



Review Article

Role of single visit endodontics in contemporary dental practice – A review

Tamase Aishwarya S^{1,*}, Ghivari Sheetal B¹, Pujar Madhu A¹, Kadam Krutika K¹,
Dandavati Divyashree D¹, Hanjagi Seema B¹

¹Dept. of Conservative dentistry and Endodontics, Maratha Mandal's NGH Institute of Dental Sciences and Research Centre, Belgaum, Karnataka, India



ARTICLE INFO

Article history:

Received 13-10-2020

Accepted 31-10-2020

Available online 11-11-2020

Keywords:

Single visit endodontics

Periapical healing.

ABSTRACT

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.

© 2020 Published by Innovative Publication. This is an open access article under the CC BY-NC license (<https://creativecommons.org/licenses/by-nc/4.0/>)

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.¹

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

* Corresponding author.

E-mail address: ah569981@gmail.com (T. Aishwarya S).

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

1.1. Indications

1. Patients necessitating full mouth rehabilitation.
2. Uncomplicated vital teeth.
3. Patients who requires sedation.
4. Fractured teeth where esthetics is the most important concern.
5. Teeth with iatrogenic pulp exposure.
6. Teeth with sinus tract.
7. Patients who are medically compromised and requires antibiotic prophylaxis
8. Patient who cannot frequently visit dental clinic, example: Physically compromised patients.¹

1.2. Contraindications

1. Patients having pain on percussion due to acute apical periodontitis.
2. Teeth with anatomic variances like calcified and curved canals.
3. Acute alveolar abscess with discharge of pus.³
4. Patients who cannot keep their mouth open for a long time for e.g. TMJ disorders.
5. Teeth with reduced access.
6. Symptomatic non-vital teeth without sinus tract.
7. Retreatments cases.
8. Hot tooth.

1.3. Single visit endodontics procedure

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.⁴

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.⁵ 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.⁶ The root canal system must be obturated using a fluid tight seal such that it prevents infiltration of micro-organisms into the endodontic system.⁷ Using newer thermoplastized gutta-percha techniques provides three-dimensional sealing of apical and coronal areas of root canal,⁸ followed by sealing of root canal orifice using various newer materials based upon adhesive techniques which provide thorough sealing.

1.4. Myths associated with single visit endodontics

● Myth No.1: Postoperative pain is greater when endodontic therapy is done in a single visit, especially in nonvital teeth.

Fact:

Overwhelming evidence displays that postoperative pain resulting from treatment of vital or nonvital teeth does not differ amongst the patients who were treated in a single or in multiple visits.⁹

● Myth No.2: When endodontic therapy is completed in single visit there is less healing, particularly in non-vital tooth.

Fact:

One-year follow-up time is the soonest possible to determine whether or not the lesion has healed.⁹

● Myth No.3: Post-operative flare up is greater when endodontic therapy is completed in a single visit.

Fact:

Postoperative pain and swelling are together described as flare-up, which is possibly one of the most perturbing issues that dentists performing single-visit therapy need to deal with.⁹

● Myth No.4: Cleaning of canals takes place if an antibacterial medicament such as Ca(OH)₂ 'is left in the tooth.

Fact:

Efficacy of calcium hydroxide in controlling bacterial colonization is a controversy.

● MYTH No.5: Multiple-visit endodontics is safer than single-visit endodontics, and multiple visits mean more careful treatment.

Fact:

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.⁹

● Myth No.6: Patients do not mind multiple appointments and are likely to object to the fee if the procedure is completed in a single visit.

Fact:

Aside from cost, there are two other major barriers to

patients visiting the dentist: fear of pain and time required.⁹

- Myth No.7: After obturation, treating a flare-up is complex; thus, treatment should not be finished at the first appointment.

Fact:

Fear of a post obturation flare-up prevents clinicians from performing single-visit endodontics, but such flare-ups generally are less common than inter appointment flare-ups.⁹

2. 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.¹⁰

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.¹¹

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.¹²

3. 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.

4. Source of Funding

No financial support was received for the work within this manuscript.

5. Conflict of Interest

The authors declare they have no conflict of interest.

References

1. Bansode PV, Pathak SD, Wavdhane MB, Khedgikar S, Birage PP. Single-Visit Versus Multiple-Visit Root Canal Treatment-A Review; 2018.
2. Dhar V. Evidence-based dentistry: An overview. *Contemp Clin Dent.* 2016;7(3):293.
3. Raju TB, Seshadri A, Vamsipavani B, Abhilash K, Subhash AV, Kumari KH, et al. Evaluation of pain in single and multi rooted teeth treated in single visit endodontic therapy. *J Int Oral Health: JIOH.* 2014;6(1):27.
4. Abraham D, Bahuguna N, Manan R. Use of CBCT in the Successful Management of Endodontic Cases. *J Clin Imaging Sci.* 2012;2:50. doi:10.4103/2156-7514.100370.
5. Patel S, Rhodes J. A practical guide to endodontic access cavity preparation in molar teeth. *Br Dent J.* 2007;203(3):133–40.
6. Bergmans L, Cleynenbreugel JV, Wevers M, Lambrechts P. Mechanical root canal preparation with NiTi rotary instruments: rationale, performance and safety. Status report for the American Journal of Dentistry. *Am J Dent.* 2001;14(5):324–33.
7. Kikly A, Jaâfoura S, Kammoun D, Sahtout S. Sealing Ability of Endodontic Cements: An In Vitro Study. *Int J Dent.* 2020;2020:1–7.
8. Deshpande PM, Naik RR. Comprehensive review on recent root canal filling materials and techniques-An update. *Int J Appl Dent Sci.* 2015;1:30–4.
9. Wahl MJ. Myths of single-visit endodontics. *Gen Dent.* 1996;44:126.
10. Ince B, Ercan E, Dalli M, Dulgergil CT, Zorba YO, Colak H, et al. Incidence of Postoperative Pain after Single- and Multi-Visit Endodontic Treatment in Teeth with Vital and Non-Vital Pulp. *Eur J Dent.* 2009;03(04):273–9.
11. Peters LB, Wesselink PR. Periapical healing of endodontically treated teeth in one and two visits obturated in the presence or absence of detectable microorganisms. *Int Endod J.* 2002;35(8):660–7. doi:10.1046/j.1365-2591.2002.00541.x.
12. Sathorn C, Parashos P, Messer HH. Effectiveness of single- versus multiple-visit endodontic treatment of teeth with apical periodontitis: a systematic review and meta-analysis. *Int Endod J.* 2005;38(6):347–55.

Author biography

Tamase Aishwarya S, IInd Year Post Graduate Student

Ghivari Sheetal B, Professor

Pujar Madhu A, HOD

Kadam Krutika K, IInd Year Post Graduate Student

Dandavati Divyashree D, IInd Year Post Graduate Student

Hanjagi Seema B, IInd Year Post Graduate Student

Cite this article: Aishwarya S T, Sheetal B G, Madhu A P, Krutika K K, Divyashree D D, Seema B H. Role of single visit endodontics in contemporary dental practice – A review. *IP Indian J Conserv Endod* 2020;5(4):165-167.