**Root canal retreatment**

**“P.S: this sheet includes everything in the slide plus what the doctor said except the radiographs – so refer to them while you’re studying the sheet”**

Root canal retreatment: redo root canal treatment which has been failed.-

Roughly 10 percent of endodontic treatments fail.-

Firstly it’s very important to know the cause of failure.-

So as we said:

1. We need to look into what causes endodontic treatment to fail.
2. What we can do to improve the chances of success with the initial treatment, (but if you can't improve it 🡪we go for extraction.)
3. We need to know more about retreatment and how, hopefully, we can help patients save their natural teeth.

\***Prognosis**:

It refers to the prediction of success or failure in a given situation.

\*The advantages of understanding the prognosis for RC procedures Include:

* Development of more rationale TX methods.
* avoidance of factors that increases failure rate
* better understanding of the healing process

\* Factors Influencing Success & Failure:

* The presence of apical pathosis

(the chance of healing for a case where there's a periapical lesion is less than a case without a periapical lesion) 🡪 the lesion may be persist in case of periapical lesion even after treatment.

* Extension of obturation (short or long )
* Quality and technique of obturation
* Type of intracanal medication
* Bacterial status of the canal before obturation
* Observation period (time span that the lesion is taking to heal is very important)

\*When to Evaluate?

follow-up periods range from ;

6 months(for the first recall )--- to 4 years (for the final Evaluation)

**( while keeping in mind that failure may occur many years later).**

\*Methods of Evaluation

* Clinical Examination
* Radiographic Examination
* Histologic Examination

\*Clinical criteria for success include :

1. Absence of pain and swelling
2. Disappearance of sinus tract.
3. No loss of function
4. No evidence of soft tissue destruction, including probing defect.

\*According to the findings, each case is classified as:

1. **Success**, (the absence of a radiographic apical lesion. This means that a lesion present at the time of treatment has resolved or that a lesion not present at the time of treatment has Not developed).
2. **Failure**, (is the persistence or development or development of radiographically evident pathosis. Specifically, this is a radiolucent lesion that has **Enlarged**, has **Persisted**, or has **Developed** since the TX)
3. **Questionable (**a state of uncertainty. The radiolucent lesion has neither become worse nor significantly improved).--> we consider it as success

\*What are the common causes of endo failure?

1. Leaking restorations
2. Root fractures
3. Untreated canals
4. Inadequately cleaned canals
5. Procedural errors (such as errors in placing posts, broken instruments, perforations, blocks, ledges).

**\*case: slide 16:**

- lower 6 with a good root canal , and lower 4 with long post with buccal perforation which is not shown in the x-ray and a periapical lesion

Lower 4:

* Previously treated with post
* Apical resorption
* Severe decay
* Post perforation
* Not retreatable
* Logical option is Extraction

\*Even with a seemingly successful treatment, problems can arise ***months or even years*** after treatment.

**\*Case 2: slide 18:**

Even with a successful treatment, problems can arise months or years from the treatment, when this's occurs we need to examine the situation and determine the course of action.

\***When is it time to endodontically retreat a tooth?**

* Retreatment may not always be necessary or even possible. (not every endodontics's failure can be re-done like ledges or perforations , they're difficult to retreatment , because if we did we're going to make the problem more worst).
* It is up to you to assess each patient’s unique situation and determine the treatment that will provide the best outcome for the patient.

* Biological, clinical, esthetic, functional, and financial factors must be considered.

(you should tell your patient about the coast of retreatment ,esthetics, function).

\*case 3: slide 21:

Is retreatment possible for this case?

Lower 2nd molar with ledge , and the major problem in the mesial root .

-First you should ask yourself if you're going to by-pass this problem or not ? 🡪 But this's not worth 🡪 so we go for surgical procedure.

\*What do we have to evaluate before embarking upon Retreatment?

**A .**Evaluate periodontal status:

* Periapical/bitewing
* Attachment apparatus
* Periodontal probing
* Mobility (ex: grade 3🡪 difficult to retreatment)
* Crown-to-root ratio (ex: crown to root ratio; 1=1 and need post🡪 difficult to retreatment)

The ability to distinguish between an endodontic problem and a periodontal problem is of the utmost importance.

**Slide 24:** In this case we see a deep cavity with horizontal defect with vertical bone loss --> so there's no endo problem, that's why we need to distinguish between endo and perio problems.

\*If retreatment of the tooth is considered, you should first take periapical and bitewing radiographs. To evaluate the status of the root, crown, and PDL.

\*If there is a sinus tract, it should be traced to the source of origin using a gutta-percha cone.

Assess periodontal status by taking periodontal probing and examining mobility and crown-to-root ratios.

When taking periodontal probing, look for a narrow, deep pocket, which can indicate vertical root fracture.

**B.**Evaluate tooth restorability:

* Remaining tooth structure 🡪 if there's adequate tooth structure to put a crown on it, so we are going for reatreatment)
* Strategic value of the tooth (like if the tooth has no opposing and there's no value for saving this tooth🡪 so no need to retreatment )

\***There are several factors affecting the restorability of the tooth:**

* periodontal support
* strategic value
* bridge abutment
* important esthetically
* an important part of the patient’s occlusion

**-if theses factors are not present🡪 so there’s no use of retreatment**

**\*** **You must also consider the stability of the tooth structure**

-Has too much dentin been destroyed during previous endodontic treatment or by caries or fracture?

-Is there **at least 2 millimeters of sound tooth structure** above the depth of the sulcus on which to place the crown?

-If not, the crown and/or post and core will eventually fail?

-Is crown lengthening surgery required? (in case the caries reach the root 🡪 you need crown lengthening)

-The cost factors?

- The esthetic concerns?

**C.** Consider impact of retreatment

- Consider the impact that retreatment will have on the overall treatment plan. Is the prognosis reasonable?

-If this was *your* tooth, would you have it retreated, given a similar set of circumstances?

-Remember, however, that the tooth and the treatment decision ultimately belong to the patient. (You give the patient the treatment options and he/she choose)

**D.** Assess patient concerns

* Expectations
* Motivation
* Cost

**\*As with all forms of treatment, it is important to assess the patient’s concerns.**

* Will the patient be happy with the results of the treatment?
* Does the patient value his or her dental health enough that he or she will follow treatment with a timely restoration?
* ***If not, it may not be worth considering retreatment as an*** ***option***.
* It is also important to determine if the results will justify the expense.

-there should be communication between the dentist and the patient.

\*Retreatment often involves other problems as well — problems that aren’t seen in initial endodontic treatments.

* These problems include *separated instruments, perforations, ledges, and obstructions such as resins/cements, posts, and calcification.*

* Can you handle any problem that might arise during retreatment?

Ex: like a broken instrument.

* Do you have the latest technologies that will help you to achieve the best possible outcome?

Ex: ultrasonic.

* Have you had sufficient experience in successful retreatment to give the patient the best possible prognosis?

**\*Most importantly, before you make the decision to retreat a tooth endodontically:**

1. You must present the facts objectively to the patient.
2. Explain the diagnosis and discuss the different treatment options that are available, explaining the pros and cons of each option.
3. Help the patient to determine which option is best for him or her.
4. You don’t want to give the patient false hope that retreatment is going to be a simple procedure, and you definitely don’t want to guarantee success.
* Tell the patient about the percentage of success of the procedure.

1. Keep in mind that you should always anticipate the worst case scenario.

1. The key is to be honest and present all the facts. Your patient will thank you for it later!

**\*Treatment Options Nonsurgical retreatment vs. Surgical intervention vs. Extraction:**

The most important thing to consider is what strategy will offer the best prognosis.

* *You already know that something must be done about the tooth*. *Now you must decide:*
* Non-surgically retreat it
* Surgically retreat it
* Both treatment options
* Extract the tooth.
* What procedure will produce the best outcome?

**\*Nonsurgical retreatment is performed because:**

* It is the Best option
* It Reduces need for surgery
* It Improves prognosis for future surgery

**\* Extraction because of:**

-Nonrestorability

-Guarded periodontal prognosis

-Vertical root fracture

\*Slide 41: in this case there is decay, crown leakage and symptoms also we can see silver points which can be removed easily and do retreatment.

Slide 42: this case we should treat it in more than one visit to achieve what is called **Disassembling restorations:** which is has been facilitated by advances in technology, including ultrasonic, crown and bridge removers, and instruments to loosen and remove posts.

So we are going to remove crown and filling materials, retreated entirely and new amalgam core 🡪 and all these made in more than one visit.

-keep in your mind that removing the restoration isn’t always possible.

**\*Once the restoration is removed:**

* You may be able to identify what caused the initial procedure to fail — *caries, restoration failures, fractures, untreated canals, blockages, ledges, and perforations.*
* Determining the causes of previous failure can help you to be more successful with the retreatment procedure.

**\*Restoration removal alternatives:**

If you can not remove restoration consider:

* Retreatment through the crown
* Surgical treatment (ex: resection, Apicoectomy)

**\* Sometimes the restoration should be left in place because of the**

* cost of replacing a complex restoration
* patient comfort,
* dental function,
* esthetics.

**\*slide 50:** here we can see endodontic failure and at the same time patient doesn't want to remove the crown,

So the option to keep the existing crowns, and prepare for surgical treatment 🡪 Apicoectomy.

**\*If the option is : Remove the restoration🡪** Then we should consider, removal of: the crown, the post and the obturation material.

**\*Removing gutta-percha:**

* Rotary Files ( D1, D2,D3) (يكون على سرعة 60)--
* Heat
* Ultrasonics
* Solvents **chloroform**
* Any combination

**\*Retreatment of paste filling**

🡪There are pictures in the slide showing how we remove the gutta percha

🡪It’s very important to find missing canals and fill it.

**Slide 62:**

-Remove the paste🡪 endo retreatment (obturation by gutta percha) 🡪 and restoration placement.

**Slide 63:**

Retreatment of paste filling (a paste that used as filling material which is difficult to be removed because it’s too hard) 🡪 retreatment was done through the existing restoration.

And we can see the healing of the lesion after the retreatment in **slide 63**.