

## Chapter 17

### **USING ART IN MISSION DENTISTRY**

#### **ART Atraumatic Restorative Treatment**

ART does not require sophisticated equipment or even electricity. This makes the ART technique ideal for remote or isolated populations with little or no dental care. It intercepts small and medium sized decay before it grows larger enough to abscess the tooth. This is an atraumatic method of filling teeth without anesthetic and without pain or discomfort. It requires only a few instruments and a simple hand mixed white filling material (glass ionomer) that sets in about 5 minutes to rock hardness. ART is a simple and economical interceptive treatment of decay, which can be easily learned by school nurses, rural health care workers or lay people with didactic skills and reasonable learning abilities in two weeks. This is a simple and affordable way to provide dental service without technology to unreached and underserved populations.

#### **The basic set up of ART instruments:**

1. Mirror
2. Explorer
3. Spoon excavator (double-ended)
4. Mixing spatula and pad or glass slab
5. Placement instrument (double-ended)
6. Carver (double-ended)
7. Cotton pliers (tweezers)
8. Hatchet or traditional enamel opening instrument
9. Optional instruments that the operator likes
10. Bulb syringe (chip blower) \*optional

When using ART technique I add a few instruments that I personally like to use. I think every dentist has favorite instruments like a Cleoid-Discoid carver or an Acorn burnisher. So the ART kit can be tailored to the likes of each individual.

**Basic list of ART supplies:**

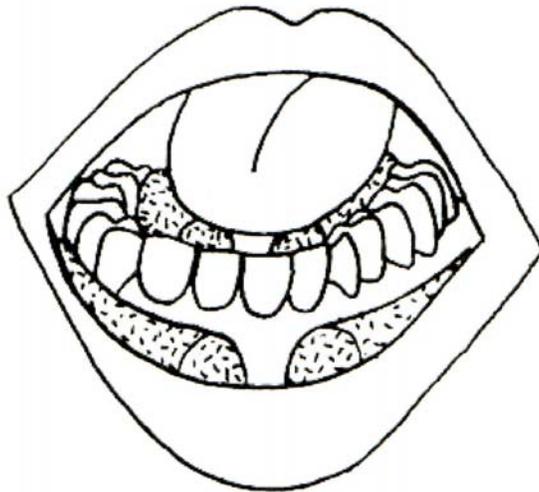
1. Cotton rolls
2. Cotton pellets
3. Glass ionomer kit
4. Cups, tissues, patient bibs, 2x2's
5. Gloves, mask, eye protection
6. Matrix holder, matrices, wedges
7. Carbon paper to adjust bite
8. Petroleum jelly

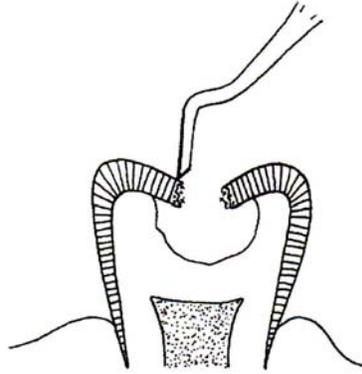
**Equipment:**

1. Good light source
2. Simple high backed chair or table
3. Bulb air syringe (chip blower)
4. Table to lay instruments on
5. Wash basins and towels
6. Ability to sterilize (pressure pot, autoclave)

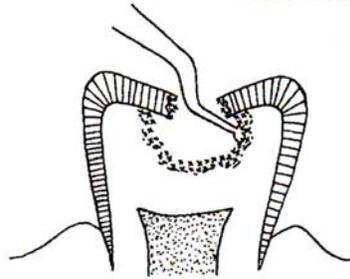
The mirror and explorer are used to identify teeth, which have small to medium sized cavities for the ART treatment.

The teeth are isolated with cotton rolls and the cavity rinsed and dried with cotton pellets using the tweezers.





The opening instrument or hatchet is used to fracture off undermined enamel.



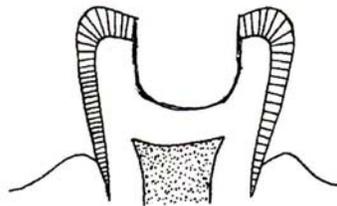
The spoon excavator is used to remove soft caries from the decayed area until all softness is gone.

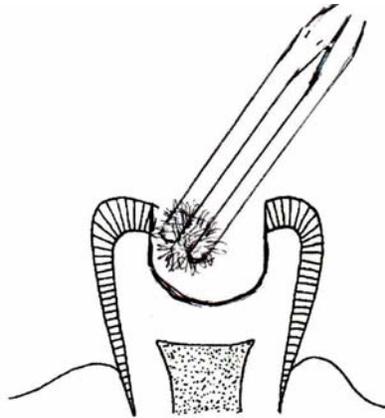
### **Preparing the Cavity** (out of ART manual)

To start with, place cotton wool rolls alongside the tooth to be treated. This will absorb saliva and keep the tooth dry. Remove plaque from the tooth surface with a wet cotton wool pellet, and then dry the surface with a dry pellet. The extent of the caries can now be judged better.

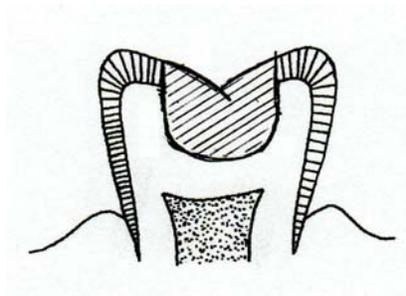
If the cavity opening in the enamel is small, widen the entrance. Do this by placing the blade of the dental hatchet into the cavity and turning the instrument forward and backward like turning a key in a lock. This movement chips off small pieces of carious enamel. If the cavity is very small, place a corner of the blade of the dental hatchet in the cavity first and then turn.

Carious dentine can now be removed with the excavators. The small excavator is used for small cavities, the bigger one for larger cavities. Soft caries is removed by making circular scooping movements around the long axes of the instrument (Fig. 4.1). It is important to remove all the soft caries from the enamel-dentine junction **before** removing caries near the pulp.





The excavated hole is etched with prep liquid or diluted vinegar solution, then rinsed and dried. The filling material is mixed with the spatula to a creamy consistency and transferred to the hole with the placement instrument. Be careful not to trap air under the filling material. Smooth level with the tooth surface and remove any excess being sure occlusion is good.



Explain what you have done for the patient and tell them not to eat for one hour on the new filling. Coat the surface of the new filling with Vaseline.

\* This is a very simple restorative technique, which causes no pain to the patient. Anesthetic is not necessary. The glass ionomer filling material bonds to the tooth and contains fluoride to prevent further decay. If by chance, a microscopic amount of decay were left under the filling then the fluoride will arrest it.

\* On mission trips to remote areas, we often have patients come in for extractions who have only a small cavity. They want it pulled because they know eventually in a few years the small cavity will get big and abscess the tooth. Then there will be no dentist available to help and they know, ***there is no pain like dental pain!***

ART Restorations:

- Are simple to teach
  - Are cheap (approximately .40 per filling)
  - Bond to the tooth to seal against future decay
  - Have fluoride to kill any decay left and help prevent secondary decay
  - ART is both restorative and preventive
  - Are white in color to match the tooth
  - Do not require anesthesia to place it
  - Much more conservative than traditional cavity preparation
  - Extremely high acceptance by all – because there is no pain!
  - Can be implemented in school based preventive programs along with brushing, fluoride toothpaste, diet, etc.
  - Is a cheap sustainable alternative to traditional high tech care
  - Can be provided almost anywhere whether electricity is available or not
  - ART health care worker can carry all of his/her supplies in a small handbag or backpack
  - ART health care worker can teach CHE (Community Health Evangelism)
  - There are training requirements for ART health care workers
1. Proper training is essential from structured teaching materials, such as anatomy, some basics, oral diagnosis, preventive techniques, the chain of sugar to bacteria to decay on teeth (diet) and hands on instruction.
  2. Training can be tailored to fit health care worker and community needs (such as sanitation, preventive medicine, CHE, etc.)
  3. Community must be involved with the process – that is why the school teacher or nurse are good candidates for “making it happen.”

“We must emphasize that ART should be considered as part of a total package of oral health care that is based on a philosophy of promoting health and preventing diseases.” *ART Training Manual*

<http://www.whocc-nijmegen.nl/>  
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## ACT Arrest of Caries Technique

A fluoride compound called Silver Diamine Fluoride (SDF)  $Ag(NH_3)_2$  is being used as a research project by Dr. Robert Yee in Nepal. The compound has been used for many years as a paint on treatment to arrest decay in non-compliant or difficult to treat children.

SDF arrests decay by killing the strep mutins bacteria and sealing the microscopic pores of a tooth through a chemical reaction which leaves a hard black surface in place of the decay layer. It mineralizes the carious surface.

This is not a restorative material. It does not fill the lesion where the caries was located and it turns the surface of the lesion black. But it is fast, effective, cheap and can treat masses of children with decayed teeth. Over 400,000 children were treated in Lamplough and Jarmen 1987.

SDF may soon become another tool to arrest and prevent decay in the teeth of huge populations of the unreached and underserved.

\* Reference: Arrest of Caries Technique (ACT): Appropriate Technology for the Clinician and For Disadvantaged Communities in Nepal. Dr. Robert Yee B.Sc. DDS, MSc. Dental Public Health

\* Dr. David Walker B.D.S. (Syd) MHP. Ed (U.N.S.W.)



Dr. Robert Yee on a project in Nepal

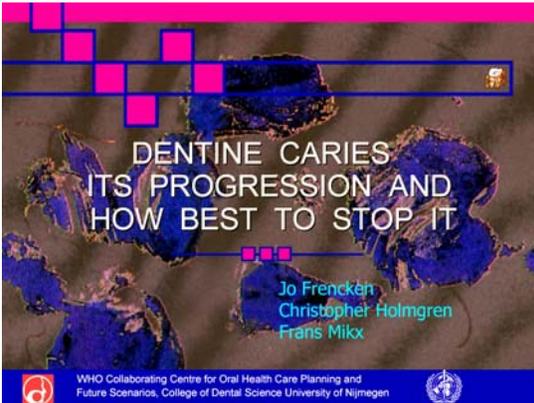
*manual  
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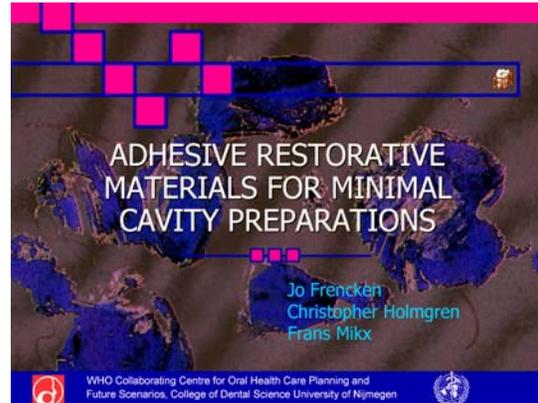
**Atraumatic  
Restorative  
Treatment**

*approach  
to control  
dental caries*

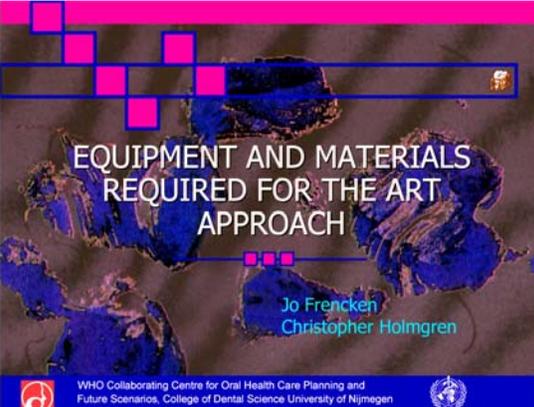
By Jo Frencken, Holmgren, et.al.



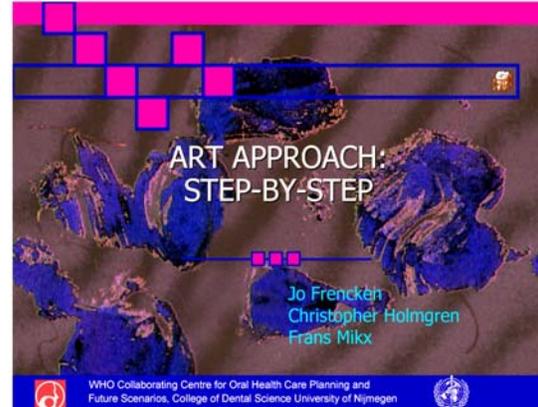
Dentine Caries  
Its Progression and How Best To Stop It



Adhesive Restorative Materials  
For Minimal Cavity Preparations



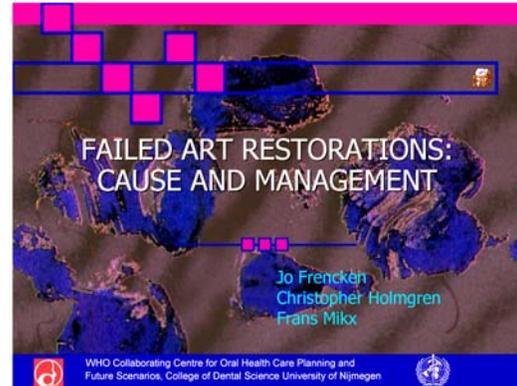
Equipment and Materials  
Required for the ART Approach



ART Approach  
Step-By-Step



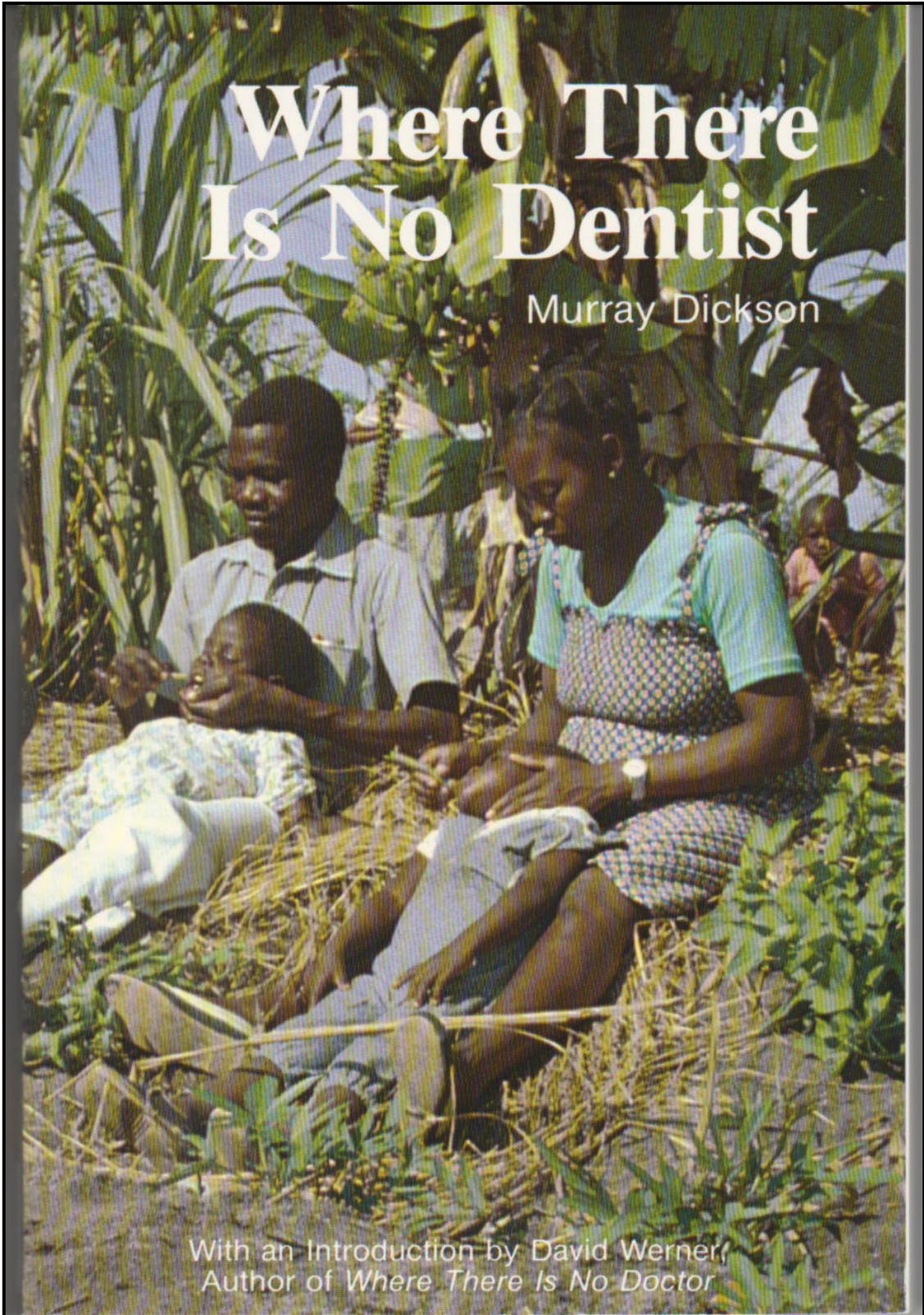
Survival of ART Restorations and  
Sealants Placed As Part of  
the ART Approach



Failed ART Restorations:  
Cause and Management

# Where There Is No Dentist

Murray Dickson



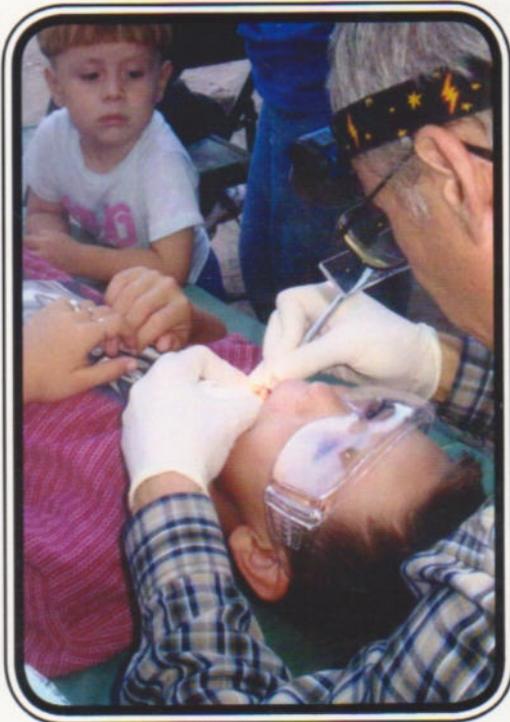
With an Introduction by David Werner,  
Author of *Where There Is No Doctor*

Where There Is No Dentist by Murray Dickson is a 216 page book about the care and treatment of dental problems in remote settings

Two-week training program for ART Technique

**DENTAL TRAINING  
FOR MISSIONS**

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❖ Equipping you to demonstrate the  
love of Christ in a practical way. ❖

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As Your Means Of Serving People**

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- ❖ Opens doors for ministry
- ❖ The need is great
- ❖ Inexpensive
- ❖ Can learn in two weeks
- ❖ Flexible time table
- ❖ Can work it into your furlough
- ❖ Portable - pack in a suitcase
- ❖ Most satisfying and rewarding
- ❖ An excellent way to help the poor

*"they only asked us to remember the poor  
the very thing I also was eager to do."*

• Gal. 2:10

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