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Cracked Teeth Update

As dental professionals, we have seen deteriorating oral health among our patients related to the disruption of dental care in a timely manner during the pandemic. Incipient interproximal caries turned into an endodontic treatment, core build-up, and crown instead of Class II restoration. Also, the stress and isolation related to the pandemic caused a surge in cracked teeth and periodontal diseases among many patients across the country according to USA Today.

Cracked teeth have been reported as a syndrome by Cameron in 1976. Since then, dental professionals have furthered the knowledge and skills in the management of cracked teeth. In this EndoNews, we feature an update on the growing evidence on management of cracked teeth by reviewing the published articles and our clinical experience.

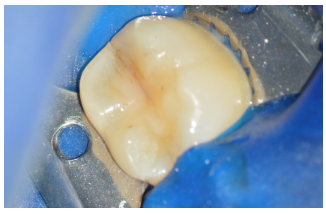
Less Favorable

Deeper Probing

More Favorable

Normal Probing

Split Tooth



Hairline Crack

Cracked teeth are defined as "Incomplete (green stick) fracture initiated from the crown and extending subgingivally, usually directed mesiodistally. It does not show mobile segments. Its fractured cusps do not break off under pressure."

Cracked teeth are caused by repetitive trauma from functional or parafunctional occlusion, and accidental trauma. Malpositioning of teeth such as rotation, tilting, a migration that causes a change in the long axis of the roots can contribute to repetitive trauma. The symptoms of cracked teeth vary in a wide range spectrum i.e. asymptomatic to excruciating pain radiating to the entire affected side of the face triggered by temperature and/or pressure. It has been reported that mandibular second molars are the most frequently cracked teeth followed by mandibular first molars and maxillary first molars.

Cracked teeth are findings, not diagnoses. It is crucially important to establish the diagnosis in the management of cracked teeth. Establishing diagnosis of cracked teeth can be challenging. Diagnostic steps include intentive listening to the history of the symptoms, thorough visual examination on the surface of the tooth with illumination and magnification, cold and heat test, percussion, palpation, tooth slooth test, periodontal probing, staining, transillumination, excavation of the existing restoration, radiographic examination including CBCT, and exploratory surgery. Even though CBCT has been a great diagnostic tool in the practice of endodontics, the crack with less than the tip size of #20 file is not detectable.

Transillumination

Tooth Slooth Test

Once the diagnosis is made, proper treatment plan can be formulated. In cases of reversible pulpitis, placing a crown on a cracked tooth without RCT has 80% of chance of success. The patient should be informed that RCT would be necessary in 20% of cases within 6 months (Krell & Rivera 2007 JEndo). In cases of cracked teeth treated with RCT, 82% of them remained successful at 1-year follow-up evaluation. Among the diagnostic data, periodontal probing more than 5mm at the distal marginal ridge area is the negative indicator for the favorable prognosis of the cracked teeth (Krell and Caplan 2018 JEndo).

Full Coverage Crown

Onlay with Cusp Protection

Cracks in the tooth structure allow microbial penetration.It is important to seal the crack to minimize microleakage. The use of the orifice barrier over the cracked floor and walls of the endodontic access can prevent microleakage during the temporization period between RCT and crown. The use of post is not recommended for restoration of cracked teeth. Full cuspal coverage restoration is recommended for cracked teeth. The occlusion should be carefully checked. Educating patients about bruxism and providing them with a bite guard can minimize the propagation of cracks from harmful repetitive trauma.

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