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Assessment Of Outcome Profile Of Patients With Peri-Apical Surgery- An Observational Study

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ABSTRACT:Background: The present study was conducted to assess profile of patients undergoing apical surgery.Materials & Methods: 56 patients were selected for peri- apical surgery of both genders. Follow-up was done at 1, 3, 6, and 12 months and every 6 months thereafter. Clinical and radiographic examinations were performed at each recall.
Results: Teeth involved was maxillary incisor in 12, maxillary cuspids in 20, mandibular incisors in 10 and mandibular cuspids in 14 cases. Prostheses were present in 25 and absent in 31 cases. Bony destruction pattern was apical in 45 and apico-marginal in 13 cases. Post was present in 14 and absent in 42 cases. The maximum healing was seen in maxillary incisor in 67% followed by maxillary cuspids in 52%, mandibular incisors in 65% and mandibular cuspids in 54%, 56% in teeth with prostheses, 82% in apical bone destruction and 76% in teeth with post. The difference was significant (P< 0.05).

Conclusion: There was better healing in maxillary incisors, teeth with prostheses present, teeth with apical bone destruction and teeth with post.

Key words: Healing, Apical surgery, Prostheses

1. INTRODUCTION

Apical surgery is an option for the management of endodontically-treated tooth with persistent periapical lesions or symptom/sign. Several epidemiological studies have suggested that 33-60% of endodontically-treated teeth still presented the pictures of apical periodontitis[1]. The possible causes may be persistent primary infection, secondary infection after endodontic therapy, vertical root fracture or cemental tears. Nonsurgical retreatment is preferable as the first choice for management of teeth with symptoms/signs, apical lesions and prior root canal treatment.[2] However, there were some limitations restricting the possibility of nonsurgical root canal retreatment, e.g., obstructed canal pathway, irretrievable materials within the root canal and persistent symptoms, which could not be resolved even after the meticulous performance of nonsurgical treatment, persistent pain or swelling/sinus tract even after endodontic treatment and re-treatment.[3]

The decision to perform periapical surgery should be based on comprehensive examination of the patient's dental, oral and medical conditions. In fact, however, treatment decisions are often based on the preferences and experience of the clinician. Moreover, patients often tend to choose the least costly option, i.e. tooth extraction, overlooking the functional, esthetic and psychological results of tooth loss.[4] Few previous studies have assessed the relative importance of the different factors involved in the decision to perform periapical surgery. Periapical surgery has to be performed in a tooth with no evidence of fracture and with an adequate periodontal status (less than 25% of vertical bone loss and periodontal pockets < 5 mm). Furthermore, the tooth must retain sufficient coronary structure for prosthesis and the patient should be able to tolerate the surgery.[5] The present study was conducted to assess profile of patients undergoing apical surgery.

2. MATERIALS & METHODS

The present study was conducted on 56 patients selected for peri- apical surgery of both genders. All were informed regarding the study and their consent was obtained.

Preoperative periapical radiograph was taken using a parallel technique. Local anesthesia was administered and followed by flap elevation. Surgical curette was used to enucleate the pathologic tissue and identify the root apex with/without prior osteotomy. The apical 3 mm of the root was resected perpendicularly to the long axis of the tooth with no or minimal bevel. The root apex and root surfaces before and after root-end resection was carefully inspected and observed under a surgical microscope. The root-end cavity was prepared with ultrasonic micro-tips and filled with retrograde materials. Flaps were repositioned and sutured. Periapical radiograph was taken after surgery using the parallel technique. Antibiotics and analgesics medication were prescribed. Follow-up was done at 1, 3, 6, and 12 months and every 6 months thereafter. Clinical and radiographic examinations were performed at each recall. Results thus obtained were subjected to statistics. P value less than 0.05 was considered significant.

3. RESULTS

Table I Distribution of patients

Total- 56		
Gender	**Males**	**Females**
Number	34	22

Table I shows that out of 56 patients, males were 34 and females were 22.

Table II Assessment of parameters

Variables	**Parameters**	**Number**	**P value**
Pre-operative clinical examination	Teeth Maxillary incisor	12	0.09
	Maxillary cuspids	20	
	Mandibular Incisors	10	
	Mandibular cuspids	14	
Prostheses	Present	25	0.13
	Absent	31	
Bony destruction pattern	Apical	45	0.02
	Apicomarginal	13	
Post	Present	14	0.01

	Absent	42	

Table II, graph I shows that teeth involved was maxillary incisor in 12, maxillary cuspids in 20, mandibular incisors in 10 and mandibular cuspids in 14 cases. Prostheses were present in 25 and absent in 31 cases. Bony destruction pattern was apical in 45 and apico-marginal in 13 cases. Post was present in 14 and absent in 42 cases. The difference was significant (P< 0.05).

Graph I Assessment of parameters

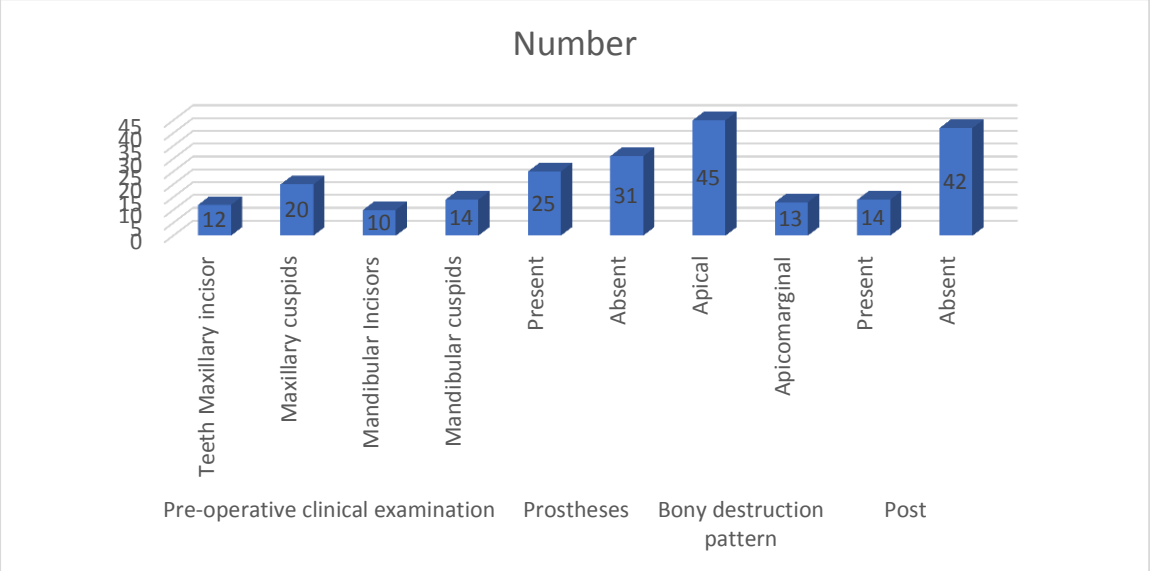

Table III Assessment of outcome

Variables	Parameters	Healed (%)	P value
Pre-operative clinical examination	Teeth Maxillary incisor	67%	0.12
	Maxillary cuspids	52%	
	Mandibular Incisors	65%	
	Mandibular cuspids	54%	
Prostheses	Present	56%	0.09
	Absent	44%	
Bony destruction pattern	Apical	82%	0.01
	Apico-marginal	56%	
Post	Present	76%	0.54
	Absent	62%	

Table III shows that maximum healing was seen in maxillary incisor in 67% followed by maxillary cuspids in 52%, mandibular incisors in 65% and mandibular cuspids in 54%, 56% in teeth with prostheses, 82% in apical bone destruction and 76% in teeth with post. The difference was significant (P< 0.05).

4. DISCUSSION

Persistent apical periodontitis following orthograde root-canal treatment is common among adult populations in various countries, with prevalence rates varying between 27%-70% and increasing with age.[6] Conventional root-canal treatment is considered to be the best method

of managing periapical disease, with success rates varying between 48%-98%.[7] If root canal treatment fails, the reasons for this must be accurately assessed before any further intervention. Whenever possible, nonsurgical retreatment is regarded as the treatment of choice.[8] However, where nonsurgical retreatment is not an option, periapical surgery (endodontic surgery) is considered to be a viable alternative. In order to eliminate existing extraradicular infections, foreign bodies and cystic tissue, periapical tissue is debrided by complete curettage in periapical surgery.[9] The present study was conducted to assess profile of patients undergoing apical surgery.

In present study, out of 56 patients, males were 34 and females were 22. We found that teeth involved was maxillary incisor in 12, maxillary cuspids in 20, mandibular incisors in 10 and mandibular cuspids in 14 cases. Prostheses were present in 25 and absent in 31 cases. Bony destruction pattern was apical in 45 and apico-marginal in 13 cases. Post was present in 14 and absent in 42 cases. Kim and Kratchman[10] suggested that surgical treatment can be more conservative than non-surgical treatment in certain cases, particularly in the frequently observed instance of a tooth with satisfactory endodontics, a new post-and-coronal restoration, but a refractory or growing periapical lesion. Breaking or disassembling the coronal before removing the post and then retreating the canal, the authors argue, would be more traumatic, time-consuming and expensive and the results more uncertain than a root-end microsurgical approach.

We found that maximum healing was seen in maxillary incisor in 67% followed by maxillary cuspids in 52%, mandibular incisors in 65% and mandibular cuspids in 54%, 56% in teeth with prostheses, 82% in apical bone destruction and 76% in teeth with post. Serrano et al[11] analyzed the most important prognostic factors when performing periapical surgery and compare the success rates of distinct authors. 33 articles were selected from 321 initially found. Ten articles from 33 were excluded and finally the systematic review included 23 articles: 1 metaanalysis, 1 systematic review, 2 randomized clinical trials, 6 reviews, 12 prospective studies and 1 retrospective study. They were stratified according to their level of scientific evidence using the SORT criteria. Factors associated with a better outcome of periapical surgery are patients ≤45 years old, upper anterior or premolar teeth, ≤10 sized lesions, non cystic lesions, absence of preoperative signs and symptoms, lesions without periodontal involvement, teeth with an adequate root-filling length, MTA as root-end filling material, uniradicular teeth, absence of perforating lesions, apical resection < 3 mm, teeth not associated to an oroantral fistula and teeth with only one periapical surgery.

Liao et al[12] investigated the correlation between the demography, preoperative, postoperative factors and healed rate of apical surgery. Total 187 patients and 234 teeth receiving apical surgery were included. 53 male and 134 female patients were collected. The age was ranged between 17 and 89 years old and the mean age was 43.64 years old. Better healed rate with significant differences were observed in female patient ($p < 0.05$), age >60 years old ($p < 0.01$), preoperative root canal filling material >2 mm short of apex ($p < 0.01$), lesion size from >2 mm to >12 mm ($p < 0.05$) and follow-up period S12 months ($p < 0.01$) groups.

5. CONCLUSION

Authors found that there was better healing in maxillary incisors, teeth with prostheses present, teeth with apical bone destruction and teeth with post.

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