

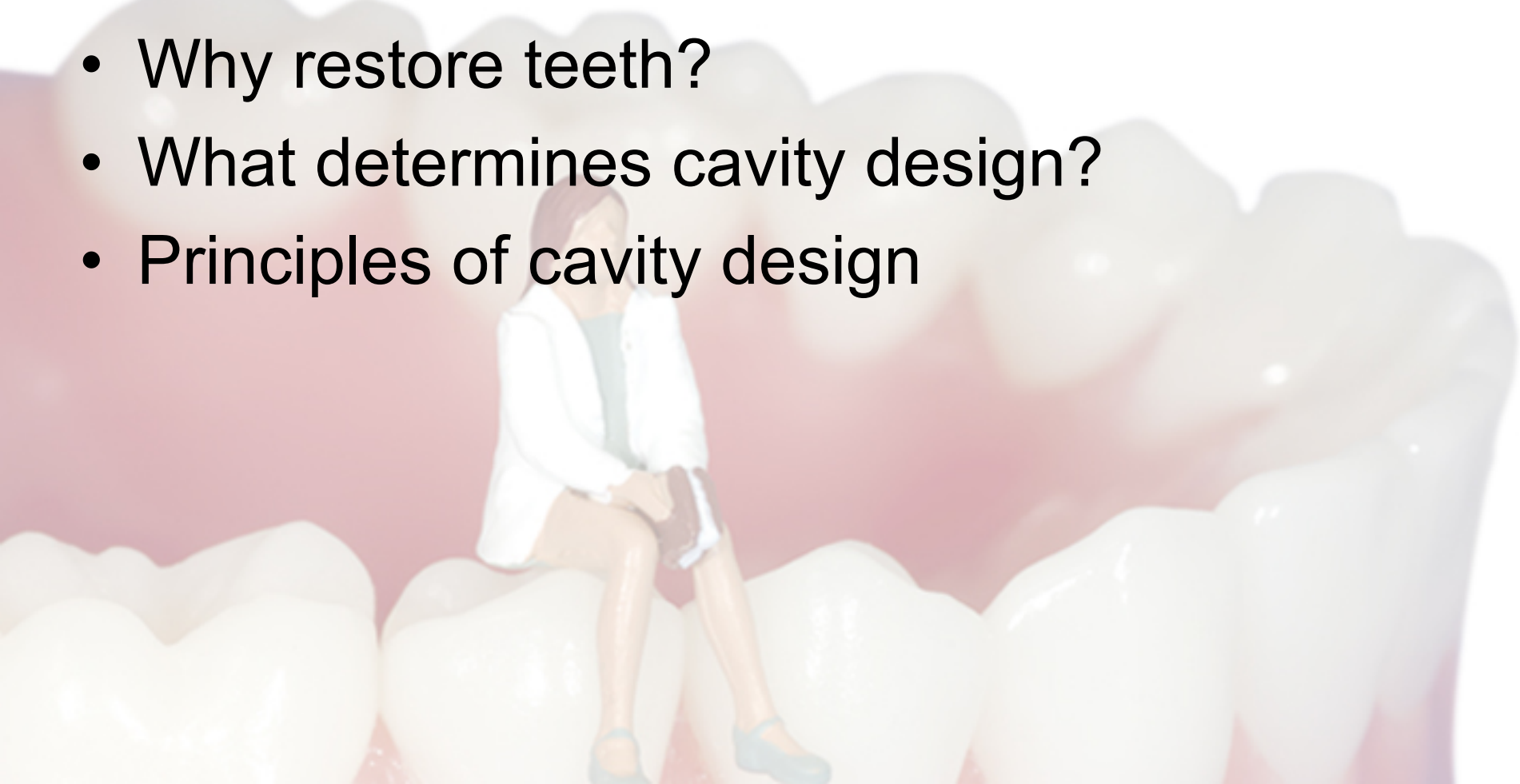


Principles of Cavity Preparation

213 RDS
Dr. N. Shono

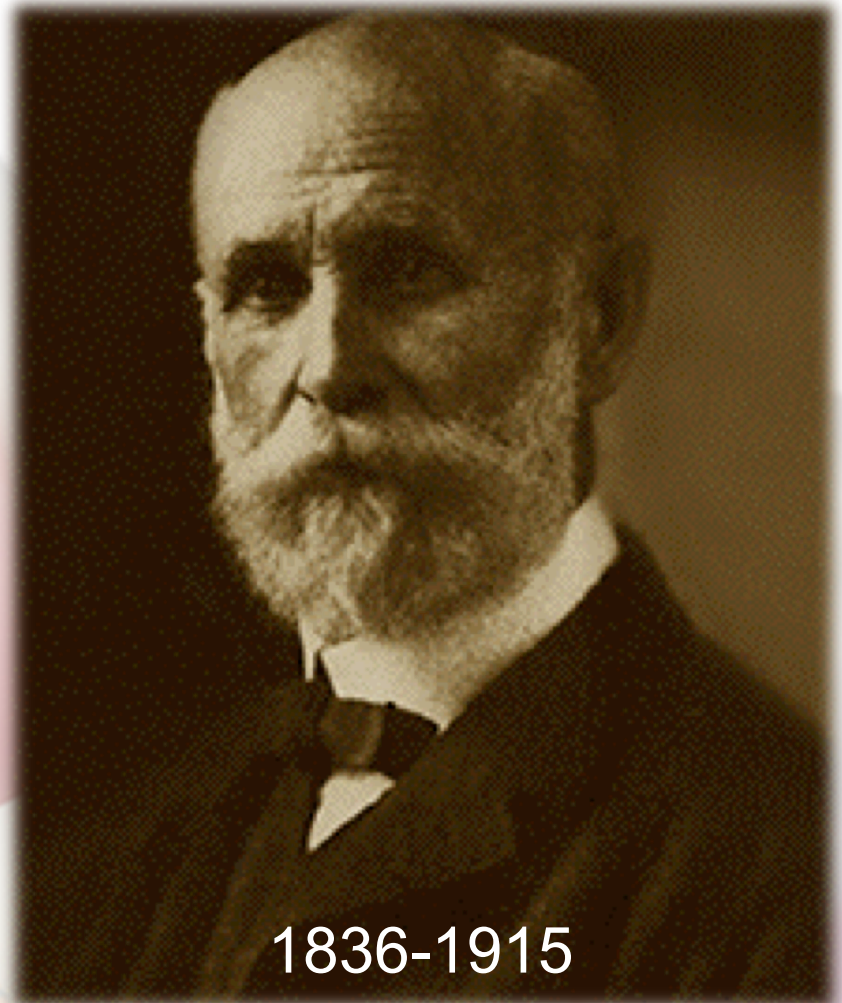
Outline

- GV Black
- Why restore teeth?
- What determines cavity design?
- Principles of cavity design



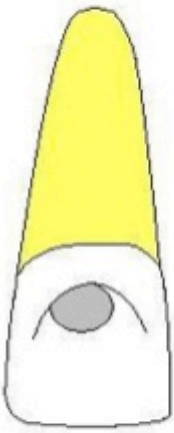
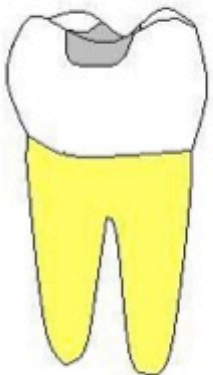
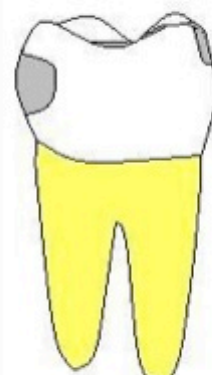
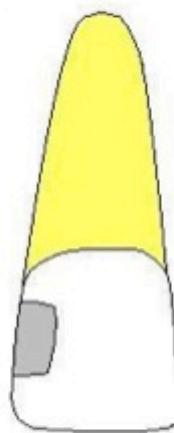
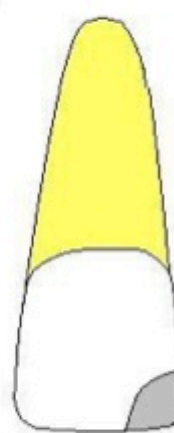
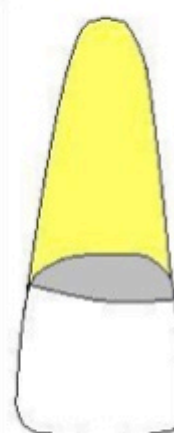
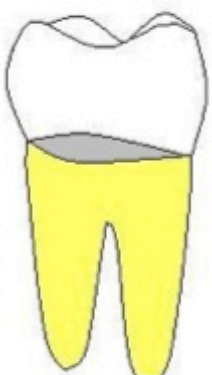
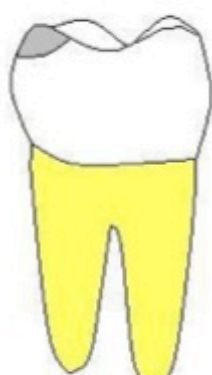
GV Black

- The father of modern dentistry
- Established the principles of cavity design
- “extension for prevention”



1836-1915

GV Black's Classification of Carious Lesions

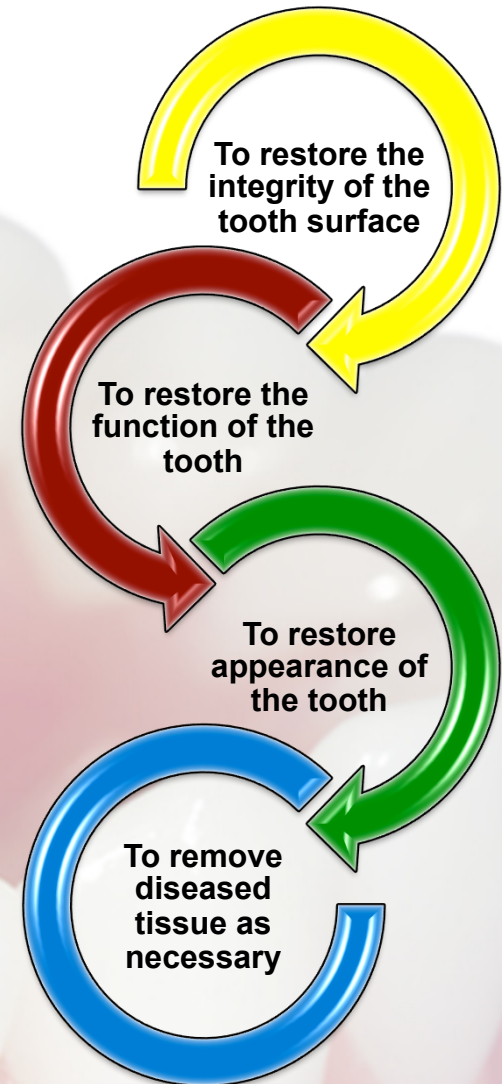
L	B/L	B/L	F	F	F/L	B/L	B/L
							
Class I		Class II		Class III		Class V	
				Class IV			
						Class VI	



Why Restore Teeth?

Why Restore Teeth?

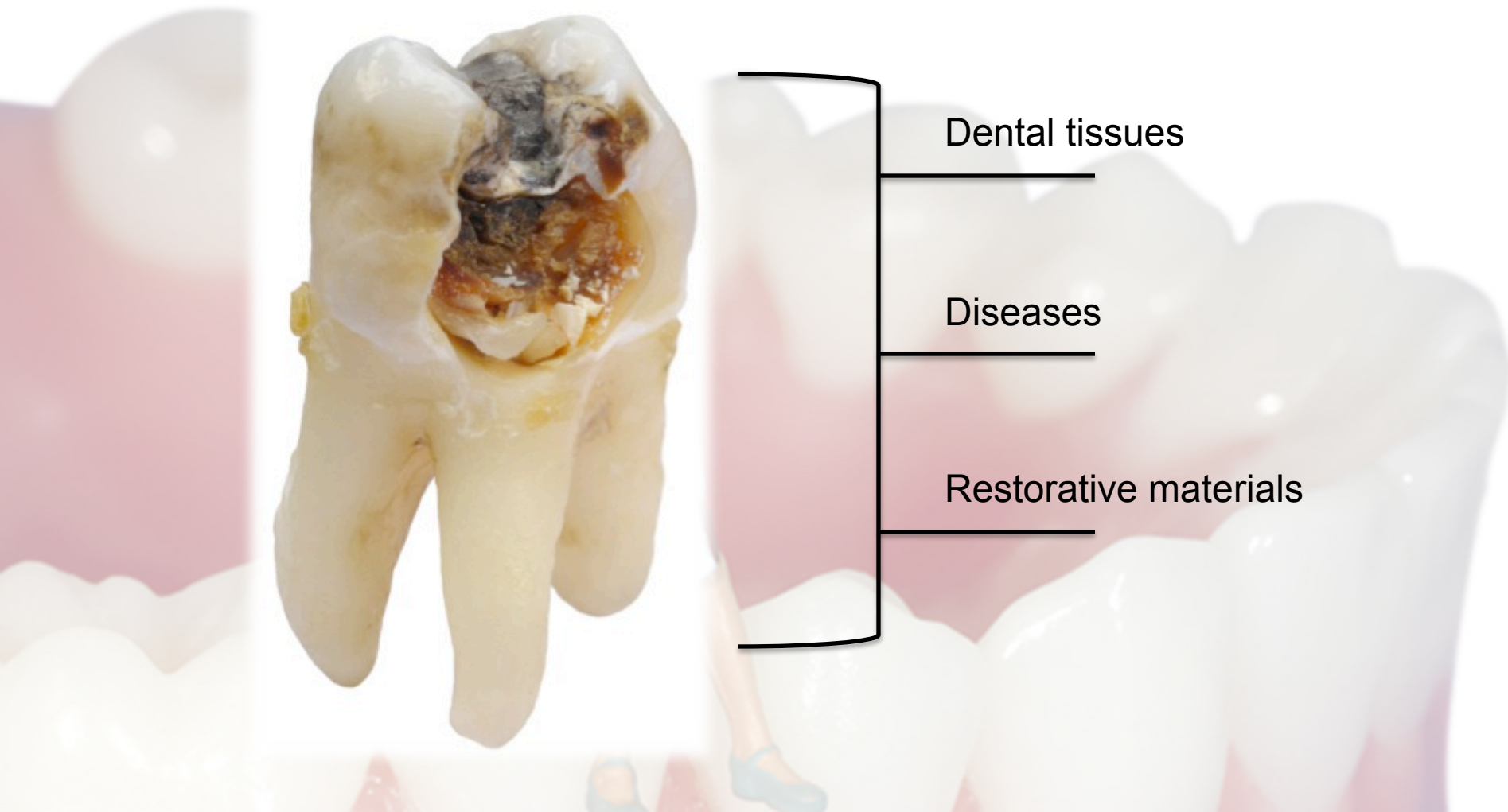
- The objectives of restoring teeth:





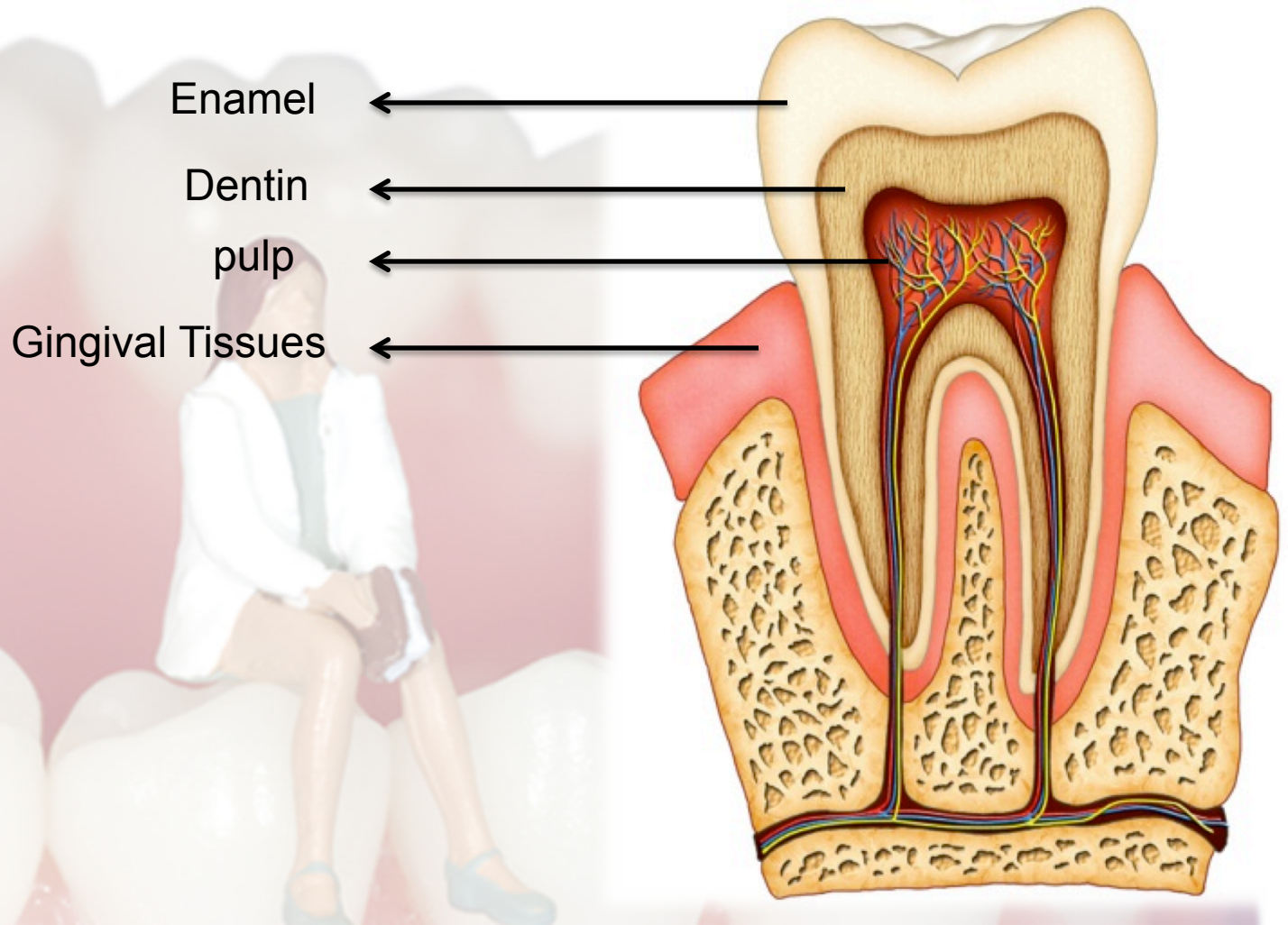
**What Determines Cavity
Design?**

What Determines Cavity Design?



What Determines Cavity Design?

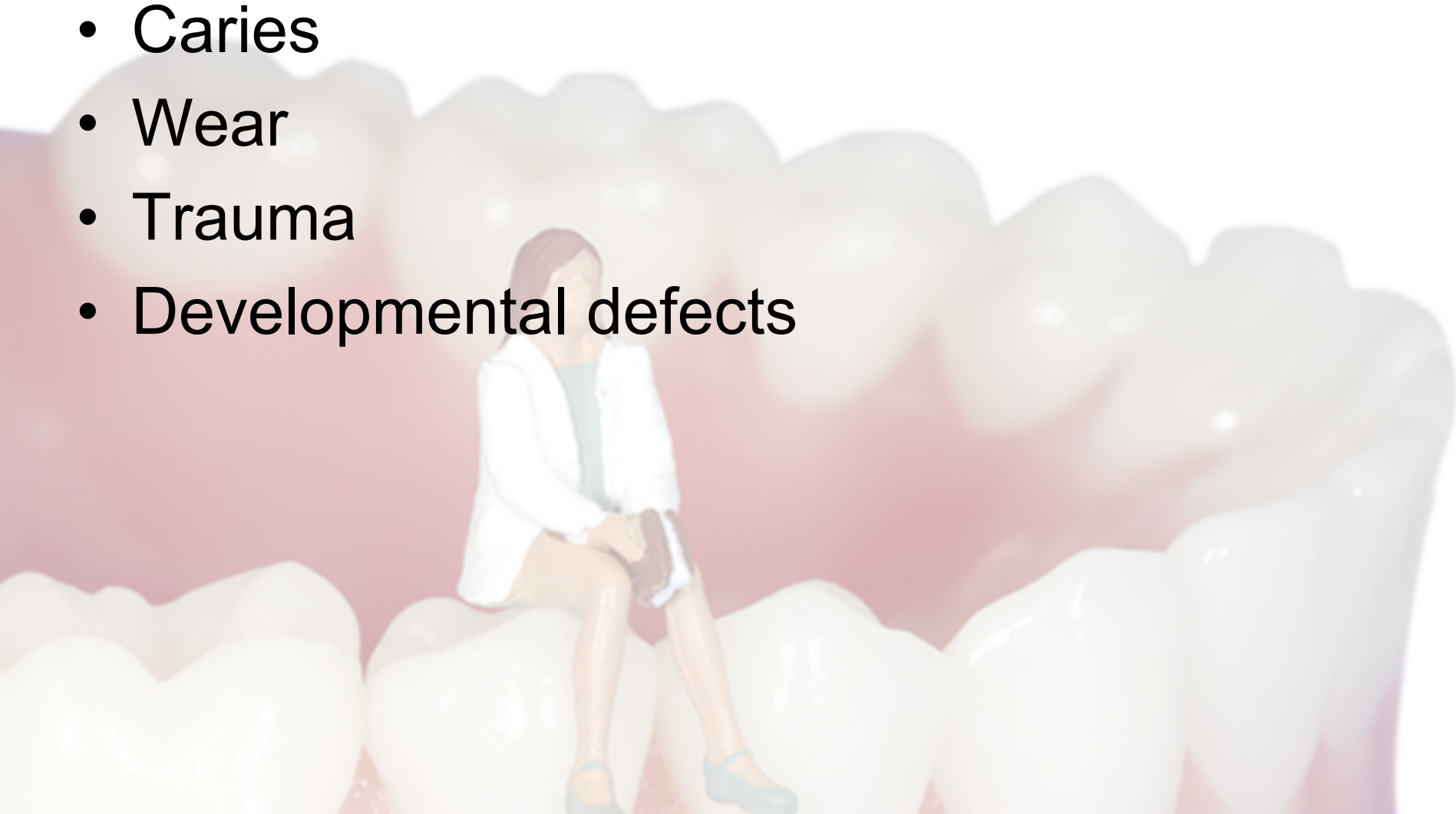
Dental Tissues



What Determines Cavity Design?

The Diseases

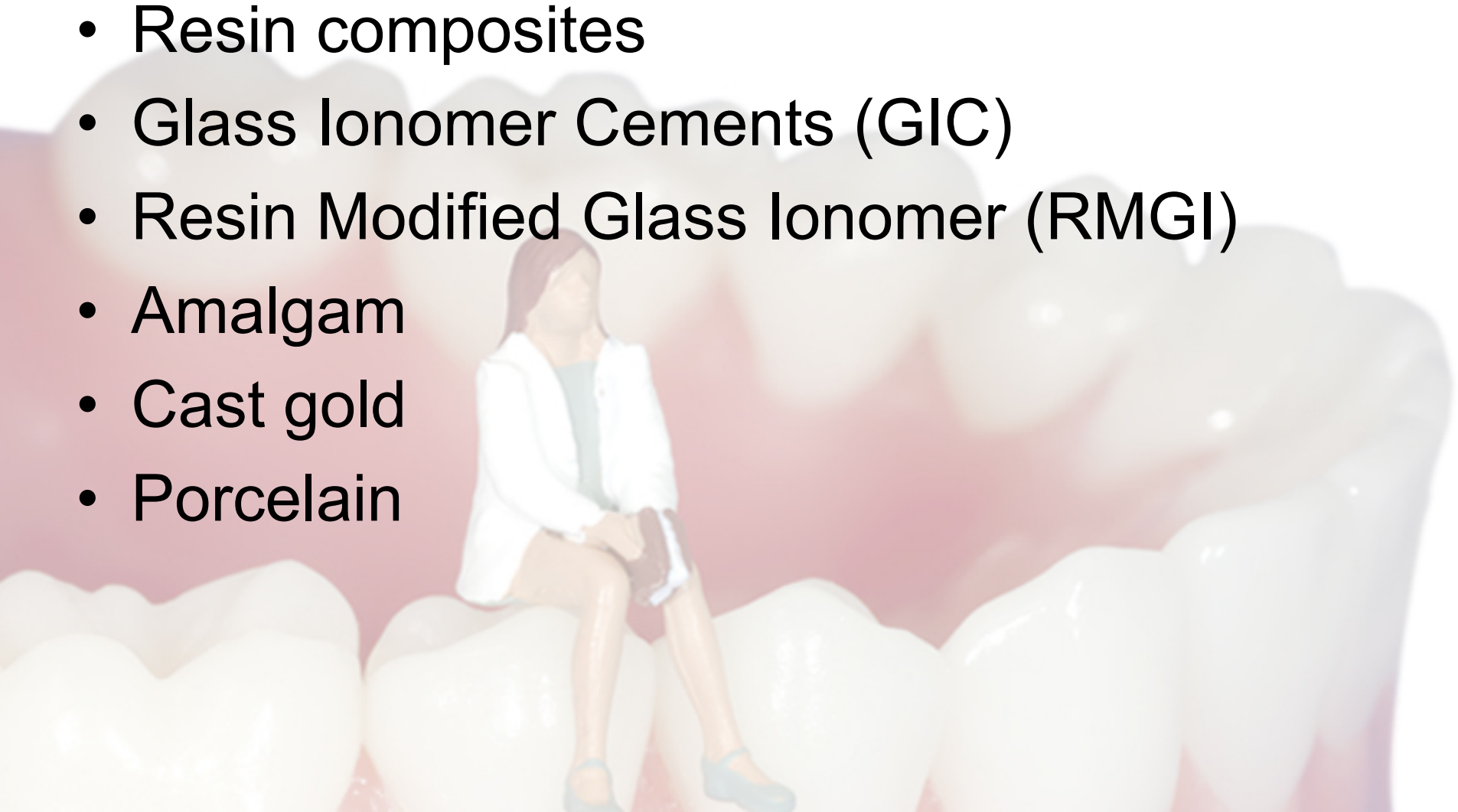
- Caries
- Wear
- Trauma
- Developmental defects



What Determines Cavity Design?

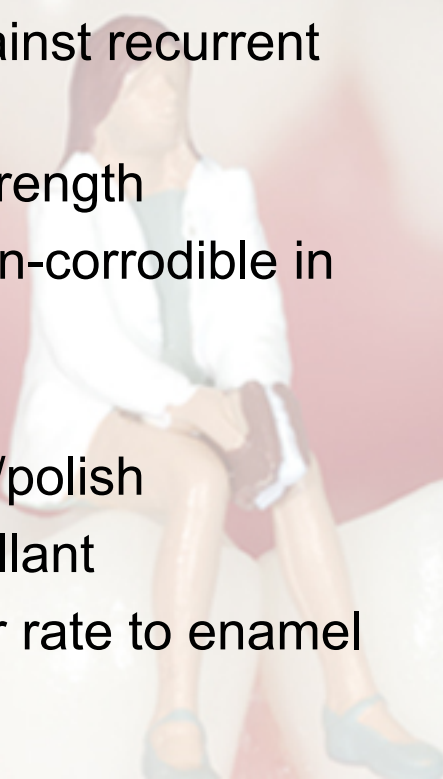
Properties of Restorative Material

- Resin composites
- Glass Ionomer Cements (GIC)
- Resin Modified Glass Ionomer (RMGI)
- Amalgam
- Cast gold
- Porcelain



What Determines Cavity Design?

Ideal Restorative Material

- 
- A small illustration of a female dentist with long brown hair, wearing a white lab coat over a grey top and blue shoes, sitting on a large, stylized white tooth. The background is a dark red gradient.
1. Ease of handling
 2. Esthetic
 3. Adheres to tooth structure
 4. Volume's constant on setting
 5. Protects against recurrent caries
 6. Adequate strength
 7. Insoluble/non-corrodible in the mouth
 8. Non toxic
 9. Easy to trim/polish
 10. Plaque repellant
 11. Similar wear rate to enamel
 12. Coefficient of thermal expansion similar to enamel and dentin
 13. Thermally diffusive
 14. Low water absorption
 15. Radiopaque
 16. Long shelf life
 17. Inexpensive

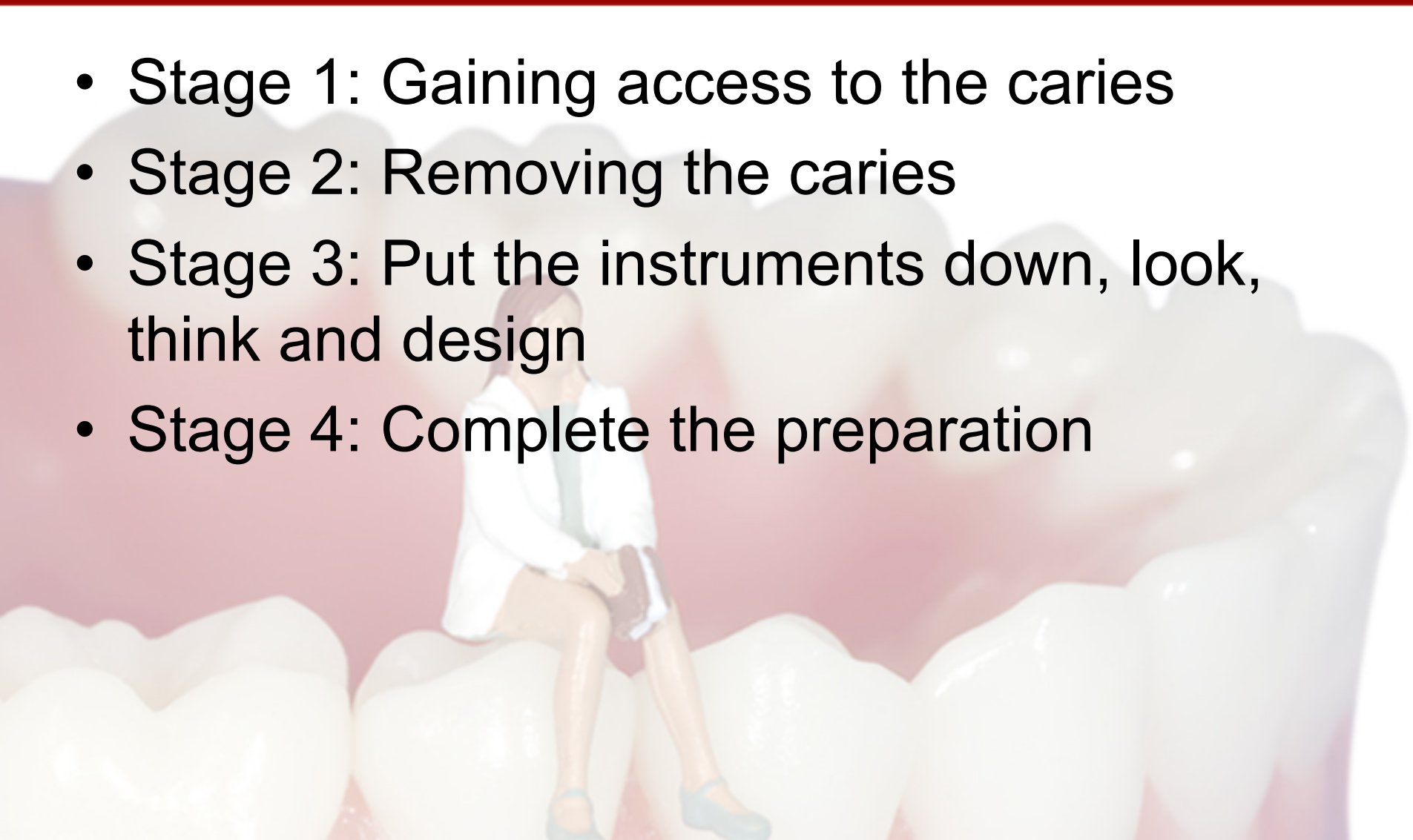


Principles of Cavity Design

Principles of Cavity Design

Stages of Cavity Preparation

- Stage 1: Gaining access to the caries
- Stage 2: Removing the caries
- Stage 3: Put the instruments down, look, think and design
- Stage 4: Complete the preparation



Stage 1: Gaining Access to the Caries

- Occlusal Caries:
 - Overlying enamel
 - More advanced lesions, enamel caved in, direct access



Stage 1: Gaining Access to the Caries

- Approximal Caries (Posterior):
 - Just inside the marginal ridge (large lesions)



Stage 1: Gaining Access to the Caries

- Approximal Caries (Anterior):
 - Lingual, palatal access
 - Overlapping teeth, buccal access



Stage 1: Gaining Access to the Caries

- Recurrent Caries:
 - Complete removal
 - Repair



Stage 2: Removing the Caries

- Enamel-dentin junction
- *Indirect pulp capping*-encourage reparative dentin formation
- *Direct pulp capping*- encourage dentin bridge formation over exposure



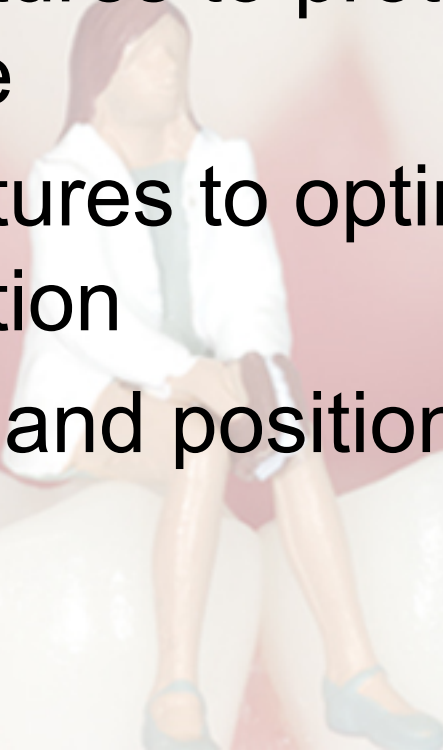
Stage 2: Removing the Caries

Soft Caries

- Hand instruments, excavators
- Slow speed round bur
- Chemo-mechanical caries removal systems



Stage 3: Put the Instruments Down: look, think and design

- The final choice of the restorative material
 - Making the preparation retentive
 - Design features to protect the remaining tooth tissue
 - Design features to optimize the strength of the restoration
 - The shape and position of the cavity margin
- 
- A woman in a white lab coat is sitting on a large, realistic-looking tooth. She is holding a dental instrument, possibly a mirror, and looking down at it. The background is a soft, out-of-focus image of other teeth.

Stage 3: Put the Instruments Down: look, think and design

- *Retentive form*: features of the preparation which prevent the restoration from falling out in any direction.
- *Resistance form*: features that help the tooth structure and restoration resist fracture.



Stage 3: Put the Instruments Down: look, think and design

- Unsupported enamel
- Undermined cusps
- Cavity margins:
 - Supragingival
 - 90 degree angle





Thank you!

Any Questions?