

# INFLUENCE OF ROTARY GLIDE PATH ON TORQUE IN A SINGLE INSTRUMENT TECHNIQUE

## 單一支旋轉器械操作技術使用下滑路徑旋轉器械對扭力的影響

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### AIM

The aim of the present poster is to present and clinically evaluate the influence of glide path on torque developed by Nickel Titanium Rotary in a single instrument technique and instrumentation time.



## INTRODUCTION

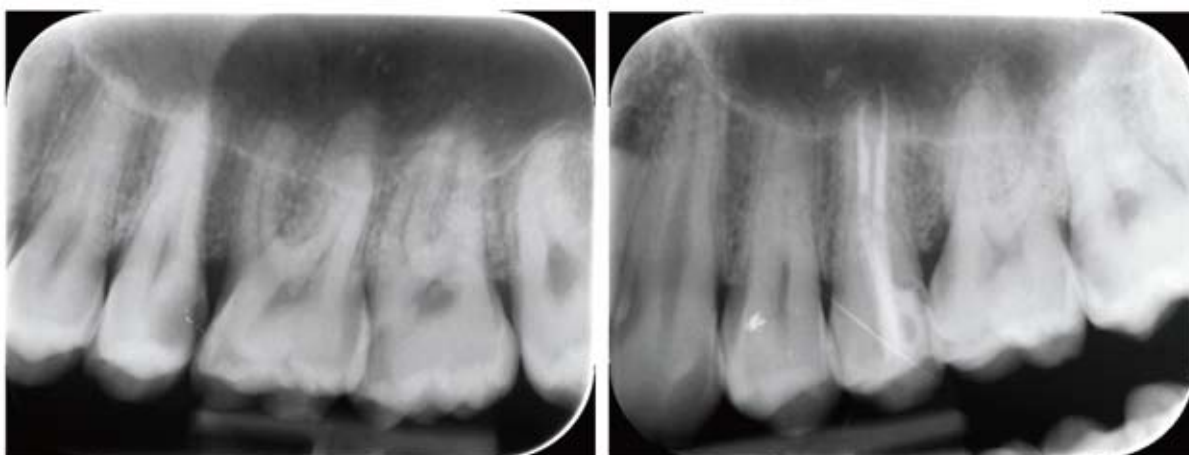
The use of low torque instrumentation has been proposed in the past to increase safety of root canal treatment (RCT). However in most of cases low torque limit did not allow instrument to progress easily and reach working length.

In order to keep as low as possible the torque reached during instrumentation, different techniques has been proposed. One of this technique is the initial use of rotary glide path instruments, as shown by many studies. This advantage could be more relevant in single file rotary techniques where one instrument is subjected to all stresses.

This poster aims at presenting and clinically evaluating the influence of rotary glide path on torque developed during shaping with S-one rotary instruments (Fanta Dental, Shangai, China).

## METHODOLOGY

Instruments were used in 20 bicucular upper premolar cases with an endodontic motor (Eighteeth, Changzhou City, China) and following the indicated setting: 350 Rpm and 1.5 Ncm. The palatal and the vestibular canals of each teeth were randomly divided into two groups A and B, to avoid influence due to dentinal hardness and anatomical complexities. Each groups was instrumented with a different technique. The mean torque was registered and compared. The instrumentation time for both the operative technique was recorded with a digital chronometer with a digital chronometer (1/10s). Data were recorded and statistically analysed. The comparison of Mean Torque were made with T-test with significance level at 95%.



## OPERATIVE TECHNIQUE FOR GROUP A

- 1) Scouting and patency check with a k-10/8 to establish working length
- 2) Rotary Glide Path with Af Blue S4 18.05
- 3) S-one 25.06 until working length was reached

## OPERATIVE TECHNIQUE FOR GROUP B

- 1) Scouting and patency check with a k-10/8 to establish working length
- 2) S-one 25.06 until working length was reached

## DISCUSSION

Both technique allowed instruments to reach working length with no deformation or fracture in all cases.

Both Mean Torque were below the torque limits, and a significant differences was found between the two technique (table 1), with the use of glide path significantly reducing instrumentation mean torque values and instrumentation time.

The usage of glide path helped to reduce coronal and middle blade engagement and facilitated progression according to the step back principles, even if a low torque was used, Low torque values could reduce the risk of intracranal separations due to

torsional stress; moreover the increase of instrument used did not results in an increase of time consumed for shaping procedure. Moreover, According to the manufacture the innovative alloy (Af H wire) significantly increased the resistant to flexural stress. The usage of Glide path files helped in reducing torsional stress by enlarging the canals dimension.

## CLINICAL RELEVANCE

The use of glide path files and low torque seems a promising technique to improve safety and efficiency of single file rotary techniques.

## REFERENCES

1. Gambarini G, Seracchiani M, Piasecki L, Valenti Obino F, Galli M, Di Nardo D, Testarelli L. Measurement of torque generated during intracanal instrumentation in vivo. *Int Endod J.* 2018 Nov 16.
2. Kwak SW, Ha JH, Cheung GS, Kim HC, Kim SK. Effect of the Glide Path Establishment on the Torque Generation to the Files during Instrumentation: An In Vitro Measurement. *J Endod.* 2018 Mar.



Table 1. Mean torque and mean instrumentation time for group A and B

	Mean Torque	Mean instrumentation time
With Glide Path	0,53 Ncm (0,09)	62,33 seconds
Without Glide Path	0,64 Ncm (0,05)	96,67 seconds

譯文：

## 目標

本篇要評估的是：臨床上單一支鐮鈦旋轉器械操作技術，使用下滑路徑旋轉器械對所需扭力及器械修形清潔時間的影響。

## 簡介

在先前的研究顯示使用低扭力進行根管清創可以提高操作安全性，然而低扭力會限制了清創進度及較難到達工作長度。

為了盡量降低扭力，有很多不同的臨床技術也應運而生。其中一種技術就是在最開始的時候使用旋轉下滑路徑器械，這種方式會與單一支旋轉器械操作技術有較多相關，因為單一支器械容易承受所有的應力。

本篇所用的是 S-one rotary instruments (Fanta Dental)。

## 方法

使用20顆雙根管上顎小白齒，同顆

牙的頰側及顎側根管隨機分為A、B兩組，A組使用8號或10號K file先探測並通暢根管建立工作長度，接下來使用旋轉下滑路徑器械 Af Blue S4 18.05，最後再用S-one 25.06一直到器械到達工作長度為止。B組則無使用旋轉下滑路徑器械，其餘步驟都相同。主機設定為350rpm，1.5Ncm。實驗中計算平均扭力，並使用數位天文鐘計時。

## 討論

兩組方式都有清創修型到工作長度，器械都沒變形也沒斷裂，平均扭力也都小於其極限值。

結果顯示使用下滑路徑旋轉器械可以減少扭力也可以節省根管清創修型時間，也可在擴大根管內徑時對抗彎曲應力及扭轉應力。

## 臨床意義

使用下滑路徑旋轉器械，可以降低扭力，並且可以在單一隻旋轉器械操作技術中可增加安全性及效率。