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Contents

Editorial Board of Dental Follicle – The E Journal of Dentistry.....	13
Scientific Editorial - Maxillary Anterior Aesthetics – A Case report	14
Case Report :	14
Result :	14
References :	15
Improv Advances in Dental Implant	15
Closed Tray vs Open Tray	15
Miratrax Implant Advanced Tray.....	16
Case example:.....	17
Conclusion	19
Reference:	19
Dens evaginatus on a maxillary molar: Case report and an Overview.....	19
Abstract	19
Introduction.....	19
Case report	20
Discussion	20
Conclusion	23
References :	23

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Scientific Editorial - Maxillary Anterior Aesthetics – A Case report

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Metal free crowns have become an integral part of dental practice. In this short case report I have portrayed a simple case of severe discoloration and erosion which

were covered with Lithium disilicate crowns and a bridge for aesthetic and functional purpose.

Key Words : Metal Free Crowns, Smile design

Case Report :

A 40 year old male patient presented with severe generalised discoloration and erosion. After discussion with the patient , it was decided to cover his upper teeth with crowns and a bridge to replace a missing tooth in relation to 12.



Fig 1 : 12 was a fake tooth and 22 was a crown.



Fig 2 : After tooth preparation



Fig 3 : Lab work with 11-14 bridge and 21,22,23,24 as crowns.



Fig 4 : Post operative Smile.

Result :

With this phase of treatment good aesthetic results were achieved. Added to it the erosion problem was also taken care of .

The gingival zenith was managed by a dynamic compression technique , using provisional restorations to condition the

gingival tissues and harmonize the proportional length of the anterior upper teeth as cited by Miranda ME et.al¹ Metal free crowns and bridges have become

indispensible part of dental practice. More research is required to increase aesthetic value.

References :

- 1 Esthetic Challenges in Rehabilitating the Anterior Maxilla: A Case Report. [Oper Dent.](#) 2016 Jan-Feb;41(1):2-7.

Improv Advances in Dental Implant

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Dental impressions form the back bone of the treatment we provide, whenever indirect restorations are planned. Yet, most practitioners don't place enough attention to the impressions they are taking. Dental laboratories consistently complain that the quality of impressions arriving in their lab tends to be of low quality, making their task more difficult in fabricating the desired restorations. The Samet study reported that 89% of impressions sent to labs have visible errors.¹

Impression quality is most critical with fixed prosthetics when implants are being restored. As implants do not have the periodontal ligament that natural teeth have, slight discrepancies between fixtures created in the impression prevent passive fit of the completed prosthesis. This lack of passive fit creates stresses on the implants which can lead to crestal bone loss as well as strains on the components leading to potential screw breakage or prosthetic failure.

Closed Tray vs Open Tray

Implant fixtures that will be restored with a prosthesis that is fixated to the fixtures with a screw can be captured using impression heads placed upon the fixtures. Unlike impressions of natural abutments with regard to implant impressions we do not have to use retraction methods to capture subgingival aspects of the implant fixtures. An impression head is placed upon the individual fixtures and is picked up in an impression either through a closed or open tray technique.

Differences do exist between the two techniques and there are reasons to favor one over the other clinically. Although the closed tray technique takes less clinical expertise than use of open tray impression heads, they do require reorientation of the impression head back into the impression upon removal intraorally. If not oriented correctly in the horizontal axis (placed into the impression rotated to its correct position) this can create problems with the implants connector. When working with non-splinted restorations, the resulting

restorations will be rotated in relation to their desired position. If not inserted completely (vertical axis), the resulting restoration will not be in the desired occlusal relationship. Additionally, as less rigid impression materials are often usually used in closed tray techniques to permit reinsertion of the impression abutment back into the impression discrepancies can be created between the individual fixtures.

Verification stents² to ensure accuracy between fixtures can not be utilized at the impression stage with closed tray impression abutments as the impression can not be removed without tearing it from the stent and abutments. Should a verification stent be desired to verify the master cast, this requires a separate appointment to try this in and may require alteration of the master cast by the laboratory prior to prosthesis fabrication. For this reason open tray impression heads offer clear benefits to the clinician and laboratory. They allow more rigid impression materials to be utilized ensuring that the fixtures are captured in relationship to each other in proper orientation. A verification stent can be fabricated at the time of impression

eliminating a separate appointment to verify the master cast. Additionally, as the impression abutments are embedded within the impression when it is removed intraorally we also eliminate issues associated with reinsertion of the impression abutment back into the impression.

Traditionally, open tray impressions were fabricated either by creation of a custom tray with openings in the occlusal surface of the tray or through the use of a stock tray that was modified with openings in the occlusal surface. Should a custom tray be selected, additional time and cost is involved requiring a preliminary impression and model poured followed by fabrication of the tray in the lab.

The challenge with either of these approaches is that upon insertion of the tray filled with impression material one has to rotate the tray so that the long pins exit at the predetermined occlusal openings. This becomes more challenging with greater number of fixtures in the arch and when fixtures in the second molar region are present.

Miratray Implant Advanced Tray

The Miratray Implant Advanced Tray simplifies the process of taking open tray implant impressions. The tray is provided in three maxillary and three mandibular sized trays and the trays are unique in their design. (Figure 1) The occlusal surface is covered by a transparent foil. This allows identification of the heads of the pins easily intraorally. Retention slots and an internal rim provide mechanical retention to retain the impression material within the tray.

Should the practitioner chose to supplement the retention with a PVS adhesive, it is recommended that it not be applied to the foil surface as this may obscure visualization of the pins when inserting the tray to proper depth. Additionally, it should be noted that PVS adhesive does not adhere to putty PVS materials and do not therefore increase retention of the impression material to the

interior of the tray. The PVS adhesive does adhere to all other PVS viscosities.



Figure 1: Maxillary and mandibular Miratrays available in small, medium and large sizes.



Figure 2: A maxillary full arch impression of 5 implants taken with a Miratray upon removal intraorally.



Figure 3: Open tray impression abutment placed upon an implant in the 2nd premolar.

Case example:

Patient presented ready for prosthetic phase of a single implant in the maxillary 2nd premolar and an adjacent crown on a natural molar. The treatment plan would restore the implant at the second molar

The technique involves filling the tray with an appropriate impression material, the author recommends either a universal body PVS or a tray or putty PVS. The tray is then inserted over the open tray impression heads intraorally and pressed down crestally until the top of the impression pins are visible through the transparent foil. The practitioner then presses the tray further until the pins puncture the foil and are visible protruding through the foil. This contains the impression material within the tray without the potential problem often seen with use of custom or modified stock trays of the impression material obscuring the tops of the pins. Upon setting, the pins are rotated in a counterclockwise fashion and removed from the impression and the impression is removed intraorally. (Figure 2) Due to the design of the tray, it can be used in all implant impression situations whether the arch is partially dentate or fully edentulous.



Figure 4: Miratray inserted to show the open tray impression abutment within the tray and capture of the entire maxillary arch.

with a custom abutment and restore the site with a cemented bridge with a cantilever pontic at the 1st premolar. Following preparation of the molar, an open tray impression abutment was placed on

the implant fixture. (Figure 3) The Miratray was tried in to verify that it was large enough to capture all of the teeth in the arch without impingement on teeth or soft tissue. (Figure 4). A polyvinyl siloxane impression material was injected around the gingival aspect of the open tray impression abutment and the sulcus of the molar preparation. The Miratray was filled with additional impression material and inserted intraorally. As the tray was pressed gingivally, the long pin was allowed to perforate the clear foil on the occlusal aspect of the Miratray. (Figure 5). Upon setting, the long pin was removed and the Miratray impression removed intraorally and was sent to the laboratory for prosthetic fabrication. (Figure 6, 7). A master cast was created from the impression and the prosthetics were completed and returned for insertion. (Figure 8)



Figure 5: Miratray filled with impression material inserted intraorally and long pin exiting the clear foil of the tray.



Figure 6: Impression upon removal intraorally showing the embedded open tray impression abutment.



Figure 7: Exterior of the Miratray impression showing the long pin removed from the clear foil after removal intraorally.



Figure 8: Finished restorations with a crown on the natural molar and a cemented crown on the 2nd premolar and 1st premolar cantilever pontic.

Conclusion

Impressions can be a challenging aspect of implant dentistry. Good impressions are the key to providing great dental restorations and inaccuracies at the beginning of the process multiply in their effects on the result as the process progresses. For this

reason practitioners need to capture the most accurate impressions at the start of the process that will be concluded at the laboratory. Selection of proper trays and impression techniques can improve the resulting impressions.

Reference:

1. Samet N, Shofat M, Livny A, Weiss EI. A clinical evaluation of fixed partial denture impressions. *J Prosthet Dent* 2005; 94:112-117.
2. Silverstein LH, Kurtzman GM, et al.: The utilization of a preprosthetic extraoral verification stent for dental implant-supported reconstructions. *Dent Today*. 2002 Jan;21(1):88-91.
3. Kwon JH, Son YH, Han CH, Kim S.: Accuracy of implant impressions without impression copings: a three-dimensional analysis. *J Prosthet Dent*. 2011 Jun;105(6):367-73.

Dens evaginatus on a maxillary molar: Case report and an Overview

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Abstract

Dens evaginatus is a developmental dental anomaly characterized by formation of an extra cusp-like structure arising from the occlusal or lingual surfaces of teeth. When it occurs on posterior teeth, it primarily involves mandibular premolars and most of

the cases are reported in people of Mongoloid race. We report a case of dens evaginatus in a south Indian male patient occurring on permanent maxillary right first molar, which is an unusual site for occurrence of this anomaly.

Key words:

Dens evaginatus, maxillary molar, dental anomaly

Introduction

Dens evaginatus is a dental anomaly affecting the shape of the tooth. In posterior teeth it clinically appears as an accessory tuberculated cusp arising from the occlusal surface. It occurs primarily on mandibular premolars. Its occurrence on

Vol X / Issue 2 / Apr May Jun 2017

molars more so on maxillary molars is rare. Dens evaginatus is also known to occur almost exclusively in people of Mongoloid ethnic group. As this extra cusp-like structure projects above the tooth surface it can cause occlusal disharmony,

periodontitis and temporomandibular joint problems. The extra cusp-like structure can also get fractured or wear away causing pulpitis and other periapical pathologies as

Case report



Fig 1

A male patient aged 35 years reported to our clinic for routine oral examination. On routine examination of his dentition, permanent maxillary right first molar (16) showed a large cusp-like structure on the center of the oblique ridge connecting the mesiopalatal cusp and the distobuccal cusp.



Fig 2

Discussion

Dens evaginatus is a developmental malformation characterized by the presence of an extra cusp that takes the form of a tubercle arising from the occlusal or lingual surfaces. (Shafer)

Dens evaginatus of anterior teeth is also known as talon cusp as it frequently resembles an eagle's talon in shape. This term talon cusp was coined by Mellor and Ripa in 1970. (Mellor and Ripa)

a sequel. We report a case of dens evaginatus occurring on the permanent maxillary right first molar in a 35-year-old south Indian male patient.



Fig 3 – IOPAR showing the dens evaginatus. Height of the accessory cusp-like structure was slightly above the normal cusps of the tooth. The findings were suggestive of dens evaginatus. (Fig 1 and 2)The occlusal surface of the tooth also showed obliteration of the mesial triangular fossa. The patient was made aware of the anomaly.

Dens evaginatus is popularly referred as Leong's premolar after M. O. Leong first drew attention to this anomalous premolar at a meeting of the Malayan Dental Association in 1946. However, it was not realized that the premolars were the only teeth to be affected. Occasionally molars, incisors and canines were also affected. (Wei Cheong)

The term dens evaginatus was first recommended by Oehlers in 1967. (Levitan) Dental anomalies¹ are due to aberrations in the embryonic development. (Raymond)

Though the exact mechanism of formation of dens evaginatus is not known, it is thought to be caused by the evagination or outward folding of the inner/internal enamel epithelium and subjacent mesenchymal cells of the dental papilla into the stellate reticulum of the enamel organ during the morphodifferentiation stage of tooth development. (Shin Yin, Levitan)

The racial difference in prevalence and the higher incidence among first degree relatives of affected individuals compared with the general population suggests a significant genetic component in the etiology. (Shin Yin)

Dens evaginatus shows a strong racial predilection towards the Mongoloid ethnic group. (Wei Cheong).

Occurance of dens evaginatus is 0.5-4.3% depending upon the group studied. (Levitan)

Dens evaginatus as a slight sexual predilection for females. It occurs both in deciduous and permanent dentition, but is more frequent in permanent dentition. (Levitan)

It occurs primarily in premolars, but has also been reported rarely on molars, canines and incisors. (Elsa EA)

It is more common in mandibular premolars than maxillary premolars. (Shin Yin) The occurrence is five times more frequent in the mandible than in maxilla. (Elsa EA) Among the mandibular premolars the second premolars are more commonly affected. (Rao) Dens evaginatus in maxillary premolars is comparatively infrequent. Dens evaginatus in molars is even rarer. (Rao)

In case of molars occurrence in the mandibular molars is 3-4 times higher than in the maxillary molars. (Morinaga)

It can occur unilaterally or bilaterally, with about 50% of cases having bilateral involvement of the collateral teeth. (Shin Yin)

In a study by Yip W K on a total 2373 Chinese, Malay and Indian patients, 57 first molars were affected with dens evaginatus. (Yip WK)

Sakiyama has reported a case of dens evaginatus in mandibular second molar. (Rao)

Morinaga K et al have reported a case of dens evaginatus on the occlusal surface of permanent left maxillary second molar. (Morinaga)

Rao Y et al have reported a case of dens evaginatus affecting 17, 27, 35, 45 in a Chinese woman. (Rao)

A case of bilateral accessory central cusps on deciduous maxillary second molars has been reported by Nagarajan S et al. (Nagarajan)

The clinical relevance of recognizing any dental anomaly is to understand the associated risk factors by the clinicians, to reassure the patients and to undertake suitable preventive measures to minimize the disease risk. (Raymond)

Dens evaginatus occurs as an accessory cusp or protuberance between the buccal and lingual cusps of the premolars. On molars it is found in the central groove on the occlusal surface or on the lingual ridge of the buccal cusp. (Rao)

It projects above the adjacent tooth surface. (Levitan)

Dens evaginatus is composed of enamel and dentin and usually enclosed pulp tissue.

When the affected tooth comes into occlusion, the tubercle can easily fracture or wear away exposing the fine pulpal extensions causing pulpitis and further periapical infections. (Elsa AE)

According to Morinaga K et al, pain caused by the fracture of dens evaginatus may manifest itself in a distant location (Referred pain) posing diagnostic problems. (Morinaga)

A study by Goto T et al has shown that 18% of premolars with dens evaginatus were associated with periapical lesions with either worn or fractured tubercles. (Goto T) It should be noted that dens evaginatus is different from supplemental cusps such as cusp of Carabelli which are rare in Asians, but reported in 17-90% of Caucasians. (Rao) Also the clinical significance of dens evaginatus is great because of presence of pulp tissue, distinguishing this anomaly from supplemental cusps such as cusp of Carabelli. (Levitan)

Schulge in 1987 has distinguished five types of dens evaginatus for posterior teeth based on the location of the tubercle

- 1) A cone like enlargement of the lingual cusp
- 2) A tubercle on the inclined plane of the lingual cusp
- 3) A cone like enlargement of the buccal cusp

4) A tubercle on the inclined plane of the buccal cusp

5) A tubercle arising from the occlusal surface obliterating the central groove

Lau has classified each type of tubercle based on four anatomical shapes as smooth, grooved, terraced and ridged. (Lau) Oehlers has categorized dens evaginatus based on the pulp content within the tubercle by examining histologic appearance of pulp in decalcified sections of extracted tooth with dens evaginatus. (Oehlers)

- Wide pulp horns (34%)
- Narrow pulp horns (22%)
- Constricted pulp horns (14%)
- Isolated pulp horn remnants (20%)
- No pulp horn (10%)

Levitan ME and Himel VT have suggested six categories of dens evaginatus to determine its treatment. (Levitan)

- Type I- Normal pulp, mature apex
- Type II- Normal pulp, immature apex
- Type III- Inflamed pulp, mature apex
- Type IV- Inflamed teeth, immature apex
- Type V- Necrotic pulp, mature apex
- Type VI- Necrotic pulp, immature apex

The comprehensive treatment plan given by Levitan ME and Himel VT is as follows:

Type I	Reduce opposing occluding tooth Apply acid-etched flowable light-cured resin to the tubercle Yearly re-evaluation to assess occlusion, resin, pulp and periapex When re-evaluation demonstrates adequate pulp recession, remove the tubercle and apply resin
Type II	Same as type I except re-evaluation every 3-4 months until development of mature apex
Type III	Conventional root canal therapy and restoration

Type IV	Shallow MTA (Mineral trioxide aggregate) pulpotomy Glass ionomer layer Acid-etched light-cured resin
Type V	Conventional root canal therapy and restoration
Type VI	MTA root end barrier Glass ionomer layer Acid-etched light-cured resin

In patients with dens evaginatus on premolars undergoing orthodontic treatment with bicuspid extraction, the

affected premolars should be extracted rather than the normal ones. (Mc Culloch)

Conclusion

In general clinical identification of any dental anomaly is of importance. Only when these anomalies are recognized, can the clinician look for any potential clinical problems these anomalies can pose.² Similar is the case with dens evaginatus, where the raised accessory cusp-like structure can cause occlusal disharmony or periodontitis due to trauma from occlusion.

The cusp-like structure can wear away or fracture causing pulpal and periapical lesions. Thus, a thorough routine examination of the oral cavity is mandatory on the part of the clinician to look for any such conditions and evaluate and tailor the preventive or therapeutic regimen as per the case requirement.

References :

1. Segura-Egea JJ, Jimenez-Rubio A, Rios-Santos JV, Velasco-Ortega E. Dens evaginatus of anterior teeth (talon cusp): report of five cases. *Quintessence Int* 2003;34(4):272-7.
- 2 . Talon Cusp Affecting Two Generations: Report of Two Cases and Proposed Comprehensive Classification *International Journal of Oral & Maxillofacial Pathology*. 2011;2(3):36-41 ISSN 2231 – 2250