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Scientific Updates

Immediate Loading of Implants

Given the variety of results obtained, there is understandably a continued interest in the immediate loading and restoration of implants placed into the jaw. Dr. Petrucco looks at this topic in conjunction with different insertion procedures—a combination which has limited reports about it.

Internal vs. External Marketing

Tyson Steele explains the four components of marketing and presents a sound case for internal marketing as the better option for a dental practice. Take some time to learn how to increase your profits without breaking your budget on expensive external marketing options.

Obesity Linked to Periodontal Disease

Dr. Mohammad S. Al Zahrani of Case Western's Centers for Health Promotion and Research investigated the link between obesity and periodontal disease in young adults. Study subjects had a periodontal exam and were then categorized into groups according to their waist circumference and body mass index. Results showed that among people between the ages of 18 and 34, obese individuals had a 76% higher prevalence of periodontal disease compared to normal weight individuals. Today’s young adults drink less milk and more soft drinks and non-citrus juices than in years past, which decreases their recommended daily allowance of vitamin C and calcium.

Can Milk Teeth Diagnose Asthma?

Preliminary analysis of umbilical cord samples seem to suggest a possible connection between pre-birth infants’ exposure to the minerals iron and selenium and subsequent risk of wheezing. By studying the milk teeth of children with and without asthma, we can check pre-birth exposure to the minerals.

A child’s top two front teeth begin to develop in the womb, where tooth enamel absorbs trace elements and minerals. This permanent record of exposure is another clue suggesting that the nature of lung and immune development in utero can greatly influence whether or not wheezing and asthma will be a part of this child’s future. This study is based at the University of Bristol.

A child's top two front teeth

Transitional Implants

A unique approach involves the use of transitional implants that are normally utilized to support partially or fully edentulous provisional restorations, and have been widely discussed and documented in the literature.1,2 Using these fixtures to retain a provisional restoration in a single tooth gap created by congenitally missing laterals in a teenager has not yet been published. This article describes such a process.

Treatment Plan

The significant success rate of osseointegrated implants is well documented. The recommended minimum age for a patient considering such treatment is somewhat vague. If we use accepted criteria regarding implant placement in the growing child, then a number of young patients who have congenitally missing teeth, specifically lateral incisors, will need to wait 3.5 years before having permanent replacements; the temporary alternatives have been limited with numerous disadvantages.3

The temporary implant work-up is similar to that of permanent implants. It is comprised of a thorough medical/dental diagnosis and history with periodontal evaluation, radiographs and models.4 The treatment plan coordinates the surgical, restorative and laboratory procedures so that the provisional restoration can be placed within 24 hours after MTI placement [Modular Transplant Implant System—Denta- tus, USA, (800) 323-336]. In most cases, the patient has completed orthodontic therapy, and is wearing a removable orthodontic retainer. It is important that the orthodontist has been completed and proper inter-radicular distance of the adjacent teeth is adequate, not only for placement of the transitional implant, but also the permanent fixture. The orthodontist will need to modify the existing retainer or remake a new one after the provisional teeth are in place.

Surgery

Before beginning the surgical procedure, the lengths of the MTIs are selected [14, 17, or 21 mm], as well as the MTI pro- file drills and ancillary items, which must be sterilized before use (Fig.4).

Once adequate anesthesia has been achieved, the osteotomies are performed in the edentulous sites created by the congenitally missing teeth. In most cases, the osteotomy is done without incisions or the use of a surgical flap. This is accomplished quite easily with the use of the pointed (long) 1.3 mm diameter profile twist drill. It is important to be parallel to the palatal tapers due to the presence of labial concav- ities (Figs. 5, 6).

Once you have achieved your pre-determined distance (it is recommended to drill to the deepest depth possible), you insert the MTI fixture manually or with the implant handpiece adapter. Due to the approximate 3 mm of transmucosal distance from the osseous crest, you must account for this when drilling the osteotomy.

The MTI fixture is placed to the pre-determined depth, but the location of the fixture in a mesial/distal direction to accommodate the restorative component. The fixture can then be bent to the ideal position for restorative purposes.

Technique

When the surgeon is satisfied with the position of the MTI in all three dimensions, the patient undergoes one of two options:

1. Placement of an impression coping seated completely into the slots of the MTI fixture, so that a final impression can be taken. This laboratory-fabri-
The prospect of eliminating a removable orthodontic appliance for a young teenager is incredibly exciting.

be placed, or if the provisional becomes loose or fractures. If the latter occurs, a decision must be made about whether to recement the present crown or fabricate a new one. It is recommended that if the laboratory fabricates a custom provisional, a duplicate sent crown or fabricate a new one. It is recommended that if the laboratory fabricates a custom provisional, a duplicate is fabricated in case the provisional becomes loose or fractures.

Case Study
A healthy 14 year old, white female presented to our office for a pre-implant work-up and evaluation of edentulous areas longer before she could have permanent implant placement, but that we would satisfy her immediate need with the use of a single transitional implant in each tooth gap. Their excitement about this concept led to scheduling for this transitional implant procedure.

Surgical Phase
Infiltration of local anesthesia was used in the maxillary right and left anterior segments both labially and palatally adjacent to 47 and 10. The osteotomies were performed with the longer size profile drill (Fig. 4) its sharp point makes directional placement rather easy. In this instance, because the osseous anatomy was quite evident, no flap was required.

To overcome the labial concavity in this area, the osteotomy must be drilled in a more palatal direction (Figs. 5, 6). When the osteotomy is complete, the 21 mm MTI was placed to the full depth (Figs. 7, 8). It is important to note that the labial/lingual alignment is not as important as the mesial/distal orientation.

This is due to the ability to bend the MTI at the neck, just posing model and bite registration is obtained, along with a tooth shade. Within 24 hours, a laboratory provisional is fabricated (Figs. 10, 12, 14) using the singular modular coping supplied by the company (Figs. 11, 12). During this short waiting period, soft rubber protective caps are placed over the MTI implants to protect the lip and tongue from any undue trauma (Fig. 13).

It is important to make sure the laboratory designs the provisional crown with broad, tight interproximal contacts to allow for resistance to off-angled forces. The patient is instructed on appropriate oral hygiene procedures and evaluated. A new orthodontic retainer is fabricated or the existing one modified.

Final radiographs are taken. Summary
I have presented a unique approach to temporarily restoring edentulous sites in teenagers resulting from congenitally missing maxillary laterals. The prospect of eliminating a removable orthodontic appliance for a young teenager is incredibly exciting. Both patients and their families have expressed appreciation of this effort.

It has been 18 months since the patient in the presented case had received her transitional restorations. All aspects of the MTI implant, and both hard and soft tissue have remained quite healthy (Fig. 15). While I am convinced that this technique has great potential and merit, additional time will be required for us to be confident that these transitional implant-supported restorations will remain stable over 4 to 5 years.

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Literature