



RECONSTRUCTIVE AESTHETIC IMPLANT SURGERY





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Introduction

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ANCIENT COSMETICS

“The beauty has come” is what her name meant, and yet Nefertiti did not rely on her natural looks alone.¹ Her darkened eyebrows and boldly outlined eyes are as popular today as they were in the pharaonic times.

The art of cosmetic beautification has roots dating back to antiquity; famous pop star Billy Idol’s distinctive hairdo (spikes) can be dated back to the end of the Iron Age (1000 B.C. to 50 B.C.), when Celts and Gauls used to wash their hair with limewater—a white, chalky substance—in an attempt to create striking white spikes of hair. Tattooing the whole body with blue pigments was a common practice in the late thirteenth century as depicted in the famous movie *Braveheart*.

The use of cosmetics in history was not restricted to the pharaohs’ times; it can also be seen during the Paleolithic Age.² The curlers used by women today are actually an ancient beauty ritual followed by men and women alike. One of the earliest examples of hair curling is seen in Venus of Willendorf, a mummy belonging to the Paleolithic Age.²

Archeological evidence suggests that prehistoric people contrived their own techniques for preparing pigments for cosmetics. As many as seventeen different colors were reported to have been created from a few primary sources: lead, chalk, or gypsum (for white); charcoal (for black); and manganese ores (for shades of red, orange, and yellow). These pigments were blended with greasy substances to acquire the right consistency for painting on bodies.

For the ancient Egyptians, life was not as important as the afterlife, and their desire to look appealing extended beyond the grave. From the large amounts of perfumes

and makeup found buried with the dead, we know that these were indispensable funerary gifts.¹

So far, no one has ever found a sample of ancient Egyptian lipstick. However, the Louvre Museum in Paris gives us an indication that Nefertiti had perhaps attempted painting her lips. Surprisingly, both men and women of the upper classes used ground ants’ eggs to paint their eyelids. The dye from the Henna plant was used to color hair and fingernails and to adorn the palms and soles of their feet. To freshen their breath they chewed on natron, a naturally occurring sodium carbonate.³ Ancient chemists synthesized the black or gray makeup, referred to as *mesdemet* by the ancient Egyptians, that later acquired the name *kohl* from Arabs.⁴

Raw essences were brought from neighboring Mediterranean countries to be utilized for making perfumes, creams, and lotions, which were then exported. Scents constituted a large percentage of Egypt’s exports at one time. Beauty inventions of the pharaohs spread so far that women belonging to the Roman Empire began to rely on cosmetics brought from Egypt and the other parts of the region.

Records have shown that the Sumerians, Babylonians, and Hebrews employed these compounds as much as the Egyptians for ceremonial, medicinal, and ornamental purposes. Locally, however, their use was most often confined to mummification rituals.

According to researchers, the apparent beauty of royal women in ancient times was essentially due to their ability to use natural resources to enhance their appearance.⁴ They believed that makeup was only an adjuvant to one’s own natural beauty.

Beautification and adornment are mutually inclusive terms that involve the use of cosmetics, clothing, jewelry, body piercing, tattooing, and so forth. They are fueled by a subconscious drive to look attractive and to feel good about ourselves. We also enjoy the attention we get from others when they notice our attractiveness,⁵ which

explains the contemporary high demand for cosmetics by all classes of society.

COSMETICS VERSUS AESTHETICS

The term *cosmetic* refers to substances and procedures that are used to enhance or correct defects in the appearance. Cosmetics are the preparations used to change the appearance or enhance the beauty of the face, skin, or hair. *Aesthetics*, on the other hand, signifies “natural beauty,” a quality that comes from within. It can be defined as the science of beauty that is applied in nature and in art.

BEAUTY IN ART

Beauty is generally described as “a pleasurable psychological reaction to a visual stimulus,” while the word *art* is derived from the Latin *ars*, meaning “skill.”⁶ For an artwork to be valued as good, it has to be satisfactory to the senses—what is referred to in the visual arts as “the relationships among colors, lines, and masses in space.”⁷

People usually interpret beauty differently; each defining it according to his own conception. Prominent artistic figures have expressed their viewpoints about beauty in ways that are worth mentioning. In his *Vision of the Prophet*, Kalil Gibran manipulated magnificent pieces of poetry and prose to express his view of natural beauty: “Beauty is that which attracts your soul, and that which loves to give and not to receive.”⁸

Dante also viewed art to as a natural imitation: “Art as far as it is able, follows nature, as a pupil imitates his master.”

Leonardo da Vinci’s famous *Mona Lisa*, the enigmatic woman whose identity remains a mystery to this day, reveals his perspective on beauty.⁹ In the *Mona Lisa*, da Vinci finds real “natural” beauty. The mysterious smile on her face—which could be interpreted as either angel-like or quite devilish—was the secret of her everlasting beauty.¹⁰

Most artists have one thing in common: they use their talent to imitate reality—the real beauty they find in a certain thing, such as nature or the beauty of a face or soul. In this way, Peter Paul Rubens expressed his true feelings towards his beloved, Susanna Fourment, by imitating her beauty in “a portrait of my love.”¹⁰

Art has always been instrumental in the imitation of beauty or nature. When Honoré de Balzac was once asked what art is, his reply was “nature concentrated.” Thus, artists derive their inspiration from God’s magnificent creation of nature and of us, and all artistic endeavors are compared to nature as the standard of excellence.

Like artists in their paintings, clinicians should attempt to maintain a balance of proportions in their work. Perfection cannot exist in isolation; each element of beauty must harmonize with all other related elements to create the whole. For example, a beautiful face cannot be called so unless all facial features are in harmony.

HARMONY IS THE KEY

The philosophy of beauty and beautification is so wide-ranging throughout history to the present time that it has attracted people of all kinds: artists, musicians, and even common man. It makes the clinician’s task of attaining perfect aesthetics even more challenging. Like a musician composing the different elements that will orchestrate his music, a successful clinician integrates the treatment elements for a particular patient before executing the treatment plan (Fig. 1.1a,b).



FIGURE 1.1a. Preoperative view of a patient with a missing left central incisor.



FIGURE 1.1b. Postoperative view of the patient restored. Note the harmony between the implant-supported restoration and the remaining natural dentition.

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Beauty in dentistry does not differ widely from the general art concepts that have been discussed earlier. Cosmetic dentistry as defined by Philips¹¹ is an elective procedure aimed at altering the existing natural or unnatural periodontium to a configuration perceived by the patient to enhance the appearance; on the other hand, aesthetic dentistry is a rehabilitative procedure that corrects a functional problem using techniques that will be least apparent in the remaining natural periodontium and/or associated tissues.¹¹ A successful aesthetic dental treatment should help the patient to regain his/her self-image, revive social skills, and experience professional success.

In evaluating an aesthetic treatment as successful, the clinician's visual judgment becomes very significant. That is, the success of an aesthetic procedure can be determined only when the eye moves along the object to be corrected and perceives its cohesion and harmony with all the other relevant aesthetic elements.¹² Any aesthetic restoration requires imaginative skills, superior clinical talents, and the comprehension of all facial relationships that will influence the treatment success. Logic and imagination are both necessary in analyzing the available elements that are required to ensure a harmonious aesthetic result.

There is a social dimension that complements the image of every person. Natural teeth are not mere physical structures with only a functional role to perform. They have social attributes as well, which are vital to one's self-image, social interaction, and physical attractiveness (Fig. 1.2). Restoring missing natural dentition, especially in the anterior area, has a complementary impact on the individual's personal and social countenance. Experience has proven that most patients not only perceive the functional improvements provided by prosthodontic rehabilitation, but also note remarkable improvements in their social and spiritual well-being as a result of the changes in their appearance.



FIGURE 1.2. View of a woman with missing anterior dentition; she used to cover her mouth while laughing to hide her edentulous status.

Dental implants have proven to be a predictable method of restoring function in the oral cavity over the past thirty-five years.¹³⁻¹⁶ The late 1980s and early 1990s witnessed the expansion of the use of dental implants to include treatment of partially edentulous patients with fixed, implant-supported restorations. These new clinical applications include the treatment of missing anterior single dentition, which has become a treatment option with documented success rates in excess of 90%.¹⁷⁻²⁰ As awareness of this treatment modality has improved, restoration of missing maxillary anterior single teeth with implant-supported restorations is quickly becoming the preferred treatment modality, despite the fact that it still remains one of the most aesthetically difficult and challenging of all implant restorations. Efforts by clinicians to improve the aesthetic dimension of dental implants and achieve restorations that exactly mimic the appearance of natural teeth have played a significant role in improving the awareness and popularity of dental implants.

Success in achieving an aesthetic implant-supported restoration that mimics the natural tooth appearance requires very meticulous treatment procedures. The process involves careful, detailed presurgical planning, optimal three-dimensional implant placement, meticulous soft tissue management, the use of predictable bone grafting techniques when required, and skillful use of various prosthetic components.

Many researchers have dedicated their efforts to improving and developing techniques that help achieve predictable, aesthetic results with dental implants. Some have laid out the fundamentals of presurgical planning,²¹ and others^{22,23} have set the guidelines for aesthetic implant positioning to achieve a natural-looking final restoration.

Soft tissue sculpture,²⁴ the use of connective tissue grafts²⁵ and free gingival grafts,²⁶ improvement of soft tissue contours,²⁷ the use of enhanced conservative new mucoperiosteal flap designs,²⁸ and methods to improve soft tissue topography at the time of second-stage surgery²⁹ were all invented to benefit the aesthetic outcome.

To achieve adequate height and width of the alveolar bone to obtain an optimal natural emergence profile, many techniques have been introduced.^{30,31} Jovanovic³² defined the term *aesthetic bone grafting* as the regeneration of the lost osseous structure to its original biological dimensions, not only to serve function but also to favor aesthetics.

Unlike natural dentition, restoring a single missing tooth with an implant-supported prosthesis can be a difficult task, never like restoring multiple missing teeth in the aesthetic zone.³³ In cases where only a single tooth is to be restored, the establishment of the peri-implant papillae and surrounding tissues is highly predictable,³⁴ whereas in the case of multiple implant placements the interimplant papilla is unpredictable. Some authors³⁵⁻³⁸

have suggested soft tissue surgical interventions as a solution for this problem, while others^{33,39} have utilized hard tissue reconstructive procedures. Tarnow⁴⁰ and Salama⁴¹ have proposed helpful tools for predicting the inter- and peri-implant papillae with classifications that have assisted in the assessment of clinical papillary conditions. Misch⁴² stated that aesthetic enhancement techniques are very often accomplished at the expense of sulcular health, as some of the clinical procedures can be invasive to peri-implant tissues. For example, creating deep soft tissue pockets around abutments can jeopardize the long-term survival of the implant and its surrounding structures.

Aesthetic implant dentistry should not be a separate discipline but rather an integral part of all other treatment modalities.⁴³ Function should complement aesthetics and vice versa: the final objective of aesthetic implant dentistry is a perfect prosthetic outcome that simulates the natural tooth appearance. Simple principles of design applied to anterior dental aesthetics that create harmony while maintaining natural beauty can turn an average restorative case into an ideal one.⁴⁴

There is no right or wrong when it comes to an aesthetic restoration. It is the clinician's own responsibility to analyze the available treatment options and utilize the best possible working strategy that will provide a predictable long-term prognosis.

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