ADVANCEMENTS IN PEDIATRIC ENDOODONTICS

PEDO VIRTUAL RAPID REVISION

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Dr. Nilesh Rathi
MDS, PhD, FPO
Associate Professor
Sharad Pawar Dental College
Wardha

9960100010
drnileshrathi@gmail.com
INTRODUCTION

- The advancement in procedure, materials and the equipment is only way of improving the outcome of the treatment.

- It is provides
  - Predictable results
  - Comfort
  - Consumes less time
1. ELECTRONIC APEX LOCATORS

<table>
<thead>
<tr>
<th>Generations</th>
<th>Principle</th>
<th>Brand Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Generation</td>
<td>Resistance based</td>
<td>Endoradar, Dentometer</td>
</tr>
<tr>
<td>Second Generation</td>
<td>Impedance based</td>
<td>Endoanalyzer, Sonoexplorer M-III</td>
</tr>
<tr>
<td>Third Generation</td>
<td>Frequency dependant Impedance</td>
<td>Propex-I, Bingo, Element</td>
</tr>
<tr>
<td>Fourth Generation</td>
<td>Ratio of multiple frequency of impedance</td>
<td>Root ZX II, Propex II</td>
</tr>
<tr>
<td>Fifth Generation</td>
<td>Dual Frequency ratio type</td>
<td>E magic finder</td>
</tr>
<tr>
<td>Sixth Generation</td>
<td>Adaptive Apex locator</td>
<td></td>
</tr>
</tbody>
</table>
REVIEW OF EAL

Review in Primary teeth:

Review:
Question 1

WRITE THE BASICS IN PEDIATRIC ROTARY ENDODONTICS
2. ROTARY ENDODONTIC FILES

Rotary endodontics in children started in year 2000

Phases of NiTi - Temperature Based Change

- Detwinned Martensite
- Twinned Martensite → Austenite

Low temperature → High temperature
PROPERTIES OF NICKEL TITANIUM ALLOY - 
SUPERELASTICITY

Phases of NiTi - Stress based Changes

Austenite | Detwinned Martensite | Twinned Martensite

Low Stress | High Stress
CROSS SECTION OF FILE

Helical Angle

Pitch

25/.04

0 3 4 mm

25/.06

.25 .43 .49
HEAT TREATMENT AND COATING

- The heat treatment is the procedure of repeated cycles of heating the wire at proprietary temperature and cooling it for achieving the required properties of the wire.

- The colour do not determine the properties.

- The surface coating like titanium carbide is done over the wire which imparts blue colour to it.
EVOLUTION OF ROTARY FILES

# COMPARISON OF HAND AND ROTARY ENDODONTICS

<table>
<thead>
<tr>
<th>Property</th>
<th>Hand Endodontics</th>
<th>Rotary Endodontics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Time consuming</td>
<td>Time saving</td>
</tr>
<tr>
<td>Canal Taper</td>
<td>Inadequate taper of canals for easy obturation</td>
<td>Adequate taper of canals for easy obturation</td>
</tr>
<tr>
<td>Root dentin</td>
<td>Incomplete removal of the infected root dentin</td>
<td>Efficient cleaning of the infected root dentin</td>
</tr>
<tr>
<td>Canal Centricity</td>
<td>Canal Centricity is not maintained</td>
<td>Canal centricity is maintained</td>
</tr>
<tr>
<td>Root apex</td>
<td>Apex is widened</td>
<td>Apex is maintained narrow</td>
</tr>
</tbody>
</table>
Cleaning efficiency of CM wire rotary files were better in coronal, middle and apical one third of the root as compared to Protaper and K files. (Kandari et al., 2016)

Review on Pediatric rotary endodontics
Question

WRITE THE ADVANCEMENTS IN PEDIATRIC ROTARY ENDODONTICS
2. ROTARY ENDODONTIC FILES

- Rotary files prepared more conical canals in primary teeth than manual instruments. It reduced preparation time (Musale and Mujawar, 2014).

Additional reference:
The ribbon shaped irregular surfaced root canal after preparation becomes conical, favoring a higher quality of the root canal filling, and increasing clinical success. (Crespo et al., 2008)

Unprepared flattened canal

Conservative preparation (4% taper file)
25/.04 has better cleaning efficiency in ribbon shaped canals (silva et al) wider taper files are more supported and engaged in coronal third and thus lesser cleaning in middle and coronal third. (madan n et al)
REMOVAL OF THE DENTIN

- The probability of root canal deformation is reduced due to its elastic memory and radial aspect that keeps the file in the center of the root canal via wall support and inactive tips (Coleman et al., 1995).

- Rotary files removes less root dentin than hand files in primary teeth.

ENDODONTIC DISINFECTION

Use of laser in endodontics:

Ivona Bago Juric, Ivica Anic

Protocol for canal sterilization with laser in primary teeth


# Canal Configuration in Primary Teeth

<table>
<thead>
<tr>
<th>Teeth</th>
<th>Canal</th>
<th>Fusion of canals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxillary First Molar</td>
<td>MB2- 50%</td>
<td>Fusion of distobuccal and palatal canals- 50%</td>
</tr>
<tr>
<td>Maxillary Second Molar</td>
<td>MB2- 77%</td>
<td>Fusion of distobuccal and palatal canals- 11%</td>
</tr>
<tr>
<td></td>
<td>DB2- 22 %</td>
<td></td>
</tr>
<tr>
<td>Mandibular First Molar</td>
<td>Single mesial canal -15%</td>
<td></td>
</tr>
<tr>
<td>Mandibular Second Molar</td>
<td>Two distal canals -21 %</td>
<td></td>
</tr>
</tbody>
</table>

Sarkar et al JISPPD 2002
ENDODONTIC DRESSING

- Teflon tape should be used as spacer in inter appointment dressing.
- Temporary fillings are displaced due compressed cotton and results in failed seal with bacterial growth in cotton.

Intracanal Teflon was also used for the dressing.

MATERIALS OF TEMPORARY DRESSING

- It was found that Cavit and Cavit-W provided almost equal watertight seals, which was significantly superior to the seal provided by Cavit-G. (Jacquot et al. 1996).

Review article:
WRITE ABOUT THE SCOPE AND LIMITATION IN PEDIATRIC ENDODONTICS
SCOPES AND LIMITATIONS

HOLLOW TUBE EFFECT (Goldman and Pearson)

Early resorption of the obturating material
SCOPES AND LIMITATIONS

HOLLOW TUBE EFFECT
(Goldman M, Pearson AH, 1965)

Intracanal resorption of the medicament
Tissue fluid into the canal space
Infection and Resorption of the root
SCOPES AND LIMITATIONS

Partial Pulpectomy

Vs

Pulpectomy

Hany Muhammod Ali Ahmed
European Journal of General Dentistry 2014; 3 (1):3-10
## SCOPES AND LIMITATIONS

<table>
<thead>
<tr>
<th>Author</th>
<th>Results</th>
<th>Non vital pulpotomy in irreversible pulpitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prabhakar AR et al. JISPPD 2008;26 Suppl 1:S5-10</td>
<td>LSTR pulpotomy is a good substitute of pulpectomy</td>
<td>LSTR (Multiple combination)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zinc oxide with formocresol</td>
</tr>
</tbody>
</table>
SCOPES AND LIMITATIONS

Symptomatic Irreversible Pulpitis

Biodentin Pulpotomy

Vs

Pulpectomy

Question 4

WRITE ABOUT THE DISINFECTION IN PEDIATRIC ENDODONTICS
POST COVID STERILIZATION IN ENDODONTICS

1. Ozone box

POST COVID STERILIZATION IN ENDODONTICS

1. UVGI (Ultraviolet germicidal irradiation)

UVC light of wavelength 254nm with

$7\text{J/cm}^2$

Inactivation of the coronavirus that induces severe acute respiratory syndrome, SARS-CoV.
POST COVID STERILIZATION IN ENDODONTICS

Personalised Endo Box

Use of files

Clean in 1% sodium hypochloride and saline

Autoclave
POST COVID STERILIZATION IN ENDOdontics

Extraoral suction

Advisory. May 2020
Health and Family welfare ministry,
Government of India
POST COVID STERILIZATION IN ENDODONTICS

Air cleaning Technologies. Ontario Health Technology Assessment Series 2005; Vol. 5, No. 17
Be rooted with basics when you grow

Thank You
SINCERE THANKS TO

ISPPD COMMITTEE

DR. NIKHIL SHRIVASTAV
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DR SONALI SAHA