ENDODONTICS: NOW, THEN AND THE FUTURE

Dr. Neil Pande
Department of Conservative Dentistry and Endodontics
National Dental Hospital

HISTORY

The practice of Endodontics for a long time has been having its share of many ups and downs.

- During 1776AD, instances were found where the abscess used to be drained with leeches and pulp cauterized with red hot cauteries and the filling of the entire root canal with gold foils.
- 1826 to 1876 saw the development of endodontic science along with the use of Gutta Percha as a root filling material and barbed broaches were used as a pulp extripitator along with wooden pegs to clean the canals.
- 1876 to 1926 was the Dark Age for the science of endodontia, even with the invention of X-ray and local anaesthetic due to the theory of focal infection taking its peak.
- 1926 to 1976 again revived endodontia with better anaesthesia, better radiographs, standardized instruments and better medicaments for disinfection of the canals. Single visit root canal theory was conceived during this period along with some rotary driven instruments as well as vertical and lateral condensation, softened and thermoplasticized Gutta Percha.

DEVELOPING PRESENT SCENARIO

Since 1976, Endodontia has gone uphill, at a very rapid pace with improved and better forms of biomechanical preparation, simpler, easier and faster obturation, improved visibility, newer and more accurate apex locators challenging the use of radiographs. Most important of it all, single visit Endodontics has been accepted now by almost all schools of thought.

SINGLE VISIT ROOT CANAL TREATMENT

The basis of root canal therapy is to clean out the affected tissues and debris from the root canal system trying to make it void of any micro-organism followed by a creation of a complete seal in the system ensuring no micro-organism infiltration. Single or multiple visit, both help in achieving this. There has been numerous studies carried out against Single Visit versus Multivisit Endodontic Treatment.

Based on the studies, following is the summary

Single visit

- Indicated for vital cases / partially or non vital with no apical periodontitis
- Contraindicated for non vital cases with apical periodontitis / Retreatment Cases
- Less Post-operative pain
- Immediate obturation prevents reinfection of the canals as a result of leakage past the temporary filling
- Lesser no. of flare ups

Practical experience with Single Visit Endodontic Treatment

Single visit treatments has been routinely carried out in Nepal since the past 2 years with a very good success. The protocol followed is:-

1. Proper Case Selection / Patient Communication.

2. Restoration of the Tooth with Zinc Phosphate Cement after thorough caries removal.
3. Placement of the rubber dam along with the maintenance of seal between the tooth and the dam.
4. Access Cavity Preparation, saving as much tooth structure as possible.
5. Complete removal of the pulpal roof and the coronal pulp.
6. Widening of the orifices with Gates Glidden Bur.
7. Crown down preparation, along with the use of copious amount of commercially available Sodium Hypochlorite for dental use. (Caution should be taken during its administration, making sure, that there is no spillage or apical extrusion. Best method is to dispense drops on the coronal area and carry it inside the canal with files. High vacuum suction comes in as an aid to prevent spillage.) Rotary driven Endo files come very handy for fast and accurate preparation of canals along with the EDTA based pastes alternatively used with Sodium Hypochlorite. Soaking of the Root Canal System for around ½ an hour with these solutions along with the biomechanical preparation aids in the removal of the debris and tissues from the lateral canals as well, helping in disinfection. Always look out for extra canals.
8. Working Length Determination could be done either with the help of an apex locator or radiographs with Gutta Percha as a marker.
9. Obturation of the Canal system can then be achieved either with thermoplaticized Gutta Percha or Lateral Condensation after using the preferred sealer. No void should be left in the canal.
10. The Gutta Percha Seal in the Canal Orifice should be achieved with the help of heated Endo Pluggers with vertical condensation. No gutta percha should be left around the orifice.
11. Tooth should be temporarized with Zinc Phosphate Cement making sure that there are no voids in between. Analgesic should be prescribed for post treatment pain on the s.o.s. basis. Antibiotics need not be prescribed.
12. Patient should be recalled after a week for evaluation followed by the permanent restoration of the tooth and further advise.

The result of this treatment has been very promising with almost negligible amount of flare up. Long term study is in progress, which will enable us to know more about this approach in Endodontics.

THE FUTURE

Numerous researches and studies are being carried out for the high end endodontic therapy. We will be seeing numerous advancements in the years to come, such as;

- Painless Endodontic Therapy from the beginning to the end
- Replacement of Gutta Percha by a biocompatible, leak resistant (bonded) material
- More sophisticated, easily applied method of determining the presence of early pulpal inflammation
- Affordable Microscopes and Loupes
- Affordable Digital Radiography
- Single Visit Endodontics
- Communication and easily accessible information technology
- Virtual Universities providing online courses

REFERENCES

1. Grossman: History of Endodontics, J Am Dent Assoc July, 1976
2. Fava LRG: One appointment root canal treatment: incidence of postoperative pain using a modified double flapped technique, Int Endod J 24:258, 1991
3. Imura N, Zuolo ML: Factors associated with endodontic flare-ups: a prospective study, Int Endod J 28:261, 1995
4. Pekruhn BP: Single-visit endodontic therapy: a preliminary clinical study, J Am Dent Assoc 103:875, 1981
5. Roane JB, Dryden JA, Grimes EW: Incidence of postoperative pain after single and multiple visit endodontic procedures, Oral Surg Oral Med Oral Pathol 55:68, 1983
6. Cohen S: Endodonics Tomorrow, Pathways of the Pulp 8/e, 2002