

Effectiveness of Subgingival Irrigation with Irrigation Device and Conventional Syringe Irrigation in the Teeth Indicated For Extraction

Dr. Aswani Cherukuri^{1*}, Dr. Prabhuji MLV²

¹Post graduate, Department of Periodontology, Krishnadevaraya College of Dental Sciences and Hospital, Bangalore- 562157, Karnataka, India.

²Head of the Department, Department of Periodontology, Krishnadevaraya College of Dental Sciences and Hospital, Bangalore- 562157, Karnataka, India.

***Corresponding Author:** Dr. Aswani Cherukuri, Post graduate, Department of Periodontology, Krishnadevaraya College of Dental Sciences and Hospital, Bangalore- 562157, Karnataka, India.

Abstract

The effectiveness of conventional scaling and root planing may be augmented by application of local or systemic antibiotics. one of the ways by which local antibiotic therapy is being administered is through irrigation. It has been clinically proven to optimise the outcome of scaling and root planing. The current case report was aimed at comparing the effectiveness of an intra-canal irrigation device to that of normal syringe irrigation for assessing the depth of penetration of irrigation solution into the pocket following scaling and root planing.

Keywords: Pocket, Periodontitis, Subgingival Irrigation, Endovac, Extraction

1. INTRODUCTION

Mechanical periodontal therapy of plaque removal, scaling and root planing following subgingival irrigation has shown to reduce dental plaque, gingivitis and pathogens causing periodontal disease. Methods to augment the positive effects of scaling and root planing on the periodontium include periodic maintenance therapy that may be combined with both systemic or topical antibiotics, and intrapocket irrigations with a variety of antimicrobial agents. [1, 2] Systemic administration of antimicrobial agents cannot be the chosen in all the patients owing to the indications of usage and to prevent antibiotic resistance. Subgingival irrigation makes use of a syringe loaded with an irrigating solution. However, this cannot reach narrow areas like the base of periodontal pockets. Also, it may lead to unwanted trauma to the tissues. Also, there exists proven evidence that oral irrigation devices had shown a significant increase of penetration of about 71% into the pocket than 44% with the conventional method. [3]

The current study was aimed at comparing the effectiveness of an intra-canal irrigation device

to that of normal syringe irrigation for assessing the depth of penetration of irrigation solution into the pocket following scaling and root planing.

2. METHODOLOGY

Patients who had one or more teeth indicated for extraction due to dento-alveolar abscess or poor prognosis tooth with periodontal bone loss extending till the apical third of the root and with grade III mobility were selected for the study. All the patients recruited were not under active periodontal therapy. A total of 8 samples pertaining to the inclusion criteria were considered.

Intracanal irrigation devices are used in endodontic therapy for root canal irrigation. It consists of a multiport adapter which is connected to the suction unit of the dental chair, with a macrocannula which is loaded with irrigation solution (Figure 1 and 2). In the control group, subgingival irrigation with normal syringe containing disclosing solution was done and in the test group, subgingival irrigation with disclosing solution using intra-canal irrigation device (Endovac™) was done (Figure 4). Prior to the procedure the pocket

depth was assessed (Figure 5). The endovac system including the macrocanulla is connected to the suction unit (Figure 6 and 7). After irrigation, local anaesthesia was administered and the teeth were extracted later. The depth of penetration (DP) of dye into the pocket was measured by subtracting the crown height from the distance between a reference notch on the crown (prepared before extraction) to the apical extent dyed (Figure 7 and 8).

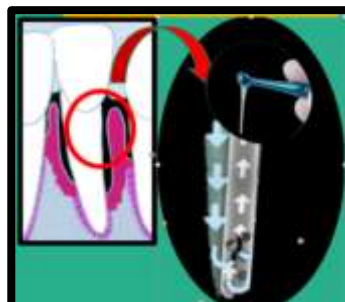


Figure 5. Endovac system



Figure 1. Multiport adaptor that is connected to the suction unit of the dental chair



Figure 6. Macro cannula connected to the suction

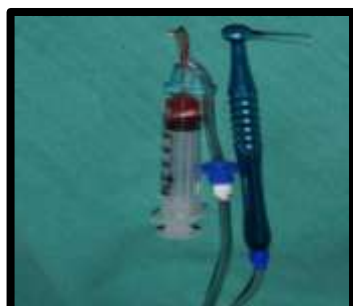


Figure 2. Delivery tip & macrocannula



Figure 7. Depth of penetration of the dye irrigation syringe



Figure 3. Measurement of pocket depth



Figure 8. Depth of penetration in conventional (intracanal irrigation)



Figure 4. Intracanal irrigation (Endovac™)

3. RESULTS

In the current study, subgingival irrigation using an intracanal irrigation device and conventional irrigation syringe had given similar results (Table 1 and 2). However, there was a better depth of penetration of about 2/3rd the length of root with the irrigation device compared to the irrigation syringe.

Table 1. *Depth of penetration of the dye in control group*

CONTROL GROUP	Tooth 1	Tooth 2	Tooth 3	Tooth 4
Pocket depth (PD)	7 mm	8 mm	9 mm	8 mm
Depth of penetration of dye in millimeters (mm)	3 mm	2 mm	3 mm	4 mm

Table 2. *Depth of penetration of the dye in test group*

TEST GROUP	Tooth 1	Tooth 2	Tooth 3	Tooth 4
Pocket depth (PD)	8 mm	7 mm	10 mm	8 mm
Depth of penetration of dye in millimeters (mm)	5 mm	4 mm	7 mm	5 mm

4. DISCUSSION

The intracanal irrigation device is used for the irrigation of root canals during endodontic therapy. [4] The periodontal pockets >5-7mm always pose a challenge for the clinician during routine scaling and root planing procedures to reach the base of the pocket. Hence, there is a need for periodontal pockets to be thoroughly irrigated post scaling and root planning to eliminate any debris from the mechanical therapy and also to flush out the pocket contents to cease the progression of disease activity.

This irrigation device has a syringe in which the irrigating solution is loaded for irrigation and a macro cannula connected to the suction unit of the dental chair to be inserted into the periodontal pocket base. This macro-cannula creates a negative pressure at the base of the pocket causing the irrigation solution to be carried till the pocket base from where it is suctioned out. This produces an effective depth of penetration of the irrigation solution.

Various other irrigation devices had been employed for oral irrigation showing a better depth of penetration. [5] The outcome of this intracanal irrigation device when used for subgingival irrigation needs to be compared with other oral irrigation devices before claiming its significance. Also, this was assessed on an extracted tooth where the outcome of the subgingival irrigation in terms of inflammation reduction that cannot be predicted.

5. CONCLUSION

This case report demonstrated an intracanal irrigation system used for periodontal intra pocket irrigation. It was observed that compared to conventional irrigating syringes, the Endovac™ system showed superior depth of penetration of the irrigating solution indicating its efficiency in deeper pockets. Employing this technique in moderate to generalized periodontitis patients following non-surgical therapy would give a better scope to assess the effectiveness of the technique.

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