Sheet#15 fourth year

Rana abbadi

treatment of immature teeth with open apexes

**what would be your options for these permanent immature teeth with open apexes ,pulp necrosis ,and periapicallesion or apical periodontitis ??**

pulpectomy

**what about in cases of non vitaltooth ?!**

🡪would it be extraction and replacement with implant !

🡪in v. young patient!!Would it conceder endodontic treatment RCT or a more sophisticated tissue engineering therapy that will promote healing and better closure in these cases .

factor responsible for apical closure and healing was debridement which is the commen factor in all techniques we used to clean the canals to debride the root canal system.

As no MTA was available in the market the debridment time for these teeth is long ..dr’s used non setting calcium hydroxide to keep these diseased immature teeth …the result was apical wound healing and radiographic singes of complete root development of these teeth (maturogenisis ) , or apical closure.

**These cases summaries and signified the importance of ;**

1. The dynamic rule of debridment

2-the healing and repair potential of the pulp-dentine complex .

Treatment approaches of these cases are the traditional non setting calcium hydroxide apexification which’s now part of the past …..recently the MTA root apexification, wound healing apexification, the apical barrier technique or the apical block technique…… and alternatively the most sophisticated,most novel technique which’s the regeneration revascularization technique.

**What is apexcification ?**

It’s the induction of the calcified barrier in the root of an open apex or the continued apical development of an incompletely formed root in teeth with necrotic pulp .

This technique was used in ant. Teeth.it’s involved the apexification traditional technique using the calcium hydroxide which involve debridment and injection of calcium hydroxide in the canal ..we recall for the pt. we reinject the calcium hydroxide past till elongation of the root or calcific barrier at the root end occurs …also it can be used in post. Teeth .

.

On the other hand the use of MTA now as apical barrier technique ..the shorter treatment time with MTA root barrier …

1-it just needs one visit …comparable with calcium hydroxide which takes 2-4 years

2-the independent compliance success of treatment .

3-higher fracture resistant and strength of the root…comparable with calcium hydroxide which is ulter the mechanical properties of the dentine .

The barrier thechniqueis non-surgical condensation of a biocompatible material (we can use MTA for this purpose ) into the apical part of the root to attempt the root end closure .

The rationale for the block visit( one visit)apexification is to attempt to creat root end closure( as MTA)rather than creation of an artificial apical stop(as in calcium hydroxide ) .

Pulp free postioning of the MTA cement in the apical 2/3 of the canal providing predictable outcomes

Where using GP in the canal is not predictable …we can not control it ..we have nothing to condense GP against :/ …so itsout extruded….

**other factors that can affect it ..are ;**

* Root architecture
* Humidity and moisture contamination at the apical region specifically blood

(blood in case of using MTA will not affect the sealing ability of the MTA Contrast to GP(we need dry canals )..)

\*\*hardening of MTA needs humidity \*\*

The better biologic heal in these cases attributed into v.importantcharacteristicof the MTA. thesealability (sealing ability)and the biocompatibility …

because of these 2 factors(characteristics )…we have multiple **uses of MTA;**

* Perforation repair
* Apexification
* Pulp caping
* Root end filling material ….and many others

The procedure for placement of MTA is the same for placement of GuttaPercha (GP)…in debridment and placement of the cement …we can also use the MTA gone to place it in the canal .

@apexificationeven if successful and even with the newest technique(as MTA block and apical apexification ) althrough they are faster but they account only for apical seal they don’t address the development of the entire root …they can only induce ahard tissue barrier at the apex (there will be neither vertical nor horizontal root development as in regeneration revascularization )

Note that MTA isa biocompatible material that can not irritate the tissue.

More recent case reports puplished during the last few 15 years showed convincingly in humans that the tissues in the periapical region of anon vital infected tooth( apical periodontitis or even abscess) could regenerate (**apexiogenesis/revascularizationregeneration**…/\*\***revitalization**\*\* )…that is a major realization in the history of dentistry .

These techniques will result in continued root development , increase dentinal wall thickness (prevents fracture) and apical closure .

The notion for regeneration is v. simple ..this isaraise between bacteria in th root canal space and new tissue .

Whole pulp and dentine healing occure in an environment free from wound infection .

Infection control(debridment ) is the main factor for success …it can affect the stimulation of wound healing in all the cases not only in this case.

If a sterile tissue matrix is provided (if we put ascaffold to form cells) …then pulp vitality can be reestablished .

\*although theres no standardized protocol for endodontic treatment of these cases but the regeneration revascularization involves no or minimal canal instrumentation O\_O.

We mainly rely on copious aggressive irrigation or exposure to different growth factors and medicament (the most important two ; are triple AB and non-setting calcium hydroxide ),, we create blood clot ,, we place MTA then a tight seal …this is the common protocol .

**Potential benefits for the pt. and the profession ;**

- Restoration of a natural function instead of placement of surgical prostheses.

- Shorter treatment time

- Cost effective

- And the main benefit is root lengthening and strengthening with no obturation of the canal required .

-no instrumentation ,,no obturation