

In-vivo evaluation of the reliability of a new apex locator: “Apex NRG™”.

Joshua Moshonov, Ronit Maor and Boaz Shay. *Department of Endodontics, School of Dental Medicine Hebrew University – Hadassah, Jerusalem, Israel.*

A new apex locator (Apex NRG™) has been recently introduced to the Dept. of Endodontics at the school of Dental Medicine Hebrew University – Hadassah.

A clinical preliminary blind study has been established comparing the Apex NRG™ to Root ZX™ as well as to the radiographic working length, and recently also to a third apex locator- the Apit 7™.

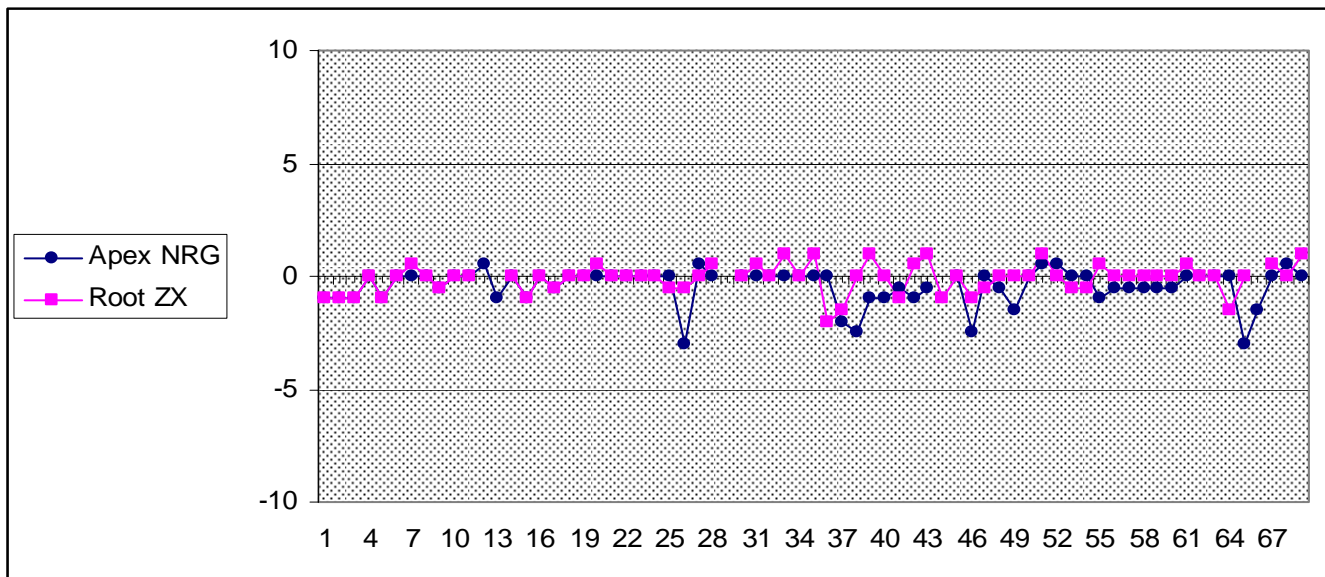
Three investigators are involved in this study while each is using one of the apex locators mentioned above. Thus, each patient in this study undergoes the three methods of apex locating.

This study is limited to vital teeth and teeth with pulp necrosis. At this point, retreatment cases are excluded.

So far, 69 root canals from 30 teeth has been included (8 maxillary molars, 9 mandibular molars, 4 maxillary premolars, 1 mandibular premolar, 5 maxillary incisors, 2 mandibular incisors and 2 mandibular canines) using the Apex NRG™ and the Root ZX™. The electronic readings were compared to those of the radiographs working length which were determined by all the examiners. The measurements showed readings mostly 0-2mm short of the radiographic apex. The preliminary results showed almost identical readings between the Apex NRG™ and the Root ZX™. The use of a third device, the Apit 7™ was introduced in some of these teeth with the results indicating very high resemblance to both the Root ZX™ and the Apex NRG™. Currently, we are testing all included teeth with the three devices. Statistical analysis will be conducted in the future.

Our preliminary results are encouraging as to the reliability of the Apex NRG™ in comparison to the Root ZX™ and Apit 7™ apex locators. Further investigation should be carried out in order to fully establish our preliminary results, based on the methods described in: Fouad A., Reid L.: Effect of using electronic apex locator on selected Endodontic treatment parameters. J of Endodontics 26 (6) 364-367-2000.

Comparison of deviations from radiographic working length (WL) between Root ZX™ and Apex NRG™ the radiographic WL is presented as the 0 axis, deviations in mm.



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tooth serial no.	canal serial no.	tooth	Canal	Working Length		
				Apex NRG	Root ZX	Radio-graph
1	1	16	MB	20	20	21
	2		DB	20	20	21
	3		P	21	21	22
2	4	46	MB	19	19	19
	5		ML	19	19	20
	6		D	20	20	20
3	7	47	MB	19	19.5	19
	8		ML	19	19	19
	9		D	20.5	20.5	21
4	10	14	B	21	21	21
	11		P	20	20	20
5	12	26	MB1	19.5	can not be determined	19
	13		MB2	18	can not be determined	19
	14		DB	19	19	19
	15		P	22	22	23
6	16	11		22	22	22
7	17	24	P	19	19	19.5
	18		B	19	19	19
8	19	34		22	22	22
9	20	46	D	20	20.5	20
	21		MB	19	19	19
	22		ML	19	19	19
10	23	26	MB	18	18	18
	24		DB	17	17	17
	25		P	17.5	17	17.5
11	26	33		18	20.5	21
12	27	37	ML	17.5	17	17
	28		MB	17	17.5	17
	29		D	can not be determined	can not be determined	17
13	30	37	MB	19	19	19
	31		ML	19	19.5	19
	32		D	19	19	19
14	33	46	MB	18	19	18
	34		ML	19	19	19
	35		D	19	20	19
	36		P	19	17	19

tooth serial no.	canal serial no.	tooth	canal	Working Length		
				Apex NRG	Root ZX	Radio-graph
17	37	36	MB	19	19.5	21
	38		ML	18	20.5	20.5
	39		D	19	21	20
18	40	31	B	13	14	14
	41		L	13.5	13	14
19	42	37	MB	19	20.5	20
	43		ML	18.5	20	19
	44		D	can not be determined	19	20
20	45	21		15	15	15
21	46	12		19	20.5	21.5
22	47	43		21.5	21	21.5
23	48	25	B	19	19.5	19.5
	49		P	18	19.5	19.5
24	50	26	MB	21	21	21
	51		ML	21.5	22	21
	52		P	21	20.5	20.5
25	53	14	B	17	16.5	17
	54		P	16.5	16	16.5
26	55	46	MB	18	19.5	19
	56		ML	18.5	19	19
	57		D	18.5	19	19
27	58	17	MB1	18.5	19	19
	59		MB2	18.5	19	19
	60		DB	17.5	18	18
	61		P	18.5	19	18.5
28	62	21		21.5	21.5	21.5
29	63	26	MB	19.5	19.5	19.5
	64		DB	20.5	19	20.5
	65		P	19	22	22
30	66	11		23.5	can not be determined	25
31	67	26	MB	18	18.5	18
	68		DB	19	18.5	18.5
	69		P	21	22	21