Detecting and managing potentially malignant diseases of the mouth still pose challenges to dental professionals worldwide. In Istanbul, Dental Tribune ONLINE had the opportunity to speak with FDI presenter Prof. Stephen Porter from the UCL Eastman Dental Institute in London about new risk factors, prevention strategies and why actor Michael Douglas is not a good poster boy for changing awareness of throat and mouth cancer.

Dental Tribune ONLINE: A recent study on Turkish dental patients in central Anatolia has shown that only one in two people are aware of oral cancer. Are these results representative of most people’s knowledge about the condition nowadays?

Prof. Stephen Porter: It is not uncommon for individuals not to be aware that cancer can arise in the mouth. Indeed, there are studies indicating that even patients without cancer who attend clinics that specialise in mouth cancer are unaware of the possibility. This trend regarding a lack of awareness occurs without cancer who attend clinics in the mouth. Indeed, there are isolated white or red patches on the oral mucosa (sometimes termed “submucous fibrosis”), which carries a high risk of causing oral cancer of possibly 30 per cent. Submucous fibrosis can arise even in young individuals and is irreversible, and thus patients are likely to have a lifelong risk of mouth cancer, even if they stop the causative habit. The nightmare scenario is that when examining a patient with submucous fibrosis the mouth opening can be so small that a clinician may be unable to see the cancer.

mouth cancer can also arise in patients who have rare genetic disorders, such as Fanconi anaemia and dyskeratosis congenita, but the most common oral cancer disorder that is considered to be a worldwide guide is oral lichen plans. This is a global disorder that typically occurs in middle-aged and older women. It is a chronic, immune disorder that may cause painful white patches that sometimes are accompanied by painful erosions or ulcers. It affects about 1 to 2 per cent of the population and is the most common disorder to affect the lining of the mouth (the oral mucosa).

It has been suggested that 1 to 2 per cent of patients with oral lichen plans will develop mouth cancer, but this risk is highly unpredictable because it does not appear to be consistently associated with the duration or type of treatment of the lichen plans, nor the age or sex of the patients, nor their alcohol or tobacco habits. The good news, perhaps, is that 98 to 99 per cent of patients with oral lichen plans will not contract mouth cancer.

Isolated white or red patches on the oral mucosa (sometimes termed “submucous fibrosis” and “erythroplakia”) have malignant potential as well, but these are actually uncommon, particularly the latter, compared with oral lichen plans.

Besides new treatment concepts, pre- individuals need the most effective strategy against oral cancer. Why do so many dentists still appear to overlook obvious signs of the disease, and does current screening procedures have shortcomings?

The great majority of patients ultimately found to have mouth cancer will have been referred to a specialist service because a dentist or other dental professional will have noticed something abnormal. He or she might not have known what it was, but they did the correct thing by referring the patient to a specialist.

Screening for possible mouth cancer is straightforward. It is just a matter of examining the neck and mouth carefully. However sometimes dentists do not know what to look for, as they have probably never seen more than one type of oral cancer in their professional lives.

Similarly, mouth cancer is more prevalent in socio-economically deprived groups than the wealthy. Socially disadvantaged people have a tendency not to attend health care providers, including dentists, on a regular basis nor to take up possible screening opportunities for common diseases and therefore have a variable awareness and practice of disease prevention strategies, whether concerning oral health or general health.

Clearly, the best option for screening would be opportunistic screening, where health care staff examine patients in risk groups for a particular disease, but this requires people to want to attend a clinic and to appreciate the possible benefits of such attendance for their health and well-being.

Is there any evidence that regular screenings could help prevent oral cancer?

There is no evidence that a particular frequency of dental examination will lessen the risk of mouth cancer. However, the more regularly a person is examined, the greater the chance that emerging malignant or potentially malignant disease will be detected and that any lesion present will be small.

However, overzealous review is likely to be wasteful and thus all patients should be advised that if they become aware of a change in their gingiva or oral mucosa that persists for more than three weeks and has no obvious local cause, or example a sharp tooth or filling, they should seek advice from their dentist.

In its 2006 policy statement, the FDI stresses the importance of dental professionals in the detection of oral cancer and patient education. To what extent are dental professionals fulfilling this role?

The majority of patients ultimately found to have oral cancer will have been identified by a dentist or other dental professional, thus dental professionals are fulfilling this role to a great extent. However, dental professionals should also be able to provide advice about oral cancer prevention, for example tobacco and alcohol cessation, and information on where additional advice can be obtained, for example tobacco cessation services.

The current rule of thumb is that the more people smoke and the longer that habit the greater the risk

What are other factors besides smoking, drinking and HPV are currently being investigated, and what is their malignant potential?

People chew betel nut preparations (e.g. paan masal and gutka) in parts of India, Pakistan, Bangladesh and surrounding areas. These cause initial fibrosis of the oral tissue, termed “submucous fibrosis”, which carries a high risk of causing oral cancer of possibly 30 per cent. Submucous fibrosis can arise even in young individuals and is irreversible, and thus patients are likely to have a lifelong risk of mouth cancer, even if they stop the causative habit. The nightmare scenario is that when examining a patient with submucous fibrosis the mouth opening can be so small that a clinician may be unable to see the cancer.

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Impression and registration for full-arch implant dentures

Introduction

Usually, a full denture is delivered following tooth extraction or implant insertion of a fully edentulous arch. A denture is usually used until the final restoration is performed. A well-designed full denture should fulfill the following criteria: 1) correct vertical height and maxilla-mandibular relationship; 2) accurate occlusion; 3) appropriate choice of teeth with regard to shape, length, width and position; 4) adequate lip support, and 5) proper function and aesthetics to meet the patient’s expectations. The final restoration should fulfill or surpass these requirements. Obtaining a correct impression and accurately evaluating the interocclusal relationship (e.g., interocclusal distance, occlusal recording and determination of the exact position of the placed implants) are often challenging and time-consuming tasks.1

The aim of the current report is to present an impression and registration technique that allows the transfer of the interocclusal relationship, occlusal recording and esthetics that were initially applied to produce a full denture as a template for the reconstruction of the final full-arch implant.

Materials and Methods

Following multiple extraction of a non-salvageable rest dentition and the placement of six dental implants in positions #4, #5, #6, #11, #12, #13, a full denture was fabricated. After the extraction sites had healed for 3 months, an implant-retained denture as a template for the reconstruction of the final full-arch implant was planned.

The resulting denture was used by the dentist and the dental technician relied on two alternatives for customized abutments selection: 1) UCLA customizable abutments (pattern resin®, GC, Alsip, IL; Fig. 1c), 2) platinum-iridium customizable abutments (PTIR, Dentegris) for casting with a chromium cobalt (CrCo) alloy (for example, Ankaiti, Anka Guss, Waldaschaff, Germany, Fig. 6b). From this point on, the customized abutments remained fixed in order to avoid any possible inaccuracies. The electroformed copings were placed on the implant abutments (Fig. 7c). The mock-up was placed over the electroformed copings and the occlusion was checked with the bite records (Figs. 8a & b).

After casting, the customized implant abutments were grinded, polished and served as the basis for the fabrication of electroformed puregold copings with a thickness of 0.25 mm (AIC Galaingold, Au > 99.9 %, Weland, Germany, Fig. 6c). The framework was then constructed via CAD/CAM. To ensure proper functioning of the framework, a plastic mock-up and a temporary fixed denture (TFD) were delivered (ZENO-PMMa, Weiland). The customized implant abutments, the electroformed copings, the mock-up and the TFD were delivered by the dental laboratory for the next clinical session.

The abutments were transferred, positioned on the implants and torqued to 35 Nm using a resin transfer key (pattern resin, GC, Figs. 7a & b). From this point on, the customized abutments remained fixed in order to avoid any possible inaccuracies. The electroformed copings were placed on the implant abutments (Fig. 7c). The mock-up was placed over the electroformed copings and the occlusion was checked with the bite records (Figs. 8a & b).

The new master cast was articulated (TFD, Dentegris) for casting with a chromium cobalt (CrCo) alloy (for example, Ankaiti, Anka Guss, Waldaschaff, Germany, Fig. 6b).

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Figure 34: DentDu modified for open-tray impression technique. 

The above-described procedures can be also performed in cases in which a fixed denture was planned for the rehabilitation of the full-arch (Figs. 11a & b and 12a-c) and in cases where part of the natural dentition is periodontally stable and can be applied as abutments. In these cases, the immediate full denture can be fabricated as a cover denture. From this cover denture, a DentDu could be fabricated and further used as described above (Figs. 13a–c).

Porcelain is a possible material for veneering of fixed-denture frameworks. If the angulation of the implants does not allow for taking impressions in the above-described way and an open-tray impression is preferable, fenestrations can be fabricated into the DentDu (Fig. 14).

Discussion

The reconstruction of the fully edentulous arch with implant-retained dentures necessitates thorough planning and a precise and passive fit of the superstructure. A previous study demonstrated that a passive fit between the implant superstructure and the underlying abutments is essential for the long-term success of the implant prostheses.1 To achieve a passive fit, an accurate positioning of the implant replicas in the master cast must be assured. The impression technique and the splinting of the implant copings are factors which may contribute to errors in the final positioning of the implant analogs, thus leading to inaccuracies in the fit of the full superstructure.2,3 Furthermore, the angulation or proxim- ity of the implants may inhibit proper seating of the impression copings and caps, which may also have a detrimental effect on the registration of the implant position.4

The precise recording of the maxillo-mandibular, e.g. interocclusal relationship is an important prerequisite for achieving proper occlusion and a successful treatment outcome.5 The initially delivered denture allowed for the correction of the interocclusal relationship, tooth shape and color and angulations during the entire healing period. In this way, the patient was able to acclimatize to the function and esthetics of the denture. In the method described in this report, an accurate impression and recording of the full denture was achieved by using a duplicate as a custom tray for the impression. Therefore, it was not necessary to repeat all the steps usually needed for recording the interocclusal relationship, e.g. wax-up, etc., at the time of the fabrication of the final restoration.

If an open-tray impression is preferred, only necessary changes to the procedure are necessary. This method is based on a previous publication.6 In cases such as this, it is advisable to fabricate two DentDus: The impression can be taken by the first DentDu; the second DentDu is used for the remaining steps. Customized abutments made from the custom-fit bar, galvano copings allow a precise transfer coping, and secondary telescopes as well as different technolo- gies are employed for the transfer of implant positions and for the construction of the superstructure.

Customized implant abutments allows for better angulations and shape, for improved occlusal force transmission from the crown to the implant and the bone, and also for facilitating the fabrication of an esthetically pleasing implant-supported denture. Ways in which abutment design contributes to improved esthetics include changes in the location of the crown and changes in the dimension and/or form of the restorative platform.

Additionally, features of the abut- ment design contribute to the health and dimensional stability of the soft tissue. Current attempts to objectively define implant-restoration esthetics have focused on periimplant mucosal parameters.7,8 The introduction of the UCLA abutment provided a custom solution for implant resto- rations. This direct-nonimplant resto- ration concept provided adaptability. Through waxing and casting, the height, diameter and angulations can be addressed in order to provide a wide range of clinical solutions for problems associated with limited interocclusal distance, interproximal distance, implant angulations and related soft tissue responses.9,10

The customized implant abutments served as primary telescopes, and the electroformed copings served as secondary telescopes in cases where a removable denture with telescopic crowns was used as the attachment. Electroformed gold copings are asso- ciated with several advantages, in conjunction with both removable and fixed restorations. The galvano-forming and electroforming process yielded a precisely-fitted secondary coping for the implant abutment with a gap of only 12–30 μm. The gold electroformed coping saves space and is made of high-quality material.11,12 Using gold copings for the impression allows for the exact transfer of the form, angulations and position of the inserted customized implant abutments.

With the help of the milled mock-up, the future fit of the CAD/CAM fabricated framework can be evaluated and necessary changes in the shape of the restoration and occlusion can be made. Making these changes on the mock-up was easier and less time consuming than making them on the metal framework itself, and it was then possible to transfer them directly to the final framework. Furthermore, the mock-up almost “splitted” the electroformed gold copings during the impression, allowing for the exact transfer of the abutment position. At the same time, the vertical height and interocclusal relationship were recorded. The delivery of a milled temporary restoration permitted a slow and non-progressive loading of the implants, which then leads to bone remodeling.6 Abutments were left in place after mounting. Combined with the fabrication of a new cast, this further decreased the risk of inaccuracies during the transfer process.

Conclusion

The method described here can be used for full-arch rehabilitation with both fixed and removable implant supported dentures. Accurate impres- sions can be accomplished and occlu- sional, vertical dimensions, as well as implant positions can be trans- ferred while facilitating the full-arch restorative process. In addition, this technique resulted in a reduction of the required chair time.

Disadvantages of this technique lie in the fact that the quality of laboratory technician’s work meets higher demands than usual, and that the clinician also needs to acquire some additional skills. Further disad- vantages of this method include the need for a highly qualified technical lab and higher technical costs relative to those associated with prefabricated titan implant abutments.

To date, this method has not been applied in conjunction with immediate implant loading. However, dentists and patients have come to expect this level of rehabilitative accuracy, precision, long-term success and aesthetics.13

Editorial note: A complete list of references is available from the publisher.

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Impression and Registration