Full-Arch Implant-Retained-Restoration. Fixed or Removable?

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Dental implants as abutments for full-arch restorations are a widely accepted treatment modality. However, when scheduling the use of a fixed or removable implant-supported full-arch restoration, many factors should be considered. Due to the possible need for additional surgical steps to enhance the esthetics surrounding fixed restorations, removable implant-supported dentures, often are a preferable alternative.

The current report presents a comprehensive treatment approach, wherein the patient undergoes different treatment modalities for restoration of the upper and lower full arches at different timelines along with discussing the advantages and disadvantages of each approach.

Although implants have become a widely accepted treatment modality, dentists and patients frequently are confronted when deciding between a fixed or removable full-arch restoration. Many patients requiring a full-arch rehabilitation, wish an esthetically sophisticated and fixed-implant-retained denture (FIRD). In such cases, the esthetic outcomes are often severely restricted by bone loss as a cause of advanced periodontitis and/or tooth extractions.

Modern restorative materials and techniques make removable implant-retained dentures (RIRD) to an esthetically and functionally acceptable alternative to FIRDs. A 55-year-old woman was referred for a complex periodontal-implant treatment (Fig. 1, Fig. 2). Due to severe periodontal disease, several teeth were extracted and the socket #14 was augmented using a non-resorbable membrane (Osseotite, Regentex GBR-200, Osteogenics Biomedical, Lubbock, TX). The patient was informed about the advanced bone destruction due to periodontitis and the following treatment plan were recommended: 1) extraction of the teeth # 13, 12, 23, 24, 16, 36, and 32-42 due to advanced chronic periodontitis as well as caries, and surgical treatment of the rest dentition by access flap surgery; 2) strategic placement of implants to increase the number of abutments; 3) full-arch restoration of the maxilla with a RIRD using telescopic crowns as attachments; 4) implant or teeth retained bridges for restoration of the mandible.

The patient did not accept this proposal and sought treatment from another dentist.

One year later, the patient presented again for consultation. Eleven implants were placed (Fig. 3, 4, 5, 6, and 7) and the maxilla and mandible have been restored with FPDs at the patient’s request (Fig. 3 – Fig. 6). However, the patient was dissatisfied with the esthetic results due to the unnatural length of the artificial teeth. Furthermore, the design of the existing FPDs impeded oral hygiene.

Due to a home accident, the fractured teeth #23, #35, #45, and #46 were extracted and an implant was immediately placed in region #44. Open tray impressions were taken using a polymer impression material (Impregum Penta Soft, 3M ESPE) and mounted on a semi-adjustable articulator (SAM 2P, SAM Prazisionstechnik GmbH, Gauting, Germany). For the previous abutments were used and temporary covered dentures were fabricated and retained on the provisional abutments (Fig. 6 – Fig. 8).

Two months later, full mouth rehabilitation of the maxilla (supported by six implants) and mandible (supported by six implants) was completed by fabrication of RIRDs using telescopic crowns as attachments, as previously described. Customized abutments served as primary telescopes and electroformed pure gold copings (0.5 mm thickness, AO Carvingold, Au-99.9%, Weiland Dental Systems Inc., Pforzheim, Germany) served as secondary telescopes (Fig. 3, Fig. 10). The metal framework was milled from titaniu- m (Zetronit Ti, Wieland Dental Systems Inc., Pforzheim, Germany) and veneered using a photo-cured indirect ceramic polymer (Ceramag, Schoi, Ratingen, Germany; Fig. 12 – Fig. 15).

Discussion

This report presents a case in which the patient was treated with fixed restorations supported by implants and natural teeth and subsequently treated with an implant-retained removable denture.

The patient initially insisted on fixed restorations. Unfortunately, the dentist fulfilled this wish, despite the existing clinical conditions of loss of hard and soft tissue. Aggressive procedures were performed prior to implant placement, resulting in an unfavorable treatment outcome.

While the fixed restoration resulted in a functionally satisfactory treat- ment outcome, the patient was dis- pleased with the esthetic results. The main concern was the unnaturally long tooth shape necessary to compensate for the insufficient alveolar ridge height. The esthetically unappealing situation was further complicated by the overdenture support. However, the overdenture position was difficult to access to the screw holes complicating the fabrication of pros- theses as well affecting the retrievability of the prostheses at the time of maintenance visits.

Other evident alternatives for RIRDs included the usage of telescopic crowns as attachments, for the patients or respecting periodontal principles should combine implant prosthodontics with experience-based but less drastic surgical techniques. In many circumstances, the latter route is a better and safer treatment alternative.

References


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New organic toothpaste may inhibit harmful bacteria

By OTI

SEOUL, South Korea: A Seoul dentist has developed an all-natural toothpaste that aims to reduce the health risks posed by Streptococcus gordonii, an oral bacterium that initiates dental plaque formation. Once in the bloodstream, which it may enter through bleeding gingivae, for example, the bacterium also causes blood clots, which can lead to life-threatening conditions such as infective endocarditis, heart attack or stroke.

South Korean dentist Dr Hyung-Il Moon, head of the Moon Dental Hospital in Seoul, recently obtained the patent for his bacteria-inhibiting organic formula from the Korean Intellectual Property Office. Conventional toothpastes mainly focus on combating two major oral bacteria, Streptococcus mutans and Porphyromonas gingivalis, which are both associated with tooth decay and periodontal disease. However, inspired by a joint study by the Royal College of Surgeons in Ireland and the University of Bristol, which found that S. gordonii can trigger an infection of the inner lining of the heart when entering the bloodstream, Moon started developing a toothpaste that especially inhibits the growth of these bacteria.

“Endocarditis is a serious disease treated only by surgery or strong antibiotics, which is becoming more difficult due to growing antibiotic resistance,” Moon told the Korea Times. “The toothpaste’s anti-inflammatory ingredients include neem and cascarilla bark, Japanese cornelian cherry. “Unlike most other toothpastes that use artificial chemical preservatives, this toothpaste is only composed of natural, organic compounds, which greatly reduces the risk of side effects,” Moon said. As the oral mucosa is very susceptible to absorbing harmful substances into the body, it is especially important to use natural ingredients for oral care products, he emphasised.

Tested among his patients, the toothpaste’s formula proved to help relieve inflammation, as well as sore gingivae and toothache.

The toothpaste is not available for purchase yet, but Moon is working on releasing it to market soon.


Hamdan Bin Mohammed College of Dental Medicine is the first college established under Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU) at Dubai Healthcare City. The Postgraduate College offers dentists a three year Master in Science degree in the following specializations.

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