

# 牙髓病學 Endodontics

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## 學習目標

All students must be familiar with the development of endodontic theory and practice and an evidence-based approach that permits an intelligent evaluation of current and future technologies and materials.

## 參考資料

- Principle of Endodontics Pathway of the pulp

## Summary

- Rationale of Endodontics  
Anatomy and Embryology of the Pulp  
Pretreatment and Rubber Dam
- Diseases of the Pulp
- Endodontic diagnosis and emergency management  
Endodontic Radiography
- Endodontic Instruments and materials
- The Art and Science of Cleaning and Shaping
- The device and application of the Ni-Ti instrument in the endodontic treatment
- The Art and Science of Obturation—  
- Vertical Compaction of Warm GP Technique  
Lateral Compaction Technique

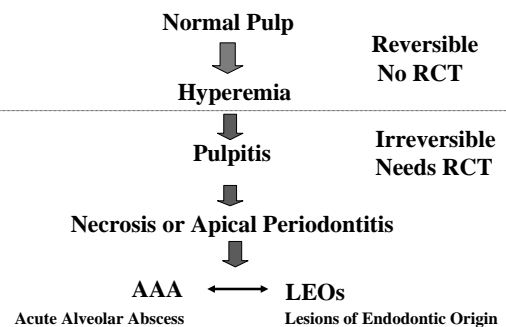
## Summary

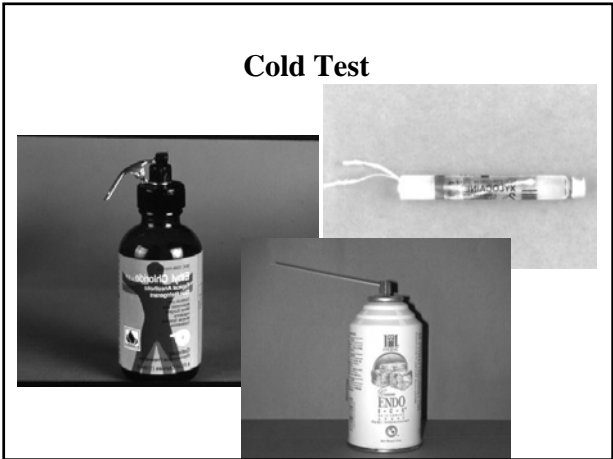
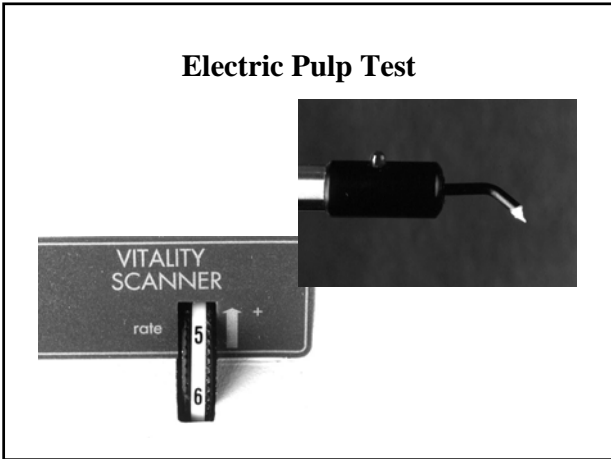
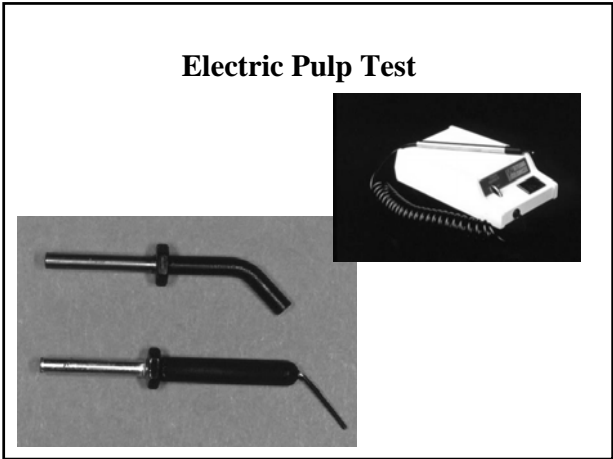
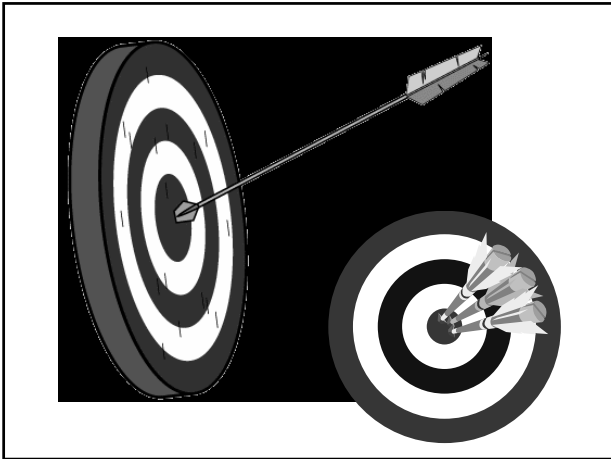
- Surgical Endodontics
- Apexogenesis and Apexification
- Endodontic Traumatology
- Diagnosis and Management of Combined Perio-endo Problem  
Treatment planning /Endodontic Mishap /retreatment
- Apex Locator  
Tooth Bleaching
- Laser endodontics  
digital radiography / CT in Endodontic treatment
- 醫療環境與心理層面  
Treatment planning /Endodontic Mishap /retreatment

# 牙髓病學 Endodontics Endodontic Diagnosis and Emergency Treatment

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## Classification of Pulp Diseases





**Hyperemia**

**Signs and Symptoms**

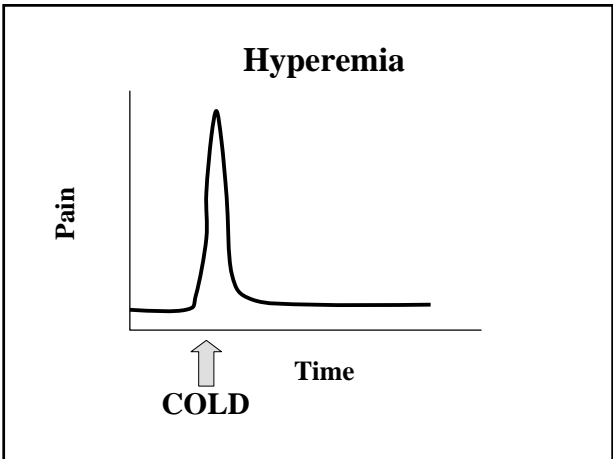
- No spontaneous pain
- Short, intermittent pain may be elicited by stimuli, particularly to cold

**Diagnosis**

- Cold test   +++
- Heat test    +
- EPT           +

**Treatment**

Sedative type filling + Permanent restoration



## Pulpitis

### Signs and Symptoms

- Spontaneous pain may last hours, especially happened at night
- Cold may sometimes relieve the pain.
- Hypersensitivity to hot tea or food.
- Extensive and deep restoration or caries is most shown in the radiograph
- Patient usually can not locate the involved tooth

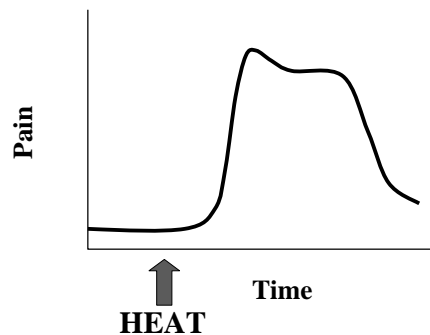
### Diagnosis

Cold test +  
Heat test +++  
EPT +

### Treatment

Pulpectomy / Pulpotomy

## Pulpitis



## Necrosis

### Signs and Symptoms

- The tooth may asymptomatic
- The tooth may discolored
- No lesion is shown in the radiograph, but it may shown a widened PDL space

### Diagnosis

▪ Cold test --  
▪ Heat test --  
▪ EPT --  
▪ Cavity test --

### Treatment

RCT

## Apical Periodontitis

### Signs and Symptoms

- Biting pain
- PDL widening or LEOs is sometimes shown on the radiograph (Pulp disease origin)

### Diagnosis

▪ Percussion test +  
▪ Thermal test + / --  
▪ EPT + / --

### Treatment

RCT (Pulp disease origin)

## Acute Alveolar Abscess (AAA)

### Signs and Symptoms

- The patient has throbbing pain.
- The patient feels the tooth is elongated and loose.
- Swelling around the tooth may be detected.
- The tooth is sensitive to percussion.
- The patient is able to pin-point the involved tooth
- The radiograph shows periradicular radiolucency or widened PDL

### Diagnosis

▪ Cold test --  
▪ Heat test --  
▪ EPT --  
▪ Cavity test --

## Acute Alveolar Abscess

### Emergency Treatment

- Establish Drainage

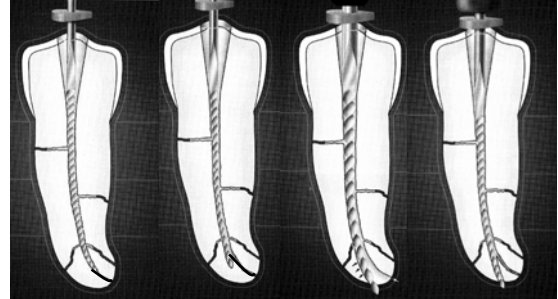
#### Intracanal drainage

1. Abscess is still localized in alveolar bone
2. No anesthesia is required
3. Access opening with the high speed bur
4. Too small and access opening will capture food and prevent drainage
5. Occlusal reduction
6. Establish canal patency

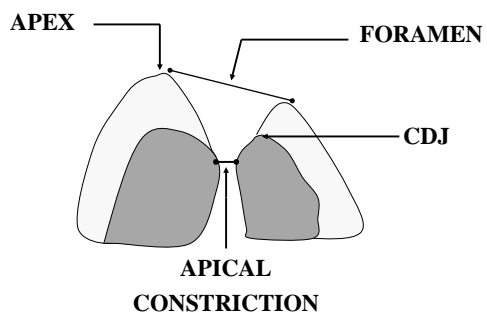
## Established the Canal Patency

### Traditional Cleaning and Shaping Breakdowns

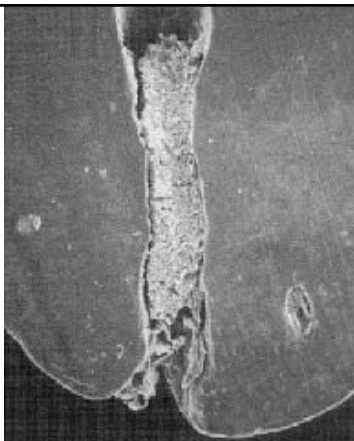
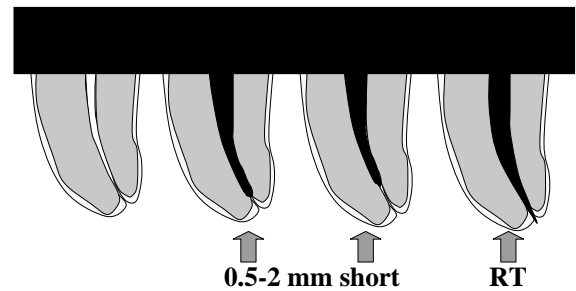
#### Working Short



### APICAL TERMINUS

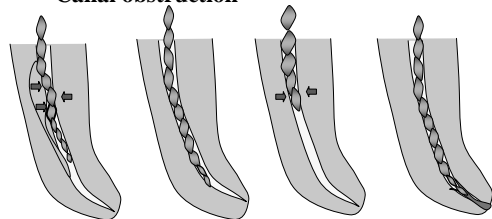


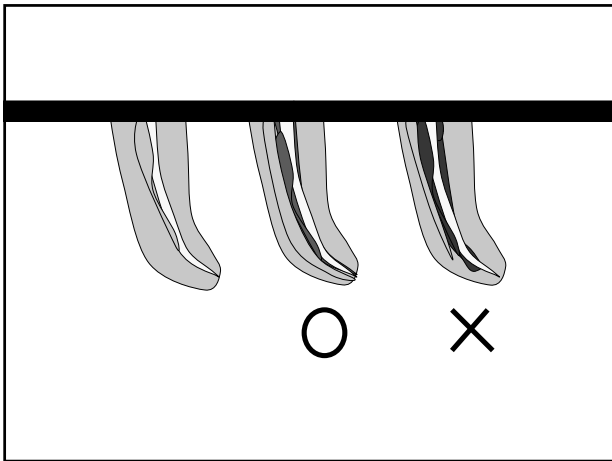
### Ideal Working Length ???



### Four reasons fail to working length

- Body of the canal interference
- Files fail to adapt the curvature of the canal
- Instrument is too wide at the apex
- Canal obstruction

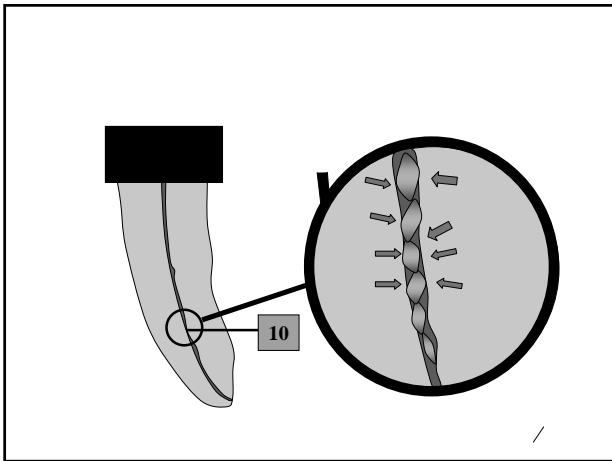
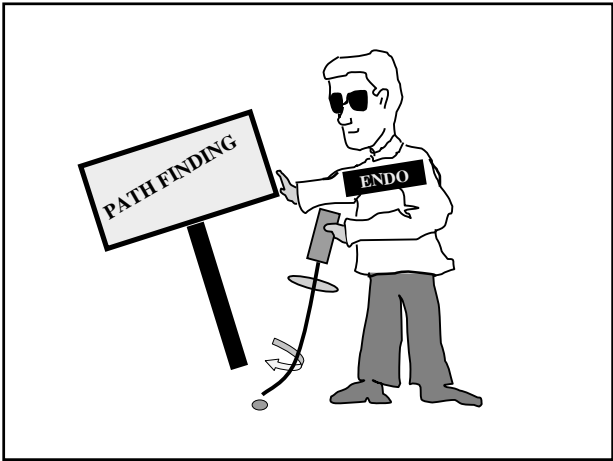




# CANAL PATH FINDING

**Select the first instrument to be used, a file**

By far the most frequent selection for the average fully-formed permanent tooth is a **# 10 file**

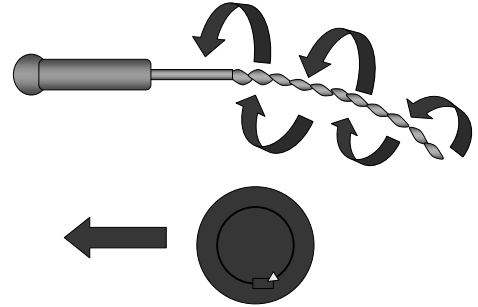


# ENVELOPE OF MOTION

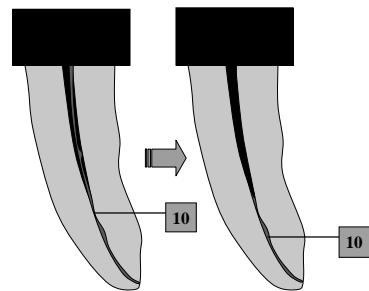
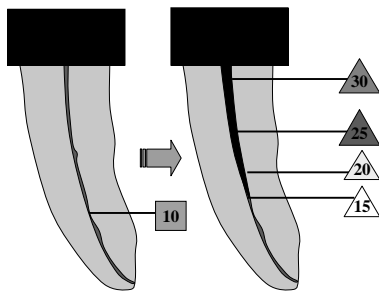
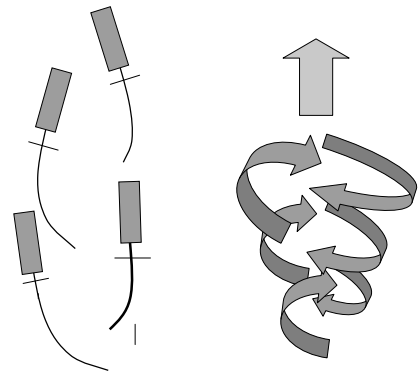
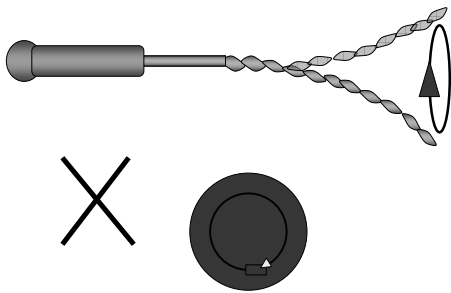
## Envelope of Motion

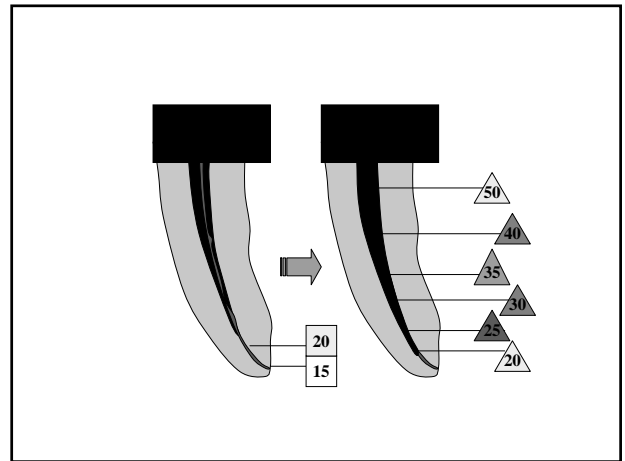
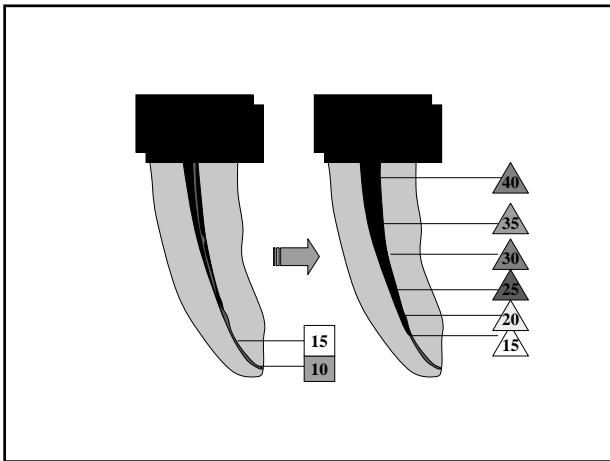
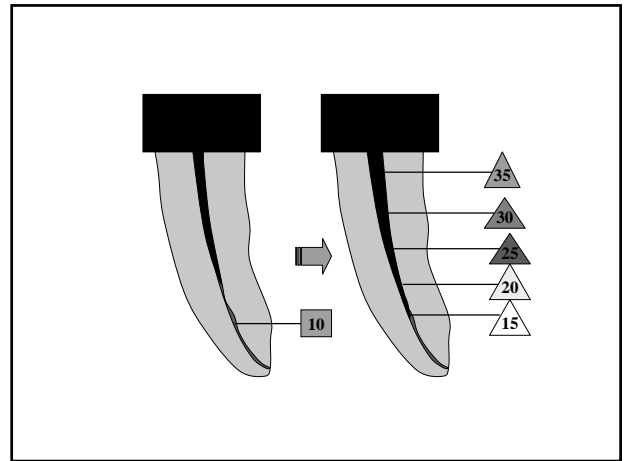
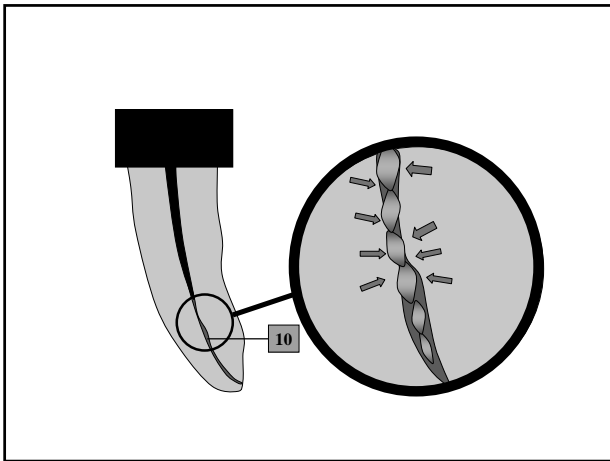
A function of the shape of the original instrument modified by its curvature within the canal

## Envelope of Motion



## Envelope of Motion ???



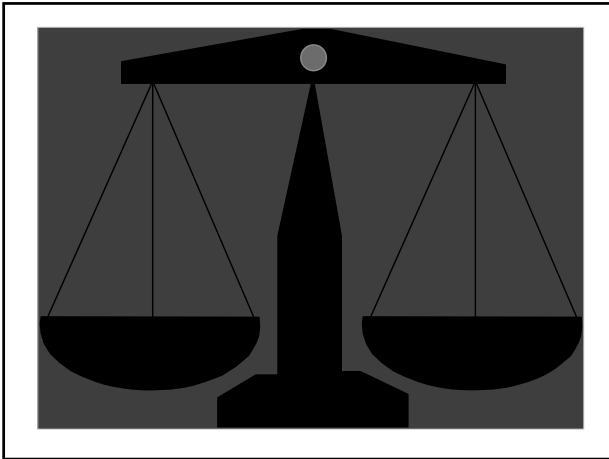


**Never**

**force an instrument deeper  
than it goes passively**

**Passive force  
Sliding into the canals**

**輕且不抵抗 Dentin Wall  
的力量滑進 Canals**



**Let the canal **take**  
the file,  
not the file **make**  
the canal!**