

**NiTi ?**

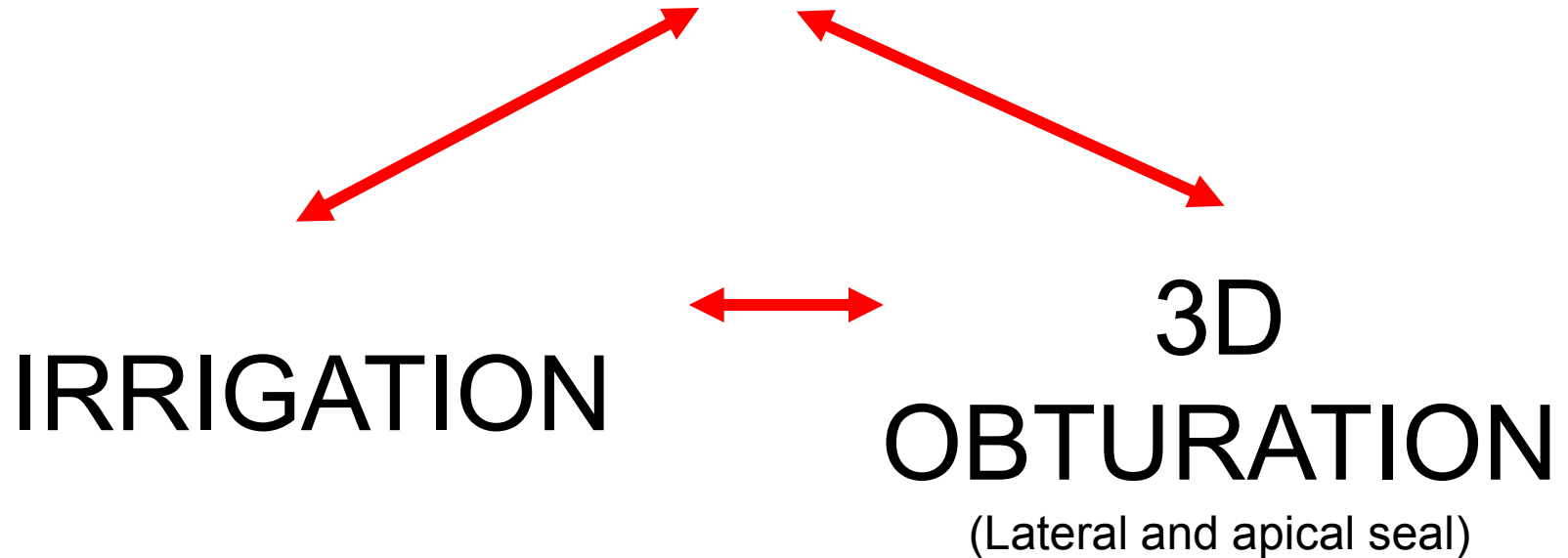
# Biological Objectives Of the Root Canal Treatment

- Eliminate pulp and debris
- Eliminate bacteria and endotoxins

From the root canal system

# The Keys to Success

**Shaping** (apical taper or enlargement)



# IRRIGATION Protocole

- SODIUM HYPOCHLORITE (0,5% to 5.25%)

with

- LUBRICATING / CHELATING GEL (Glyde™)

And

- LIQUID EDTA (to eliminate smear layer)

*Other solutions and irrigation devices are advocated to allow better disinfecting efficiency:*

*(Chlorhexidine, heat, ultrasonics, sonics.....)*

# Evaluation of Glyde File Prep in Combination with Sodium Hypochlorite as a Root Canal Irrigant

Grandini S. *et al.* *J Endodon* 2002 ; 28 : 300-303

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*« Combined use of 2.5% Sodium Hypochlorite and Glyde File Prep allowed to obtain cleaner canal walls (less debris, less smear layer and a greater number of open dentinal tubules) than irrigation with saline or hypochlorite alone »*

# GLYDE File Prep™

Available in single dose compules  
(avoids cross contamination)



- EDTA
- CARBAMIDE PEROXIDE
- HYDROSOLUBLE GEL (GLYDE)

# Drawbacks of Conventional Hand Stainless Steel Preparation Techniques

- ➔ MISHAPS (*ledges, canal blockade, zipping of foramen*)
- ➔ DEBRIS EXTRUSION WITH FILING MOTION
- ➔ TIME CONSUMING
- ➔ LESS PREDICTABLE SHAPES IN CURVED CANALS

# Advantages of Rotary NiTi Techniques

- ➔ LESS CANAL TRANSPORTATION
- ➔ LESS DEBRIS EXTRUSION (LESS Post Op PAIN)
- ➔ FASTER THAN HAND PREPARATION
- ➔ MORE PREDICTABLE RESULTS



# Characteristics of Rotary Nickel Titanium Instruments

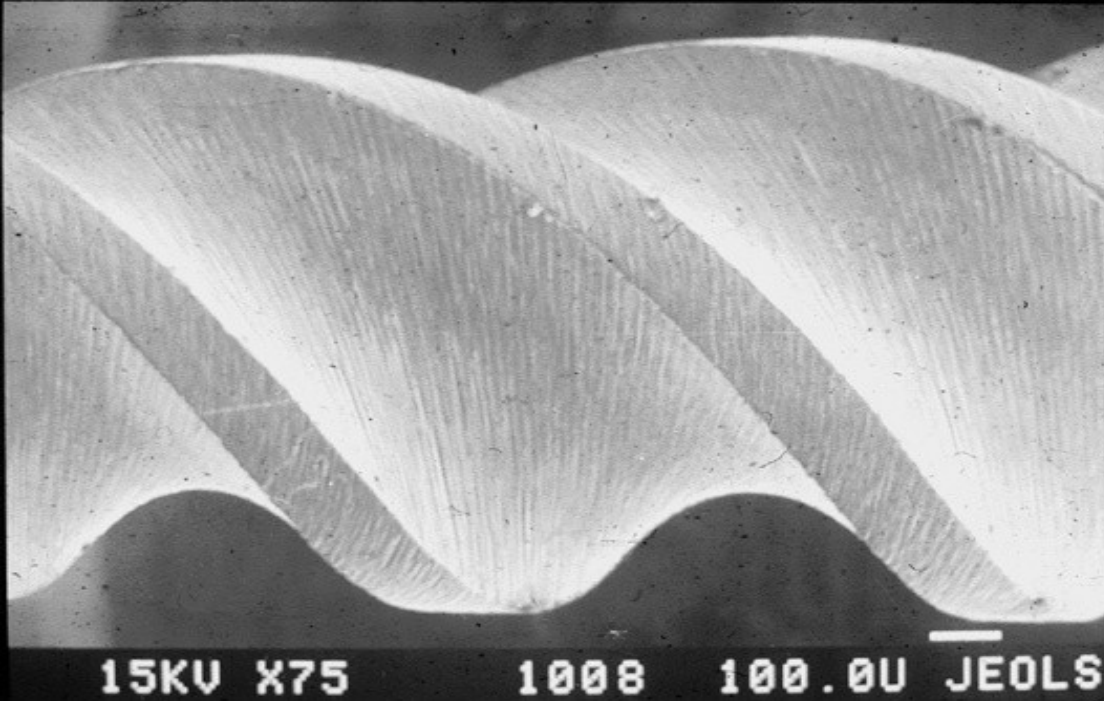
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graph TD; A[Characteristics of Rotary Nickel Titanium Instruments] --> B[Constant Taper (All instruments)]; A --> C[Variable Taper (ProTaper)]; B --> D[Cutting blades Or Non cutting blades (Radial Land)]; C --> E[Cutting blades];
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Constant Taper  
(All instruments)

Cutting blades  
Or  
Non cutting blades  
(Radial Land)

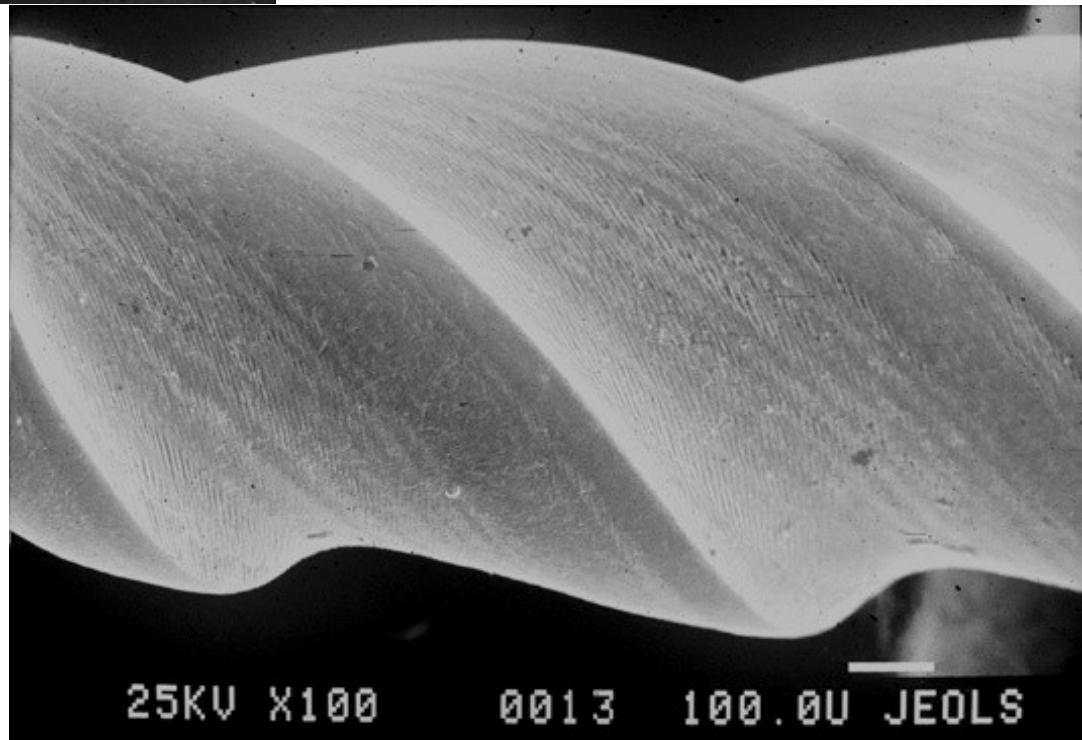
Variable Taper  
(ProTaper)

Cutting blades



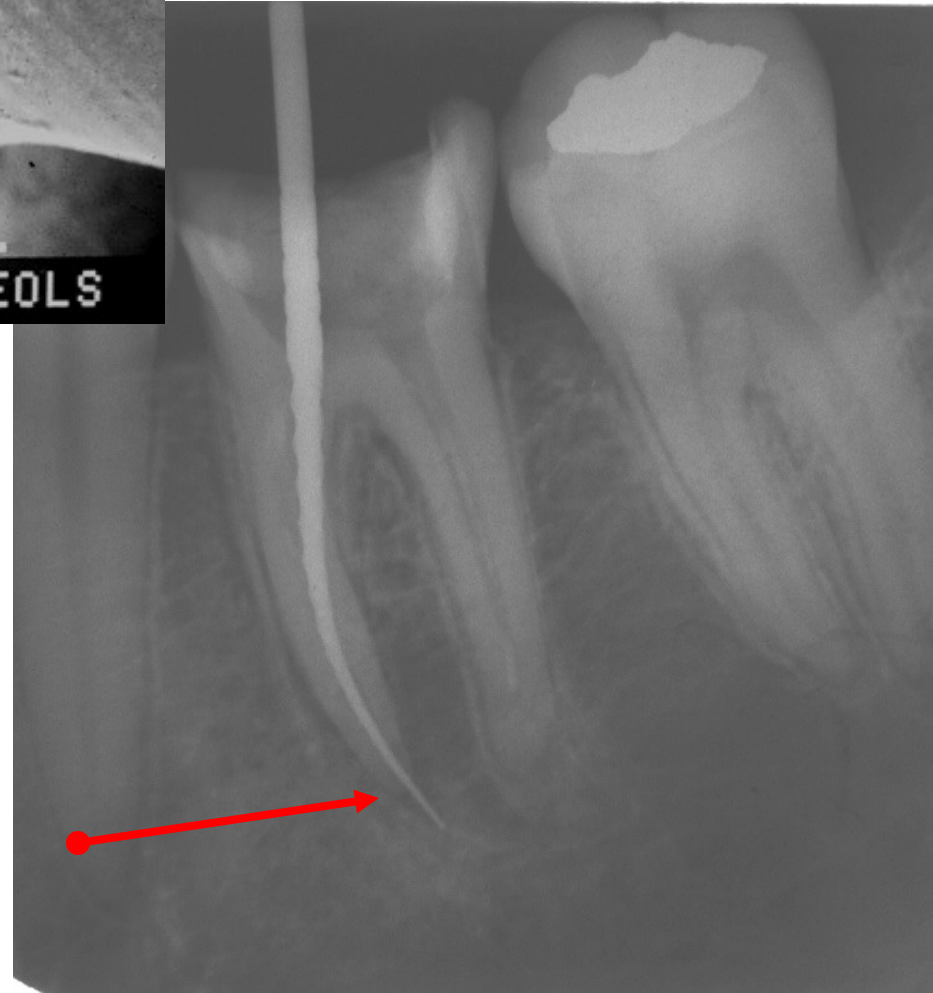
NON CUTTING BLADE  
(with Radial Land)  
ProFile, GT System, K3

CUTTING ACTIVE  
BLADE  
(Hero 642, HeroShaper,  
Mtwo, Alpha File, RaCe)





Rotary Instrument with  
a Constant taper  
and Cutting Blades  
have a tendency to **screw-in**

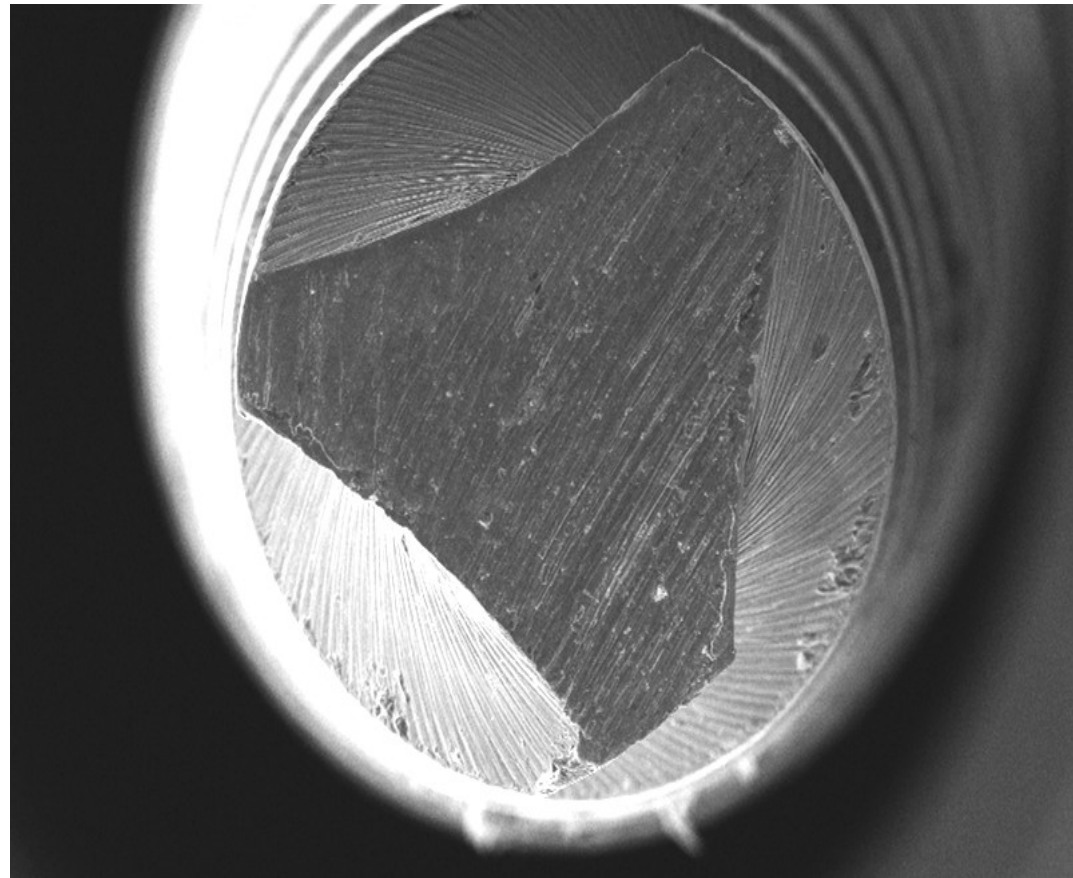


# Rotary Instruments with a Constant taper and a Radial Land

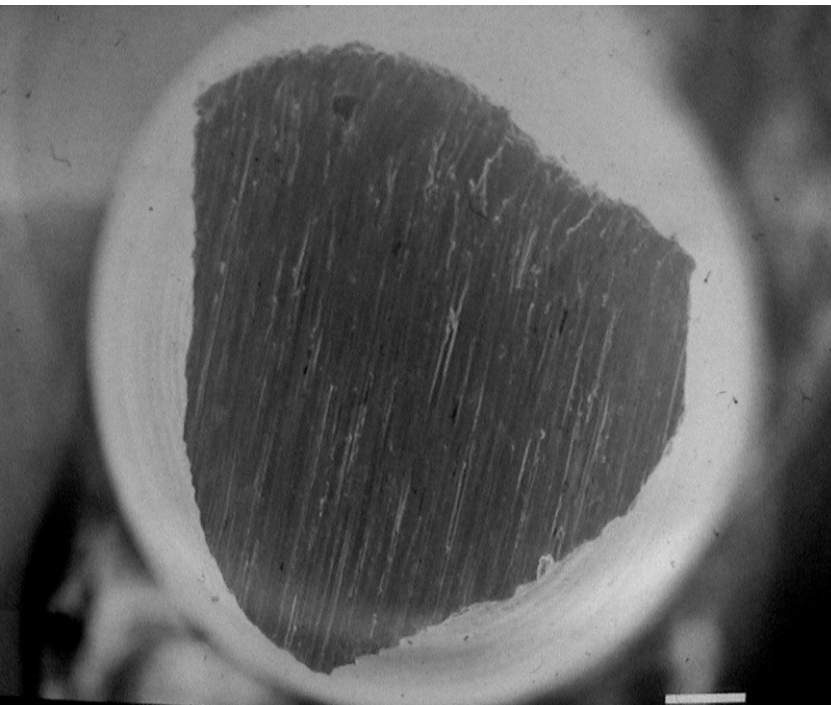
Requires **more pressure** to cut and are subjected to **more stress** (surface contact is increased)

Berutti et al. *J Endodon*

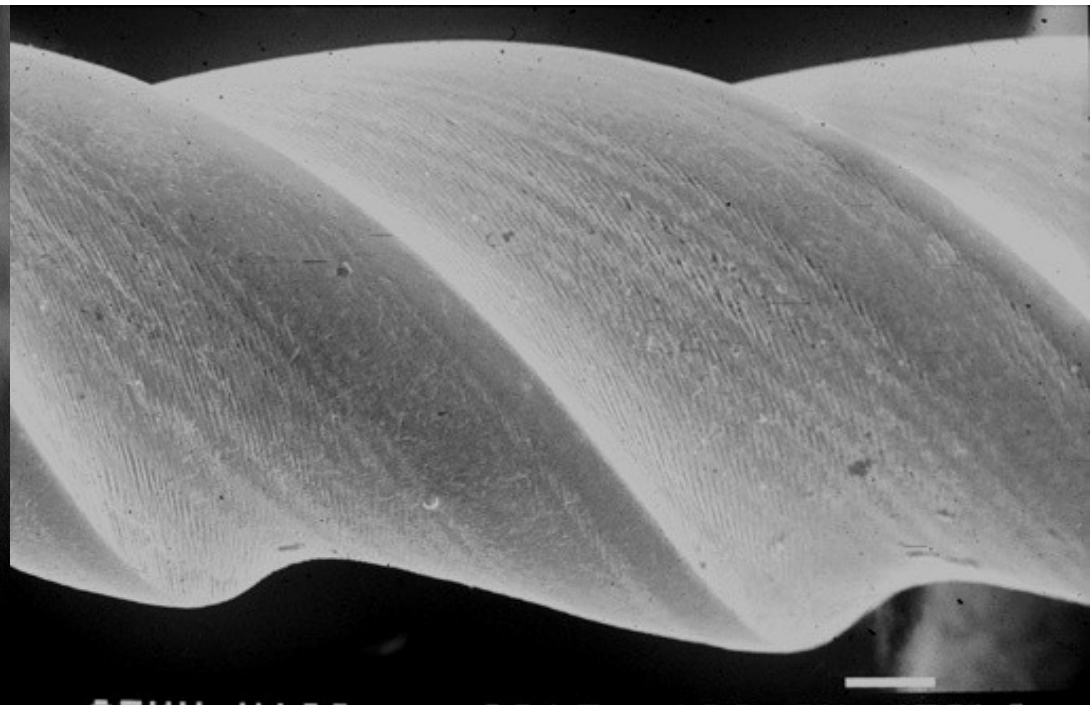
2003;29:15-19



Rotary Instrument with a large cross-section  
(central mass)  
and a constant taper  
are **too stiff in taper higher than 4%** to shape  
curvatures without risks of mishaps



25KV X110 0012 100.0U JEOLS



25KV X100 0013 100.0U JEOLS