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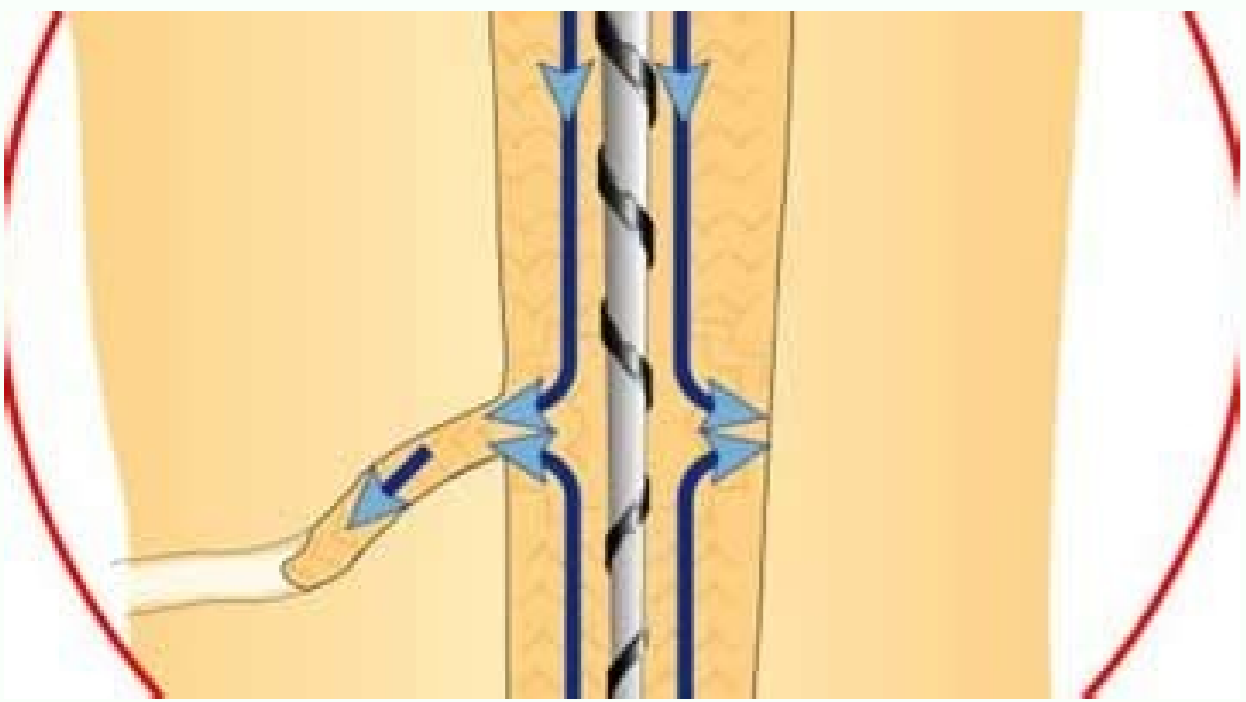
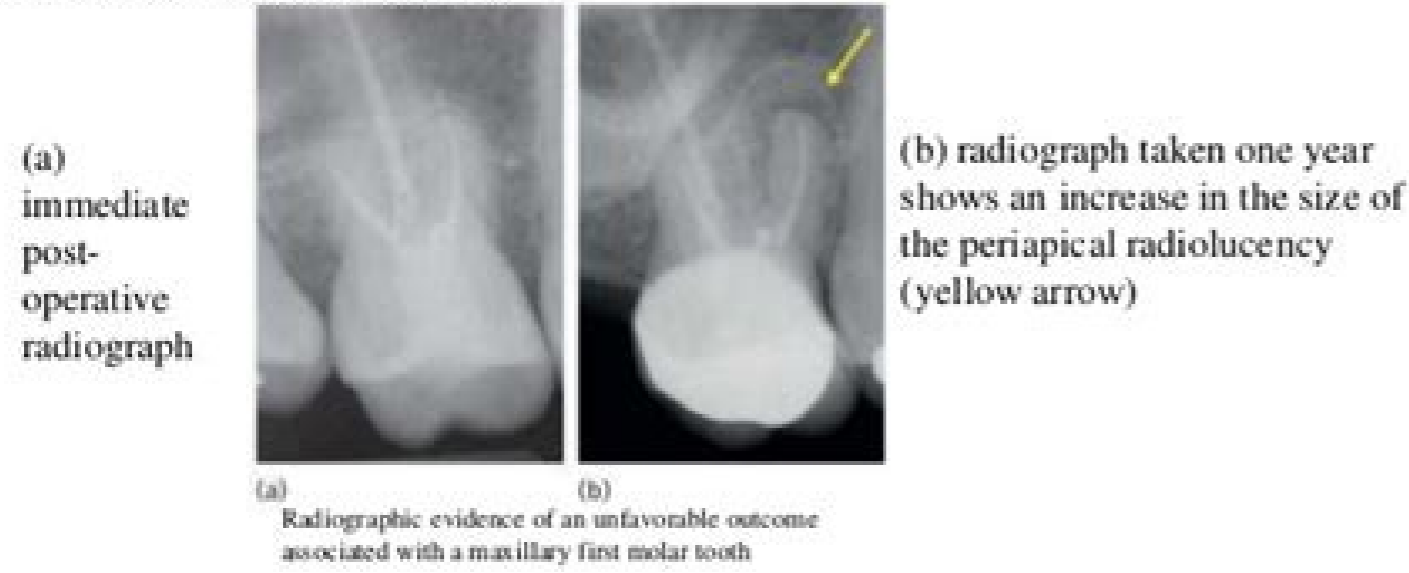




*Q2: How do you classify the outcome of endodontic treatment?*

**3-Criteria for an unfavorable outcome:**

- The patient is complaining of symptoms “pain , swelling”.
- The endodontically treated **tooth not functional** “the patient avoid eating on the tooth due to aggravation of symptoms”
- Clinically:** there are signs of infection, eg sinus tract, swelling.
- Radiographically:**
  - A *new periapical radiolucency* has developed post-treatment.
  - the periapical radiolucency has *increased in size post treatment*
  - the periapical radiolucency has persisted (*remained the same size* or only reduced in size) at or after a four year assessment period.



Aae guidelines for endodontic retreatment.

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Understanding the diagnosis and prognosis and how to manage endodontic retreatment is essential before considering this option. New developments in endodontic retreatment. First-time root canals have a very high success rate, at least 95%. And with contemporary methods and materials, root canal retreatment has a success rate of between 85-90%. Apicals and microsurguries are also great options for patients, and are comparable to implants when it comes to tooth survival. Even when there are major concerns about a tooth, such as perforations, separated instruments, cracked teeth, incomplete coronal fractures, or non-vertical root fractures, the tooth can be usually be saved, particularly in the case of perforations when repaired with either MTA or some other type of bioceramic. However, this all depends on the conditions surrounding the tooth. There have been notable improvements when it comes to treatment and diagnostics. Treatment advancements With endodontic retreatment, the file designs have changed to be more conservative, variable tapers, with differences in the metallurgy and heat treatment itself. This allows for a much more conservative shaping of the tooth and far less removal of tooth structure. Ultrasonics have been extremely helpful for removing posts; vibrating them very conservatively; and removing tiny amounts of tooth structure to find calcified canals, missed anatomy, and even to cleanse many parts of the tooth. Another technological improvement is in the activation and irrigation process. Beyond syringes, there are sonic, ultrasonic, and multi-sonic activation solutions that have been shown to improve disinfection abilities and thoroughly cleanse the tooth in three dimensions. Material advancements One of the most important improvements in endodontics has been the type of materials available to treat the tooth. MTA and other types of bioceramics, for example, are bioactive material used to help repair different parts of the tooth. They help activate different cells, spurring the bone and tissues to regrow. That is particularly important when repairing a perforation, replacing vital pulp therapy treatments, or treating the canal itself. Bioactive membranes, PRFs, and PRPs also improve tooth survival and promote healing of all different types of tissue. Diagnostic advancements CBCT imaging plays a crucial role in evaluating the possibilities of endodontic treatment options. It has been shown to be extremely useful in not only assessing the existing conditions of treatment or existing root canal treatment but understanding the anatomy and structures surrounding the tooth. CBCT offers improved dental and canal anatomy, while micro CTs offer the advanced, high resolution studies of the teeth, anatomy, canals, and the pulp system itself. These diagnostic tools allow clinicians to look for the existence of lesions, radiopacities versus radiolucencies, the extent of the bone loss, the size of the bone loss and the size of the lesions themselves, perforations of the bony plate and where those perforations are, if they connect to other vital structures, and the tooth structure loss itself. The endodontist will also look for any kind of swelling, and can trace the sinus tracts radiographically to distinguish where an apical abscess is coming from. Diagnostics will also include evaluating the tooth's mobility, the furcation involvement, the types of bone loss, whether there's vertical or horizontal bone loss, and if there's any fractures visually as well as any swelling assignment tracts. All of these factors are essential to making a diagnosis in evaluating a root canal-treated tooth. When looking at the prognosis of endodontic retreatment, endodontists consider not only the clinical findings but what exactly is the condition of the tooth overall. Restoratively, that's going to involve overarching concerns in terms of what kind of tooth structure is remaining, if there's adequate ferrule, how thick the remaining tooth structure is, and the future restorative treatment plan of this tooth. Additionally, it involves looking at the extent of the existing caries and the extent of any resorption. Additionally, they will look at the aesthetics themselves, the restorative prognosis and the patient's occlusion. If there are any perforations, transportation, excessive tooth structure loss, or separate, all of that will affect the overall prognosis. Radiographs should include multiple angles to visualize bone loss, the extent of the root canal treatment itself, and to see if there might be missed canals. Understanding radiographs One of the biggest misconceptions when it comes to diagnosing radiolucencies of teeth, especially of teeth that have existing root canal treatment, is the notion of a J-shaped lesion. A J-shaped lesion or radiographic binding in and of itself is not pathognomonic, and it's not going to be the complete diagnosis. It has to be aligned with all the other findings. In fact, J-shaped lesions can develop from many different possibilities and do not necessarily mean there is a fracture. For example, they can be due to a canal that exits much more distantly or to one side compared to what is expected or the radiographic apex. Choosing the right CBCT system Different CBCT systems have their own modules, functions, and views of view. When it comes to endodontics, not every CBCT will do. CBCTs for full head and jaws are not necessarily ideal for endodontic evaluation. This is because endodontists use a limited field of field that is fractions of a millimeter in size. This requires extremely high resolution. The ability to evaluate very minute structures provide the ability to visualize missed canals and see the extent of fractures. The system doesn't need to involve as many anatomical structures but needs to have a more penetrating beam on a specific area. If the machine has too large a field of view, the resolution won't be high enough. Even very high-level CBCTs, however, still have a difficult time identifying very small hairline fractures. What you can see, however, is bone loss and the extent of root canal filling material. If there's a perforation of the root material, that can alert the endodontist to other issues. The pattern of bone loss is an important aspect when discussing the prognosis. Additionally, when using CBCT, endodontists can look at what kind of vital structures are involved. In some cases, a patient's symptoms and radiographic findings may show that lesions actually perforate the sinus. Anytime there is an apical or periodontal lesion that extends into the sinus, then those can actually cause sinus symptoms, in which case that would involve a referral to an ENT. Conclusion Choosing the right retreatment option requires looking at the patient as a whole, identifying issues, determining bone loss, and evaluating the situation from a radiographic, CBCT, and clinical standpoint. That way we can do a better job of evaluating the existing endodontic treatment and discussing the options with the patient. With the latest advancements in technology and the different advancements in the methods of endodontic retreatment, clinicians can definitely consider endodontic retreatment as an option for patients. To explore other topics related to dentistry and dental equipment solutions, visit . About Dr. Stephanie Tran Her passion for empathetic patient-centered care, combined with her extensive endodontic experience are just a few reasons why Dr. Stephanie A. Tran is so beloved by her patients and is such a valuable member of Drs. Curatola & Zagani in NYC.

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