Endodontic Therapy in Single Visits

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Abstract

Endodontic success usually depends on the localization of canals along with the proper shaping as well as cleaning of the root canal system in addition to 3 D Obturation of the canal system. Root Canal (or endodontic) therapy in single visits can be defined as a non-surgical as well as conservative management of an endodontically associated tooth that consists of biomechanical preparation with obturation of the root canal system in a single visit. The purpose of endodontic therapy is thorough mechanical as well as element debridement of the total pulp cavity as well as its full obturation with static restorative material. There has been a subject for long eminence debate within the dental community regarding the advantages and disadvantages of single sitting root canal therapy versus the multiple visit root canal therapy. With modern advanced technologies and surfacing of new gadgets as well as evidence-based dentistry along with the concept of maximum dentistry in minimum visits has given an urge to a new venture in the treatment protocols in dentistry. This review article discusses the advantages and microbiological considerations of single-visit endodontic therapy.

Keywords: *Single visit, Endodontic therapy, Advantages.*

Introduction

The purpose of endodontic therapy is thorough mechanical as well as element debridement of the total pulp cavity as well as its full obturation with static restorative material. Endodontic success usually depends on the localization of canalsalong with the proper shaping as well as cleaning of root canal anatomy in addition to 3 D Obturation of the canal system. Root canal therapy in single visits can be defined as a non-surgical as well as conservative management of an endodontically occupied tooth that consists of biomechanical grounding with obturation of the root canal system duringa single visit. This review article discusses the advantages and microbiological considerations of single-visit endodontic therapy.[1]

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Evolution of Single Visit Endodontics[2]:

(a) Dodge JS. The 1880s: Concept of single-visit root canal management Ferranti 1950s.

(b) Tosti 1970: Clinical study using a single-visit approach.

(c) Rudner and oliet: 1983 described a concept and clinical technique for treating teeth in a single visit.

(d) Ashkenaz. P.J. 1984 Defined and enumerated the indications and contra indications for single sitting endodontics.

Indications: Uncomplicated vital teeth. • Anteriors and fractured or bicuspid teeth anywhere aesthetics is the concern. • Indicated for endodontic surgery. • Nonvital teeth along with sinus tract. • Patients who are medically compromised and require antibiotic prophylaxis. • Patients who are physically compromised and are not able to visit the dental clinics frequently• Intentional root canal therapy. • Patients requiring full

mouth rehabilitation. • Some of the re-treatment cases. • Accidental/Mechanical pulp exposure. • Vital pulp exposures because of trauma with symptomatic pulpitis. • Vital pulp exposure because of caries with indicative pulpitis • Teeth in need of urgent post-placement, everywhere esthetics is the alarming thing.[3]

Contraindications:

• Developmental anomalies teeth like calcified as well as curved canals. • Teeth with periapical pathology as well as non-vital teeth without symptoms as well asno sinus tract. • Pus discharge with acute alveolar abscess cases. • Acute apical periodontitis along with severe pain on percussion. • Symptomatic non-vital teeth and no sinus tract. • Most of the re-treatment cases. • Allergies to medications or any kind of restorative material • Teeth having restricted access. • Patients who are not able to keep mouth unlock for a longer duration for example TMJ disorders.[4]

Clinical Advantages:

• Clinicians have the most intimate awareness of canal morphology, immediately the following instrumentation, and need not reorient themselves with the peculiarities of particular teeth.

• No risk of bacterial regrowth and leakage of the temporary seal.[6]

Single-Visit Versus Multiple-Visit Root Canal Treatment

The small chance of a life-threatening reaction is reduced by not repeating procedures such as local anesthetic injection. • For patients at threat of contracting bacterial endocarditic, the American Heart Association (AHA) had recommended completing as many procedures as possible during the antibiotic course. • Anxiety as well as post-operative discomfort of patients will be limited only to one episode. • If hemorrhageor else exudation occurs, it may be tricky to manage • Complicated cases utilizing extremely fine, calcified, multiple canals could not be treatable in one appointment without causing undue stress for both the patient and the clinician. • The clinician may be deficient in expertise correctly to manage a case in one visit. This could result in failures as well asflare-ups.[6]

Practice management advantages:

• Prosthetic work can begin without delay. • The risk of canceled appointments is reduced. • Increase in the number of teeth that patients can save. • Several types of equipment and restorative materials that are needed for another separate visit like suction tips, disposable bib, anesthetic as well as irrigation needles along with rubber dams can be saved. • Time is also not wasted as there is no requirement of giving reappoint to the patient and also nor reconfirm appointments • Medico-legal risk is reduced: AHA guidelines are followed, the likelihood of cross-contamination is minimized and invasive procedures are fewer.[1,5]

Patients Advantage Patient expediency–There will be no need for discomfort regarding repetitive local anesthesia, treatment procedure as well as no additional appointments for the patient. • Patient ease – decrease in the number of frequent visits and repetitive measures of injections can be avoided.[7]

Restorative consideration–Effective coronal seal, as well as esthetics, can be achieved by distinct visit or by urgentfixation of coronal restoration (post and core placements) • The total economy will get increase both for the patient and for the dentist by not wasting chair side time as well as using less restorative material. • Overall anxiety, as well as fear towards treatment, will decrease for some years.[8]

Disadvantages:

The access to the apical canal will not be an easy task if there is a flare-up. • Usually cliniciansget tiredness with long and repetitive working hours such as extended one -appointment operating time. • Patient fatigue - The longer single appointment may be tiring and uncomfortable for the patient.[9]

Adjuncts to provide resourceful plus quicker management during solo endodontic therapies:

1. Pain management and isolation access cavity preparation
2. Light as well as magnification use of irrigants
3. It relaxesthe concerned patient plus saves time
4. It is advisable to make use of a long-acting local anesthetic mediator.
5. It also helps tomanagepost-operative pain.
6. Now and then supplemental anesthesia is indicated. These include 1. Local Infiltration 2. Intrapulpal injection 3. Intraosseous injection[10]

The utilization of a rubber dam is compulsory in endodontic therapy. The rubber dam use in endodontics ensures the following:

1. The patient is confined from aspiration of required instruments, tooth debris, and medicaments along with irrigating solutions. 2. A surgically hygienic operating field is inaccessible from saliva, hemorrhage as well as other tissue fluids. 3. Soft tissues are extracted and also protected. 4. The visual site is improved. Isolation access cavity preparation before access cavity preparation, Caries usually is removed early, ahead of the pulp chamber entrance. The roof of the pulp chamber is best perforated with a round bur. A. No 2 bur - anterior and premolar teeth and a No.4 should be used in molar teeth. B. Once the roof is perforated, tapered, Flame shaped and round ended tapered diamonds are excellent for endodontic access.[11]

An uncovering receded or calcified root canal orifice is a challenge. • Use of low - speed smaller burs. • These burs have an extra-long, flexible shaft that allows in visualization by the operator as the bur advances into the deeper portions of the access preparation. • For identifying canal orifices as well as to determine canal angulation DG-16 endodontic explorer and CK-17 endodontic explorer can be used.[12]

Fiber-optic endoscope• A recent addition to the field of visualization is a fiber-optic endoscope designed for intraoral use. • The Orascope uses a fiber optic probe, xenon light source, and a medical-grade video monitor to provide a magnified image of the operating field.[13]

Use Of Irrigants: The theory of single visit root canal management is based on the entombing theory. • Even though instrumentation of the root canal is the principal method of canal debridement • Especially in the case of single visit endodontics, irrigation plays a critical role as there is no scope of taking advantage of intracanal medicaments. • Irrigation serves as a bodily flush to get rid of smear layer, debris plus serving as a bactericidal agent, tissue solvent as well as lubricant.[14]Of all the presently used substances, sodium hypochlorite appears to be the most ideal • NaOCl is efficient against endodontic germscounting those tricky to get rid of root canals, for example, Enterococcus, Actinomyces and Candida organisms. • NaOCl solutions are used in a concentration ranging from 0.5% to 5.25%.[15]

Sodium hypochlorite in combinations- • There is ever-increasing evidence that the efficiency of NaOCl, as an antiseptic agent is augmented when grouped with other solutions such as calcium hydroxide, EDTAC, or Chlorhexidine. • With Chlorhexidine- Kuruvilla and Kamath 1998 in a study combined alternating use of NaOCl and Chlorhexidine gluconate irrigants and results indicate a superiorfall of microbial flora (84.6%).[16] EDTA-Goldman et al showed that the residual layer is not disconnected by NaOCl irrigation alone but it is removed with EDTA. Ultrasonic activation of sodium hypochlorite has also been advocated, as this would “accelerate chemical reactions, create cavitational effects, and achieve a superior cleansing action”.[17]

To illustrate the modern endodontic procedural sequence for single visit endodontics, an itemized sequence follows1. The diagnosisgives a positive indication for the need forendodontic treatment and therefore the tooth is anesthetized. 2. Subsequent placement of the rubber dam, then access is being made. 3. The pulp chamber is precisely prepared by thorough use of microscope at low to mid magnification size 2 for inspection. 4. The floor of the chamber is examined for additional canals under high magnification (16–24) because more than 50% of molar teeth have a fourth canal.[18, 19]

Conclusion

There has been a subject for long-standing debate within the dental fraternity regarding the advantages and disadvantages of single visit root canal management versus the multiple visit endodontic management. With modern advanced technologies and materialization of new gadgets as well as evidence-based dentistry along with the concept of maximum dentistry in minimum visits has given an urge to the new venture in the treatment protocols in dentistry. Careful case selection and proper and thorough adherence to standard endodontic principles, with no shortcuts, should result in successful one-appointment endodontics. Practitioners should attempt one-visit root canal treatment only after making an honest assessment of their endodontic skills, training, and ability.

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