

Single Visit Endodontics with Related Myths: A Questionnaire

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ABSTRACT

Aim:

1. The main objective of performing root canal therapy is to eliminate the bacteria from the root canal and seal it with various newer filling materials. If the treatment is thoroughly done it helps in faster periapical healing. Single visit endodontic treatment had numerous drawbacks primarily about the post-operative pain and failure of the treatment effect. With recent advances in endodontics the single visit therapy has become more predictable and lessened intraoperative procedure and has increased operators comfort. In this review article indications and contraindications of single visit endodontics, success rates and myths related to it are discussed.
2. Single visit root canal treatment is predicted on the entombing theory, which states that the large number of microorganisms are removed during cleaning and shaping and therefore the remaining bacteria are entombed by the root canal obturation. The recent advances, helps the dental practitioners and endodontists to perform the root canal treatment in single visit.

Keywords: Cryotherapy, topical anesthetic, Pain Perception, Visual Analogue Scale and Dibucaine

1. INTRODUCTION

In this modern Era fulfilling the patients needs in minimum visits and performing a painless procedure is utmost important for the endodontic management. In endodontics, as per the data gathered from evidence-based dentistry continuous revolution in material science and equipment's have opened newer path to predictable success in endodontics.

The fundamental step followed in endodontic procedure is cleaning, shaping, debridement and obturation. To accomplish this goal endodontic treatment desires to be done in multiple visits. Multiple visit endodontics was monotonous procedure followed in endodontics but it is associated with certain drawbacks like inter appointment flareup and pain leading operator and patient fatigue. Inability to cater immediate esthetic demand of the patient in case of traumatized teeth.

All these elements led to change in the endodontic treatment from multiple visit to single visit endodontics. Endodontic treatment which is conservative, time saving and followed by treatment completion in single visit. Retrospective analysis of evidence-based dentistry recommended single visit endodontics as natural outcome of transformation in the treatment aspect of endodontic treatment to era of rotary endodontics from a hand-held file. With a wide research in the field of canal preparation, culture and obturation methods has led complete shift in the endodontic practice. Due to advent of newer materials and ever-increasing numbers of clinical trials, have increased operator's ability to achieve more precise endodontic procedures using dental operating microscopes. Operating microscope has improved the area of virtualization, increased visualisation with the help of digital radiography and accurate apical foramen identification using apex locators. Root canal cleaning and shaping with more sophisticated technique using Niti with computer aided electronic hand pieces, ultrasonics all for the sake of attaining optimal outcomes during endodontic therapy

The WHO reports dental caries as the most common chronic disease which requires prompt management because if left untreated, it might lead to pain resulting in tooth loss thereby affecting a person's quality of life. Factors like function and aesthetics motivate the patient to seek dental treatment. Root canal treatment (RCT) and restorative therapy (Filling) are restitutive dental procedures involving direct interactions between the dentist and the patient where the dentist takes into consideration factors like clinical criteria, the patient's socioeconomic status, and the patient's expectations to modify of behaviors of patients in a positive way which might help patients accept the procedures. Health services provide interventions at primary, secondary, and tertiary levels. Furthermore, the research aims to identify potential barriers to patient acceptance and compliance with RCT and fillings, paving the way for strategies to overcome these obstacles. Ultimately, the study aims to inform the institute on ways to enhance patient education and communication, thus improving treatment acceptance and outcomes.

Single visit root canal therapy vs multiple visit root canal therapy has been a topic of debate amongst the dentists. The most common myths related with endodontic therapy is increased pain, insufficient microbial control and fear of clinical outcome. When clinicians are forced with choices of which treatment offered as a prime issue should be considered are effectiveness, complication and the cost.

So, with new innovations single visit endodontic treatment has revealed to be an effective treatment aspect when compared to multiple visit endodontic treatment and it thoroughly achieve the objective of proper BMP, debridement and obturation. It is more beneficial to the patient and dentist provided proper case selection

2. INDICATION AND CONTRAINDICATION FOR SINGLE VISIT ENDODONTICS

Indications

- Patients necessitating full mouth rehabilitation.
- Uncomplicated vital teeth.
- Patients who requires sedation.
- Fractured teeth where esthetics is the most important concern.
- Teeth with iatrogenic pulp exposure.
- Teeth with sinus tract.
- Patients who are medically compromised and requires antibiotic prophylaxis
- Patient who cannot frequently visit dental clinic, example: Physically compromised patients

Contraindications

- Patients having pain on percussion due to acute apical periodontitis.
- Teeth with anatomic variances like calcified and curved canals.
- Acute alveolar abscess with discharge of pus.³

- Patients who cannot keep their mouth open for a long time for e.g. TMJ disorders.
- Teeth with reduced access.
- Symptomatic non-vital teeth without sinus tract.
- Retreatments cases.
- Hot tooth.

3. CONCEPT OF SINGLE VISIT ENDODONTICS

The most important aspect of performing an endodontic procedure is to correctly diagnose the tooth. The diagnosis is done based upon subjective and objective findings, indicating if the pulp is inflamed and demands RCT. Advancements such as RVG and CBCT helps the operator to choose if the tooth requires single visit root canal therapy based upon the pulpal condition and periapical status. CBCT also helps in discovering extra canals in maxillary first molars.

Rubber dam isolation and pain control is the most essential step in endodontics. The access cavity preparation can be one of the most demanding aspects of endodontic treatment, but it is the solution to effective treatment. With the help of advancements like endodontic microscope and loupes the treatment speed has enhanced. The canals are debrided thoroughly using sodium hypochlorite, chemicals such as EDTA and chelating agents using various irrigating techniques. Biomechanical preparation done using various advanced NITI systems which prepares root canal in crown down manner with minimal extrusion of debris and irrigant. And NiTi systems are safe with a minimal incidence of instrument failure. The root canal system must be obturated using a fluid tight seal such that it prevents infiltration of micro-organisms into the endodontic system. Using newer thermoplastized gutta-percha techniques provides three-dimensional sealing of apical and coronal areas of root canal, followed by sealing of root canal orifice using various newer materials based upon adhesive techniques which provide thorough sealing.

4. MYTHS AND FACTS RELATED TO SINGLE VISIT ENDODONTICS

MYTHS	FACT
Postoperative pain is greater when endodontic therapy is completed in a single visit, especially in nonvital teeth.	Overwhelming evidence shows that postoperative pain resulting from treatment of vital or nonvital teeth does not differ among patients treated in a single visit or in multiple visits. The reported findings on postoperative pain differed between studies. Many studies like study done by Wang C et al. showed no significant differences in pain after single-visit and multiple-visit treatment. ¹⁰ Study done by Risso PA et al, surprisingly described more postoperative pain developing with conventional multiple-visit treatment. ¹¹ Study done by Oginni A reported significantly more postoperative pain for single visit treatment.
There is less healing when endodontic therapy is completed in a single visit, especially in non-vital tooth.	One-year follow-up time is the soonest possible to determine whether or not the lesion has healed. No studies demonstrated a statistically significant difference in healing rate (therapeutic efficacy) between single- and multiple-visit treatment. In a systematic review done by C. Sathorn found that single-visit root canal treatment appeared to be slightly more effective than multiple visit, i.e. a 6.3% higher healing rate. ¹³ No significant difference in radiographic evidence of healing between singlevisit and multiple visit treatment was seen by study done by Paredes-Vieyra J.
Post operative flare up is greater when endodontic therapy is completed in a single visit.	Postoperative pain or swelling are collectively described as flare-up, which is probably one of the most concerning issues that dentists practicing single-visit treatment must deal with. Trope defined flare up as "intolerable pain and/or swelling ". Akbar et al in his study found that there was no significant difference in the flareup rate between single and multiple visit groups. ¹⁵

Canals are cleansed if an antibacterial medicament such as Ca(OH)₂ 'is left in the tooth.	Efficacy of calcium hydroxide in controlling bacterial colonization has been debated. Studies have reported that the clinical outcome of multiple-visit endodontic treatment was better for teeth treated with the intracanal calcium hydroxide than for those with root canals left empty. ¹⁶ Despite the high alkalinity antibacterial properties of calcium hydroxide, some bacteria species, such as <i>E. faecalis</i> and <i>Candida albicans</i> , have been found to be resistant to it. It is therefore generally considered that non setting calcium hydroxide should be
	used as a supplement to antibacterial irrigations. Complete elimination of bacteria is not strictly necessary, and maximum reduction of bacteria and effective canal filling may be sufficient in terms of healing, rather than complete eradication.
Multiple-visit endodontics is safer than single-visit endodontics, and multiple visits mean more careful treatment.	For patients at the risk of contracting bacterial endocarditis AHA recommends as many procedures as possible during antibiotic prophylaxis. By limiting these patients to single appointment, they are at less risk of contracting endocarditis and of having an allergic reaction to the antibiotic. The small chance of a toxic reaction from medication (analgesics, antibiotics, or anesthetic) is reduced by not using them repeatedly (at multiple appointments) and by using a smaller dose (enough for one appointment).
Patients do not mind multiple appointments and are likely to object to the fee if the procedure is completed in a single visit.	Aside from cost, there are two other major barriers to patients visiting the dentist: fear of pain and time required. Completing root canal therapy in one appointment limits fear of pain to one incident and decreases the time required (the number of appointments and total treatment time). Patients are more likely to, accept single visit treatment.

5. POSTOPERATIVE PAIN AND HEALING RATES OF SINGLE VISIT V/S MULTIPLE VISIT

A study by Bayram Ince et al showed that, The incidence of postoperative pain did not show much difference among vital and non-vital teeth and most of the patients in either group had no or only mild pain.

According to PetersLB, Wesselink PR et al in their study they concluded that there were no statistical differences in healing of periapical pathosis in between teeth that had gone endodontic treatment in a single visit (without) and multiple visits with inclusion of calcium hydroxide for 4 weeks. The existence of a positive bacterial culture at the time of obturation did not have any effect on the outcome of treatment.

Another study by Sathorn C et al, showed that, the single-visit root canal treatment showed to be more effective than multiple visit therapy, i.e. 6.3% greater healing percentage. But, the difference in healing rate between the two treatment procedures was not statistically significant.

6. CONCLUSION

With the initiation of technological developments and advent of new gadgets, evidence-based dentistry and more scientific discussions, has directed single visit endodontic treatment to become more predictable. Single visit endodontics has presented to be an effective treatment aspect for both dentist and patient when compared with multiple visit treatment by decreasing the number of appointments and patient discomfort.

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