ANALYSIS OF ERRORS AND COMPLICATIONS IN ENDODONTIC TREATMENT

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ABSTRACT
Errors and complications of endodontic treatment were investigated in 460 patients with orthopantomograms, who addressed to the dental clinic SMPhU «N. Testemitanu ». We studied 950 endodontically treated teeth with various errors and complications, from which 456 molars (48%), 248 premolars (26%) and 248 of the frontal teeth (26%). In 680 teeth with endodontic treatment we observed destructive processes in the apical part of the periodontal tissues.

Keywords: Errors, periodontium, granuloma

INTRODUCTION
Endodontic treatment as any medical workmanship has a rate of errors. In such cases it is necessary to resort to repeated endodontic treatment. Endodontic therapy, endodontic retreatment involves resuming of endodontic therapy at tooth with obturated root canals. This procedure is necessary when first endodontic treatment faileid for various reasons, and this can happen in a few months or even years. Endodontic treatment is consedered successful if in a 1 year period, clinical and radiological pathological elements disappeared and tooth is functional. Endodontic treatment failed if there is a new apical lesion, or if the existing one has not fully healed within 4 years, or if there are signs or radiographic evidence of root resorption or hipercementosis.

Endodontic treatment failures can be classified into five groups.

1. Complications occurred during opening of pulp chamber.
2. Complications occurred during processing of the root canals
3. Complications occurred during obturation of the root canals.
4. Accidents during endodontic treatment
5. Complications occurred during and after endodontic treatment. [1,2]

European Society of Endodontics criteria regarding the endodontic treatment results are the following:

1. At least one year after completion of endodontic treatment success is represented by:
- Total absence of specific clinical symptoms (pain, swelling, fistula)
Tooth is functional
- Radiological image lacks any pathological elements

2. Failure is represented by:
- Occurrence of periapical lesions, or preexisting one increased in volume that
- Within four years pre-existing periapical lesion remained the same or has decreased in size without be completely disappear.
- Radiological signs of root resorption or hypercementosis.
- There is a contradiction between clinical symptoms and radiological. [2,6]

Incomplete removal of protruding dentin does not allow to check the bottom of the tooth cavity, and identify the entrance to the mouth of the root canals.

During the creation of access, clinicians, often do not take into attention the slope and displacement of the tooth, that leads to perforation of the walls and bottom of the tooth cavity. By datas of E.V.Borovsky, I.M.Makeev, V.S.Novikov, E.G.Sokolinskaya (2005), molars of upper jaw protruding above the mouths of the root canal dentin detected in the 70 - 75% of cases, in mandibular molars - in the 80-82% of cases.

The author believe, that failure is often left mesio-buccal canals in mandibular molars and the mesio-buccal root canals of molars of the upper jaw.

Creating good access allows for adequate treatment.

With limited access is impossible or extremely difficult instrumentation of root channels, drug preparation and filling them [3].

Errors and complications in preparation for fixing intra pulpal pins, in 46% showed that the pin axis does not coincide with the axis of the tooth root. In such case often occurs root perforation. In 15% of cases, the absence of material retaining pin intra radicular. Root channel is not filling. In all cases were observed destructive changes in bone apical areas [2,3].

According to E.V. Borovsky (1999) share quality obturation of the root canals is 18% of all teeth undergo endodontic treatment, in the molars - is only 3%.

Cases proper disclosure molars of lower jaw present 20-25%, and 30-33% at upper molars. Analyzed the quality of root canal 628 molars according panoramic radiography.

In no case was found an obstruction of four root canals, but according to the literature 4 channels are found in 40% of cases [3].

The past two decades have revolutionized endodontic therapy, enabling the preservation, rehabilitation and reconstruction of damaged dentitions. Fifty million root canal procedures are performed annually in North America alone. Studies show a wide range of success rates for root canal treatment reflecting the complex nature of endodontic therapeutics. Endodontic retreatment failure is reported in the literature to occur in the long term at a rate as high as 50%. The verificationism of these reported results is readily prejudiced by the design of the studies, the techniques employed, the operators performing the treatment, the recall time period, and the criteria used to define success or failure. [6,7,9]

Michael M. Hoen, DDS, and Frank E. Pink, DDS, MS shown a prospective in vivo investigation wich conducted to determine radiographic and clinical factors associated with contemporary nonsurgical endodontic retreatments. Approximately 1100 failing endodontically treated teeth were screened to determine an appropriate treatment plan. Using magnification, 337 consecutive retreatment cases were evaluated and treated. The vast majority of the retreated cases involved multiple factors. Eighty-five percent of the cases presented with periradicular radiolucencies. Sixty-five percent of the cases demonstrated poor radiographic obturation quality. Associated pain was noted 51% of the time. Forty-two percent of the teeth had
untreated canal space. Evidence of coronal leakage was noted in 13% of the retreated teeth. Tooth number, obturation materials, overfills, and previous surgical retrofillings were also recorded. Recommendations were made that might improve the rate of clinical success. [10]

Epidemiological studies have shown a clear correlation between the standards of obturation technic of root canals and periapical state of obturated roots. Thus, while 80-90% of teeth with adequate root filling have no pathological changes of periapical tissues, only 50% of teeth with unqualified root canal fillings have normal periapical tissues. There is no reason to expect that the periapical lesion healing to occur, if root fillings not done properly. [11]

**The goals**
2. Frequency analysis of appearances of errors and complications in endodontic treatment in Republic of Moldova.
3. Comparative analysis of errors and complications in endodontic treatment with literature datas.

**MATERIALS AND METHODS**
Panoramic radiography studies were done on 460 patients that adresed for treatment at the University Clinic No.1, Toma Ciorba 42. They revealed errors and complications after previous endodontic treatment. The study included 950 endodontically treated teeth, with various errors of endodontic treatment, including 456 molars (48%), 248 premolars (26%) and 248 frontal teeth (26%). In 680 teeth with inadequate endodontic treatment was found periapical tissue damage.

<table>
<thead>
<tr>
<th>Errors</th>
<th>Number of Teeth</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomplete root canals filling</td>
<td>578</td>
<td>60%</td>
</tr>
<tr>
<td>Overfilling of root canals</td>
<td>230</td>
<td>24%</td>
</tr>
<tr>
<td>Material in maxillary sinus</td>
<td>12</td>
<td>1,2%</td>
</tr>
<tr>
<td>Material in mandibular canal</td>
<td>3</td>
<td>0,3%</td>
</tr>
<tr>
<td>Fractured instrument in root canals</td>
<td>135</td>
<td>14,2%</td>
</tr>
<tr>
<td>Fracture of the lateral walls of the tooth crown</td>
<td>231</td>
<td>24%</td>
</tr>
<tr>
<td>Perforation at furcation</td>
<td>131</td>
<td>13,7%</td>
</tr>
<tr>
<td>Perforation of tooth crown</td>
<td>69</td>
<td>7,2%</td>
</tr>
<tr>
<td>Perforation of tooth root</td>
<td>72</td>
<td>7,5%</td>
</tr>
<tr>
<td>Radicular wall thinning</td>
<td>57</td>
<td>6%</td>
</tr>
<tr>
<td>Defective coronary filling</td>
<td>566</td>
<td>59,57%</td>
</tr>
</tbody>
</table>
CONCLUSIONS

1. Comparative data revealed that in the Republic of Moldova the most common endodontically treated teeth are molars,
percentage 48%, in foreign literature - 58%. Premolars and anterior teeth have a higher rate of errors and complications (premolars - 26% in foreign literature - 22%, frontal teeth RM - 26% in foreign literature - 20%).

2. The most often seen error of endodontic treatment in Republic of Moldova is incomplete obturation of root canals -60%.


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