

A Traumatic Restorative Technique: A Review Article

Anwasha Subuddhi

Intern, Institute of Dental Sciences, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar-751003, Odisha, India

Abstract

The art procedure is minimally invasive. It is mainly based on minimum discomfort & preservation of maximum healthy tooth tissue. Using hand instruments reduces pain & vibration, unlike rotary instruments. This procedure is getting more popular, acceptable in children & those individuals who fear & have anxiety about the dental procedure in socioeconomically weaker areas are becoming more popular. Art is suggested to utilize around the world, not only in developed countries but also in industrialized nations. This article gives a short review of art and its uses in the current situation.

Keywords: *A traumatic restorative treatment (art); Glass ionomer cement (gic).*

Introduction

Art is a part of the primary oral health program in Tanzania (support of WHO). Art was needed to be available in less developed countries like the socioeconomically weaker section. Art is the excavation of soft carious dentin with hand instruments only & then restoration is

done by using modern restorative material. To minimize the onset of secondary caries presently fluoride leaching gic were used. High viscosity gic; simplifies the process of restoration & enables dentine pulp complex to respond against the carious process.¹

Table 1. History a traumatic restorative technique²

Mid 1980	Pioneered in Tanzania done by university of Dar es Salaam
1986	At the scientific meeting of Tanzania dental association, the results of the piolet study were presented & later officially art born.
1991	Comparison between art & the mobile conventional equipment approach was done by community field trial in rural Thailand.
1992	In the Thailand study, it was clear that children more happily participated who had been treated by the art approach rather than those treated with traditional rotary hand piece approach.
7 th April 1994	Art was officially adopted by WHO on "world health day"
1996	In 25 countries, art was used.
2002	Art was declared as minimally invasive dentistry by FDI in Vienna

Definition: Art is defined as a minimally invasive care approach in preventing dental caries and stopping its further progression.

Principles: Evaluating the carious part utilizing hand instruments. With the help of glass ionomer cement. i.e. A restoration material restores the carious lesion which adheres to the tooth.

Goals: To preserve tooth structure, reduce infection, and to avoid discomfort.

Armamentarium: The accomplishment of any treatment relies upon the administration knowing the capacity of different instruments and utilizing them effectively.³

Essential instruments:

- a) Mouth mirror: to reflect light onto the field of operation to see the hole by implication and to withdraw the cheek or tongue.
- b) Explorer: to recognize where delicate caries dentine is present. Do not stick the point into very small caries sore. This may decimate the tooth surface and caries arrestment process. Also do not test into profound pits where yo may harm or presentation the mash.
- c) Pair of tweezers: to convey cotton wool rolls and wedges.
- d) Dental hatchet: the instrument is utilized for enlarging the passageway to the cavity, for cutting ceaselessly the unsupported and carious polish left.
- e) Small, medium-sized spoon excavator: the instrument is utilized to expel soft caries dentine. The little excavator has a distance across of 1mm. This instrument is for use in little holes and for cleaning the veneer/dentin intersection. The width of this medium spoon is 1.5mm. It is utilized for expelling delicate caries from enormous pits adjusted surface is utilized to drivethe material into small pits.
- f) Glass slab:this is provided with the cement.
- g) Carver: the instrument with double end has two functions. The blunt end is utilized for embedding glass ionomer cement into the cavity and sharp end is utilized to expel the overabundance material and shape the reclamation.
- h) Spatula: the spatula is might be metal or plastic.⁴

Material

- a) Gloves: for cleanliness reason.
- b) Cotton rolls: to assimilate the spit.
- c) Glass: ionomer restorative material (powder, liquid)
- d) Wedges: these are utilized to hold the plastic strips near the state of the proximal surface of a tooth with the goal that remedial material is constrained between the tooth and gums.
- e) Petroleum jelly: to forestall glass ionomer cement adhering to the gloves for conclusive protection.
- f) Plastic strips & water: utilized for forming the proximal surface in different surface reclamation.

Pre-treatment precautions:

What steps we should do before the start of the procedure:

- a) Before doing the art of a carious sore you must know how to set up a good working place.
- b) Select and utilize the right instrument.
- c) Cross disease
- d) Utilize material i.e. Glass ionomer cement.

Why we use hand instrument:

- a) Less injury to the tooth conservative/moderate arrangements.
- b) Minimal effort of hand instrument
- c) Improved contamination control.
- d) No use of anesthesia, which decreases physiological injury to children.
- e) Makes helpful construction accessible for all population gatherings.

Why we use glass ionomer cement material:

- a) Chemical adhesive- limits cutting.
- b) Fluoride discharge- caries prevention.
- c) Does not cause pulp aggravation consequently atraumatic restorative technique gives preventive and remedial treatment in on the strategy.

Procedure: This method comprises essentially in the removal of carious lesions by hand instruments and filling the subsequent cavity with glass ionomer cement. In any case,it is important to feature that the therapeutic systems are only a piece of the treatment that incorporates oral cleanliness guidance, preventive, and remedial activity.⁵

Light source:

- a) The light source can be the sun (normal) or counterfeit.
- b) Counterfeit light is more dependable and consistent than regular light.
- c) To improve permeability, an uncommon light source fixed to a couple of display outline that is controlled by a battery-powered battery source (voroscope) is utilized.
- d) This unit likewise allows amplifying glasses to be connected.

Work stand and positions:

- a) The operator ought to sit immovably on the dental chair, having back straight, thighs corresponding to the floor and two feet level on the floor.
- b) The stool's height ought to be balanced so that operator can see the patient's teeth.

Patient's position:

- a) Patients should be lying on a level surface.

patient head position:

- a) For proper accessibility to upper teeth, jawline should be lifted backwardly.
- b) For proper accessibility to lower teeth, jawline should be dropped forwardly.

Techniques:

- a) Cotton rolls are used to isolate the tooth.
- b) Wet cotton pellets are used to clean the tooth surface to be treated
- c) A hand instrument is used for widening the entrance of the lesion to remove unsupported enamel rods.
- d) Small & medium-sized spoon-shaped excavators are used to remove dental caries.
- e) If necessary, calcium hydroxide paste is used for pulpal protection.
- f) Clean the cavity surface along with the occlusal margin.
- g) According to the manufacturer's instruction mix the glass ionomer cement.
- h) The cavity is slightly overfilled by the mixed glass ionomer.
- i) Petroleum jelly is coated over the gloved finger & pressed over the entire occlusal surface & slight pressure is applied.
- j) Check the bite.
- k) Sharp carver used to remove excess material.
- l) All high points are removed by rechecking the bite.
- m) Once again petroleum jelly is applied on the filling or sealant.
- n) Instruct the patient to not bite for at least half an hour.

Indication: Based on evidence & strength of the approach for a certain situation, indication divided into 2 levels.⁶

At the patient level:

- a) The art approach is acceptable by patients majorly.
- b) Art rarely requires local anesthesia, unlike traditional restorative treatment.
- c) The approach should be minimally invasive by nature i.e. Removal of necrotic tissue only.

At the tooth level:

- a) Art; single surface restoration using high viscosity gic. in both primary & permanent teeth have a high survival rate.⁷
- b) asart restoration are minimally invasive & caries protective unlike traditional restoration method it is considered as a treatment of choice for single surface caries lesion.
- c) Art is suggestable for multiple surface restoration but its survival rate is lower as compared to single surface restoration.⁸

Contra Indications:

- a) There is the nearness of growth or fistula.
- b) The pulp of the tooth is uncovered.
- c) Tooth has been agonizing for quite a while (chronic pulpitis).
- d) There is a conspicuous carious cavity, however, the opening is unavailable to hand instrument.
- e) There is an away form of the cavity, for example in a proximal surface, but the cavity cannot be entered from the proximal or the occlusal bearing.

Advantages:

- a) The use of a hand instrument eliminates the noise & vibration of dental handpieces.
- b) The need for acid etching, water coolant is eliminated along with accompanying high-velocity suction.
- c) The need for local anesthesia is also eliminated because of the use of hand instruments for caries removal.
- d) Fluoride-releasing restorative material helps prevent further decay.

Limitation:

- a) Long term survival rate of art restoration is unknown.
- b) Because of lower wear resistance & strength of the material; used only in small & medium sized one surface lesion.
- c) Due to the hand mixing technique, an unstandardized glass ionomer mix is produced.

Failure of the process: Restoration may not be worthy or inadmissible any longer for a few reasons. It is missing, an enormous part of it has broken, cracked restoration, the restoration has eroded or caries has created at the rebuilding edge or somewhere else on the tooth surface.⁹

Restoration is completely missing due to: During restoration procedure contaminated by saliva or blood. The blend of the material was excessively wet or excessively dry. Not all soft caries had been expelled. This sabotaged finish had been abandoned and this later severed.

Part of the restoration has broken: It is plausible that the restoration was excessively high or air bubbles were caught in the material during the arrangement of the restoration whatever the explanation clean the tooth surface and/or staying therapeutic material with a wayfarer or little excavator and wet cotton wool pellets first, before molding the whole surface and materials, fill the hole with another blend of glass ionomer cement and guarantee that the reclamation is not excessively high.^{8,9}

The restoration has fractured: this most regularly occurs in a different surface restoration which was too high. The approach to fix it relies upon the area of the crack line and the portability of the brokenpart. if the crack part is free and can be evacuated, fix the hole as portray as above. However, if the broke part cannot be expelled fix through workmanship is an absurd and conventional treatment utilizing a drill is required.^{8,9}

The restoration has worn away: Potential reasons, the patient eats hard nourishment as often as possible, the patient grips his/her teeth much of the time or the blend had been excessively wet or excessively dry. The restoration ought to be reconstructed, guarantee that all the outside of the tooth and the rest of the rebuilding are spotless and liberated from soft tissue apply dentin conditioner over the glass ionomer and the depression dividers. Spot another layer of glass ionomer cement

on the bygone one, finish the rebuilding as depicted before.^{8,9}

Caries has developed:

maybe in nearby fissure or pit. Expel all the delicate rot. Clean and reestablish the new cavity adhere to the restoration as per the standard technique.¹⁰

Conclusion:

Art is a perfect approach for both alternative & biological treatment in developing countries & social groups in the industrialized world. The outcome results from art restoration in class 1 cavities are much effective than the class 2 cavities. The procedure is very cost-effective so as it is a friendly procedure. It should be considered as an interventional procedure for class 2 cavities, art in both industrialized countries & developing countries are needed to validate its effectiveness & acceptability.

Conflict of Interests: None

Ethical Permission: Approved

Funding: Nil

Reference

1. Saber AM, El-Housseiny AA, Alamoudi NM. Atraumatic Restorative Treatment and Interim Therapeutic Restoration: A Review of the Literature. Dent J (Basel). 2019;7(1):28.
2. Frencken JE, Pilot T, Songpaisan Y, Phantumvanit P. Atraumatic restorative treatment (ART): rationale, technique, and development. J Public Health Dent. 1996;56(3 Spec No):135-163.
3. Dorri M, Martinez-Zapata MJ, Walsh T, Marinho VC, Sheiham Deceased A, Zaror C. Atraumatic restorative treatment versus conventional restorative treatment for managing dental caries. Cochrane Database Syst Rev. 2017;12(12):CD008072.
4. Mjör IA, Gordan VV. A review of atraumatic restorative treatment (ART). Int Dent J. 1999;49(3):127-131.
5. Smales RJ, Yip HK. The atraumatic restorative treatment (ART) approach for the management of dental caries. Quintessence Int. 2002;33(6):427-432.
6. Yip HK, Smales RJ, Ngo HC, Tay FR, Chu FC. Selection of restorative materials for the atraumatic

- restorative treatment (ART) approach: a review. *Spec Care Dentist*. 2001;21(6):216-221.
7. Lopez N, Simpser-Rafalin S, Berthold P. Atraumatic restorative treatment for prevention and treatment of caries in an underserved community. *Am J Public Health*. 2005;95(8):1338-1339. doi:10.2105/AJPH.2004.056945
 8. Byrd TO. Preventing Advanced Carious Lesions with Caries Atraumatic Restorative Technique. *J Evid Based Dent Pract*. 2016;16 Suppl:84-90.
 9. Frencken JE. Atraumatic restorative treatment and minimal intervention dentistry. *Br Dent J*. 2017; 223(3):183-189.
 10. da Mata C, McKenna G, Anweigi L, et al. An RCT of atraumatic restorative treatment for older adults: 5 year results. *J Dent*. 2019;83:95-99.