Cosmetic Rhinoplasty Using Five Control Molds

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Cosmetic rhinoplasty is an art. This surgical procedure can produce changes in the appearance, structure and function of the nose. Nevertheless this surgery comprises potential risk of patient dissatisfaction and request for revision. In order to prevent this risk, the surgeon should be obtained a deep knowledge of the three-dimensional anatomy of the nose, physiology, complete familiarity with techniques of surgery and acceptable sense of aesthetic (1).

The major problem of rhinoplasty is the success rate, both for the surgeon and the patient. This rate is highly dependent to preoperative evaluation, which is based on the analysis of nose structure and skin texture. These two factors have influence on the results: the degree of technical difficulty and patients' satisfaction level (2).

Since there are limitations during rhinoplasty, the surgeon should check whether the nose is shaped and refine in that moment. Therefore, it can be said it is made by the surgeon and there is only eye inspection in all steps of surgery. Therefore, the final result is completely dependent on the surgeon decision.

Different surgeons achieve various results

Surgeons face with two major problems in rhinoplasty:

1- To check the correctness of all steps of the surgery by eye inspection and that's why they may make wrong decisions during surgery.

2- Surgeon and patient may not have the same understanding about patient ideal shape of the nose.

In order to solve these problems, it was proposed that pre surgical planning must be based on very accurate measurement technique. Therefore, we designed a new method using the custom control molds.

Today, advances have induced in medical technology. One of these advances is three dimensional (3D) technique that may overcome the deficiencies of conventional photography and surgeon's visual error (2).

The first step of rhinoplasty via control molds is to create a high accuracy 3D model with a face 3D scanner (Figure 1).
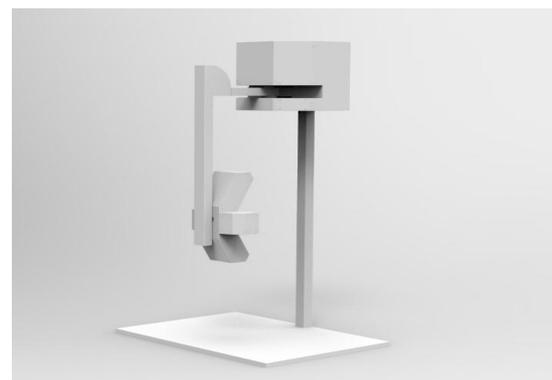
Figure 1. Face three-dimensional (3D) scanner

After consultation with the surgeon and the patient, the ideal form of the nose is designed by graphical and engineering software. The data of the scanner is analyzed by engineering software and then a 3D model of the patient's face will be produced.

The patient and surgeon can see the differences between before and after in a front and side view (Figure 2).

By using the final favorite nose shape designed in the software, we can make 5 control molds to control each steps of surgery (Figure 3).
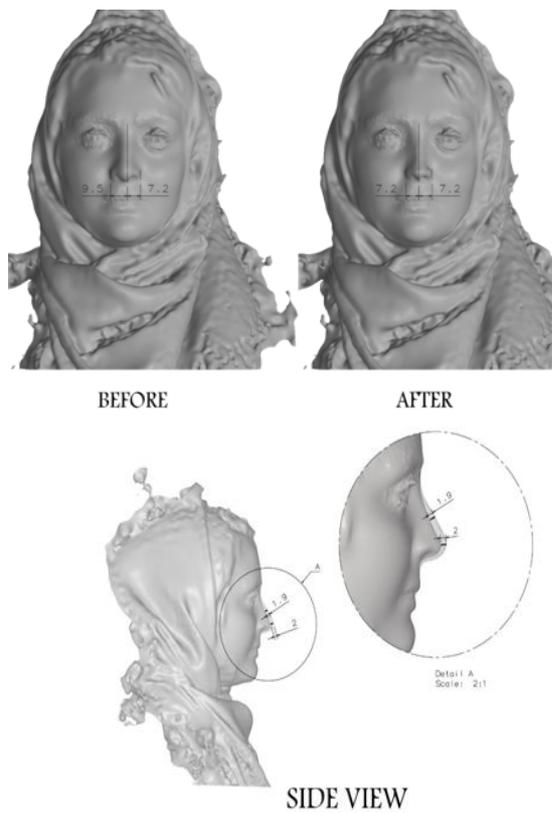
Figure 2. Different between before and after in front and side views
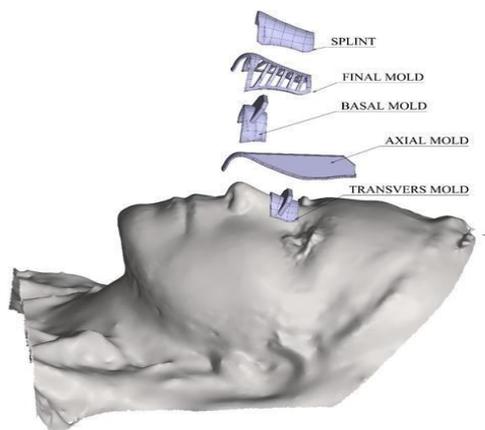
Figure 3. Five control molds: Transverse, Basal, Axial, Final, Final splint

The surgeon as a surgical guide in rhinoplasty steps uses all designed control molds. For example the transverse mold is used after osteotomy as a guide for correct positioning of the nasal and maxillary bones. The axial mold is used for checking the shape of the columella, dorsum and tip.

During the surgery, the surgeon can put the control molds on the patient's nose and look for the difference between the nose subunits and the control molds.

In this method surgeon can easily see the difference between the shape of the nose and the ideal predesigned nose shape in each stage and decide to keep improve the nose parts or not.

We produce these molds with a larger scale because we faced edema during surgery.

Control molds include:

1-Transverse mold: It is used after osteotomy as a guide to position the nasal skeleton correctly (Figure 4).
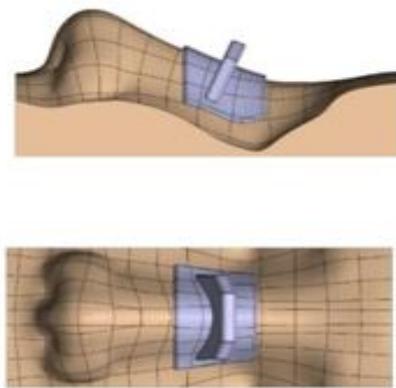
Figure 4. Transverse mold

2-Axial mold: It is used for checking the dorsum, tip and columella (Figure 5).
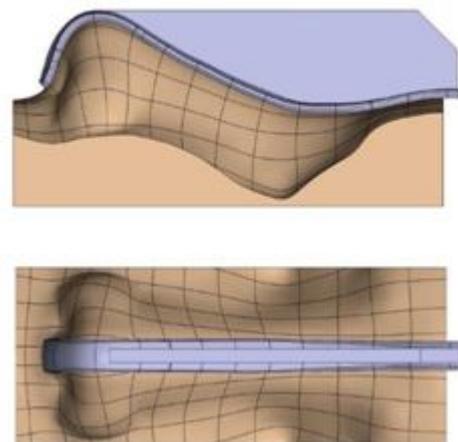
Figure 5. Axial mold

3-Basal mold: It is used for checking the alar area (Figure 6).
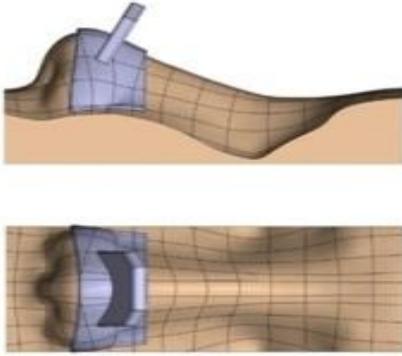
Figure 6. Basal mold

4-Final mold: Checking the dorsum, tip and alar and basal area all together (Figure 7).
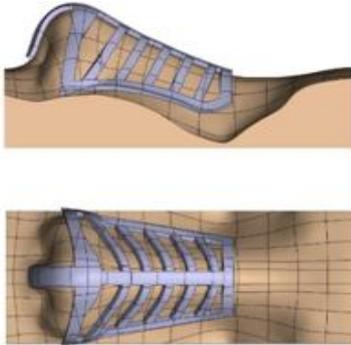
Figure 7. Final mold

5-Splint: utilizing to maintain the nose 5 5-Splint mold: To keep the nose in ideal form and reduce the surgery time (Figure 8).
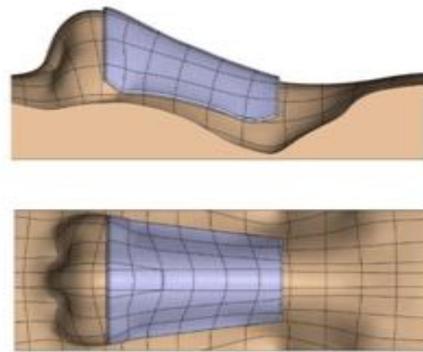
Figure 8. Splint mold

The control molds not only increases the precision of the surgery and satisfaction rate, it also saves time and reduce complications in this surgery.

ACKNOWLEDGEMENTS

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