



RESEARCH ARTICLE

ESTHETIC SUCCESS IN COMPLETE DENTURE

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ABSTRACT

Esthetics naturally evokes harmony, balance and beauty. The success of the esthetic challenge involves many factors that the practitioner must take into account when rehabilitating total edentulous patients. The aging of the population had the effect of increasing the number of completely edentulous people, which gave back to the removable prosthesis all its importance and its capital role in prosthetic rehabilitation. It must satisfy the patient and be perfectly credible according to his age, sex and personality. Currently, patients with complete edentulous teeth, regardless of their age, are increasingly demanding on their dentofacial appearance. The aim of this work is to define the different aesthetic parameters of prosthetic reconstruction and to highlight the importance of the clinical sense and artistic taste of the practitioner in the facial dentofacial reconstruction of the complete edentulous.

INTRODUCTION

The ageing of the population had the impact of increasing the number of completely edentulous people, which has given back to the removable prosthesis all its importance and its crucial role in prosthetic rehabilitation (Fajri *et al.*, 2013). It must satisfy the patient and remain perfectly credible according to his age, sex and personality. Currently, patients with complete edentulous teeth, regardless of their age, are increasingly demanding on their dentofacial esthetics. The natural appearance and esthetic realization of conventional removable prostheses are in every individual situation a challenge for both the dentist and the technician (Teubner *et al.*, 2007). The success of the complete adjunct prosthesis requires the application of a certain number of parameters and also implies the clinical sense and artistic taste of the practitioner. The objective of this work is to define the different aesthetic parameters of prosthetic reconstruction and to highlight the importance of the clinical sense of the practitioner during the dentofacial reconstruction of the complete edentulous teeth.

During the clinical examination: A pre-prosthetic aesthetic analysis is essential. It allows us to identify problems and provide the patient with information on the range of possible solutions to improve their dento-labial aesthetics. This analysis requires time and method. The oral camera is used in this case for a privileged use (Marzouk, 2002).

During this examination, it is advisable to:

- Draw inspiration from pre-extracted documents (models, photos...) or old prostheses, in order to restore the patient's initial aesthetics;

- Assess morphological parameters including the shape and symmetry of the face; the profile, presence of wrinkles or fine lines following a dental collapse, tint of the integument, muscular examination, intermaxillary relations; (Fig 1,2) the form and tonicity of the lips (Fajri *et al.*, 2013; Marzouk, 2002), the smile and visibility of the ridge at rest and smiling (Paris *et al.*, 1998).

The disappearance of osteodental structures in the edentulous patient causes an immediate retreat of the orbicular strap due to the tension of the buccinators and the labio-jugal diaphnesia that is created during swallowing (Fig 3 a and b) (Regragui *et al.*, 2010). The proper repositioning of the orbicularis oris muscle is essential for denture esthetics (Meshramkar, 2013). The key to aesthetic replacement to all these losses is to support and harmonize the collapsed lower third of the face with the upper part with the help of various treatment modalities (Aggarwal *et al.*, 2016). The use of specific impression techniques will allow the future prosthesis to support its paraprosthetic organs. (Piezographic impression, tertiary impression of polystabilizing surfaces,) (Fig 3,4)

**When registering the intermaxillary relation
Adjustment of the maxillary occlusion rim:**

- The upper lip should be supported enough, Nasolabial angle varies between 90° and 95° for men and 100° to 105° for women (Hüe, 2008]
- Its length is evaluated according to aesthetic criteria (visibility at rest between 0 and 3 mm) and phonetic criteria (pronunciation of phonemes F and V) (Fig 5)
- Rendered parallel to the interpupillary line (It passes through the centre of the eyes) in the frontal plane and to

the Camper plane in the sagittal plane (Helfer *et al.*, 2010; Monalee Devi, 2010; Pompignoli *et al.*, 2011).

- On the maxillary occlusion rim some references will be marked:
- The interincisive point: we refer to The midline line which is a essential vertical reference line, retroincisive papilla, the lip brake, the philtrum, and the middle of the face. These last two references seem to be the most reliable (Monalee Devi, 2010).
- The distal surface of each canine whose position can be estimated by different methods: For example, its tip is, facing straight from the outer edge of the nose wing; in profile in Simon's plane (vertical frontal plane passing through the suborbital points)
- The position of the upper lip to the smile which corresponds to the height of the incisors. The neck is at the level of the upper lip, the incisal edge touches the lower lip and conforms to its concavity (Fig 6)
- The ideal incisal curve when observed in the frontal view is a convex curve that trails the natural concavity of the lower lip during smiling (Monalee Devi, 2010).
- The commissures, lips and cheeks must be correctly supported, causing partial removal of the nasolabial folds. (Fajri *et al.*, 2013; Helfer *et al.*, 2010; Lejoyeux *et al.*, 1976).

Assessing vertical dimension: This delicate clinical phase is closely linked to the clinical sense of the practitioner and his experience. The vertical dimension of occlusion (VDO) can be determined directly by aesthetic appreciation essentially or indirectly by evaluating the vertical rest dimension, from which the value of the freeway space is then subtracted (between 1 and 4 mm depending on the skeletal classes). The vertical rest dimension is evaluated by asking the patient to keep his lips slightly semi-opened and to breathe through the mouth slowly. The patient may also be asked to keep some water under the tongue. Muscle relaxation should be as complete as possible. The vertical dimension of occlusion is estimated according to the comfort felt by the patient, functional tests based on swallowing and most of the time according to aesthetic criteria (Helfer *et al.*, 2010; Lejoyeux *et al.*, 1976). An underestimated VDO causes: an aged appearance of the face by accentuating lines, folds and furrows, soft tissue fall in, and a change in the proportions of the face. An overestimated VDO causes: stretched integument, "full mouth" appearance, a frozen face losing all expression with lip unocclusion and a too visible and unsightly dentition at the mouth opening (Fajri, 2013). The intermaxillary ratio is a key step, the success of which will guarantee a good aesthetic result.

Choice of teeth: When searching for the size of artificial teeth, pre-extractional documents are always very useful. As much data as possible should be collected on natural teeth, especially if the patient is examined before the last extraction. Extracted teeth, photographs, casts, X-rays or other pre-extraction documents are welcome. Old prostheses, complete or partial, still worn or kept as a backup (or as a souvenir) are an important source of information. Without being obliged to copy them servilely, they serve as a reference to decide in agreement with the patient to do the same or different things (for example, the more this... the less that...). The examination of a family member who is still toothless is also likely to provide information. This can be done with the brother or sister, often the son or daughter, but even a more distant family

member if he or she has a certain similarity (Schoendorff *et al.*, 1997).

Material: The choice is relatively limited since it is only between ceramic (porcelain) and acrylic resin.

Dimensions: Reference will be marked on the occlusion models placed in the mouth and will be transcribed on the plaster models. The size of the anterior teeth is of great importance: teeth that are too small lead to a narrow arch with a very unaesthetic buccal corridor. The tip of the canine tooth is located vertically above the wing of the nose. The width of maxillary central incisor is a quarter of the base of the nose. Women generally have much wider central incisors than lateral ones, a less marked difference for men. The phonation and visibility of the incisal edge must be taken in consideration. It is very apparent in young people and women. It is less visible in middle-aged people and often masked in older men as a result of usury.

Form: Refer on the one hand to the form of the face and on the other hand to the sex-personality-age factor (SPA)

Face form: Williams notes the interrelationship between the form of the central incisor and the form of the face. The contour of the face represents the inverted contour of the central incisor. He describes four types of faces and teeth: square, tapering, ovoid, mixed.

Dentogenic Concept (Monalee Devi, 2010): Introduced by Frush and Fisher in 1955. Dentogenic means the art, practice, and techniques used to achieve that esthetic goal in dentistry. Factors of dentogenic concept are Sex, Personality and Age

Sex: This factor was the first introduced by ZECH and determined that there was a difference between a woman's teeth and a man's teeth. The masculine characteristics are straight-based, square and sharply angled, while those of the woman are found in the softness and roundness of the curves.

Personality: Frush and Fisher divide personalities into three groups:

- The vigorous, with strong and very visible central incisors;
- The delicate, with frail, fragile and eroded central incisors;
- The Medium, with balanced incisors, of medium form.

According to Lombardi, personality is mainly reflected in the canine teeth: it is stronger and more pointed in aggressive, ambitious, vigorous subjects. It is softened in calm, wise people.

Age: In general, the older the patient is, the stockier, abrasive teeth have, with a dense and opaque free edge. This usury, which concerns all anterior teeth, gives the illusion of shorter teeth. Contact points often look like contact surfaces.

Choice of shade: The choice is influenced by:

- **Light:** must be done in the morning.
- **Age:** the older the tooth gets, the darker it gets. More patients are older, more they have yellow, saturated, less bright and translucent teeth.



Fig. 1. Vertical midline of the face and main horizontal lines (bipupillary and lip commissures line)

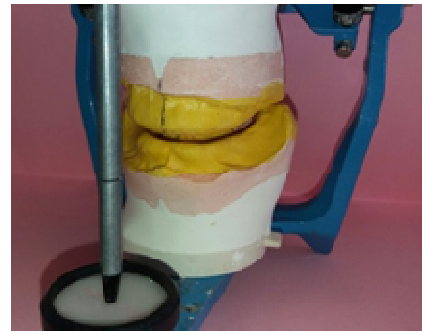


Fig 2 : Study of the casts of a patient with insufficient prosthetic space that have an effect on facial aesthetics requiring pre-prosthetic surgery

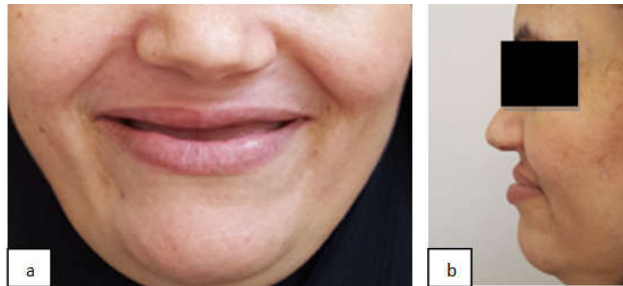


Fig 3 a and b : front and side view showing the collapse of the lower part of face and retreat of the orbicular oris

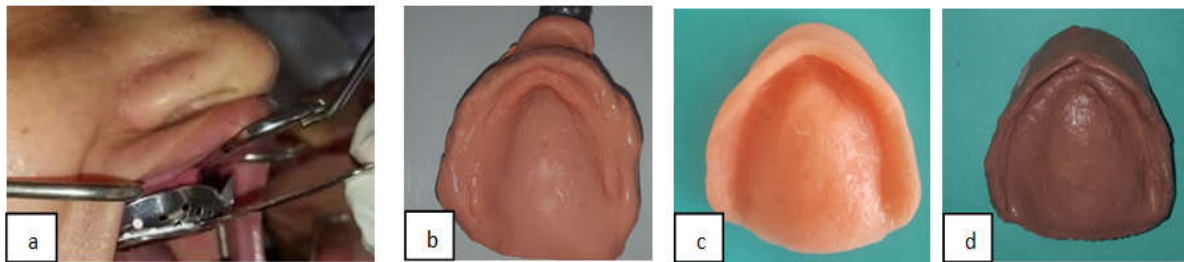


Fig 4 (a,b,c and d) : a,b : Alginate primary impression with a space tray, c : Individual impression tray with large front edge
d : secondary impression using polysulfide



Fig 5. a and b. Appearance of the smile and profile after the prosthesis is inserted



Fig 5. Visibility of rim at rest between 0 and 3 mm

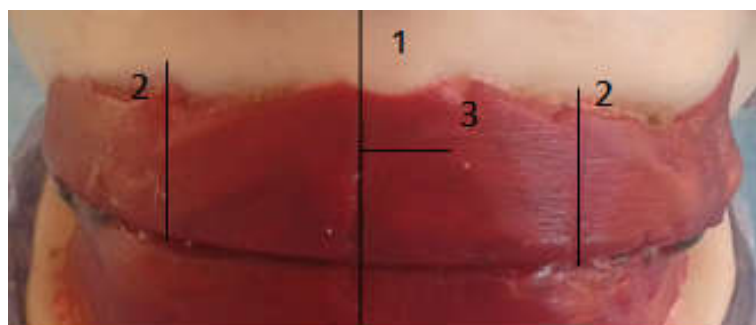


Fig 6. 1. The interincisive point, 2: the inter-canine distance, 3: the position of the upper lip to the smile

- **Sex:** Women's teeth are brighter, lighter and less pigmented.
- The colour of the skin and ethnic groups: tooth shade must be in harmony with that of the skin, eyes and hair.
- The situation of the tooth: the posterior teeth appear more saturated because they are darkened by the bottom of the oral cavity.

The teeth of the shade guide are placed, one by one, at the external corner of the eye. Thus the colour to be appreciated is located in a crossroads between the skin elements, eyebrows, eyes and hair. The patient should never be shown the entire shade guide outside the lip frame as the patient would inevitably choose the lightest colour. Patients find the shade guides "too colourful" and have a "white idea" of the teeth.

Mounting the teeth: The mounting of the teeth must satisfy the aesthetic requirements in accordance with the functional imperatives, in particular phonetics, but there must be a harmony between the prosthesis and the face, which no rule can ensure. Modification of the shape and size of some teeth, abrasion of free edges or canine tips, reproduction by grinding of recessions gingival tissue contribute significantly to the credibility of the prosthesis. The central incisors define the inter-incisal environment and create symmetry and balance in the overall prosthetic restoration. The canines occupy a key position at the intersection between aesthetics and function. They thus determine a progression effect from front to back. The presence of the buccal corridor reinforces this impression, as the teeth pass posteriorly, the light is reduced and this gives a gradually darker shade and therefore a smaller appearance. (Richard, 1973). The lateral incisor plays a key role in the animation of the mounting (Hüe, 2003). Perfect horizontal and radiant symmetries do not exist. Very slight rotations, egressions, disturb this ideal arrangement but harmony must be maintained. It is prosthetically, the most delicate element to reproduce: indeed how to recreate an asymmetric symmetry or a symmetric asymmetry (Fajri, 2013; Schoendorff *et al.*, 1997).

Conclusion

Aesthetics naturally reflects harmony, balance and beauty. It involves a number of parameters including proportions and symmetry. But the pure and hard application of these parameters will often produce smiles stereotypical, uniform, and cold. It will always be advisable to add a little personal touch to break this perfect arrangement. The restoration of a natural and lively smile is a sign of the success of any prosthesis that is well integrated into the patient's personality.

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