

A Review on Genioplasty

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Abstract

The alteration of the chin through either osseous manipulation or implant augmentation, is an integral component of aesthetic surgery of the face. The chin (mentum) is vital to the human facial morphology as it contributes to the facial aesthetics and harmony both on frontal and lateral views. Genioplasty is an extremely versatile instrument of change of human chin morphology - it offers the surgeon the ability to mould the native chin into the desired and near ideal form with commensurate ease, irrespective of the pre-operative deformity, with excellent and sustained long-term results. When performed with proper preoperative assessment and technical execution, the results can harmonize and restore balance between skeletal, soft tissue, and dental components of the lower face. This study presents pertinent points on preoperative assessment, a description of the surgical technique, postoperative and discusses advanced procedures and optimizes outcome.

Keywords: *Genioplasty, chin surgery, aesthetic alteration, chin enhancement, osseous genioplasty and alloplastic chin augmentation.*

Introduction:

Chin Enhancement Surgery, also called Genioplasty or mentoplasty, improves contours of the chin, neck and jawline. Typically, surgical correction of chin abnormalities by skeletal modification, has the potential of causing refreshing changes in facial harmony with minimal effort^[2]. Surgery involves placement of an implant around a patient's existing chin bone to augment the size and shape of the chin and achieve a more naturally attractive balance between facial features. When performed by a qualified, experienced cosmetic surgeon, chin enhancement can provide a permanent solution to improve a weak or recessed chin. Mentoplasty is a procedure that has a great potential to transform facial profiles^[7,8].

Preoperative Assessment:

Gender, ethnicity, age, and medical comorbidities are important factors to consider in overall treatment planning for genioplasty^[1]. From a morphologic standpoint, men tend to have wider, square faces often with more projected chins that may have two-point light

Most importantly, genioplasty is an elective procedure and should only be performed in patients who are medically fit. Smoking, though not a contraindication, increases the risk of complications, including delayed wound healing and graft failure if genioplasty requires a bone graft^[4].

Surgical Techniques:

After the patient is evaluated, a CT scan in DICOM format is performed, which allows assessment of the chin morphology and determination of the facial midline, as well as the location of the vital structures (mental nerve)^[5]. The contour of the chin and its movement are designed using specific software, such as Mimics Innovation Suite 20.0 software for medical image processing (Materialise, Belgium), a toolkit for engineering on anatomy which allows to solve the most difficult challenges in 3D customized mentoplasty^[5].

This information is used to create a tooth-supported surgical guide that defines the osteotomy line and the position of the screws on which the customized plate will be fastened, ensuring its position in the 3 planes of space (Video, which displays 3D animation of customized mentoplasty and recording of a real procedure for chin augmentation using a customized guide and plate, with use of a minimally invasive approach that ensures the continuity of the mentalis muscle^[5]).

Postoperative Procedures:

Medication consisting of painkillers, an antiseptic mouthwash, and an antibiotic is prescribed for the first 5 postoperative days^[6]. The patient is discharged after 1 night in the hospital. The pressure bandage is removed 1 week after surgery.

Advancement Genioplasty:

It was done to increase chin projection, alter lower third facial height, and increase chin projection. In this, midline was marked on the chin and cut was given in such a way that the maximum amount of bone could be advanced without injuring cuspid apices or mental nerve. Horizontal osteotomy was planned 4–5 mm below the apices of cuspids anteriorly and 3–4 mm below the level of mental foramen. Bony cut was made with tapering fissure bur and then a reciprocating saw was placed into this marking and carried out till the inner cortex. The bone was cut completely by osteotomy to mobilize the segment. Once the segment was mobilized, any lingual cortical irregularities were removed which might prevent sliding forward of the inferior segment. For stabilization of the inferior segment, holes were made through lingual cortex of mobile segment and buccal cortex of stable superior segment in the midline and on each side. Wires were tightened to pull the mobilized portion of the chin to the desired position. In some cases, the lag or position screws and bent mini plates were used to fix the repositioned segment.

Reduction Genioplasty:

It was done to decrease the size of the chin vertically, anteroposteriorly, laterally, or in all directions. It was mainly indicated in Class III cases or in macrogenia. Midline of symphysis was marked to maintain symmetry and two vertical lines were marked just anterior to the mental foramen. Two holes were made into each of these vertical reference lines and osteotomy lines were made with tapering flat fissure bur on both sides with small depth cuts in the bone. A reciprocating saw was placed on the lower border of osteotomy line and completed up to the inner cortex. Bony cut was completed with osteotome to mobilize inferior segment. Similarly, the superior osteotomy was done. Intervening segments were removed and both segments were fixed with the lag or positional screws after repositioning.

Sliding Genioplasty:

It was indicated in patients with facial asymmetries in which chin symmetry cannot be corrected by repositioning of jaws. Midline of symphysis was marked and appropriate bone cut was made. Segment is repositioned and stabilized with wires and lag screws to match the facial midline.

technique, can be relatively easy to perform and should be an integral component in the surgical armamentarium of a plastic surgeon.

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