



Short Communication

Criteria for esthetic outcome around implants

Trilok Bhatt¹, Anushri Shah²

1, 2 Department of Prosthodontics, Vaidik Dental College and Research Centre, Daman and Diu- 396210

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ABSTRACT

The use of a dental implant to replace a single missing tooth or edentulous space has shown high rates of survival. Along with the survival, the surrounding peri implant health is also an important factor in the success of the implant. A variety of different criteria have been incorporated to judge the esthetic outcome. During the treatment planning phase, factors like the smile line, lip support, ridge position and interocclusal space are key in achieving a good result. Clinically after 6-12 months of the implant placement, a variety of dental indices and the pink esthetic score and white esthetic score parameters can be used. This literature review has been done to highlight the importance of the esthetic outcome and the best ways that can be employed to do the same.

Keywords: Esthetic outcome; peri implant health; dental indices

Address for Correspondence:

Dr. Trilok Bhatt,

Department of Prosthodontics,

Vaidik Dental College and Research Centre,

Daman and Diu- 396210

EEmail id: bhatttrilok07@gmail.com

INTRODUCTION:

The use of an endosseous implant and a single crown to reconstruct a single edentulous space is a proven therapeutic approach with high implant and crown survival rates^[1]. In this case degree of osseointegration and the longevity of the restoration have been considered equally essential^[2] The colour, form, and surface quality of the restoration as well as the peri-implant soft tissues are all taken into account during an aesthetic evaluation. Ceramic loosening has caused titanium[Ti] to be considered the standard abutment material. In terms of restorations, all writers observed "good to exceptional" aesthetic integration, and zirconia [ZrO₂] has been more popular than other ceramics, such as alumina, due to its superior mechanical qualities.

DISCUSSION:

Many zirconia abutments for all implant diameters, connections, implant-abutment interfaces, and platform forms are now commercially available. Stock or prefabricated abutments [that may generally be modified or veneered], computer-aided design and computer-aided manufacturing [CAD-CAM] custom abutments, and abutments with titanium inserts known as Ti base abutments or 2-piece abutments are the three primary current alternatives. These abutments were designed to hold cemented crowns^[3], but they can also hold screw-retained crowns.

The following factors are important in the treatment planning of providing the best esthetic and mechanical implant outcomes: the smile line, lip support, ridge position, soft tissue and crown height space also known as interocclusal space.

When determining how many teeth a patient should show with upper lip movement during talking and smiling, the smile line is an important factor to consider. According to Tjan et al.^[1], the average smile allows for 75 percent to 100 percent visibility of the maxillary incisors and interproximal gingiva. When evaluating an edentulous arch, the clinician should look at how much ridge is visible when smiling without the denture. If the residual ridge is visible when you smile, implant prosthesis treatment planning can be difficult. The shapes of the maxillary anterior teeth, as well as the position of the remaining ridge, provide lip and soft tissue support. The lip and soft tissue support should be assessed both with and without the present denture in place. This will help determine if a fixed or removable prosthesis is the best option.

The remaining ridge is usually substantially lingual to the optimal position of the teeth in the maxillary anterior and posterior, depending on the amount of bone resorption. This discrepancy must be taken into account when determining the appropriate position of the implants in order to build a prosthesis that provides adequate lip support, phonetics, and patient acceptance, as well as enough tongue space. Both clinically and through a cone beam computed tomography examination, the thickness and quality of the soft tissue should be assessed. The tissue thins and becomes less thick when the maxillary ridge resorbs due to the loss of keratinized tissue.

In the treatment planning of a maxillary prosthesis, the amount of space between the residual ridge and the incisal edge is critical. There are differing dimensional tolerances for fixed vs detachable implant prosthesis to fit the prosthesis. Between the edentulous ridges and the opposing occlusal plane, conventional screw-retained implant prostheses [i.e., zirconia or porcelain-fused prostheses] can be created with 8-10 mm [zirconia]. The interocclusal distance necessary for a hybrid prosthesis is roughly 15 mm, as more space is required to prevent acrylic material fracture^[4]. A sufficient crown height space allows for proper bulk of material, as well as better aesthetics and hygiene. If space is limited, there may be a rise in prosthetic issues^[5]. Wittneben et al conducted a study to evaluate and compare the aesthetic outcome and clinical performance of prefabricated zirconia abutments veneered with pressed ceramics against CAD/CAM zirconia abutments veneered with hand building technique for anterior maxillary all-ceramic implant crowns [ICs]. Patients were

visited at baseline, 6 months, and 12 months, with the same examiners assessing clinical and radiographic characteristics. 1 week after the final all-ceramic implant-supported crown was inserted, a baseline was established. The primary outcome was the PES/WES aesthetic index; secondary outcomes included radiographic findings [crestal bone-level alterations [DIB]], cast analysis, implant success and survival, mechanical problems, and implant-supported prosthesis survival, as well as clinical data.

The following clinical parameters were evaluated at baseline, 6 months, and 12 months after baseline at four sites per implant [mesial/distal/buccal/oral; excluding keratinized mucosa [KM]: buccal side only]:

- Modified pink aesthetic score [mod PES] ^[6]
- WES ^[7]
- Plaque presence/absence [mod PI]: will be assessed using the PI criteria adapted for oral implants
- Modified Sulcus Bleeding Index [mSBI]
- Pocket probing depth [PPD] ^[8]
- KM in millimetres

It was noted that Y-TZP has surpassed alumina as the favoured ceramic abutment material due to its superior mechanical qualities ^[9]. It offers high flexural and fracture toughness, as well as the potential to launch a novel phase transformation toughening mechanism that can improve mechanical strength and reliability ^[10]

Zirconium dioxide is a thick, monocrystalline homogeneous material with minimal corrosion potential and excellent radiopacity ^[9]. It is a biocompatible material that, when compared to titanium, is less prone to plaque accumulation ^[11].

Based on the aesthetic benefit of a white colour material, less mucosa shine-through, biocompatibility, radiopacity, insolubility in water environment, soft tissue integration at least as good as titanium, and less plaque adhesion, it can be concluded that zirconium dioxide abutments in the anterior maxilla are beneficial. However, there are a variety of novel abutment types on the market, and discrepancies in clinical performance should be identified. In the aesthetic zone, both prosthetic pathways demonstrated great clinical performance. During the observation period, no mechanical/technical or biological issues occurred.

CONCLUSION:

With the increase in demands of the patients requirements and need for a beautiful smile, these factors should definitely be taken into account. Its important to know that a failure in reproducing the best possible outcomes of any of the following could lead to a compromise in the final prosthesis of the patient. The clinician must plan his final prosthesis with these points in mind. Choice of restoration also does make a difference with zirconia being one of the best available materials.

Authors' contribution:

Trilok Bhatt: Manuscript editing, Literature search, data collection

Anushri Shah: Data Analysis, manuscript drafting

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Conflict of interest

The authors have nothing to disclose or any conflicts of interest.

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