today’s society of aging baby boomers.

Today, the desire to enhance one’s features is becoming increasingly pervasive in our society and surgeons still strive to identify suitable guidelines to aid in guiding operations and procedures. Fig. 1 represents common lip enhancement procedures performed in the US. Even though injectable fillers for lip enhancement are simple, relatively low cost, and safe, there currently are no clear rules or geometric guidelines to follow with respect to optimizing female lip size [3,4,5].

METHODOLOGY:
Using image processing software, digital synthetic portraits of 20 Caucasian females (ages 18 - 25) were adjusted to create a series of five faces with altered lip dimensions [6]. This study had two wings, first, the total lip area (upper and lower) was linearly adjusted to create a range from very large and small lip sizes as assessed by total surface area (Fig.3).

As depicted in Fig. 5, portraits were adjusted to the arbitrarily chosen ratios of: 1:2 (upper lip to lower lip), as well as 1:3, 1:1, and 2:1. Normalized lip dimensions were quantified by surface area (SA) and linear measurements, and correlated with attractiveness scores [7].

RESULTS:
For Part 1, a total of 100 unique faces were created and ranked in ordinal fashion by 150 individuals through various rating resources including both live and online focus group evaluators. Ratings showed that an optimal lip SA exists for every face in this study.

- Fig. 6 demonstrates that the most attractive faces have a SA range varying from 20,000-22,500 pixels.
- Facial attractiveness is highest with an average +53% enhancement of lip SA.
- SA of this ideal lip surface area corresponds to a linear dimension equal to 10% of the distance of the lower third of the face (subnasal to menton).

For Part 2, an additional 80 unique faces were created and ranked by 450 focus group members (online). Results demonstrated that a ratio of 1 to 2 (upper to lower lip area) was the ideal ratio (Fig. 7 & 8). Additionally, the least attractive ratio was considered by far was a 2:1 ratio. Images with rankings of 2nd and 3rd place were mostly commonly faces with a 1:1 and 1:3, respectively.

DISCUSSION:
- Ideal lip dimensions for a given face can be calculated to enhance overall facial attractiveness. This surface area is on average, only a minor enhancement of just +53% in the overall lip dimensions. Deviation from the ideal SA is correlated with decreasing facial attractiveness.
- As lip proportions may be even more important than the actual total surface area, this study determined the most attractive ratio to be 1:2. This is also the ratio of most natural, pre-filler lips. Therefore, it is essential to either preserve this ratio in lip enhancement and augmentation procedures. (Fig. 9)

CONCLUSION:
- Clinically, this study aimed to generate a method for facial plastic surgeons to evaluate the effect of lip modification on overall facial attractiveness.
- Optimal surface area exists – 10.19% the lower third of the face.
- Ideal proportions of the lips: surface area ratio - 1:2 upper to lower.
- Lip dimensions and ratios derived in this study provide validated practical guidelines to aid surgeons in enhancing lip attractiveness through surgical augmentation or fillers.

REFERENCES:


