

Treatment Outcome Of Teeth With Cemental Tears In South Indian Population

Research Article

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Abstract

Aim and objective: The aim of the study is to find out the treatment outcome of teeth with cemental tears in the South Indian population.

Introduction: A cemental tear is a root surface fracture that leads to periodontal problems as well as periapical tissue destruction at times. Cemental tears can appear at different levels. This can be accessed by studying each tooth individually.

Materials and method: 8 teeth with cemental tear wear be assessed in a multicenter cemental tear study project. Of the total teeth with cemental tears, a particular number of teeth will be extracted. The remaining teeth are examined for a treatment outcome of healed, questionable, or failed.

Results: Thus all tooth that was selected was accessed for their level of tear, treatment plans and prognosis.

Keywords: Cemental Tear; Periapical; Cervical Third; Middle Third; Apical Third.

Introduction

A cemental tear can be explained as a root surface fracture that leads to periodontal problems as well as periapical tissue destruction at times. [1-3] It is a lesion of endodontics origin also besides being among the periodontal entity. The study has been limited most of the time due to the lack of knowledge and awareness, even due to the difficulties in diagnosis of the case. Recent studies state that age, sex, tooth type, Attrition also play a major role in the occurrence and progression of a cemental tear [1, 4, 5]. Predominant clinical findings in the tooth with central tears were said to be swelling, localized periodontal pockets, bone loss, vital pulp, and radiographic findings of the tooth involving the cemental tear. In the radiographic findings generally, a radiopaque fracture-like picture can be studied [6, 7].

Cemental tears in recent times are found to have a male predisposition. It was noted that patients who are older than 60 years were more prone to be diagnosed with a cemental tear. Cemental tears more frequently occur in a vital tooth. The maxillary and

mandibular incisors with abscesses, sinus tract, deep pockets were said to be more frequently diagnosed. [7-9]

Radiographic examination is almost always essential to the diagnosis [2]. In the proximal surfaces, the displaced cementum appears radiographically as a radiopaque fragment inside the periodontal ligament. Nevertheless, in buccal or lingual surfaces, this image can be masked by the tooth root, complicating the diagnosis. In these cases, computed tomography should be used to make a differential diagnosis among root fracture and cemental tears.

The difficulty in diagnosis is being less as the fragments that are fractured are removed by surgical or nonsurgical methods and being subjected to Histopathological examination. Based on these factors correct diagnosis and interpretation are required as misdiagnosis may be further progressing periodontal and endodontics problems. [4]

For a long time, the diagnosis and management of cemental tear was a problem due to the variation in treatment plan decisions.

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[2] Clinical data combined radiographically can give more specific insight into the case and help to plan the treatment and get a better outcome.[1]

Several treatment modalities have been described for treating a cemental tear. One important treatment that allows functional retention of the affected tooth is regenerative periodontal or apical tissue therapies.[7] This can be combined with guided tissue regeneration, with bone grafting. Nonsurgical management can be done by scaling, root planning which removes the cemental tear.

Although the fractured fragments are being removed in most of the treatment, the prognosis is not clear still. Explaining about the prognosis and deciding has been still a difficult test because of the diversity in sample size, data collection, treatment done and assessment. [10-12] Previously our team has a rich experience in working on various research projects across multiple disciplines [13-27] Now the growing trend in this area motivated us to pursue this project.

Materials And Method

Study Sample

Patients who reported a periodontal or Endodontics issue were screened. A tooth with cemental tears was identified. These teeth were accessed in a multicenter cemental tear project. The treatment planning accordingly was done and was proceeded. The follow-up of the patient was done every 3 months. The outcome of the patient was accessed based on clinical and radiographic examinations on each visit.

Results And Discussion

Different treatments were planned for the teeth with cemental

tears based on the clinical and radiographic examinations. It was based on the type of teeth that was seen, the gender of the patient, the level of cemental tear, the prognosis of the tooth, bone destruction that was seen, the regeneration capacity.

Four anterior teeth and four posterior teeth were identified. The study included 6 males and 2 females. The tooth with failed prognosis said to have a cemental tear in the middle and apical third whereas the one with a questionable prognosis in the apical third and healing was seen in 1 tooth with a tear in the coronal third, 2 in the middle third, and 1 in the apical third. Bone destruction was found in 3 teeth in the failed and as well as one that had a questionable prognosis and 2 teeth in which healing was seen. 3 teeth were extracted considering the damage level and capacity to regenerate and 3 teeth underwent an RCT and had a questionable prognosis whereas 2 teeth underwent an RCT and healing was seen.

Statistical analysis was done by comparing and conducting a t-test between the corresponding 2 results.

The p-value that was obtained by comparing the failed and questionable prognosis was 0.85246, between questionable prognosis and healed it was 0.00471, and between healed and failed it was found to be 0.0132.

The morphology of cemental tears can be either piece-shaped or even U-shaped. Clinically, cemental tear shows a periodontal pocket and signs/symptoms mimicking localized periodontitis, apical periodontitis, and vertical root fractures.

Similar studies that were conducted assessed Treatment outcomes for the teeth with a cemental tear was of the 71 teeth with cemental tears, 38 teeth (53.5%) were extracted. The remaining 33 teeth (46.5%) were examined for a treatment outcome of healed, questionable, or failed.

Figure 1. Graph showing the level of cemental tear and treatment done.

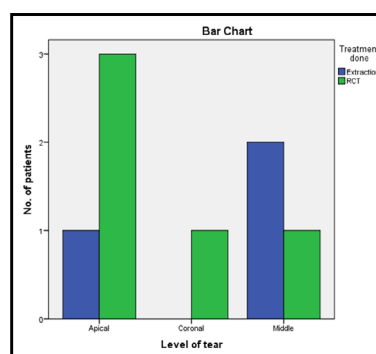
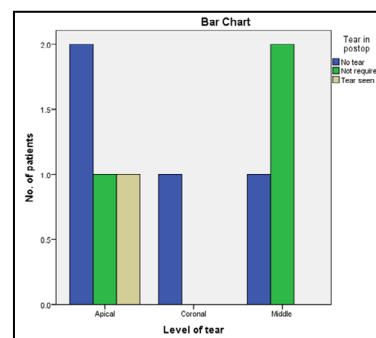


Figure 2. Graph showing the level of cemental tear and presence or absence of tear in the post-op.



Outcome assessment found that 51.5% (17/33), 42.4% (14/33), and 6.1% (2/33) of teeth were classified as healed, questionable, and failed. Additive bivariate analysis indicated a significant difference between treatment outcome and the length ($P = .01$) and apicocoronal location ($P = .02$) of the separated root fragments. Logistic regression analysis found that treatment technique and apicocoronal location of cemental tears may affect the treatment outcome. The percentage of healed cemental tear cases located in the apical, middle, and cervical third of roots was 11.1%, 66.7%, and 60.0%, respectively. By surgical management, 57.7% of cemental tears were healed, whereas only 28.6% cases were healed after nonsurgical treatment.

Treatment of cemental tears includes scaling, root planning, root canal treatment, periodontal/periapical surgery, guided tissue regeneration, bone grafting, and intentional replantation. Recurrence of cemental tear is possible especially when the fracture involves root apex [28, 29]. Extraction is recommended for teeth with a poor prognosis. In conclusion, cemental tears can involve both the periodontal and periapical areas.

Nonsurgical treatment for periodontal diseases has been advocated as the first therapy of choice since scaling and root planning are effective in the resolution of periodontal diseases, reducing the depth of periodontal pockets of non-molar teeth [30, 31]. In the context of the case reported, as part of the cementum fragment was exposed to the oral environment and the probing depth was 4mm, only nonsurgical treatment was performed [32, 33]. This approach demonstrated clinical and radiographic efficacy, twenty-four months after the procedure [34]. Conservative intervention should be considered in cases in which the cemental tear is exposed, since it causes less morbidity, as well as reduces the treatment time and cost.

Our institution is passionate about high quality evidence based research and has excelled in various fields [35-45].

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Conclusion

Several options are available for treating a hot tooth if diagnosed correctly or rather at an early stage. If not so the tooth mostly has to be extracted or even when treated will surely have a hopeless or poor prognosis. Diagnosing a tooth with a cemental tear lies as a challenge still among several dentists.

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