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Endodontic Management Of Patient With Reduce Oral Aperture And Mandibular Hypomobility

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Abstract

This article provides a case report representing endodontic management of maxillary first premolar in patient with limited mouth opening . A 38-year-old patient was referred to department of conservative dentistry and endodontic for endodontic treatment of maxillary first premolar . An intraoral periapical radiograph revealed carious lesion approaching pulp . Precations were taken during the entire procedure inorder to minimise the discomfort for the patient since the patient had under surgical exicision of squamous cell carcinoma and hemi mandibulectomy . ENDOARCH files were used for the biomechanical preparation as they have increased flexibility and single cone obturation was carried out. Microstomia / limited mouth opening present challenges for endodontic to obtain access and handle the curvatures.

Keywords: EDTA ,Endodontic management , Microstomia, Trismus

Introduction

Patients, their caregivers, and dental and other professionals may face significant difficulties due to limited access to the oral cavity. This can be caused by microstomia (restricted oral aperture) or mandibular hypomobility/trismus. Both of these conditions have a variety of causes, and while microstomia is primarily a chronic condition, mandibular hypomobility can be acute or chronic.

Microstomia

Microstomia is a chronic reduction in the dimensions of the oral aperture that is defined by its effects on function or appearance rather than any specific size criteria. [1]It's frequently linked to systemic diseases or autoimmune diseases that affect the connective tissues (like scleroderma), and it's also seen in conjunction with a variety of oro-facial syndromes. Furthermore, it's going to arise as a results of post-surgical scarring following peri-oral procedures, or following trauma, notably electrical or chemical burn injuries.[2]Microstomia following growth surgical operation has become abundant less common as a results of fashionable rehabilitative techniques. Pedicle, rotational, or free-flap techniques that recruit further tissue to catch up on a district of lip that has been resected area unit useful in maintaining the oral aperture .

A case report is presented involving endodontic management of maxillary premolar in patient who have undergone surgery for squamous cell carcinoma of right cheek , using modified endodontic instruments.

Case Report

A 38 years old man presented with spontaneous and temperature related pain, in upper left front tooth region for two weeks. There was no pain on biting . There was a progressive reduction in the mouth opening from past 1 year. The inter-incisal opening was 16mm . Patient gave a history of surgical excision of squamous cell carcinoma and hemi mandibulectomy 1 year ago , which resulted in mandibular hypomobility and limited mouth opening . Intraoral examination revealed blanching of oral mucosa . On the buccal mucosa, thick fibrous bands could be felt. Oral hygiene was a problem. There was no swelling or tenderness in the buccal or lingual cortical areas. Thermal tests elicited a prolonged response from the patient. The results of electric pulp testing indicated irreversible pulp damage. It was determined that the patient had symptomatic irreversible pulpitis. The oral findings were confirmed with an intraoral periapical (IOPA) radiograph revealing carious lesion approaching pulp in upper first premolar (tooth no : 24).Also pdl widening can be seen irt 24 .(Figure 1).

Figure 1: Pre operative radiograph

An emergency endodontic access opening with pulpectomy was planned for the patient,in order to relieve the pain . The treatment plan and procedure were explained to the patient and discussed with them, and they gave their informed consent. An infraorbital block of 2% lidocaine with 1:100,000 epinephrine was given . Because of the limited mouth opening, it was impossible to place a rubber dam. All the endodontic hand instruments (10 k and 15 k files) were tied with dental floss to prevent their swallowing.

An endodontic access opening was made; after gaining an adequate access, initial scouting of all the root canals was done with K-file no. 10, and the patency of root canals was established. Working length was confirmed using apex locator (Coltene Canal Pro) . Two Canals were located (buccal , palatal with 21 and 19 mm working length respectively) . Highly flexible NITI rotary files of 21mm length (ENDO ARCH Endodotic Files) were used. Succeeding, glide path files(Endo Arch) of intermediate sizes, i.e., no. 15 0/3 and no. 17/04, were used in order to closely follow the curvature and maintain the apical spatial orientation . The rotary files were subsequently used in the fashion as instructed by the manufacturer (20/04 , 20/06 , 25/04). (Figure 2).

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Figure 2 : Radiograph with master cone

Figure 3 : Radiograph showing post obturation restoration

Following the biomechanical preparation, the canals were irrigated, flushed with .25% Sodium hypochlorite and EDTA 17%, and dried prior to obturation. Single cone 4% and 6 % taper gutta percha cones were used to obturate all the canals. The post obturation restoration was done with a composite to maintain a good coronal seal .(Figure 3)

Discussion

The endodontic management of a patient with a compromised mouth opening is highlighted in this case report. For long periods of time, the patient was unable to keep his mouth open. As a result, it was critical not only to gain access to the limited space around the tooth, but also to complete the root canal treatment quickly.

Chronic reduction in oral opening is relatively uncommon in the general population but may be seen in a significant proportion of patients who have undergone treatment for an oral cancer by surgery, radiotherapy, chemoradiotherapy or combinations of these (Figs 4 and 5). The prevalence of post-radiotherapy mandibular hypomobility has been reported to vary between 5% and 38%.[3,4]

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Figure 4 : Post operative image after surgery

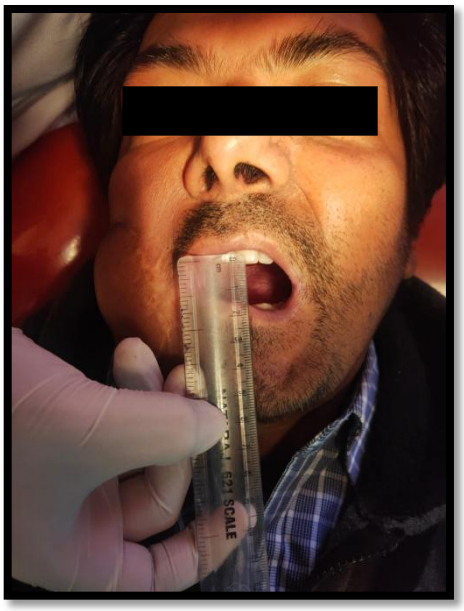

Figure 5 : Limited inter incisal space

Mandibular hypomobility will often limit the amount of time a patient can be treated in a single session; frequent breaks, moments of relaxation, and the use of a mouth prop are recommended that may reduce patient fatigue and prolong this a little . Various clinical tips and tricks that were used to reduce the discomfort which includes :

1. A short (21-mm) stainless steel hand K files were used. When patients cannot open their mouths very much, every millimeter saved for operating space counts. NiTi files with a shaft that is a few millimetres shorter than standard-length shafts can mean the difference between being able to perform an endodontic procedure and not being able to do so.
2. When working in a mouth with a limited opening, using handpieces with small heads is another way to save a few millimetres. Some current-generation motors could easily be 2 to 4 mm larger than a standard-sized handpiece head.But here since we were performing endodontic treatment irt 24 (anterior) so there was no such need for this kind of hand piece .But for posteriors one can use handpieces with micro head.
3. It's easier to get into tight spaces with stainless steel hand files if you curve the file rather than trying to use a straight file. Stainless steel hand files were precurved prior to its use .
4. Proper handling of a stainless steel hand file is one of the most important tips for facilitating access. Many clinicians hold hand files with the file pointing in the direction of their fingers (index and thumb). When the opposing arch is in the way and the mouth opening is limited, this makes access nearly impossible. Instead, the hand file should be held at a 90-degree angle to the direction of the fingers.This should be considered in just the same way as any endodontic handpiece that holds a NiTi motorized file at 90° to the shaft of the handpiece. In This case also the same strategy was applied .
5. To facilitate visibility: A small size 3 hand mirror was used to enable visibility into the endo access.
6. To reduce treatment time and the possible need for numerous mid-treatment radiographs: A NiTi-mechanized controlled memory filing system requiring fewer files than traditional hand filing systems was used.These niti file were also precurved prior to its use .

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7. To assist with working length confirmation, an electronic apex locator (Coltene Canal Pro) was used .

When combined, the above tips, tricks, and tools made it possible to predictably, and quite easily, treat the patient with limited access .

Conclusion

Reduced oral aperture and mandibular opening are common problems that can be caused by a variety of factors. In some cases, problems are temporary and self-limiting, whereas in others, the situation is permanent and extremely distressing for both patients and clinicians. The conditions have a wide range of implications, which are heavily influenced by the degree of restriction. Eating and speaking are two examples of functional difficulties. The patient's self-performed oral hygiene and dental treatment may be compromised, and in severe cases, the patient's self-performed oral hygiene and dental treatment may be impossible. Several strategies exist to try to prevent reduced oral aperture and reduced mandibular opening, and several useful techniques and manoeuvres to facilitate operative dentistry have been documented.

Endodontics faces a significant challenge in gaining access to tight spaces due to limited mouth openings or small mouths. Fortunately, there are a variety of clinical tricks and tools that can assist in dealing with this problem. In such cases, pre-curving stainless steel and NiTi files and using a handpiece with a small head, as well as a small hand mirror, can only make root canals easier for a dentist.

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