



SMART DENTAL UPDATES

Volume 4 | Issue 40 | 2023

Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you
“**SMART DENTAL UPDATES**” which contain latest and interesting
news in the field of Dentistry.

This issue contains:

- **Assessing the effectiveness of green tea and chlorhexidine mouthwashes in reducing complications like pain and haemorrhage after tooth extraction.**
- **Evaluation of Pathological Changes in the Distal Area of Erupted or Partially Impacted Lower Third Molars of Peri-Coronal Tissue.**
- **Comparative study on minimally invasive treatment of Lateral Incisors with guided one-piece or two-piece titanium made Narrow Diameter Implants**
- **A case report of a large Dentigerous cyst in a child as a complication of deciduous molar endodontic treatment**

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Looking forward to your valuable feedback

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Assessing the effectiveness of green tea and chlorhexidine mouthwashes in reducing complications like pain and haemorrhage after tooth extraction.

Introduction

Tooth extraction is a frequently carried out procedure in dental practices to treat dental caries, periodontal problems and pericoronitis associated with impacted teeth. ⁽¹⁾ Performing tooth extraction requires perfect knowledge and mastery of operative procedure, without which can lead to complications which can occur during or after the intervention. The most common post-extraction complications are wound infection, pain, and oroantral communication. Patients who have undergone 3rd molar extraction are at increased risk of complication compared to those who had simple tooth extraction. Postoperative complications remain a major concern for clinicians which can be a source of morbidity. However proper management could avoid these complications. ⁽²⁾ NSAIDs were prescribed to control pain, saline manometer pressures to control bleeding, mouth washes to treat infection after tooth extraction. Chlorhexidine is the most commonly used antiseptic in dentistry. Various studies have shown that green tea has an antioxidant, antiviral, antibacterial and anti-inflammatory properties. ⁽³⁾ This study aimed to assess the effectiveness of green tea and chlorhexidine mouthwashes in reducing post-extraction complications like pain and haemorrhage.

Green tea has significant effect in reducing the pain and time of Hemostasis

Methods

The cross-sectional observational study was conducted on 80 subjects (38 men and 42 women) of 18-70 years old. Subjects were randomly assigned to 2 groups (group 1- green tea, group 2- chlorhexidine) before tooth extraction. Simple tooth extraction was performed without flap elevation, bone removal or tooth incision under local anaesthesia (2% lidocaine + 1: 80,000 adrenaline). After surgery, the participants in the green tea group immersed the bitten sensor in green tea for 30 minutes. Starting the next day, they rinsed their mouth with green tea gargle 4 times a day, for 1 minute each time. On the other

VAS SCORE	GREEN TEA		CHLORHEXIDINE	
(0-10)	MEAN	SD	MEAN	SD
4 HOURS AFTER SURGERY	5.28	2.25	8.84	2.58
1 ST post-operative day	7.35	3.75	8.68	3.54
2 ND post-operative day	4.63	2.52	7.15	5.36
3 RD post-operative day	3.48	3.64	6.68	3.22
4 TH post-operative day	3.22	2.27	5.24	2.29
5 TH post-operative day	3.05	2.26	3.92	2.84
6 TH post-operative day	2.66	4.21	3.20	3.41
7 TH post-operative day	0.57	2.13	1.52	2.54
TOTAL	4.76	1.14	6.85	2.36

Table 1 POST-EXTRACTION VAS SCORE COMPARISON BETWEEN GREEN TEA AND CHLORHEXIDINE.

hand, the participants in the chlorhexidine group placed the saline-soaked transducer in their mouth after tooth extraction and rinsed with chlorhexidine mouthwash in the same manner. Pain was assessed using VAS 4 hours after tooth extraction and pain score was recorded daily for 1 week. Hemostasis time was determined by the absence of blood spots in the saliva during each observation.

Results

Statistically significant decrease in mean VAS score was observed in group 1 than that in group 2 at 4 hours after surgery. One week analysis revealed that green tea group had significant lower mean VAS score from day 1 to day 7 compared to chlorhexidine group (Table 1). In addition, there was significant decrease in the time to complete hemostasis in green tea group (20.6 hours) than that in chlorhexidine group (32.4 hours). 7 days after surgery, the amount of analgesic with green tea was less than chlorhexidine (Figure 1). No adverse effects were reported after mouthwash with green tea and chlorhexidine.

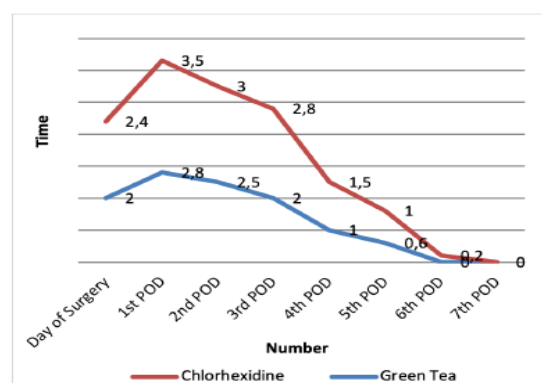


FIGURE 1 Amount and time of analgesic in greentea and chlorhexidine group

Discussion

Green tea is known to have antioxidant, anticarcinogenic, antimicrobial and anti-inflammatory properties and is helpful in the treatment of obesity, diabetes, and cardiovascular disease (CVD), as well as nervous system and oral health⁽⁴⁾. The current study's findings can also be credited to the antibacterial and anti-inflammatory effects of green tea mouthwash. The study showed significant decrease in time to complete hemostasis after using green tea mouthwash⁽³⁾. Green tea contains large amounts of polyphenol compounds and tannins. The existence of tannins helps in stopping gingival bleeding⁽⁵⁾.

Conclusion

It was found that pain experienced among the patients after tooth extraction was significantly less with green tea compared to chlorhexidine and green tea has significant effect on reducing the time of hemostasis.

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Evaluation of Pathological changes in the Distal Area of Erupted or Partly Impacted Lower Third Molars of Peri-Coronal Tissue.

Introduction

The pericoronal tissue, also known as the dental follicle, is a connective tissue that surrounds the crown of impacted or erupting teeth and plays a role in the formation of the dental organ and periodontal support tissues⁽¹⁾. Impacted third molar was reported to cause pathological changes in surrounding peri-coronal tissue. Removing an impacted tooth requires a microscopic assessment of its peri-coronal tissue to identify any pathological alterations⁽²⁾. This study aimed to evaluate the early pathological alterations in peri-coronal tissue of erupted or partially impacted third molar associated with radiolucent distal area of lower molar (DALM) diameter less than 2.5mm.

Absence of disease in a dental follicle may not be detectable purely from the radiographic appearance hence clinicians should carefully look into any peri-coronal radiolucencies that are smaller than 2.5 mm in size.

Methods

The prospective observational study was conducted over a period of 36 months. The patients with Erupted or partially erupted mandibular third molars and vertically positioned associated with radiolucent distal area of lower molar (DALM) with dimensions equal to or less than 2.5 mm were sent to the oral surgery department to have their mandibular third molars extracted. The assessment of extension of DALM radiolucency was done, where the measurements were carried out following measurement scheme (Figure 1). On the image of the impacted teeth, 2 perpendicular lines were drawn. One line (AA') passing through the cement-enamel junction and other line (BB') passing through the most distal point of crown. Another line parallel to BB' was drawn passing through the most distal point of peri coronal radiolucency(CC'). The size of DALM radiolucency was the distance between BB' and CC'. The extraction of tooth (third molar) with associated Dental follicle or a biopsy of DALM was performed, removing the soft tissue between the bone and overlying gingiva. The tissue area from distal area were subjected to anatomopathological examination to determine the histological nature.

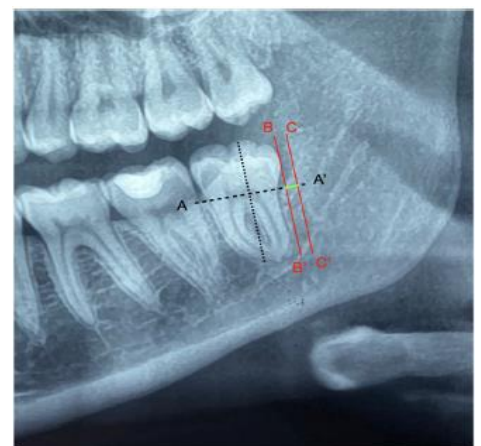


Figure 1 X-ray OPT measurement scheme for determining the extent of the DALM lesion

Results

This study included 100 patients (50 males and 50 females) of 16-50 years of age and were analysed. 53 of samples were included in non- pathological group(1st group) and 47 were included in pathological group(2nd group). In the 1st group the most common findings were physiological dental follicle (25 cases), followed by gingival tissue showing sign of



inflammatory infiltrate (18 cases) and physiological gingival tissue (10 cases). In the 2nd group the most common pathological findings was fibrotic tissue (15 cases), periodontal cyst-like (9 cases), focal squamous epithelial metaplasia (4 cases), islands of odontogenic epithelial residues organized micro-cyst with keratocystic/ ameloblastic appearance (4 cases), granulation tissue (8 cases), giant cell tumour (4 cases) and lobular capillary hemangioma (pyogenic granuloma) (3 cases) (FIGURE 2). Pathological changes did not show any correlation with age and did not have difference in occurrence between the two genders.

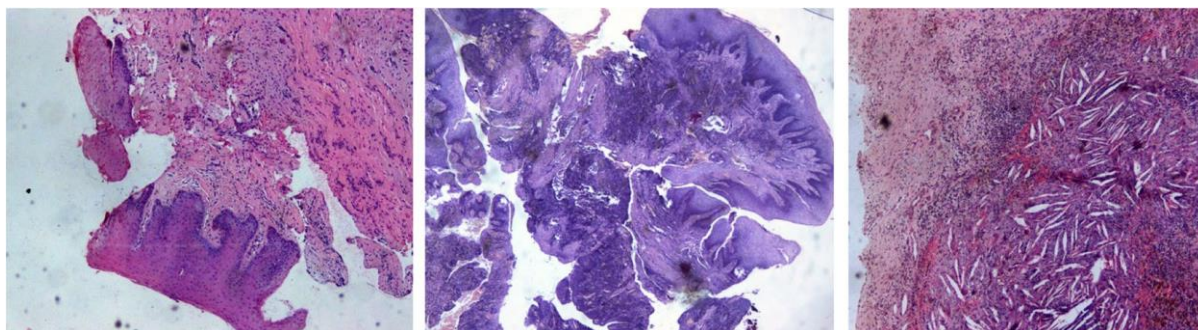


Figure 2 Photomicrographs showing multi-layered non-keratinizing squamous epithelium with focally “plaque-like” epithelial proliferation and histological appearance of periodontal cyst, epithelial cells in an island in the intrapariental region that histologically resembles a satellite microcyst; squamous metaplasia with an odontogenic cystic-formation-like wall rich in cholesterol

Discussion

In present study, pathological changes which were reported are fibrotic tissue, periodontal cyst-like, squamous epithelial metaplasia, islands of odontogenic epithelial residues organized micro-cyst with keratocystic/ ameloblastic appearance, granulation tissue, giant cell tumour and lobular capillary hemangioma (pyogenic granuloma)⁽³⁾. Impacted third molar was reported to cause pathological changes in surrounding peri-coronal tissue. Removing an impacted tooth requires a microscopic assessment of its peri-coronal tissue to identify any pathological alterations⁽²⁾.

Conclusion

This study concluded that relying solely on the radiographic appearance may not be sufficient to determine the absence of disease in a dental follicle. Consequently, clinicians should closely monitor or investigate even small peri-coronal radiolucencies measuring less than 2.5mm.

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Comparative study on minimally invasive treatment of Lateral Incisors with guided one-piece or two-piece titanium made Narrow Diameter Implants.

Introduction

The oral health significantly impacts overall well-being. Missing or damaged teeth cause functional, esthetic and social issues. Dental implants are now the preferred choice for restoring teeth, particularly in the esthetic area⁽¹⁾. High success rates with the treatment with dental implants have been demonstrated. Increased oral-health related quality of life has been reported from oral rehabilitation with dental implants. However, there are certain limitations for dental implant placement. Therefore alternative concepts like narrow-diameter implants (NDI) are gaining clinical and scientific interest⁽²⁾. This study was conducted to compare and evaluate one-piece versus two-piece titanium made narrow diameter implants for the treatment of the upper lateral and lower incisors.

Both One-piece and Two-piece titanium made Narrow Diameter Implants can effectively restore upper and lower lateral incisors.

Methods

A retrospective comparative study was carried out on patients, aged 18 years who received atleast one narrow diameter implant(NDI) to support a crown in maxillary lateral or mandible incisors. 2 years of follow-up was done on the patients. This study considered apical radiographs taken at implant placement, loading stage, one and two years after to evaluate the available data. The patients were divided into two groups. Group 1 received one-piece NDI implant of diameter 2 or 2.5 mm (Category 1) and length of 10 to 13 mm(Figure 1). Group 2 received two-piece NDI of diameter 3 or 3.5 mm (Category 2 and 3) and length of 10 to 13 mm(Figure 2). All implants were placed flapless or without vertical incision. The outcomes measures were implant and prosthetic failure, any complications occurring during 2 years follow-up, peri-implant bone level changes and Pink Esthetic Score. Peri-implant bone levels were assessed at the mesial and distal edges of the implants. Marginal bone loss was calculated comparing the difference between the marginal bone levels at different time points. Statistical analysis was performed.



Figure 1 One-piece implant placement with guided implant

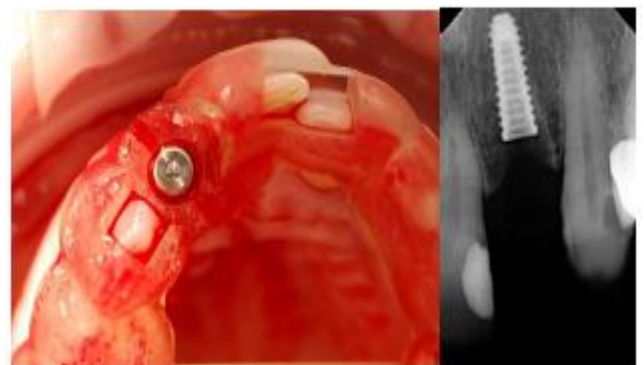


Figure 2 Two-piece implant placement with guided implants



Results

Analysis was done on 23 NDI cases. 11 in one-piece implant group (group 1) and 12 in two-piece implant group (group 2). No implant or prosthetic failure or complications occurred during 2-year follow-up examination. Both groups showed minimal peri-implant bone loss, with 0.23 in group one and 0.18 in group 2, but the difference was not statistically significant ($p=0.3339$). The Pink Esthetic Score measured two years after loading was 12.6 in group one and 12.2 in group two, showing no significant difference between two groups ($p=0.3554$) (TABLE 1).

TABLE 1 PES and MBL between groups			
Data	One-Piece	Two-Piece	P-value
PES at the 2-year follow-up	12.6	12.2	0.3554
MBL at the 2-year follow-up	0.23	0.18	0.3339

PES= Pink Esthetic Score, MBL= Marginal Bone Loss

Discussion

In this study one-piece NDI of 2 or 2.5 mm of diameter (Category 1) and two-piece NDI of 3 or 3.5 mm of diameter (Category 2 and 3) was used. A recent systemic review found that narrow diameter implants, measuring less than 3mm in diameter performed notably worse compared to wider narrow diameter implants. The statistical significance of the difference in performance highlights the importance of choosing wider narrow diameter implants for achieving successful outcomes⁽²⁾. In this study no statistically significant difference was observed between both the groups, it is possibly because all the used implants were placed in a prosthetically driven positions, in the native bone, and with at least 1.5 mm of the buccal bone⁽¹⁾. Moreover, implants were made of titanium grade V which showed similar resistance to implants with wider (3.5mm) diameter⁽³⁾.

Conclusion

The present study concluded that both one-piece and two-piece NDIs can effectively restore upper and lower lateral incisors during 2-year follow-up.

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A case report of a large Dentigerous cyst in a child as a complication of deciduous molar endodontic treatment

Introduction

Dentigerous cysts are the most common odontogenic cystic lesions which is caused by the accumulation of fluid between the reduced enamel epithelium and the crown of the tooth⁽¹⁾. Dentigerous cyst exhibits a higher incident in males accounting for 24% of all epithelium-lined jaw cysts. They are the second most prevalent odontogenic cysts which primarily affect individuals in their twenties and thirties⁽²⁾. The cysts can form when inflammation spreads from the damaged or previously treated primary teeth to the surrounding follicular teeth, leading to changes in the follicular tissue and cyst formation⁽³⁾. This case presents an large Dentigerous cyst in a child as a complication of deciduous molar endodontic treatment.

Early diagnosis of Dentigerous cyst is needed in order to prevent extraction of permanent teeth

Case presentation

A 12-year old girl, was referred to the clinic of oral surgery due to discovered suspected cystic lesion in the mandible on the Orthopantomogram (OPG) X-ray. A significant swelling was observed in the vestibule of the left premolar mandible region, specifically between teeth # 34 and # 36 during the clinical examination, which indicated the presence of relatively big cystic lesions. The analysis of the OPG X-ray revealed a round radiolucency in the left premolar region of the mandible (Figure 1 a), indicating a cystic lesion. The cyst primarily affected the body of the mandible and had the potential to spread to the lower margin of the jaw. The roots of previously treated deciduous second molars were in direct contact with the cystic cavity, including the crown of 2nd premolar protruding into the cavity. Cone-beam computed tomography(CBCT) analysis confirmed the presence of a sizable radiolucent lesion with the cyst containing the count of an impacted permanent tooth # 35 (Figure 1b and 1c). The cystic cavity communicated with the mesial root of the first molar. Cold and electric pulp tests indicated the vitality of tooth #36. Based on the findings, a working diagnosis of dentigerous mandibular cyst in the teeth #34 - #36 region was established. After administering local anaesthesia, two vertical incisions were made near teeth #33 and #36. A trapezoid muco-periosteal flap was carefully raised, revealing a round deformity

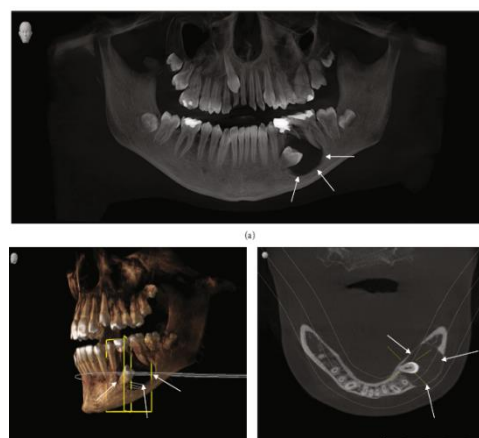


Figure 1: (a) OPG X-ray showing unilocular radiolucency in the left premolar region of the mandible. (b) 3D CBCT showing cystic lesion and its relation to other anatomical structures of the mandible. (c) CBCT showing coronal view of the cystic cavity.

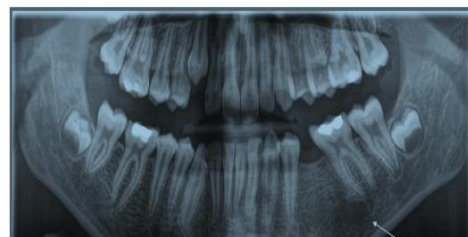


Figure 2 Control OPG X-ray showing good bone healing without relapse.



in the vestibular bone. The deciduous molar was extracted and the thinnest part of the vestibular bone was removed using a bur. A clear, yellow cystic fluid was aspirated. The surgical procedure involved complete removal of cyst, including the impacted permanent second premolar. The wound was irrigated and the muco-periosteal flap was repositioned with 2 apical mattress sutures. The complete cystic lining, along with the permanent tooth, was sent to histopathological examination. Microscopic analysis of the sample material confirmed the presence of dentigerous cyst. The fibrous cystic wall contained an infiltrate of chronic inflammatory cells. The luminal surface of fibrous cystic shell had hyperplastic squamous epithelium without keratinization. The patient experienced no significant pain or complications during recovery. Orthodontic therapy was delayed due to the substantial bone defect resulting from the cyst's expansive growth. The plan included the placement of a space maintainer to preserve space for a future implant once proper bone healing occurs. Clinical and radiologic examination was done 1 year after surgery, which showed good bone healing with no signs of relapse (figure 2).

Discussion

In present study, patient presented with cystic lesions on the mandible. Deciduous molar was extracted and cyst was completely removed⁽⁵⁾. Noujeim Z et.al., study showed that dentigerous cyst commonly affect mandibular third molar⁽³⁾. The management of a dentigerous cyst involves 2 main procedures: extraction of the impacted tooth and enucleation of the cyst. In case of large cyst, an initial step of marsupialization may be performed to reduce its size before proceeding with the extraction and enucleation⁽⁴⁾.

Conclusion

This case presents -a rare complication arising from endodontic treatment of deciduous teeth and emphasized the potential complications that can arise with this kind of treatment. It emphasizes the significance of early detection of cysts in preventing the extraction of permanent teeth.

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