Maxillofacial prosthesis: it can happen to anyone

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Craniofacial reconstruction has been recorded throughout recorded history. Human beings have found the need to reconstruct missing or defective maxillofacial parts—such as eyes, ears, noses, maxilla, mandible and teeth—with artificial substitutes. These maxillofacial deformities may be due to congenital defects such as cleft palates, acquired disfigurements of the face from accidents, war trauma, cancer or other diseases. Evidence of the making of such prostheses has been found in archeological digs dating back to the Egyptian Dynasty (pre-2500 B.C.).

Maxillofacial defects can cause not only functional difficulties, but also some serious psychological struggles that could cause the individual to avoid social contact altogether.

In view of the significance placed upon facial appearance, especially in today’s society, accolades should be given to those creative professionals involved in the development and improvement of various facial and ocular prosthetic restorations, materials and treatment modalities.

There are several synthetic polymeric materials, such as rubber, silicone or acrylic, that are currently used for facial prostheses. These require color and texture blending and matching with that of the patient to achieve a realistic and seamless appearance.

Long-term success of these facial prostheses depends mainly on their material stability, strength and facial retention. For many years, retention of the synthetic polymeric craniofacial prosthetic restoration was obtained by inferior mechanical factors, such as tissue undercuts or skin adhesives. The retentive abilities were somewhat proven to be unpredictable, with the potential of prompting some very delicate psychological circumstances.

It was only after the introduction of extraoral osseointegrated implants, with retention bars, clips, magnets and other attachment mechanisms for anchoring the prostheses, that the area of maxillofacial reconstruction gained the needed support, security and the anchorage that patients required for confidence in the treatment of their complex reconstructive prostheses.

One exception to this was patients who have received radiation therapy. Those should be selected cautiously because overall success rates in this category were found to be low.

Case report

In 1990, Dr. V. Eskenazi, the subject of this case report—a general dentist who served his mandatory term in the Israeli Defense Force (IDF)—sustained a shattering facial injury. In addition, the location of the injury involved a facial birthmark that was compounded by basal cell carcinoma. As a result, for the following 10 years, he ended up having numerous surgical and radiation procedures. Interestingly enough, Eskenazi originally practiced dentistry in Bucharest, the largest city and capital of Romania. Shortly after he was discharged from the IDF, he re-established a dental office and resumed his career as a dentist.

Unfortunately, the basal cell carcinoma turned out to be a “rodent ulcer” type, a persistent basal cell carcinoma condition. As a result, the affected site increased in size following each surgical excision. Ultimately, about 10 years after his injury, his right eye and surrounding socket were removed as well.

His medical records defined this procedure as an “orbital exenteration and radical maxillary resection.” The defect encompassed the right orbit, midface and right maxilla. It
was closed with a skin graft, taken primarily from his thighs and shoulders regions. Each surgical procedure also left permanent scars at the donor sites.

In 1975, he was diagnosed again with clinical evidence of recurrence of basal cell carcinoma in the deep portion of the facial defect. According to his medical records, this recurrence infiltrated his sinuses near the margins of the existing skin grafts. At this point, the Organization of Disabled IDF Veterans decided to seek international expertise, and sent him to the head and neck service at Memorial Sloan-Kettering Cancer Center in New York City.

In July 1975, Eskenazi was operated on at Memorial Sloan-Kettering. According to his medical records, the disease was indeed evident bilaterally in the posterior sphenoid sinuses. While most of the diseased tissue was removed, there were no satisfactory margins that were completely clean of the disease.

Surgeons further extended the resection to include the midface and the entire maxilla. The surgical site extended from above his right eyebrow onto his forehead, crossed the midline and included a large segment of the nose and a total maxillectomy, thus significantly increasing the size of the defect (Fig. 1a).

Craniofacial prosthesis incident

Before returning to Israel, Eskenazi was referred to the Burn Institute in Galveston, Texas, where a special maxillofacial prosthesis was fabricated.

Composed of a silicone rubber, a facemask with one glass eye, eyebrow, cheek and nose was designed for him by a medical sculptor. This was in addition to a maxillary obturator prosthesis restoring the roof of his mouth.

Once the maxillofacial prosthesis was shaped, hand painted and dyed to visually match his face shape and skin color, it was given to him and he returned to Israel. Shortly after, despite his somewhat unusual looking face and slurred speech, he regained his strength and returned to the practice dentistry.

Although his silicone maxillofacial prosthesis was custom made, it had limited retention. As mentioned earlier, back in the ’70s the success of the majority of these large facial prostheses depended on retention primarily derived from mechanical undercuts and medical grade skin adhesives.

Due to the size, extent and weight of his prosthesis, these forms of retention were insufficient.

After wearing the extraoral prosthesis for some time, Eskenazi finally refused to wear the prosthesis. Apparently, one day while working in his dental office, due to the combination of the weight, size and high temperature, the prosthesis dislodged. Surprised and horrified at the sight, his patient jumped out of the dental chair while pointing at his face.

As a result, from that time forward and most likely due to insecurity, Eskenazi no longer wore his maxillofacial prosthesis. Instead, he carefully packed the defect in his face with gauze pads and then covered it externally with a large piece of gauze, a ritual, he repeated each morning.
before he went to work (Fig. 1b).

In 1977, following another recurrence of his disease coupled with spontaneous bleeding and aggravation in his speech impairment, the IDF decided to once again send him back to Memorial Sloan-Kettering in New York City, where he was operated on for a second time.

This time they had to remove additional surrounding bone and tissue, resulting in an even greater disfigurement. In 1979, Eskenazi succumbed to his devastating condition.

Phantom sensations
According to medical literature, there is an illusion of connectivity between our physical body parts and our brain. Following an amputation of a body part, an individual continues to feel the missing part and experience sensations such as body touch, pain, pressure and temperature.9

These sensations are called "phantom limb sensations" and Eskenazi experienced them on a regular basis.

According to family records, family members were curious to see him scratch the area that used to be his right eye. When he was asked why he was scratching the gauze on his face, he replied that he “got an itch in his eye.” When his family members tried to argue that he lost his eye, he tried to explain that it felt like he had sand in his eye, and shrugged his shoulders.

Conclusion
Injuries to the head and face seem to fascinate the public more than other injuries. Over the years, we have learned about many cases similar to Eskenazi’s where someone “lost his or her face.” While some are related to devastating illnesses,10 others are war-, accident- or birth-related.

Facial appearance affects a person’s ability to communicate and clearly embodies one’s self-esteem and character. Just think about having to look at oneself in the mirror daily. Loss of facial appearance brings with it difficult psychological effects, which makes re-entering life both at work and home very difficult.11

References