

POSSIBILITIES TO EVALUATE THE FUTURE AESTHETIC DENTAL RESTORATIONS

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Abstract: The visual information has a major impact on people. Our patients become increasingly interested in the aesthetic appeal of their teeth. To meet their demands the dentist has developed a large scale of methods to estimate and analyse together with the patient the future dental aspect. These are computer simulations, wax modelling on wax-up models, intraoral mock up modelling, temporary dental restorations.

Cuvinte cheie: restaurări estetice, consilierea pacientului

Rezumat: Informațiile vizuale au un impact major în viața oamenilor. Pacienții noștri sunt din ce în ce mai preocupați de aspectul estetic. Medicul dentist are la dispoziție mai multe metode de a estima și analiza împreună cu pacientul viitorul aspect dentar estetic, simulări computerizate, modelare în ceară pe model wax-up, modelare intraorală-mock-up, lucrări provizorii.

Nowadays, the patients expect from a dental restoration to be functional, strong and long lasting and to be highly aesthetic.

There is no universal definition of aesthetics. Depending on the individual concepts and on the access to information, each of us has a proper concept.

The dentist establishes the aesthetic criteria based on the specialised literature considered as “normally aesthetic” but every patient must have an individual treatment.(1)

It is true that the aesthetic dental restoration requires good knowledge in dental medicine and in other related fields such as physics and chemistry, but highly important however is the correct approach to the patient.

Every patient who comes for consultation has aesthetic expectations, however quite frequently there occurs a gap between their visions and the financial possibilities. In other cases the dentist’s visions do not match with those of the patient.(2)

Quite frequently the dentist faces two problems: one related to the attitude and the psychology of the patient towards the treatment and the second one, related to the effective clinical procedure.(3)

The success and the acceptance of the previous aesthetic restoration works is based on a common vision and agreement between the patient and the dentist. If both the patient and the dentist have different views regarding the final restoration work, this can lead to disappointment and in the end to the refusal of the patient to accept the restoration work.(4)

An efficient communication between the patient and the working team increases the patient’s trust in the solutions suggested by his physician. A lot of patients have little understanding of the progress which has been made in the restoration work; this makes them unaware of all the treatment possibilities they have. This is why a clear representation of what can be accomplished could be helpful.(5)

The dentist and the patient may sometimes have different views. For a proper understanding of the aesthetic solutions and a proper case analysis we can perform computer

simulations, wax modelling on wax-up models, intraoral mock up modelling, temporary dental restorations.

Frequently, the dentist chooses a combination of methods for the treatment because every method has its own advantages and disadvantages and used together, they have a better effect.

Methods and evaluation techniques of the future aesthetic dental restorations

Computer simulations: by means of software and hardware tools, we can virtually restore the future aspect of the patient. There is a close relation between these two tools; the results depend very much on the user to handle them to the best of his ability.

The (ideal) equipment used is represented by:

- Image acquisition equipment: photocaleras (intraoral, professional), video cameras, scanners for photos and films etc.;
- Image processing equipment: computers, professional screens (for the correct reproduction of the colours), graphic tablets (to simplify the advanced graphical processing) etc.;
- Reproduction equipment for processed images: colour printers with very high resolution (semi professional and professional), professional screens in the dental lab to ensure a correct reproduction of the dental colour.

The recommended software depends very much on the user’s level of expertise and on the available budget: Paint (included in the operation system Windows, Microsoft Co.), GIMP (GNU Image Manipulation Program, free for the operating systems Windows/Linux/Mac), Adobe Photoshop (Adobe Systems Inc.), PaintShop (Corel Co.). There can also be used programs such as PowerPoint (Office Suite, Microsoft Co.) or Keynote (Apple Inc). Although they offer rather reduced possibilities for image processing, they have a greater flexibility in use because they are specialized in the presentation of images. Notable is also the software specialized in the dental field such as the Dental GPS Smile Prescriptions (Dental GPS Inc.) or CARA (Heaeus Holding GmbH). The specialized programs

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allow an advanced modelling with main focus on the dental field, associated if possible with technologies of CAD-CAM type, however these programs are rather expensive.

The advantage of this method is that a fast result is obtained of the future aesthetic dental restoration.

The disadvantage is, that we cannot always put into practice what we have obtained through computer simulations.(6)

Figure no. 1. Computer simulation: a) initial aspect of the patient; b) the smile after the digital processing of the picture: the image section with the teeth from the left side has been copied, inverted, placed axially and rotated to render continuity to the soft parts, dental symmetry



Wax modeling on the wax-up model reproduces the future aspect of a tooth in wax on the study model. Prosthetic restorations or gingivoplasty can be performed, which offer a three-dimensional image. It may be used in the setting up of a treatment plan in collaboration with the patient and in the accomplishment of the silicone key.(7,8)

The advantage of this technique is that it uses rather short clinical steps, the difficult time costing modeling work being performed in the laboratory. The patient can study the esthetic model, which can be shaped and adjusted and be brought to a desired form and size regarding the restored teeth.

The disadvantage of this model is that it requires a second treatment session and thus supplementary laboratory costs.

Intraoral – mock-up modelling is a faster method to present the probable results of the indicated treatment. It is used both in simple restoration works such as those of a single tooth and in the resizing of the mesiodistal space in the frontal region. An intraoral modification of the physiognomic aspect is performed by means of composite materials without using the adhesive system. At this level, the future restoration form is more important than the stratification technique of the composite.(9)

The advantages of this method are the immediate evaluation of the patient's response to the suggested treatment and the fast adjustment of the treatment to the patient's expectations. A single treatment session is sufficient here. The disadvantages of this method are, that this variant requires the clinician to have very good manual skills and that the treatment session takes very long. In this situation, too a silicone key is made after the future restoration aspect is agreed upon.

Temporary restorations

Temporary restorations restore the functions of the dento-maxillary apparatus only partially and have a short or medium life time. Their main aim is to meet the aesthetic requirements and only then the ones of stabilization.

Temporary restorations of good quality can offer valuable information to the surgeon, to the patient and to the technician before the final restoration work is made. Temporary

diagnosis restorations suffer adjustments and modifications until the final aesthetic and functional results are achieved and agreed upon by the patient. Once the agreement has been concluded, the final restoration can be processed with confidence on the basis of the temporary restoration which serves as a guide for the final work.(10)

Temporary restorations are generally performed from polymeric materials of lower quality, because they are not subject to the long term use, the accomplishment time must be short and of low price.

The common method for temporary restorations in the current practice is to insert the temporary prosthetic plastic material between two faces: an external conformer, which reproduces the exterior face of the desired restoration and an internal conformer which reproduces the prosthetic field. The initial aesthetic aspect is good only for a limited period of time, such as several weeks. A more special temporary restoration, with higher functional requirements or with a higher resistance in time involves the manufacturing of the prosthetic works in the laboratory, longer accomplishment time and higher costs.

The aesthetic effect of these temporary works can be increased by realizing deeper incisal embrasures in the frontal region and more rounded in the lateral area, by sizes on a rising scale from the median line to the posterior. The coloristic individualization of the restoration work increases the visual impact.

A successful temporary restoration in aesthetic dentistry requires a detailed attention for every single aspect of the case.

To obtain high quality in temporary restoration can be time consuming and sometimes difficult.(11)

Figure no. 2. Wax-up diagnosis in a patient with extended frontal edentations, and trema a) The wax-up working model and the silicone conformer in temporary works b) temporary work in the conformer immediately after the removal from the prosthetic field; c) intraoral view of the temporary work



The cementation of the temporary fix restorations is done with temporary cement, which is quite easy to remove.(8)

The advantages of this method are that the restoration work can be performed in practice in a relatively short time. The functions of the dento-maxillary apparatus are restored, aesthetic adjustments of the temporary restoration are performed, with regard to the tooth shape or to the resizing of the mesiodistal

space in the frontal region. This type of treatment serves as a guide for the permanent restoration; it can be used in communicating with the patient as basis for the establishment of a treatment plan, in the modification and the occlusal evaluation of the future restoration, it protects the biological integrity of the prosthetic field, it has a favourable effect on the patient's psyche.(8,12) Another advantage is the fact that, the problems which arise at cervical level because of a prosthesis which is axially too short can be corrected easily by means of composite materials of the type flow.(13)

The disadvantages are the high costs in the accomplishment of temporary restorations if laboratory work is required.

Conclusions:

The dentist disposes of a large variety of evaluation methods for the future aesthetic aspect of the patient and has the possibility to use them in the communication with the patient.

Depending on the advantages and disadvantages of each method, the dentist will choose the method which best suits the patient.

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