

Comparative Evaluation of ProTaper Next File and ProTaper Universal Retreatment File in Removal of GuttaPercha- In-vitro Study

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Introduction



Success rates for primary root canal treatment reported to be 83%



Untreated canals

Inadequate obturation

Overextended obturation

Improper coronal seal

**Non- Surgical root canal
Re -treatment**

The main objective of nonsurgical retreatment would be to remove all the filling material and regain access to the apical foramen, which can be time consuming and challenging

Objective

To compare mean of remaining Gutta Percha (in mm²) using ProTaper Next and ProTaper universal retreatment file system during root canal retreatment

Sample Selection

Inclusion criteria

Root with single oval shaped canal
Straight canal <10 degree curvature

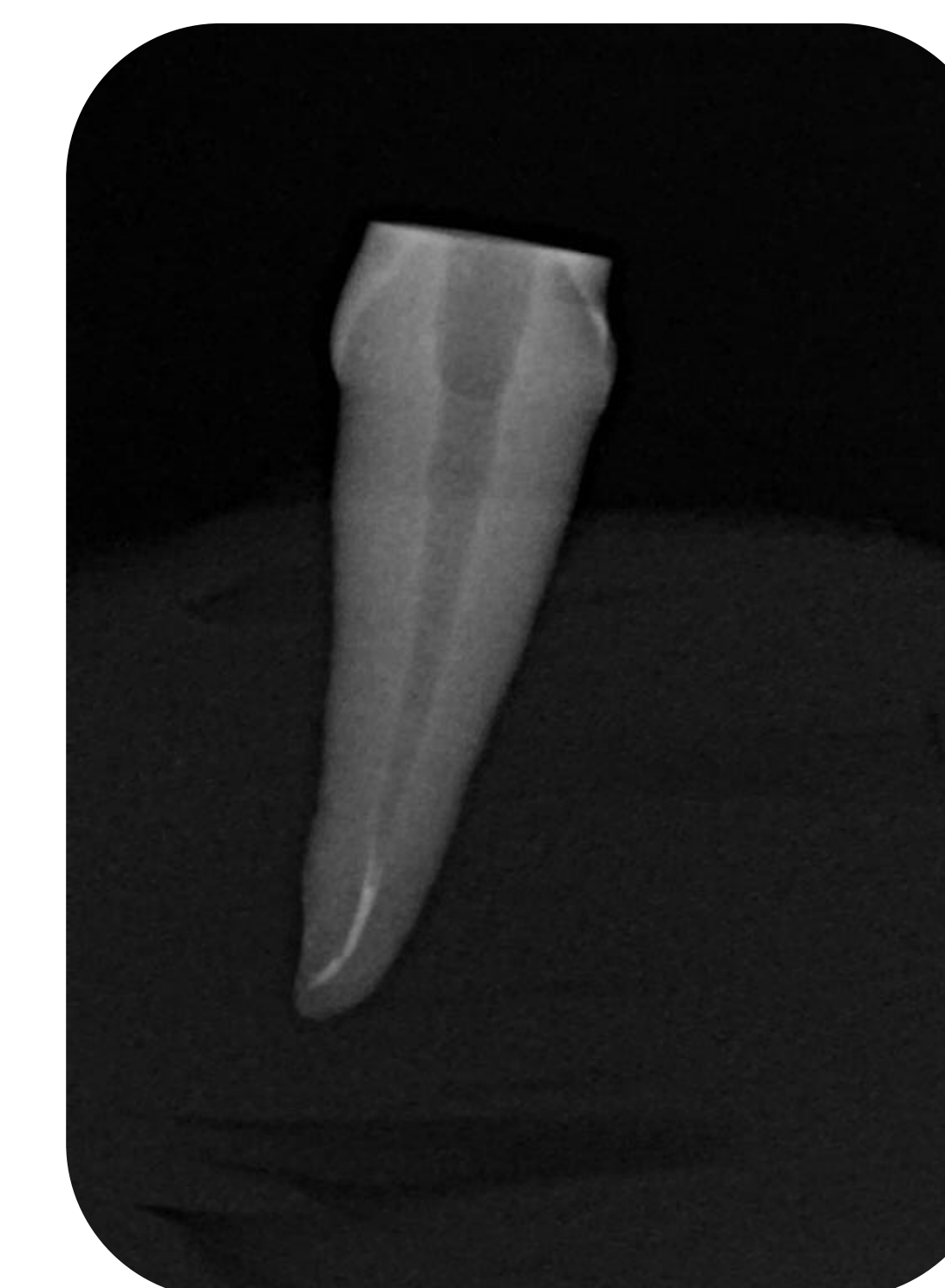
Exclusion Criteria

Root with open apices or resorption defects

Materials & Methods

Study design:	Experimental study design (In-vitro)
Settings:	Dental clinic - AKUH (Karachi)
Duration:	Two months (Dec-January)
Sample size:	Sixty roots
Sampling technique :	Non probability, consecutive
ERC #	5052-Sur-ERC-17

Data Collection Method



Statistical Analysis

Independent t-tests were applied to compare remaining GP and time required to remove it among both groups.

Chi-Square was applied to determine the association of remaining GP w.r.t location in canal

Results

Mean remaining GP in PTN and PTUR file was 1.71 ± 2.1 and 2.01 ± 2.6 respectively. The mean time required to remove maximum GP was 2.58 ± 0.75 and 3.16 ± 0.91 in PTN and PTUR groups. The amount of GP and time required to remove maximum root filling material among both groups were not were not significantly significant (p value > 0.01). However, PTN was found to be more efficient in removing coronal GP (P value < 0.01).

Table 1: Difference of Remaining Gutta Percha in 2 groups

File System (n=30)	Post operative Gutta Percha		
	Mean (mm ²)	SD	<i>P- Value</i>
PTN	1.71	2.1	0.63
PTUR	2.01	2.6	

- Independent sample t test was applied
 - $p\text{-value} \leq 0.01$ is significant

Table 2: Time required to remove the Gutta percha

File System (n=30)	Time taken For GP Removal		
	Mean (min:sec)	SD	<i>P- Value</i>
PTN	2:58	0.75	0.19
PTUR	3:16	0.91	

- Independent sample t test was applied
 - $p\text{-value} \leq 0.01$ is significant

Table 3 : Association of residual Gutta percha w.r.t location in canal

Location	File (n=30)	Yes	No	<i>P- Value</i>
Coronal	PTN	4	26	0.01
	PTUR	13	17	
Middle	PTN	9	21	0.37
	PTUR	6	24	
Apical	PTN	17	13	0.43
	PTUR	14	16	

- Chi-square test was applied, $p\text{-value} < 0.01$ is significant

**PTN= ProTaper Next*
***PTUR= ProTaper Universal*
Retreatment Group
GP= Gutta percha

Conclusion

Both file systems are equally good in removing gutta percha in retreatment cases

ProTaper Next is more efficient in removing gutta percha from coronal third

Strength

Comparison between two different file systems without any adjuncts (Hand files, solvents)

Experimental condition were standardized

Limitations

Files were not observed in curved canals

Remaining Gutta percha assessed on radiograph

Recommendations

Clinical studies needed

Assessment using 3d modality