Journal of Applied Dental and Medical Sciences
NLM ID: 101671413 ISSN:2454-2288
Volume 2 Issue 1 January - March 2016

Case Report

Neo adjunct technique to retrieve broken instrument- A case Report

Priyanka Chopra [1], Anjali Gupta [2], Ram Tiwari [3]

[1] *Private Dental Practitioner, Mahasamund, Chhattisgarh*
[2]*Senior Lecturer; Department of Conservative Dentistry and Endodontics,Rungta College of Dental Sciences and Research, Bhilai, Chhattisgarh , India*
[3]*Senior Lecturer , Department of Public Health Dentistry,Rungta College of Dental Sciences and Research, Bhilai,India*

ARTICLE INFO

Keywords:
Regression Analysis, Linear Regression, Logistic Regression Statistics, Research Methodology

ABSTRACT

Prediction and estimation is the mainstay in the treatment planning in dentistry. With variations being common is many events of the oral cavity, it becomes important to have a methodology which can help us predict the happenings of the region in relation to each other. Regression analysis is one such concept which explores the relationship between two or more quantifiable variables so that one variable can be predicted from other. The aim of this article is to provide a simple yet holistic approach to the understanding of the concepts of Regression Analysis along with its use and misuse, advantages and disadvantages pertaining to the art and science of dentistry.

Introduction

The separation of an endodontic instrument instantly transforms a case, from whatever level of difficulty it was preoperatively, to a new level of severity. In the quest to develop better instruments and techniques to improve our quality of care, we have developed a "double-edged sword", an instrument that can cut and shape the dentin wall efficiently, and in the blink of an eye, cut into the peace of mind of the operator when it separates[1]. Every clinician who has performed Endodontics has experienced a variety of emotions ranging from the thrill-of-the fill to an upset like the procedural accident of breaking an instrument. During root canal preparation procedures, the potential for instrument breakage is always present[2]. Like they say **"To Err Is Human"**, and every clinician has a good and a bad day but it takes a vision to handle the situation wisely. Sometimes it is not possible to remove the obstruction deterring removal of separated instruments by the conventional orthograde techniques. Then a new way of gliding the obstructed instrument via an escape hole can be very fruitful.

Case Report

A 50-year-old male patient entered to the department of Conservative Dentistry, Rungta College of Dental Sciences and Research with a chief complaint of swelling in upper front tooth region. Clinically there was labially Placed and Elli's Class III fractured right central incisor, Mesiodens, Supernumerary tooth having Dens Invaginatus between 11 and 12, Grade II Mobility with 11 & Mesiodens, Missing 31, 41 and Generalized Recession (Fig. 1). The preoperative radiograph revealed periapical radiolucency

* *Corresponding author:**Dr. Anjali Gupta, MDS Qr. No. C-101 SECL Colony Seepat Road Bilaspur, Chhattisgarh , India , PIN- 495006 Mobile No.- 08109422554 e-mail: rohitagrawalphd@gmail.com***

involving four teeth (Fig. 2). Treatment plan was Root Canal Treatment with 12, Supernumerary tooth and 21; Extraction with 11 and Mesiodens; Apicectomy with 12, Supernumerary tooth, 21. While doing root canal treatment of supernumerary tooth (type 2 dens invaginatus) #25 K file got fractured from coronal third to apical third (Fig. 3). Because an attempt to bypass the broken file with K files failed, a decision was made to remove the file with the Masserann kit with the aid of the surgical loupes (Fig. 4). Under rubber dam isolation, a "guide groove", approximately 2 mm deep and circumferential to the coronal end of the broken file, was prepared with the smallest trepan bur (1.1 mm in outer diameter). Then the dentin between the file and the groove was removed under the loupes with an ultrasonic spreader tip activated with the ultrasonic unit at the power setting of 5. With this procedure, the periphery of the file was successfully exposed and was gripped with the extractor. However, the file was very tightly wedged into the dentin and efforts to loosen the file with manual pressure were unsuccessful. The ultrasonic tip was thus applied directly against the exposed end of the file and activated under the microscope. Alternate application of the ultrasonic vibration and counterclockwise rotation with the extractor along with escape hole preparation at the cervical area finally resulted in the successful withdrawal of the file (Fig. 5, 6). The total time to retrieval was approximately 45min.

Discussion

Intracanal separation of instruments prevents access to the apex impedes thorough cleaning and shaping of the root canal and complicates the treatment. Several techniques have been adopted to remove the separated instrument. Gates gliden drill are used to create radicular access and a uniform tapering funnel to the obstruction then K files were used to loosen the fractured instrument[3]. The Masserann kit has been used for over 30 years as a device for removing intracanal broken instruments. The locking mechanism of the extractor provides considerable retention, which is a major advantage of this device. As recognized widely, however, it is in the removal of the dentin around the object where difficulty lies[4, 5]. Moreover, practitioners may encounter the frustrating situation in which a wedged object does not come out despite successful gripping of its coronal end. In the present case, the diameter of the coronal end of the broken instrument was approximately 0.4 mm. As the caliber of the small tube is approximately 0.7 mm at the embossment, the space inside the small extractor was too narrow to firmly grip the instrument. The ultrasonic tip was thus applied directly against the exposed end of the file and activated under the surgical loupes[6, 7]. But repeated application of extractor and ultrasonic cause excess removal of solid dentin. So, different orthograde technique has been applied i.e. preparation of escape hole at the cervical area and tweezer from microsurgical kit was used to hold the broken file and push it coronally and finally successful removal of broken instrument.

Conclusion

The best antidote for a broken file is prevention. Refinement in endodontic cavity preparation should be given due consideration in teeth presenting anatomical variation such as Dens Invaginatus to prevent procedural accidents. Routine Protocol for successful retrieval of separated instruments demands evidence

based treatment approach by trained professionals. Yet we need to explore some of the untraveled roads not from the standpoint of closure and establishment of defining principles but rather from the view point of vision, redirection and excitement. Thus, allowing us "To have masterful administration of the unforeseen".

References

1. Steven J. Cohen, Cert. Endo,Gary D. Glassman and Richard Mounce. Rips, Strips and Broken Tips: Handling the Endodontic Mishap PART I: THE SEPARATED INSTRUMENT. Oral health May 2005.
2. Dr. Clifford J. Ruddle. Broken Instrument Removal: The Endodontic Challenge . Dentistry Today July 2002.
3. Gencoglu Nimet, Helvacioglu Dilek. Comparison of different techniques to remove fractured Endodonti c Instruments From Root Canal System. European Journal Of Dentistry 2009;3:p-90-95
4. Arun Kulandaivelu Thirumalai et al. Retrieval Of Separated File Using Masseran Technique.J Cons Dent 2008;11(8) :p-42-45.
5. Friedman S, Stabholtz A, Tamse A. Endodontic retreatment—Case selection and technique. Part 3. Retreatment techniques. J Endodon 1990;16:543-9.
6. Gianluca Plotino, Cornelis H. Pameijer etal. Ultrasonics in Endodontics: A Review of the Literature. J Endod 2007;33(2): p-81-89.
7. Friedman S, Stabholz A, Tamse A. Endodontic retreatment: case selection and technique. Part 3: retreatment techniques. *J Endodon* 1990;16:543-9.

Fig.1. PREOPERATIVE

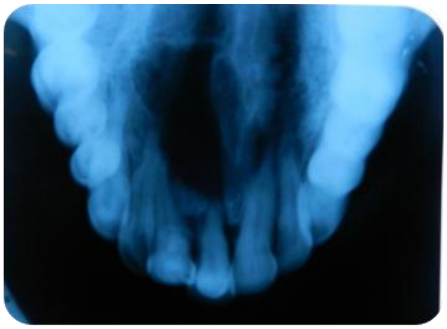

Fig.2. PREOPERATIVE RADIOGRAPH

Fig.3. #25 BROKEN K FILE

Fig.4 ARMAMENTARIUM FOR RETRIEVAL OF BROKEN INSTRUMENT

Fig.5. ESCAPE HOLE PREPARATION

Fig.6. POSTOPERATIVE RADIOGRAPH