EVALUATION OF THE ACCURACY OF INDICATIONS FOR SURGICAL ENDODONTICS IN PRIVATE PRACTICE

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Abstract: The purpose of the study is to analyze the correlation between the indications for surgical endodontics in private practice and those provided by surgery and endodontics practice guides. Material and methods: there have been examined 709 cases within the Bucco-Maxillo-Facial Surgery Clinic of Târgu-Mureș, of which 144 were included in the study having preoperative radiographs. Aspects related to the clinical condition, as much as it can be inferred from the radiographic analysis at a 3X magnification and of the files of each case have been recorded. Results: 52.77% of the cases with indication for apicectomy were not primary endodontically treated. 88.19% cases presented an apical radiolucency smaller than 5mm. Fixed prosthetics have been found in 54.68% of cases. Conclusions: the indication for surgical treatment is overestimated compared to the endodontic conservative treatment, often being considered a failure from the very start, in the absence of primary endodontic treatment and coronary sealing. The surgical treatment remains a viable option when indications are rigorously respected, a correct endodontic treatment is present and an optimal coronal sealing is made.

INTRODUCTION

Conservative endodontic retreatment is always the primary treatment option for periapical pathology in endodontically treated teeth. There are some cases in which endodontic retreatment cannot be done, therefore endodontic surgery becomes necessary.

PURPOSE

In this observational study, we have tried to evaluate the correlation between the indications for apicectomy present in three major guides of oral surgery and endodontics, as well as the practical approach of primary endodontic failure cases. The indications of the European Endodontic Association (1) concerning the surgery retreatment are:

1. Radiological findings of apical periodontitis and/or symptoms associated with an obstructed canal (the obstruction proved not to be removable, displacement did not seem feasible or the risk of damage was too great).
2. Extruded material with clinical or radiological findings of apical periodontitis and/or symptoms continuing over a prolonged period.
3. Persisting or emerging disease following root canal treatment when root canal retreatment is inappropriate.
4. Perforation of the root or the floor of the pulp chamber and where it is impossible to treat from within the pulp cavity.

According to the American Endodontic Association, (2), the indications mentioned in the Endodontic Clinical Surgery Guide are the following:

A root-end resection (apicectomy) in conjunction with periradicular curettage is indicated if any of the following clinical conditions exist:

1. Persistent periradicular pathosis following endodontic treatment.
2. A periradicular lesion that enlarges after endodontic treatment, as noted on follow-up radiographs or digital radiographic images.
3. A marked overextension of obturating materials interfering with healing.
4. Access for periradicular curettage, biopsy or to an additional root is necessary.
5. Access for root-end preparation and root-end filling is necessary.
6. When the apical portion of the root canal system of a tooth with periradicular pathosis cannot be cleaned, shaped and obturated.

The indications of apicectomy according to the Romanian Guide of clinical oral surgery:(3)

1. Anatomical anomalies:
- severely curved canals;
- inside calcifications of canals with periapical radiolucencies;
- intracanal denticles;
- external and internal resorptions;
- apical perforations;
- teeth with underdeveloped roots, where apexification technique fails.

2. Periodical pathology:
- chronic periapical osteitis;
- chronic apical parodontitis;
- radicular cysts;
- conditions when after apicoectomy, the root can still be preserved.

3. Traumatic radicular lesions:
- radicular fracture in the apical third.

4. Failure of certain treatments:
- the presence of intra-radicular post on a root having periapical pathology, with higher risk of fracture in case of post removal;
- impossible endodontic filling removal (fractured instrument in the apical third);
- pulp chamber perforations/false radicular path;
- endodontic overfillings that cannot be removed;
- incomplete endodontic fillings;
- other failures in endodontical treatment;
- failures in apicoectomy.

According to El-Swiah JM, Walker RT (1996) (4), the indications for surgical endodontics are limited to:

1. Presence of periodontal disease, with or without symptoms in a root filled tooth, where non surgical root canal re-treatment cannot be undertaken or has failed, or where conventional re-treatment may be detrimental to the retention of the tooth. For example, obliterated root canals, small teeth with full coverage restorations where conventional access may jeopardise the underlying core.

2. Presence of periodontal disease in a tooth where iatrogenic or developmental anomalies prevent non surgical root canal treatment being undertaken.

3. Where a biopsy of periradicular tissue is required.

4. Where visualisation of the periradicular tissues and tooth root is required when perforation, root crack or fracture is suspected.

5. Where procedures are required, either tooth sectioning or root canal treatment being undertaken.

6. Where it is impossible to undertake prolonged nonsurgical root canal re-treatment because of the reasons related to the patient.

The indications for apicoectomy as they appear in Oral Surgery; 2007 (5) are:

1. Teeth with active periapical inflammation, despite the presence of a satisfactory endodontic therapy.
2. Teeth with periapical inflammation and unsatisfactory endodontic therapy, which cannot be repeated because of:
   - Completely calcified root canal;
   - Severely curved root canals;
   - Presence of posts or cores in root canal;
   - Breakage of small instrument in root canal or the presence of irretrievable filling material.
3. Teeth with periapical inflammation, where completion of endodontic therapy is impossible due to:
   - Foreign bodies driven into periapical tissues;
   - Perforation of inferior wall of pulp chamber;
   - Perforation of root;
   - Fracture at apical third of tooth;
   - Dental anomalies (dens in dente).

RESULTS AND DISCUSSIONS

Of the 144 cases, 68.72% were anterior and 31.28% were lateral mostly premolars. The surgery was performed mostly at upper teeth (70.84%) compared to lower arch (29.16%).

The higher frequency of the surgical intervention to maxillary teeth and mostly in premolar-canine-incisive region is justified by a more facile access and bone anatomy.

Table no. 1. Patients’ distribution by gender and age

<table>
<thead>
<tr>
<th></th>
<th>No. Average age</th>
<th>Age range</th>
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</thead>
<tbody>
<tr>
<td>Women</td>
<td>62</td>
<td>42</td>
</tr>
<tr>
<td>Men</td>
<td>48</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td></td>
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</tbody>
</table>

The age range is similar in both genders and the average age is extremely close.

The associated pathology on each case was characterized by the dimensions of radiolucency and the aspect of margins. There have been identified 88.19% cases with radiolucency smaller than 5mm and 11.8% cases wider than 5mm. The net delimitation, well shaped of the lesion has been identified in 27.08% of the cases, 72.91% of them presenting a diffuse radiolucency.

The fact that in 88.19% of the cases the radiolucency is smaller than 5mm diameter increases the prognostic of a conservative endodontic treatment and does not justify the surgery. Concerning the endodontic treatment, we discovered the following: 98.4% of the cases were incorrect, just one case being correctly done. Of the incorrect endodontic fillings, 89.6% were more than 1.5mm underobturated and 9.3% presented sealer above the apex.

Figure no. 1. Sealer extrusion over the apex, certain indication for apicoectomy when symptomatic

Of the total of endodontic filled teeth, 84.3% presented coronal reconstruction of which 35,9% have been correctly done.

by restorative materials or crowns. 45.71% of the teeth reconstructed by crowns included metal posts cemented or screwed, only 12.5% being correctly done.

Figure no 2. Incomplete filling and a fractured file in the coronal and middle third.

Fractured instruments have been identified only in two cases, located in the coronal third and medial third of the root canal. Separated files represent an indication for surgical endodontics, but not in cases of endodontic accessibility due to the presence in the coronal or medial third of the root canal as in our cases.

One case showed vertical fracture with displacement, case in which the only method of treatment is extraction.

Figure no. 3. Abutment tooth with metallic post and vertical fracture with displacement referred for apicoectomy

CONCLUSIONS

Teeth associated pathology proves to be of endodontic origin and the lack of endodontic primary treatment in 52.77% of the cases sends an alarm signal to ignorance concerning the conservative endodontic treatment in cases where they should represent the treatment of choice.

Nowadays, modern endodontics has at disposal treatment methods, magnification and chemical solutions for instant disinfection that do not imply delaying the treatment and so, the endodontic retreatment remains the best alternative. Extensive fixed prosthetics (54.68%) justifies the conservative surgical treatment as there are studies that support the idea that cementation might be affected by access cavity during retreatment.

Lack of coronal sealing ensures a pure prognostic to the surgical intervention due to leakage from coronal side.

In our study, taking into consideration the endodontic and surgical guides, we found that the justified surgical treatment of just 56.25% of the total of cases, all the rest being eligible for endodontic retreatment or extraction, is a proof of a superficial evaluation of the cases, lack of collaboration with the endodontic specialist or can be partially justified by the rural origin of 38.07% of cases.

REFERENCES