

# Retrospection - Analysis of Patients Treated by the Endodontist

*Rasmute Maneliene, Irena Balciuniene*

## SUMMARY

The aim of this retrospective investigation was to assess the medical status of the mouth of patients who presented themselves to an endodontist, taking into consideration: patient's age, reason for coming to a dentist, diagnosed and treated apical periodontitis. Two years' medical history of patients, who presented themselves to the endodontist, have been studied.

In 1995-1996 among 336 patients, who arrived at the endodontist, 36,05 % came due to pain, 63,95 % of the patients attended the specialist after the directions of other specialist; more than 50 % of all treated patients from all patient groups had apical periodontitis and the first time having undergone the treatment.

**Key-words:** apical periodontitis, orofacial pain, dental emergencies, endodontic treatment.

## INTRODUCTION

By all odds, the most frequently seen "pain" patient will be experiencing acute, true intraoral pain, toothache and its sequelae being the most common. Pain accompanying intraoral lesions and infections is the next most commonly seen. After that, the field is somewhat, with top priority going to the acute pains of everyday general, endodontic, and oral surgery practice. The most common form of orofacial pain is odontalgia, or toothache. This painful condition afflicts about 12-14 % of the population. [Keiser K. 2003]

Pain indicates bad oral health and urgent necessity for dental treatment. Dental caries and its sequelae, including apical periodontitis, seem to represent the most prevalent reasons for extraction of teeth. As apical periodontitis is usually not defined as a specific cause for extraction, it is difficult to estimate its relative importance for extraction of teeth in society. It has been suggested that 10 % of extractions performed among adult Swedes were due to apical periodontitis. [Eckerbom B., Magnusson T., Martinsson T., 1992] The data found in scientific works prove the pain being the main cause to extract a tooth (47,2 %). However the true cause of this pain –symptomatic pulpitis or symptomatic apical periodontitis have not been revealed [E.Reich, K.A.Hiller, 1993]. This problem has been analysed globally and there have always been sought ways to improve oral health.

The investigation carried out in 1987 in Toronto (Canada), revealed that during the four weeks period 21% of patients addressed a dentist due to medium and severe pain [D.Locker, M.Gushka, 1987]. According to the present clinical survey of dental emergencies treated by organised emergency services in two of the larger Finnish cities the main causes (64 %) of the problems leading to these visits were caries and its consequences. [Widstrom E, Pietila I., Nilsson B., 1990] The data of thirty dental practitioners from Denmark show that only 2% of all treated patients complained for pain [S.Sindet – Petersen, J.K. Petersen et al., 1985]. According to research data provided by two Finnish emer-

gency clinics, almost 40% of the treated patients were diagnosed with symptomatic pulpitis and symptomatic apical periodontitis [E. Widstrom, I. Pietila et al., 1990].

Petersson in Malmo and Eriksen and co-workers in Oslo have both performed such investigations by reevaluating the endodontic status in the same individuals after 11 years and 15 years, respectively. Both studies demonstrated that about half of the teeth with chronic apical periodontitis at the first investigation had been treated/re-treated or extracted during the observation period. These data may indicate an incidence of possible exacerbations per year of less than 5% for chronic apical periodontitis. Provided people addressed a dentist for teeth prophylaxis on a regular basis, there would have been 5% less of those complaining of pain [H.N.Chun, D.R.Peterson et al., 1984].

## MATERIALS AND METHODS

Investigation – retrospection has been carried out in the Zalgiris clinic of Vilnius University. Two years' medical history of patients, who presented themselves to the endodontist, have been studied. These medical histories revealed the reason for which patients addressed the specialist – endodontist:

- 1) patients were experiencing pain,
- 2) patients presented themselves following the directions of another medical care specialist.

All the patients treated by the endodontist during the two-year period were classified into four age groups:

- I group – 7-15 years
- II group – 16-30 years
- III group – 31-50 years
- IV group – 51-70 years

According to the data of 1995 – 1996 medical histories, there was established the number of patients diagnosed with and treated for the apical periodontitis.

Statistical analysis has been carried out applying the programme SAS at Vilnius University, Centre for Statistics. Statistical characteristics were established under the  $\chi^2$  criteria. Reliance index has been chosen  $p = 0,05$ .

*Rasmute Maneliene* - D.D.S., PhD, assoc.prof., Institute of Stomatology, Faculty of Medicine, Vilnius University.

*Irena Balciuniene* - dr.hab.med., professor, director of Institute of Stomatology, Faculty of Medicine, Vilnius University.

Address correspondence to Dr. Rasmute Maneliene: Zalgirio 115, Vilnius 2042, Vilnius, Lithuania.

**RESULTS AND DISCUSSION**

Having analysed the reasons of patients' attendance at the specialist it turned out that in the year 1995 35,4 % and in the year 1996 36,7 % of the patients were complaining of pain. In 1995 64,4 % and in 1996 63,3 % of the patients attended the specialist after the directions of other specialist. The results of this investigation are presented in table 1 and table 2. It should be said that the data does not reflect endodontic status of the mouth, but only the medical condition of the teeth, which caused the patient's presentation at the specialist endodontist. Patients, who attended the endodontist following recommendations of other specialists, did not experience pain. Radiological examination revealed the teeth with apical periodontitis – this was the main reason why the patients were directed by the specialist to attend the endodontist. During the period of two years 34,4 % (1995) and 36,7 % (1996) of all patients with severe tooth pain (symptomatic pulpitis and symptomatic apical periodontitis) attended the endodontist. The pain indicates that medical condition of the mouth is bad and that there is a great necessity for dental treatment.

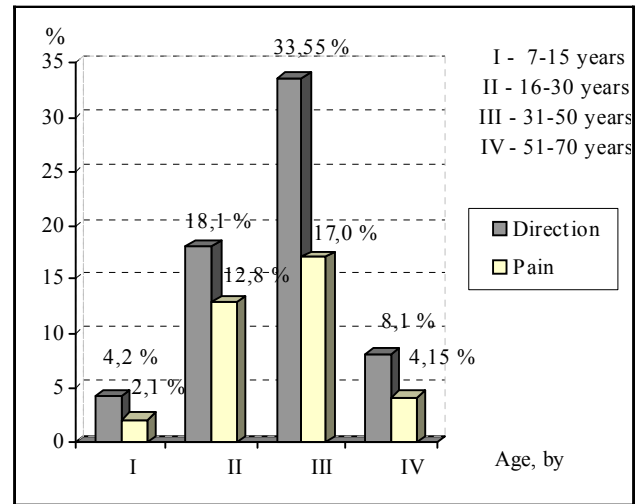
The diagram has been drawn to show the incidence of various patient groups' (different age) visits to the endodontist for a certain reason in 1995 and 1996 ( Graph 1).

2,1 % of the youngest patients' group under the age of 7 to 15 years attended the specialist due to pain and 4,2 % - due to the directions of other specialists. Such a small number of patients of this group is based on those patients being not independent, i.e. their parents or general dental practitioners at schools, who carry out preventive task, take care of their mouth health.

In the second group (16 – 30 years of age) the number of the patients, who attended the specialist endodontist, was bigger: 12,8 % of them were complaining of pain and 18,1 % - attended following the directions of other specialists. The patients of this age group are independent people (they are students or they work). Evidently, the medical condition of their mouth depends only on their understanding and intelligence. As it can be seen in the diagram of the Graph 1, the number of patients of this group who presented themselves to the endodontist due to pain and the number of patients, who addressed the endodontist on the basis of the directions of other specialists, differ only 5,3 %. Such a small difference indicates that patients of this group attend the dental specialist mainly when they experience pain in their tooth.

The situation differs among those in the third group (31 – 50 years of age). Only 17,0 % of these patients attend the endodontist due to pain, but 33,55 % of them – following directions of other specialists. Probably the patients from this group are facing chewing problems (they may need dental prosthesis) and being afraid of losing their teeth,

they present themselves to the dentist. Some impact on such a decision has the more beneficial financial situation of these patients and they can afford to take care of their health condition. The studies done in Finland in 1990 indicate that 40 % of the 20 – 40 years patients attended the dentist due to pain [E.Widstro, I.Pietila et al., 1990]. The big number of working age patients is due to the fact that they are very busy and have no time to attend the dentist on a regular



**Graph 1.** Incidence of patient's visits to endodontist for a certain reason.

**Table 1.** Number of patients who attended the specialist endodontist in 1995 due to various reasons (according to age groups)

Investigated group	Age of patients	Number of patients					
		arrived with pain		arrived with the directions of other specialists		overall	
		n	%	n	%	n	%
I	7 - 15 m.	3	1,7	6	3,4	9	5,1
II	16 - 30 m.	23	12,9	34	19,1	57	32,0
III	31 - 50 m.	28	15,7	62	34,8	90	50,5
IV	51 - 70 m.	9	5,1	13	7,3	22	12,4
<b>Total:</b>		<b>63</b>	<b>35,4</b>	<b>115</b>	<b>64,6</b>	<b>178</b>	<b>100</b>

**Table 2.** Number of patients who attended the specialist endodontist for various reasons in 1996 (according to age groups)

Investigated group	Age of patients	Number of patients					
		arrived with pain		arrived with the directions of other specialists		overall	
		n	%	n	%	n	%
I	7 - 15 m.	4	2,5	8	5,0	12	7,6
II	16 - 30 m.	20	12,7	27	17,1	47	29,7
III	31 - 50 m.	29	18,3	51	32,3	80	50,6
IV	51 - 70 m.	5	3,2	14	8,9	19	12,1
<b>Total:</b>		<b>58</b>	<b>36,7</b>	<b>100</b>	<b>63,3</b>	<b>158</b>	<b>100</b>

**Table 3.** Number of teeth diagnosed and treated for apical periodontitis by the specialist endodontist in 1995 – 1996 (according to age groups)

Patient groups	Patient age	Number of treated teeth				
		1995		1996		
		overall	apical periodontitis	overall	apical periodontitis	
		n	%	n	%	
I	7 – 15	11	6	18	12	66,6
II	16 – 30	107	79	87	58	66,6
III	31 – 50	242	161	194	118	60,8
IV	51 – 70	66	33	55	37	67,2
<b>total</b>		<b>426</b>	<b>279</b>	<b>354</b>	<b>225</b>	<b>63,6</b>

p>0,05.

**Table 4.** Incidence of apical periodontitis among different age groups patients in %

Bibliography	Incidence in % of apical periodontitis among patient age groups				
	20 – 30	30 – 40	40 – 50	50 – 60	60 +
Laurell L. et al., 1983	12	39	51	56	68
Eriksen H. M. et al., 1988	-	30	49	-	-
Odesjö B. et al., 1990	22	42	46	61	48
Eriksen H. M., Bjertness E. et al., 1991	33	40	48	57	62

**Table 5.** Per patient number of treated for apical periodontitis teeth

Year	Number of treated teeth per patient of a respective age group			
	7-15	16-30	31-50	51-70
1995	0,7	1,4	1,8	1,5
1996	1,0	1,2	1,5	1,9

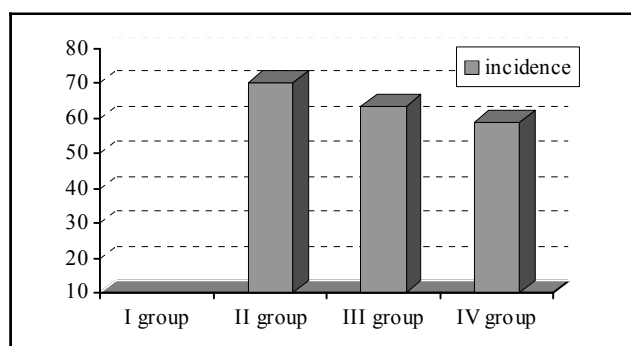
basis. The results of the second and the third group (12,8 % and 17,0 %) put together show that 29,8 % of patients attended the dentist due to pain. This means that often the reason for which the patients of the second and the third group visited the specialist endodontist was pain, and almost every third patient suffered this. The overall results of the first (the youngest patients, 7 – 15 years) and the fourth group (the oldest, 51 – 70 years) indicate that pain incidence is only 6,25 % (Graph 1).

The number of the fourth group (51 – 70 years) patients, who came to the endodontist definitely decreased: 8,1 % came following the directions of other specialists and 4,15 % - due to pain. These numbers demonstrate that patients of such an age have already lost many teeth, thus the necessity to cure the tooth had decreased, as they mainly needed dental prosthesis. Many patients from this group are retired people and they cannot afford to pay for their dental treatment.

From all the patients who addressed the dentist 36,05 % came due to pain (2,1 % + 12,8 % + 17,0 % + 4,15 %, Graph 1). However according to the study data from Finland 40 % addressed the dentist due to pain [E. Widstrom, I. Pietila et al., 1990]. The difference could be explained by the fact that at the period of our study, patients who arrived because of pain have been registered with a specialist endodontist and not with the general dentist practitioner.

In 1995 – 1996 among 336 patients, who arrived at the endodontist, there were 504 teeth with apical periodontitis and for the first time having undergone the treatment (Table 3). As can be seen from the Table 3 more than 50 % of all treated patients from all patient age groups had apical periodontitis.

Epidemiological data on the incidence of apical periodontitis have first been studied in Scandinavia, in Sweden. In this country great attention has been paid to the analyses of the incidence of apical periodontitis. Data of these studies reveal that from 30 % to 60 % of all treated dental

**Graph 2.** Incidence of apical periodontitis among patients treated by the endodontist.

problems were violated by apical periodontitis. And this process is increasing with age [A. Hugoson, G. Koch et al., 1986; H.M. Eriksen, E. Bjertness et al., 1988; B. Odesjö, L. Helden et al., 1990; H.M. Eriksen, E. Bjertness et al., 1991]. This data is shown in Table 4.

The studies carried out in Switzerland on the incidence of endodontic treatment and quality assessment had established the 31 % incidence of apical periodontitis among matured (66 years of age) people [T. Imfeld, 1991]. Similar data in Dutch population in 1993: apical periodontitis had been diagnosed in 39 % of the cases [M.J.H.

De Cleen, A.H.B. Schuurs et al., 1993]. In the USA the study on the incidence of apical periodontitis has been performed at schools. Study results revealed that 31,3 % of cases treated endodontically, had been violated by apical periodontitis [M. Buckley, L.S. Spangberg, 1995]. Recent studies in Portugal have indicated that among people of 30 – 39 years of age the incidence of apical periodontitis is less than 25 % [M.D. Marques, B. Moreira et al., 1998]. In Lithuania epidemiological studies have been carried out in 1999 with the 35 – 44 years of age citizens of Vilnius city. The investigators have established the 70 % incidence of apical periodontitis among people of this age group [B. Sidaravicius, J. Aleksejuniene et al., 1999].

According to the data of our study, age had no impact on the diagnosis or treatment of apical periodontitis ( $p > 0,05$ ; Graph 2). One of the prerequisites of such conclusion could be the fact that these were not randomized patients, but only those who visited the specialist endodontist experiencing endodontic problems, i.e. they had been diagnosed with apical periodontitis. Data from scientific literature (Table 3) indicate that apical periodontitis is encountered not so often in patients younger than 30 – only in 33 % of the cases. Our results did not prove this statement, because we had diagnosed apical periodontitis for 70,2 % patients of this age (Graph 2). The same results were obtained in the study performed in Vilnius by B. Sidaravicius, J. Aleksejuniene et al., in 1999: the 70 % apical periodontitis incidence among the 35 – 44 years of age patients has been established (the patients were randomized for this study).

The question arises: why there are so many cases of apical periodontitis among Lithuanian people?

Having compared our study data with analogical study data found in literature, it has become evident, that this illness is more widely spread in our country than in any other country. For example, the results of the studies carried out in Norway, Sweden, Switzerland, Holland and the USA during the period of 1991 – 1997 indicate that the apical periodontitis incidence in these countries is not higher than 39 % [H.M. Eriksen, E. Bjertness, 1991; T. Imfeld, 1999; D.J.H. De Cleen, A.H.B. Schurset et al., 1993; K. Petersson, 1993; H.A. Ray, M. Trope, 1995; H.M. Eriksen, G.P. Berset et al., 1995]. Only in Scotland in 1997 the established incidence of apical periodontitis was 58 % [W.P. Saunders, E.M. Saunders et al., 1997].

The 50 years experience in Oslo of studies on epidemiological mouth health and endodontic status reveal, that incidence of apical periodontitis directly depends on the mouth health, social and behavior changes, and indirectly – on the quality of previous endodontic treatment, hygiene of the mouth and intensity of caries [H.M. Eriksen, E. Bjertness, 1991]. All mentioned above factors make only 27 % of those, which have impact on the incidence of apical periodontitis. The results of our study on the incidence of apical periodontitis by 64,5 % proved that caries has not been treated

in time in Lithuania. According to B.Sidaravicius, J.Aleksejuniene et al., 1999, almost 82 % of the endodontically cured teeth were violated by apical periodontitis. When diagnosing apical periodontitis, we had not established the fact whether prior to this the tooth had been treated endodontically. It is known that almost 2/3 of all changes, which had remained round the apical root after the endodontic tooth treatment was assessed as being the apical periodontitis [H.M.Eriksen, E.Bjertness, 1990]. The reason being technically poorly filled root channels [H.A.Ray, M.Trope, 1995]. Thus, with only endodontic treatment the spread of apical periodontitis cannot be controlled.

Knowing how many patients had addressed the endodontist during the period of two years (Table 1 and Table 2), and how many apical periodontitis cases were treated (Table 3), we have assessed how many teeth per patient were treated due to this reason in different age groups (Table 4).

As can be seen from the data in Table 4, the number per patient treated for apical periodontitis is increasing with age. Analogical studies performed in Scandinavian countries indicate that number of teeth treated for apical periodontitis per patient varies from 0,4 to 1,6 and that this number is increasing with age. According to data obtained in epidemiological studies performed in Sweden (A.Hugoson, G.Koch et al., 1986) where the age of investigated patients was from 30 to 80 years, every patient experienced apical periodontitis in 1,3 of teeth.

The third and fourth group age in our study was from 31 to 70 years and older, i.e. very close to that studied in Sweden. As it can be seen from the data in Table 4, in these age groups respectively: in 1995 apical periodontitis had violated in every single patient – 1,8 and 1,5 and in 1996 – 1,5 and 1,9 of the teeth. By no means the results of our study differ from those of Swedish results. In our case, there are more apical periodontitis cases per patient. There are also more literature data, which allow us to compare our results. For example, it has been established that every 65 – 75 year old patient had 1,3 teeth with apical periodontitis [U.Allard, S.Palmqvist, 1986], every 50 years patient – 1,6 teeth [H.M.Eriksen, E.Bjertness, 1990].

However the results of analogical Norwegian studies slightly differ: in every patient of 35 (and older) apical periodontitis has violated only 0,4 teeth [H.M.Eriksen, E.Bjertness, 1991]. The index of our investigated patients of this age is 1,8 (1995) and 1,5 (1996), more than 4 times compared to data provided by Norwegian investigators. The reason for this could be the too late treatment of caries. This happens when patients do not attend the dentist on a regular basis for preventive reasons. It is evident that Norway is a highly economically developed country compared to Lithuania. The society's viewpoint towards health condition differs greatly: Norwegian patients regularly visit the family dentist. That is why the mentioned above index is not high [H.M.Eriksen, E.Bjertness, 1995].

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