

Case Selection in Endodontics - an important step

SAW LIP HEAN

ABSTRACT

Endodontic treatment (and retreatment) can be straight forward or very difficult. It is important that any potential difficulty be recognised before undertaking an endodontic treatment. Thorough history taking with good clinical and radiological examination (plus special tests) set the stage for a predictable and successful treatment.

General considerations are the patients' medical and dental history, psychology, cooperation in keeping appointments, cooperation during treatment, size of mouth, ability to open mouth, gagging problem etc.

Many cases fail because proper case selection has been overlooked. In addition to the general factor, the tooth and root should also be assessed clinically and radiographically for the following factors:-

DIFFICULTIES IN TAKING X-RAY

Ability to take good radiographs is a prerequisite to a successful endodontic treatment. It is difficult to take a satisfactory radiograph in some individuals, e.g. a patient who gags easily, patients with shallow palatal vault or shallow lingual sulcus. It is also not easy to take an x-ray in patients who have very long roots, thick zygoma, presence of heavy trabeculation in the jaw bones and patients with trembling hands. A poor radiograph will not provide adequate information for a successful endodontic treatment.

The technique of taking good radiographs is another important thing that one has to master well. Please refer to Dr Sapuram Ravindranath's article (in this bulletin) for further reading.

EXISTING RESTORATIONS

The presence of crown and bridge works also render the treatment more difficult. This is because the crown and bridge anatomy is usually very different from the original tooth anatomy. Also, there is a tendency for the pulp chamber space and the canals to undergo calcification underneath heavy restoration and crown and bridge works. In some cases it is wise to remove the existing restoration in order to have a better and clearer view of the tooth. Failure to recognise this inevitably leads to perforation in the pulpal floor and the root.

CORONAL TOOTH STRUCTURE

The amount of remaining coronal tooth structure is not only important for the subsequent restoration but must be able to hold a rubber dam clamp. It is difficult to carry out an endodontic treatment in a last standing tooth with little tooth structure (eg. in a tooth where the whole lingual/palatal or buccal wall is missing) because rubber dams cannot be used. An additional visit to restore the tooth may be required in order to enable the use of rubber dams later. Crown lengthening procedure may also be required in some cases prior to commencement of endodontic treatment.

PREVIOUS TREATMENT

In every retreatment case, the dentist must always be aware of any procedural error that may have occurred previously (like ledging, canal blockage, perforation and separated instruments). Failure to identify this problem earlier may inevitably result in a complication during the treatment and lead to another failure. All retreatment cases should be carefully considered.

POST CORE

The presence of post core should be carefully evaluated. This will determine the difficulty in

removing the post core material. The length, the diameter, the type of post (eg. cast post vs. preformed post), the type of cement should be carefully considered. The amount of remaining tooth/root structure should also be studied. Without proper planning, any attempt to remove the post core may end up with insufficient remaining tooth/root structure for further restoration and also predispose to root fracture at a later time.

CALCIFICATION

A good radiograph may give an indication of the amount of calcification in the pulp chamber and canals. The location of orifices and the instrumentation of these canals are usually more difficult. Many calcified teeth have suffered from perforation. Moreover, these teeth may require additional visits to complete the endodontic treatment.

RESORPTION

Teeth with internal or external resorption are more difficult to treat satisfactorily. Because of this they usually have poorer prognosis.

PERIODONTAL CONDITION

The periodontal condition of the teeth should be carefully charted before an endodontic treatment. Undiagnosed periodontal problem will lead to treatment failure.

DENTAL TRAUMA

In teeth that have suffered from previous dental trauma it is important to get a more thorough history. The prognosis of these teeth is usually poorer. When dental trauma occurs in teeth with open apices, apexification and apexogenesis procedures are usually required.

CANAL ANATOMY

Canal anatomy of the teeth, i.e. the length, the diameter and the curvature of a root should always be carefully studied before undertaking an

endodontic treatment. A long thin root is more difficult to treat than a shorter and larger root. It takes more instrumentation steps and time to clean and shape a long canal. The proper obturation of these canals is also more difficult. A thin root is very prone to stripped perforation and vertical root fracture. Ledging and canal blockage can occur easily in a curved root than a straighter root. Obturation in a curved canal is also more difficult. In general, the more apical the curvature begins the more difficult the treatment is going to be.

PROXIMITY TO VITAL STRUCTURES

When the apical end of the root is very close to the mandibular canal, it is important to exercise great care. Over-instrumentation and over-filling can result in parasthesia.

THE MORPHOLOGY OF THE TOOTH ITSELF

Certain teeth are more difficult to treat than others. For example, it is not uncommon for the mandibular first premolar to have 2 or 3 canals. The presence of C-shaped canals in certain teeth also makes the treatment more difficult. Lower incisors, though they appear relatively straight forward, commonly have more than one canal. Failure to locate these canals may result in treatment failure.

LEVEL OF ENDODONTIC KNOWLEDGE AND SKILL

Different dentists rate the difficulty in the same patient and the same tooth differently. To a large extent this will depend on how skilful and knowledgeable a dentist is. Generally this depends on the level of undergraduate training, the amount of continuing dental education and the number of routine and thorough endodontic treatment that have been carried out.

The difficulties in endodontic treatment can be divided into 3 groups, i.e. Group 1 (straight forward case), Group 2 (moderate case) and Group 3 (difficult case). Goerig and Nerverth stated that teeth in Group 1 are those teeth that may be undertaken by any qualified dentist. Group 2 teeth are more difficult. They should be undertaken by dentists who had

attended many continuing education courses in endodontics. Moreover, these dentists must have obtained consistent treatment results with a high degree of success. Group 3 teeth are those that are very difficult. They should be treated by dentists who have extensive postgraduate endodontic training and exposure only.

SUMMARY

In summary, it is important that systematic evaluation of treatment difficulty be done before carrying out a treatment. Based on the many factors discussed above, one should attempt to classify the case according to the 3 groups. Always treat to your level of competence and aim for the best. If you are ready to take the challenge then I think you are on your way towards a successful treatment!