

Paranasal Augmentation in Orthodontics

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The midface is an important area for determining the overall aesthetics and impression of a face. Hence, midface concavity can be extremely conspicuous and aesthetically displeasing. Public interest in appearance and beauty is increasing, and the number of patients who wish to improve midface concavity is also on the rise. Midface concavity may be aesthetically displeasing and accelerate the appearance of facial aging [1]. Patients with paranasal volume deficiency and localized concavity present with a flattened facial profile, compressed nasolabial angle, and deepening of furrows around the nose and mouth [2]. Improvement of paranasal deficiency can be achieved by malar osteotomy, Le Fort I osteotomy, or both. When there is paranasal deficiency and a normally positioned maxilla, augmentation of the depressed area can camouflage the paranasal deficiency. This is accomplished with autogenous bone graft or alloplastic materials [3]. When a concavity is accompanied by occlusal disharmony, various skeletal operations are used. However, skeletal surgery has disadvantages, such as the need for perioperative orthodontic treatment, general anesthesia-associated morbidity, and increased costs. With patient demand increasing for minimally-invasive treatments, paranasal augmentation is gradually rising as an alternative to skeletal surgery in the world. Implantation of alloplastic material in the paranasal area can simulate the visual effect of Le Fort I advancement and other skeletal manipulations. Paranasal augmentation does not alter occlusal relationships and, therefore, avoids perioperative orthodontic treatment and limits surgical morbidity and hospital expense.

Keywords: Augmentation; Paranasal Area

Severe cases of nasomaxillary deficiency, seen with Binderas syndrome, have been treated with bone and cartilage grafts alone or together with osteotomies [4]. Implants are often used to selectively augment the paranasal skeleton, often in conjunction with rhinoplasty. These implants can be placed through upper gingivobuccal sulcus incisions. Fixation of the implant to the skeleton with screws ensured precise placement and allowed in place contouring at the time of surgery. Paranasal augmentation has camouflaged relative mid face hypoplasia in a number of patients who have had mid face deficiency. No early or late complications have been associated with this surgery. It can be done under local or general anesthesia. After sterile preoperative preparation and draping, a local anesthetic with 1:100,000 epinephrine is infiltrated at the surgical site. An upper gingivobuccal sulcus incision is made just lateral to the piriform aperture to avoid placing incisions directly over the implant. An adequate cuff of mucosa is left to allow layered closure. Subperiosteal dissection exposes the area to be augmented [5]. The implant is positioned to sit flush on the bone. The patient's anatomy will determine whether the entire crescent or just the horizontal or vertical limb of the crescent will be used. No fixation of the implant is required. However, fixation with a single screw is useful for several reasons. It allows precise adaptation of the implant to the maxilla so there is no motion of the implant with palpation in the early postoperative period. It ensures precise placement of the implant, preventing any displacement with soft tissue redraping [6]. It allows in place contouring of the implant with either a scalpel or cutting burr. This simplifies custom shaping and minimizes the soft tissue manipulation inherent in implant placement and replacement. The wound is closed in two layers. Peri-operative antibiotics are used. The implant is not impregnated with any antibiotics at the time of surgery [7].

The influence of paranasal augmentation on the surrounding soft tissue envelope remains unclear. Factors like incision placement, plane of dissection, wound closure technique, and scar formation are expected to influence the aesthetic outcome. Paranasal augmentation using autologous material will predictably alter paranasal measurements with minimal morbidity. Surgeons can anticipate an increase in alar width, alar base width with paranasal augmentation, and modify the surgical plan on an individual basis. Paranasal augmentation may be a useful substitute for orthognathic surgical procedures if occlusions are normal or have been corrected. This procedure can produce a subtle but noticeable aesthetic improvement, thus creating a softer and more youthful facial expression. It can be easily performed alone or together with other aesthetic operations. This procedure has good synergy with operations such as rhinoplasty, genioplasty, and angle resection. Implant-based paranasal augmentation can improve facial profile of patients with minimal mid-face deficiency and normal occlusions.

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