

# Atraumatic Restorative Treatment (ART) – Redefining Dental Care

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# Definition

Atraumatic Restorative Treatment (ART) is a minimally invasive approach to managing dental caries (tooth decay) that prioritizes preserving tooth structure and minimizing patient discomfort.

# History of ART

- **Developed in the 1970s by Dr. Jo Frencken in the Netherlands.**
- **Minimally invasive cavity treatment without sophisticated equipment.**
- **Minimal drilling, decay removal with hand instruments, restoration with materials like glass ionomer cement (GIC).**
- **Popular in developing regions, reduces discomfort, preserves tooth**
- **structure. Cost-effective, accessible, evolving with research for better**



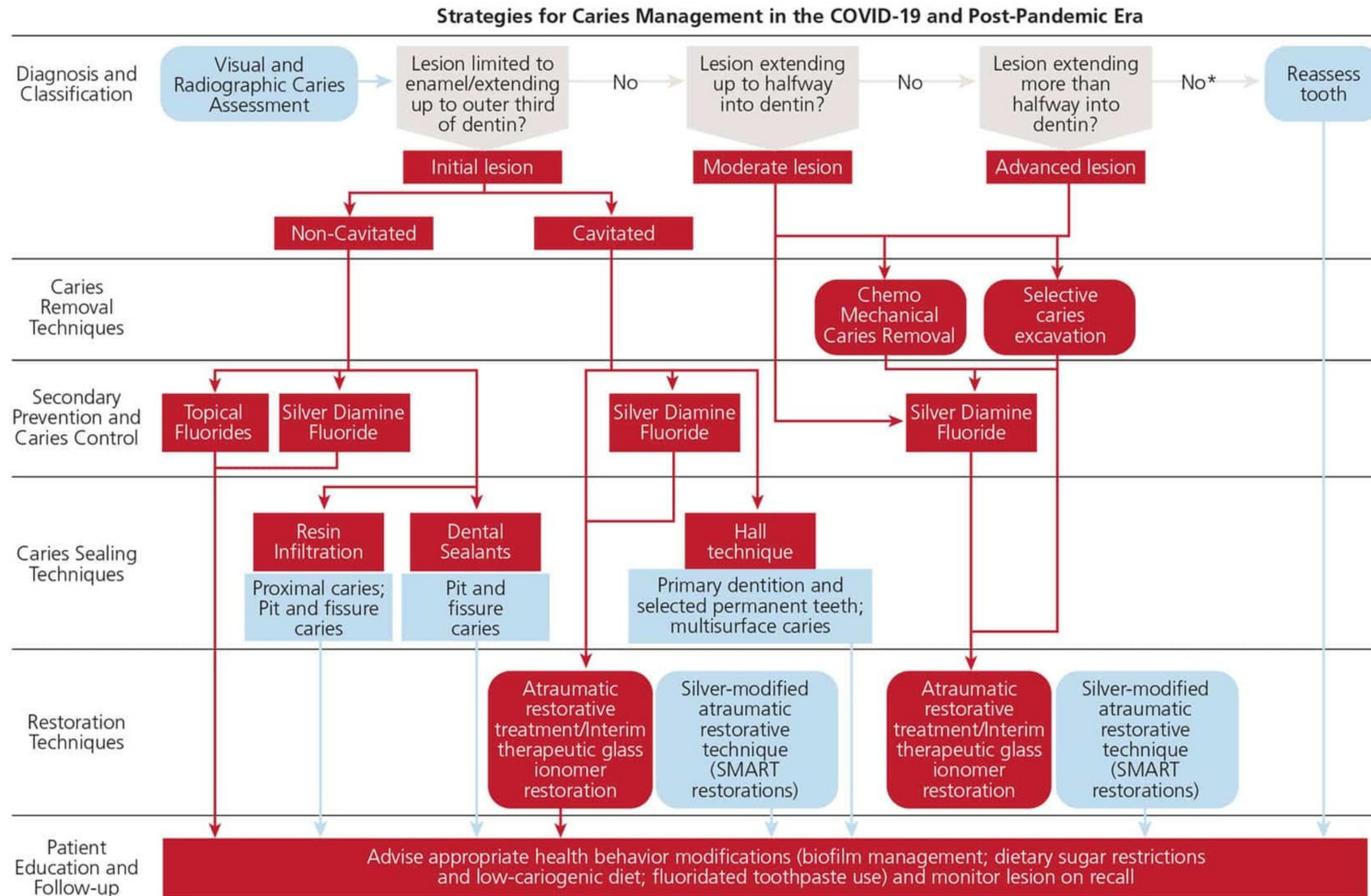
# Principles of ART

- Minimally Invasive: Preserves tooth structure by reducing drilling and trauma.
- Patient-Centered: Reduces discomfort and anxiety, often without anesthesia.
- Simplicity and Accessibility: Uses basic tools and materials suitable for different settings.
- Preventive: Focuses on early intervention to stop decay progression.
- Cost-Effective: Provides a budget-friendly alternative to traditional methods.

# Indications for treatment

- Ideal for geriatric patients with compromised health
- Recommended for patients with dental anxiety
- Valuable in resource-limited settings
- Useful for emergency situations requiring rapid treatment

# BONUS WEB WORKFLOW SCHEMATIC



**FIGURE 1.** Nonoperative and minimally invasive sequential strategies for caries management in today's practice environment.

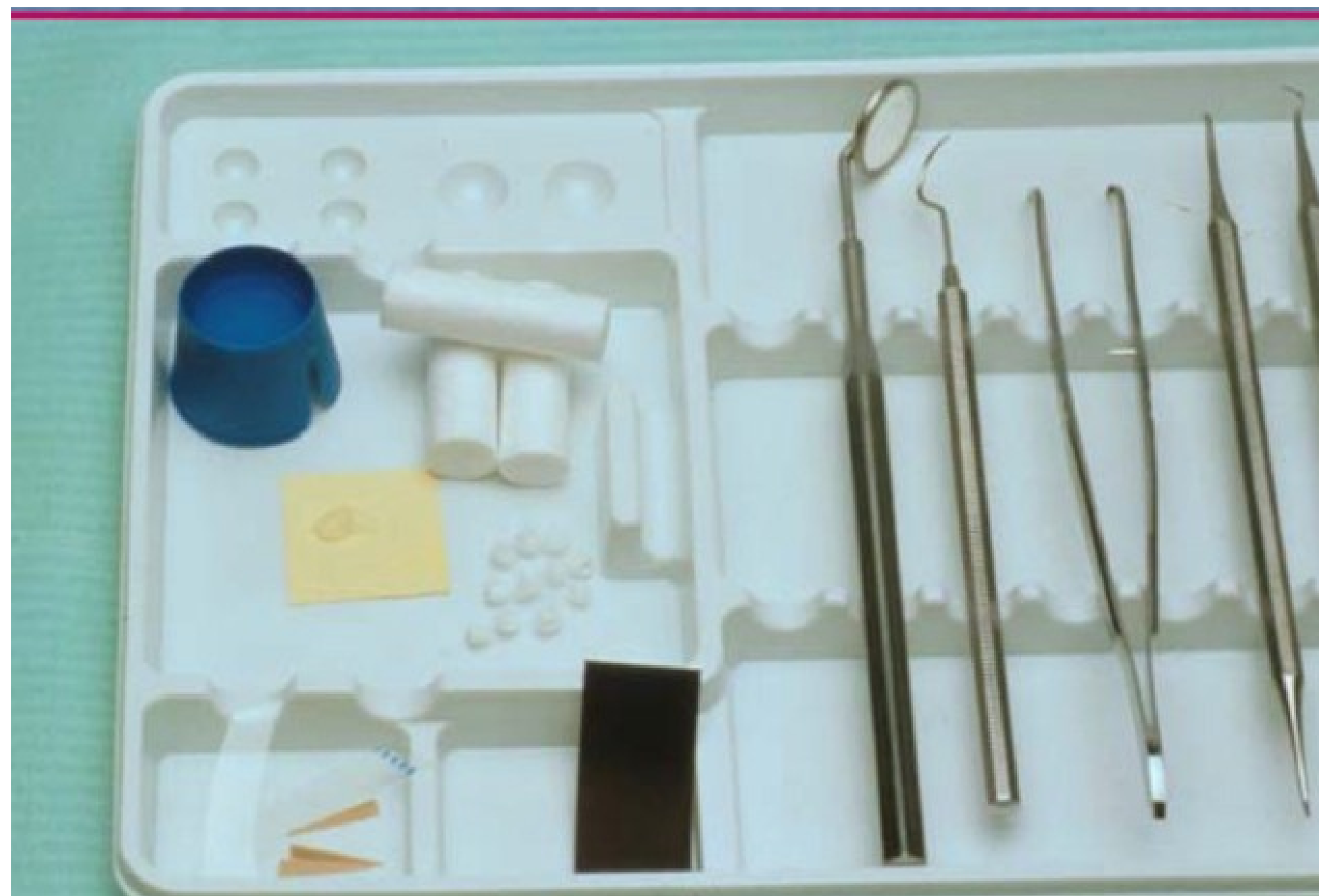
# Contraindications for treatment

- ART is not suitable for treating severely decayed teeth.
- Cases with irreversible pulp damage will need root canal therapy.
- Not suited for large or complex dental restorations.
- Limited esthetic options may not meet the highest esthetic standards.

# Advantages

- **Painless**
- **Cost effective**
- **Minimally Invasive**
- **Promotes Oral Health**
- **Aligns with emerging dental treatment standards**

# Instrumentarium



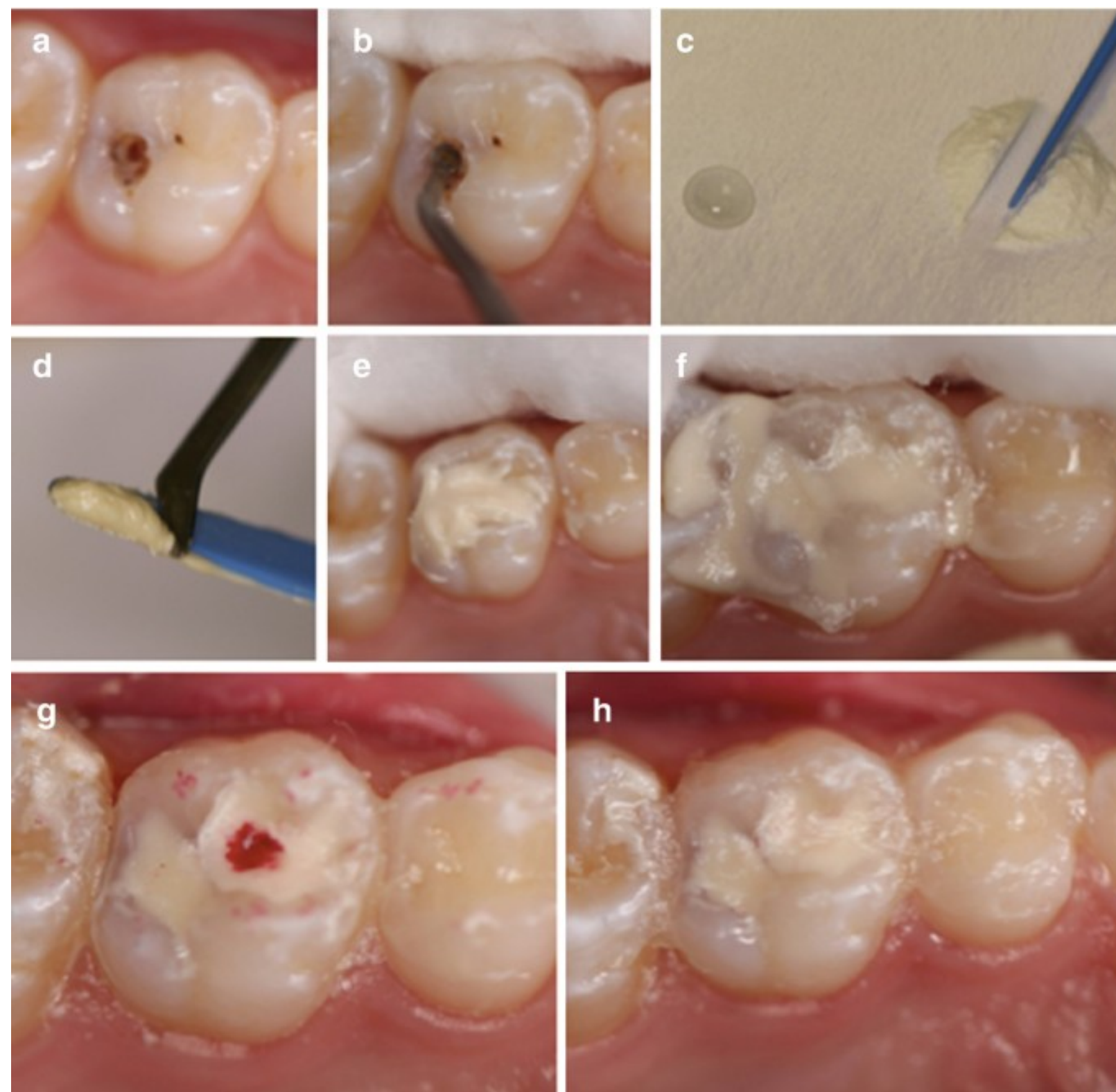


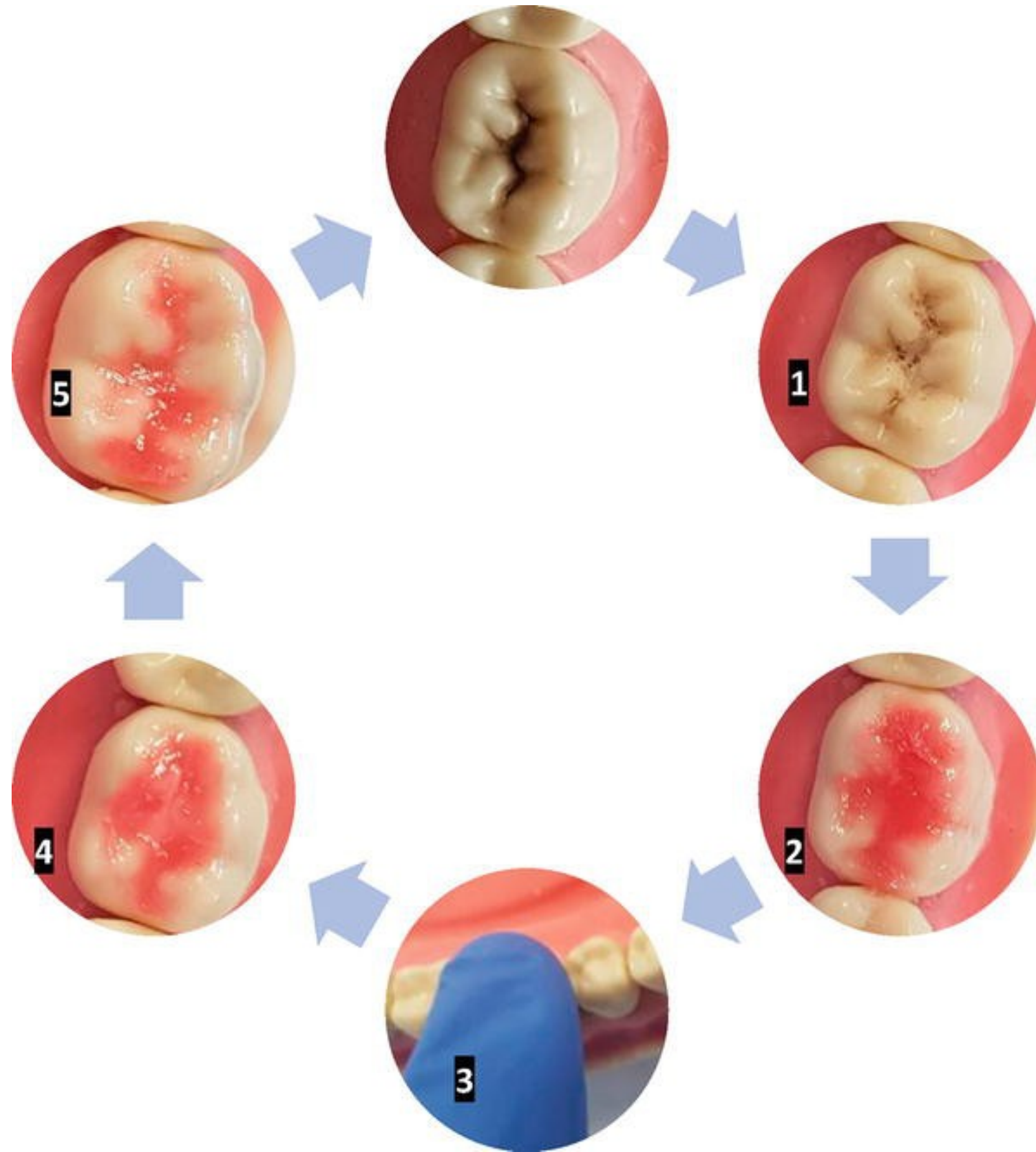
Photos from Dr Rocio Lazo

# Technique

- Caries Removal: Instead of drilling, decayed tooth tissue is gently removed using hand instruments.
- Preparation: The cavity is then cleaned and conditioned.
- Restoration: Biocompatible materials, such as glass ionomer cement, are used to restore the tooth.

# Procedure





# Using GIC (GIR)

- Adhesion: Bonds well to tooth structure without the need for total enamel removal, preserving more tooth tissue.
- Biocompatibility: Non-irritating to pulp and oral tissues, reducing post-operative sensitivity.
- Fluoride Release: Helps prevent secondary caries by releasing fluoride ions over time.

Minimal Sensitivity: Low post-operative discomfort due to its gentle adhesion and fluoride content.

- Moisture Tolerance: Sets in the presence of moisture, making it suitable for partially saliva-contaminated fields.
- Ease of Application: Simple technique suitable for field settings and areas with limited resources.
- Esthetic Appearance: Tooth-colored options available, improving esthetics compared to traditional silver amalgam.
- Cost Effectiveness: Economical choice for ART procedures in resource-limited settings.



# Patient Management

- Effective communication, employing gentle techniques, and creating a comfortable environment can reduce patient anxiety during ART.
- Patient education regarding the benefits of ART and the procedural steps can improve cooperation and compliance.
- Methods such as behavior management, involving parents, and providing child-friendly explanations are key techniques to consider.

# ART Restoration Longevity

- **Longitudinal studies evaluate the durability of ART restorations over a period of 5 years or more, in comparison to conventional materials.**
- **ART demonstrates similar longevity to both amalgam and composites given appropriate maintenance and patient cooperation.**
- **Various factors, such as patient compliance and operator proficiency, can impact the longevity of ART restorations.**

## Table 5

Life table analysis of atraumatic restorative treatment at six months and 12 months follow-up

<b>Interval (mo)</b>	<b>Evaluated restoration</b>	<b>Success</b>	<b>Failure</b>	<b>Success rate (95%CI)</b>	<b>Cumulative survival rate (95%CI)</b>
6 mo	54	49	4	94.4% (88.2%-99.9%)	94.4% (88.2%-99.9%)
12 mo	49	40	7	85.7% (75.9%-95.5%)	80.9% (69.9%-91.9%)

# Global Impact

**ART improves oral health outcomes in remote areas  
lacking traditional dental services.**



<https://capp.mau.se/media/1324/artsaclin.jpg?width=384&height=288>

# Post-Operative Care

- Regular checks detect issues like sensitivity or discoloration early, ensuring timely intervention.
- Scheduled visits assess restoration integrity and oral health, addressing concerns promptly.

# Research and Innovation



# Case Study

## Study on Atraumatic Restorative Treatment (ART) conducted in Santiago-Toxie, Mexico

<https://ajph.aphapublications.org/doi/ref/10.2105/AJPH.2004.056945?role=tab>

- **Santiago-Toxie, a community with limited access to medical and dental care.**
- **Treatment delivered by a team including dental students, dentists, and Ministry of Health personnel with permission from village elders.**
- **Implemented World Health Organization protocol for ART, maintained universal infection control, prepared teeth manually following guidelines, and restored with a popular more current glass ionomer using press finger technique.**

# Case Study Results

## Restoration retention rates

- 81% in first year
- 66% in second year

# Case Study Results Continued

- **Patient satisfaction 93%**
- **Patients not experiencing pain during excavation 68% or filling 85%**

# Case Study Results Continued

## ART effectiveness based on study:

- Prevented caries development even after sealant loss
- Study suggests that ART can be performed by less experienced personnel.
- Potential for training dental nurses and therapists to administer ART in communities without dentists.
- Absence of recurring decay
- High retention rates in occlusal surfaces

**Thank You!**