Micro-Invasive Dentistry

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Disclosure

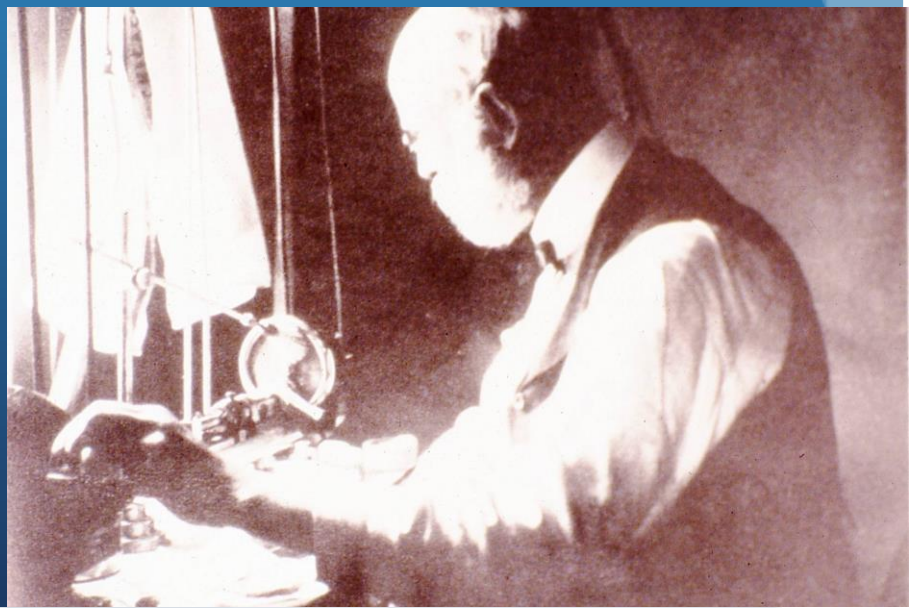
- Consultant, Velopex USA
- Former Trainer AA 1993- present
  - American Dental Technologies
  - Air Techniques

Black Preparation System

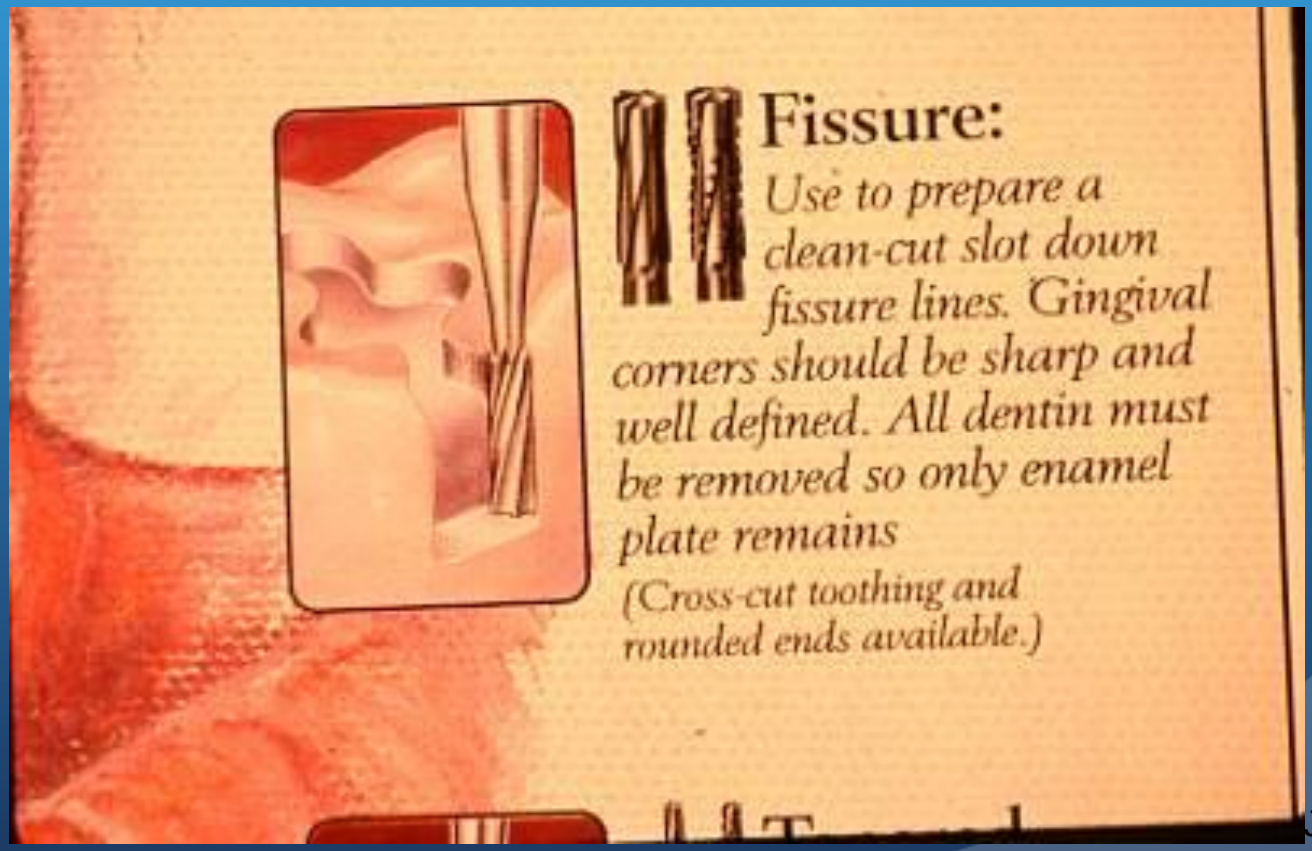
- Designed for Amalgam
- Mechanical retention
  - Weakens structure
  - Good structure removed
  - Wider restorations- more surface wear
- 100 y.o. technique

Black in Context

- Preceeded X ray diagnostics
- 2000 RPM rotary equipment
- Metallic restorations only available



Methodology



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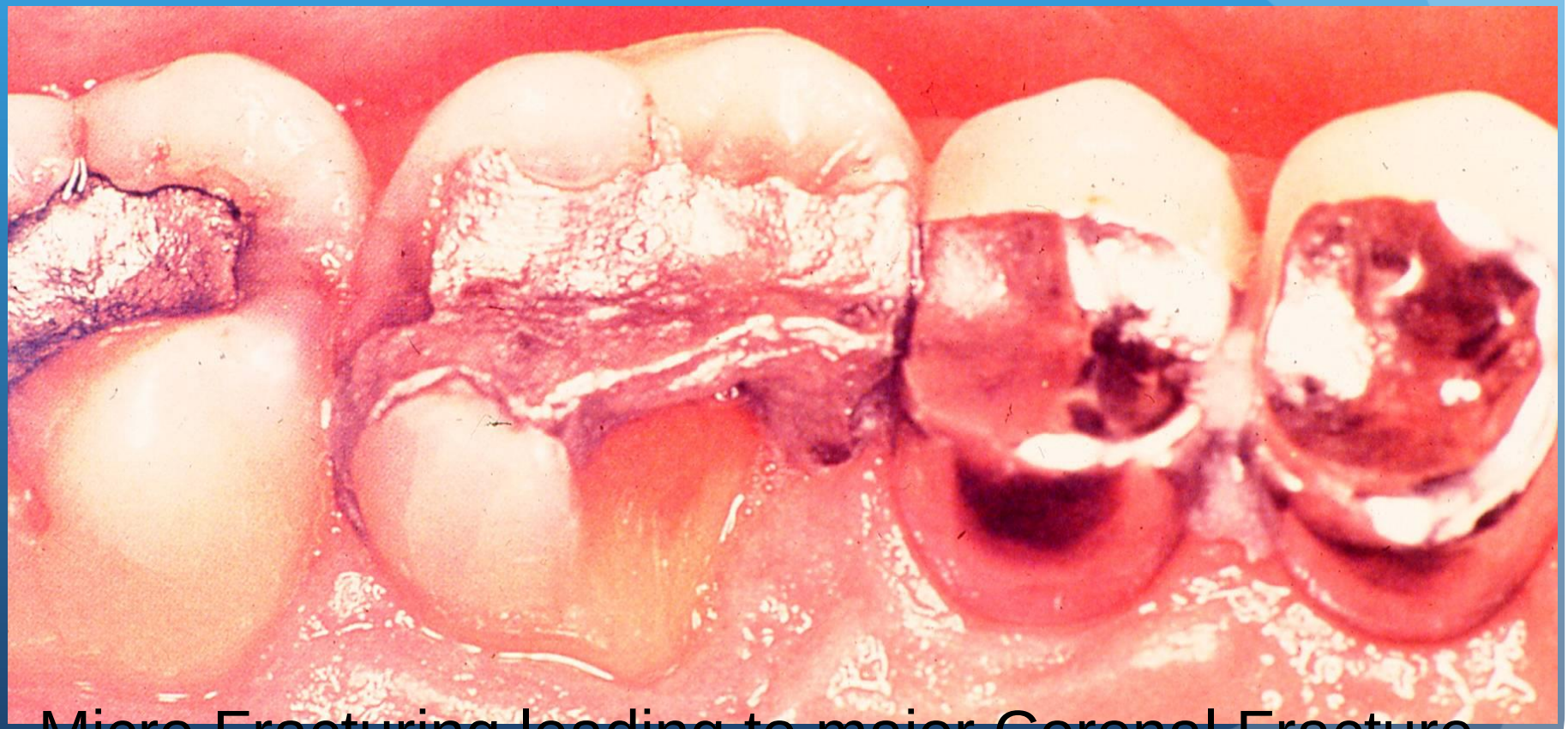
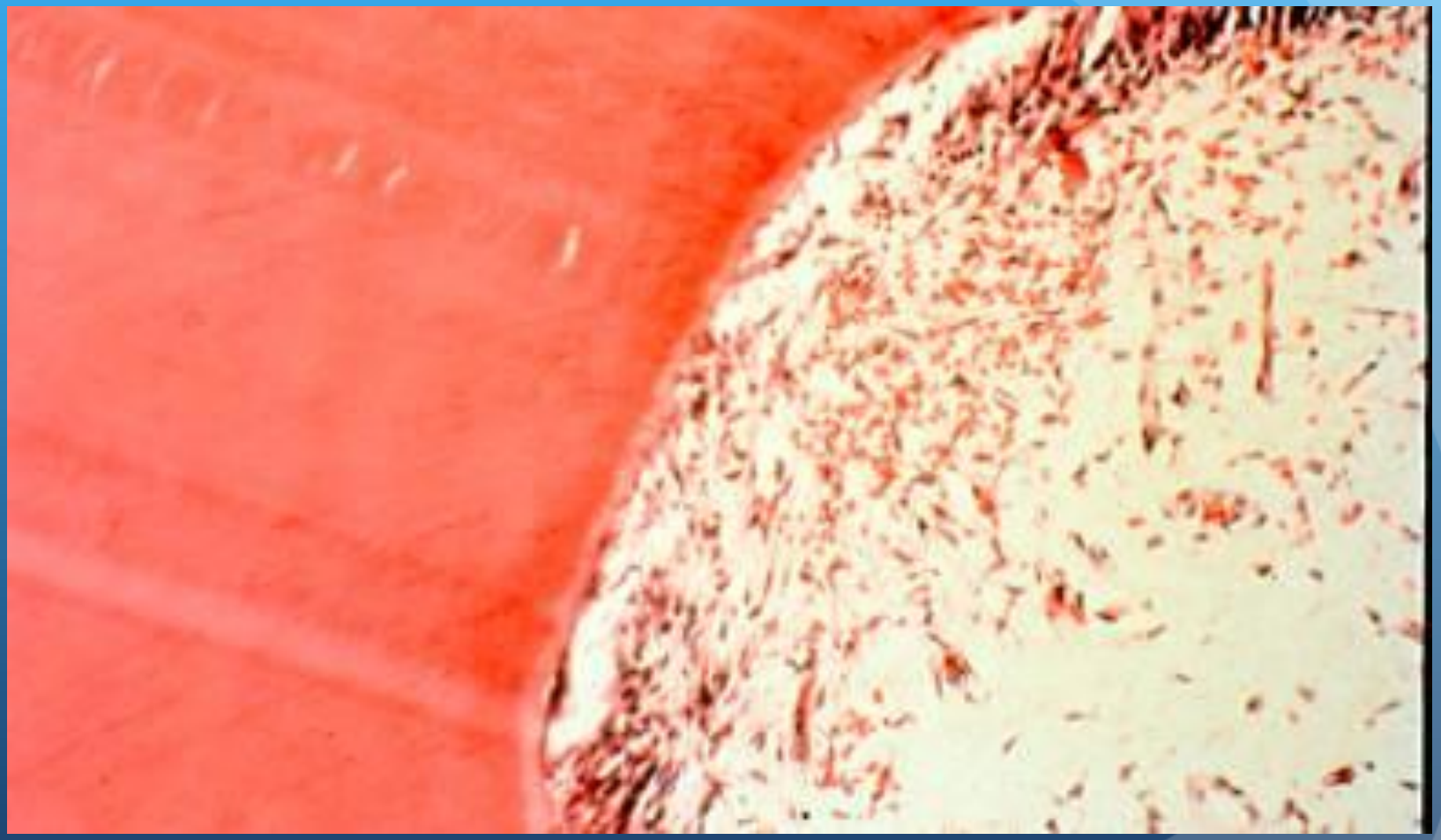
A Half Century of High Speed Treatment



Micro Fracturing leading to major Coronal Fracture

Hyperemic results



Aspiration of Odontoblasts/cell death

Not Just Cuspal Fractures

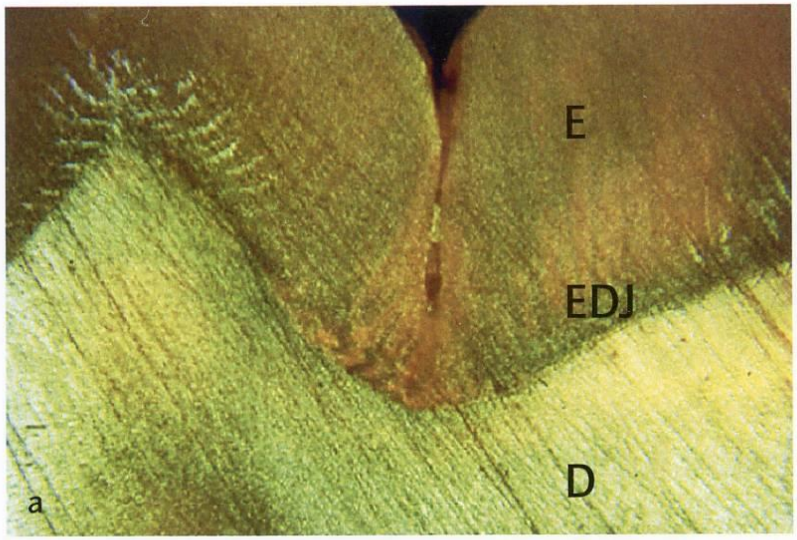
Marginal ridge fractures leads to recurrent decay

Alternatives to Rotary Preparation

- Air Abrasion
- Cost 3-5k
- Short learning curve
- No special precautions
- Cost per use < $1

- Erbium/CO_2 Lasers:
- Cost > $45-85k
- Long leaning curve
- Eye protection req’d
- Tip cost = $5. Per use

Air Abrasion Preparation



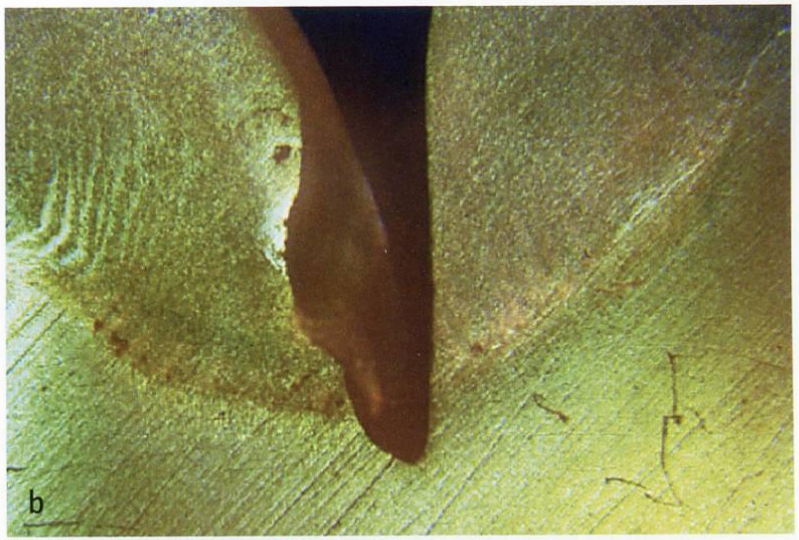


Fig 7-13 Occlusal enamel fissure prepared using air-abrasion (27.5μm). Cavity width is approximately 500μm. Fieldwidth = 3mm. Reproduced from Banerjee A, Watson TF Air-abrasion: Its uses and abuses (courtesy of Dental Update: Dent update 2002;49:340-346).

Abrasive Powder will abrade demineralized structure faster than hard tissue lasers - Ideal for thick enamel surfaces

Dual Chambers

- Cutting:
- Aluminum Oxide 29
- Aluminum Oxide 50

- Polishing
- Sodium Bicarbonate
- Sylc –(Novamin)Bioactive powder

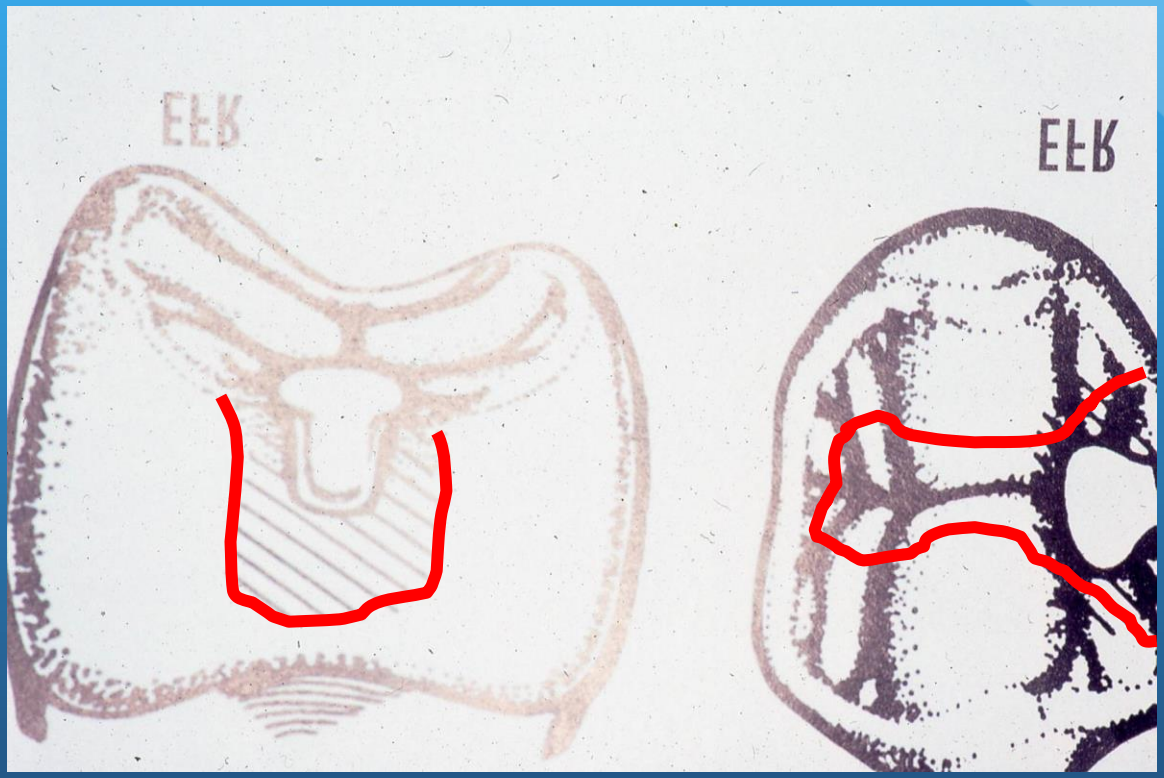
Typical Clinical Appearance, But How Deep?

Pit and Fissure Treatment

Class II Pre-Treatment

- Access
- Protection
  - Hard tissue- Matrix material
  - Soft tissue- Rubber dam, liquid dam, instruments, Cure-thru class V matrices

Minimally invasive Cl II



Class II Bicuspid

Occlusal/ Proximal Decal

Tissue Protection/Initial Exposure

D=Cl II; M Pit; Central Sealant

Final Caries Check

Interproximal Restored

Final Restoration

Anterior Interproximal Video

Hypocalcification Preparation Video

Treatment Goals

- Preserve, Protect, Defend Tooth Structure
- 4 steps: dx, expose, remove, restore
- AA: no pain*
- AA: No noise
- AA: No vibration
- AA: Follows decalcified Structure
- AA: incapable of causing fracture
- AA: Best available Bondable surface 50%Increase B.s.

Workshop

- Abrade models minimally
  - Dry teeth are harder, Models close to reality
- Allow adequate restorative bulk
- Tip at 70º to surface Not perpendicular!
- Funnel can be used as “rest”
- Water shroud will widen prep
  - More comfortable, no airborne particles
- Dry stream for minimal width