

## The Teaching Oral Hygiene Cubicle: The TOHC: A Fitting Addition to Dental Clinics and Operatories for Patients

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### Abstract

**Introduction:** Most dental operatory chairs are designed ergonomically with an adjustable chair for a patient to receive therapy from the operator and for the operator.

**Aim:** This contribution introduces the TOHC the teaching oral hygiene cubicle, a separate facility designed to teach oral hygiene.

**Discussion:** Patients benefit from a TOHC by subjective involvement and participation, receiving instruction and demonstrating subjective proficiency for themselves in mastering oral hygiene skills. The purpose of dental prophylaxis and oral hygiene paraphernalia are appraised.

**Keywords:** Oral Hygiene; Operatory; Cubicle

### Abbreviations

OB: Oral Biofilm (Plaque); OH: Oral Hygiene; OHCW: Oral Health Care Worker; TOHC: The Teaching Oral Hygiene Cubicle

### Introduction

Historically chairs were made for specific purposes. Chairs were designed for birthing, or to be seated, or signify status. The 'chairman' derives from the leader of a group, while the rest sat on benches or lesser chairs. The ultimate prestige bestowed on a person is when a monarch sits on a significantly embellished chair as a throne. Specific designs were developed in the 20<sup>th</sup> century which included the 'Electric-Chair' that was designed to execute criminals. Also, the fully adjustable ergonomic dental operatory chair evolved, with all the support apparatus, lighting, instruments and audiovisual accoutrements. The chair for many, looks threatening.... Possibly as a torture couch or like a complicated chair fit an airplane cockpit or for an astronaut launch in a rocket spaceship.

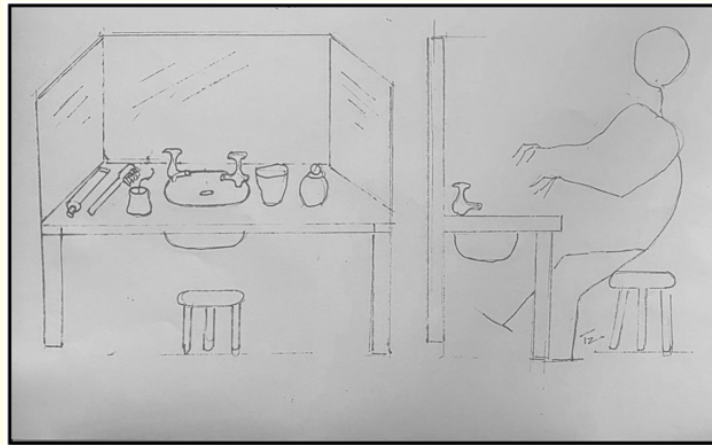
When teaching oral hygiene the oral health care worker (OHCW as dentist, auxiliary, hygienist or nurse) usually has the patient sitting in the clinical operatory chair and uses a hand-held mirror. The patient sits in the operatory chair as a targeted recipient for treatment and instruction.

### Aim of the Study

This reported commentary introduces the TOHC.... The teaching oral hygiene cubicle, as an essential service facility into a dental clinic, that is designed as a separate benign facility to successfully teach and optimize oral hygiene for patients. The skills commonly used as OH accessories are appraised.

**The oral hygiene cubicle TOHC:** This is a designated space and facility, away from the clinical dental chair, conceived designed and prepared for patient active participation in learning, and subsequently demonstrating how they perform their learned oral hygiene routines.

The amount of space required for a TOHC station is two square meters. The cubicle should replicate a domestic mini-washroom, consisting of a large chest-height mirror, facing a fully plumbed basin and shelf, and a sitting stool. The OHCW can stand and watch the seated patient, both of whom can observe the patients' mouth in the opposite mirror. The patient has two free hands to manipulate a toothbrush and/or dental floss, and becomes subjectively involved in the learning and mastering of their OH-skills. See figure 1 for the layout.



**Figure 1:** Sketch of the oral hygiene cubicle (TOHC).

*The left figure indicates the lay-out of the cubicle. Three mirrors (Double arrows < - - - ->) surround a shelf with a basin in the center. A stool for the patient is placed in front. Toothpaste, a toothbrush, and dental floss is on the left of the basin, and a glass and disclosing solution is on the right side of the basin. On the right shows, a side view of a seated figure in front of the cubicle.*

### Discussion

**One-way instruction:** Because dentistry has always been associated with some sort of pain The Dental Clinical Chair, which is essentially an operating gurney, is often deemed and feared as a torture device. Also, the patient, as a target in the clinical chair, is passive and receives one-way instruction as oral hygiene (OH) advice or treatment. This is frequently less than optimally effective when patients return home. Oral Hygiene instruction as verbal instruction input is one-way, or uni-directional from the OHCW to the patient with minimal subjective patient participation. Having an allocated place similar to what a patient may have at home, changes this formal professional teaching dynamic in which the patient will receive instruction. And when the patient is sitting in front of a mirror and basin, resembling a familiar washroom setting, the patient is more relaxed and consequently more receptive to listening, adapting, learning and acquiring effective OH-skills. This personal practical involvement ensures compliance with instructions, retention, application and successful implementation of sustained OH, which is expected to be done at home twice daily. The patient can demonstrate their OH skills, see them and become involved in experiential learning.

**Oral hygiene purpose:** The aim of oral hygiene is to maintain oral and dental health by keeping the oral biome constrained to ensure no disease obtains. Most dental pathology (caries, gingivitis, periodontitis) is cause-related to stagnating oral biofilm (OB). OB is often called “Plaque” a term borrowed from microbiology that grows microbes and are seen as microbial plaques. Oral microbes exist in planktonic or sessile form. The sessile form of biofilm changes into different pathological ecosystems, and morphs from a mainly Gram+ve, aerobic, non-motile, polysaccharide, exotoxin-producing ecosystem, to a mainly Gram-ve, anaerobic, motile, endotoxin-producing ecosystem. Over time (weeks and months) the OB acts as a dynamic, ionic exchange gradient, that allows for decalcification, with subsequent bacterial invasion and cavitation of hard tissues. This stagnated OB also causes the breakdown of the periodontal apparatus with toxins, enzymes, antigens and mitogens. The oral microbiome in health is in an equitable balance with interdependent resident bacteria and saprophytes. Some retained OB in conjunction with salivary inhibitory molecules, ensures no overgrowth for fungi, such as *Candida*. If OB calcifies it forms calculus (tartar), often around the cervical margins of lower incisors and opposite upper first molars. This is because the calcium-ions are in secreted saliva solutions that exit from major salivary glands in these two locations. If immunity is compromised from Diabetes mellitus or a viral infection, these immunosuppressive pathologies can predispose the patient to advanced attack from stagnant OB, and in these cases fungal overgrowths may happen and gingivitis can progress to periodontitis [1].

It follows that if OB maturation is disrupted, or better still, if OB is completely removed, the pathological processes will be stopped. It is rational and correct to assume that.... With no OB.... It means no consequent caries or gum-disease will develop.

**Exposure and visualization of oral biofilm:** Sessile OB tends to form in areas which are not subject to friction from mastication. Accordingly, OB stagnates interproximally and cervically, as well as in occlusal pits and fissures. It is important for patients to see the OB to understand that it is a mass of oral germs. Some of it is always necessary and present in health. If a dye, like toluidine or erythrosine, is introduced and in contact with OB, the OB easily absorbs the disclosing dye and can be seen macroscopically. This staining procedure is often done by OHCW's, but is also an easily exposure-staining learnt-skill for individuals to do this at home. See figure 2 and 3.



**Figure 2:** Teeth stained with a disclosing red dye (erythrosine) will show up oral biofilm, which is constituted by plaques of microbes in the dental plaque.

### Prophylaxis with scaling and root-planing

Successful OH is realized between regular visits, at least once or more per year) to a professional oral health care worker (OHCW), and home-care by the patient, usually twice a day, in the early morning and at night. Should any 'plaque' calcify, it forms calculus (also called tartar) attached to the teeth and oral hygiene demands that both are removed. During a professional cleaning or "prophylaxis" for preventive therapy, "scaling" is the removal of extrinsic tooth material as all plaque, calculus and debris; "root planing" is the removal of intrinsic tooth material (dentine, cementum and rarely enamel), infected or affected by OB or tartar. Conservative dentistry takes care of tooth decay. Periodontal therapy takes care of the tooth attachments to bone and oral soft tissues. Oral hygiene instruction combined with scaling, root-planing and tooth-polishing are the fundamentals of a professional prophylaxis visit. Polishing the teeth with a fluoridated prophylaxis-paste, cleans away residual adhering debris and strengthens the enamel against decalcification. Home care OH and regular professional prophylaxis prevents dental caries and gum disease [2].

**Patient's oral hygiene skills:** Tooth brushing and flossing are the main parts of the oral hygiene routine to reduce the OB. Because the aim of oral hygiene is to remove sessile OB to sustain oral and dental health, it is impossible to sterilize the oral cavity; but it is feasible and reasonable to sustain the oral microbial ecosystem at levels consistent with health for a lifetime. This is done by people using OH-skills at home. Traditionally tooth brushing is encouraged to be done twice daily, in the morning and evening. Various techniques have been described: Horizontal scrub; smith physiological (brush the teeth from the gums to the teeth, brush uppers down and lowers up), the modified bass technique (holding the brush at ~ 45° angle on the gum-line and move the brush occlusally); fones (clench teeth and brush in large circular motions; used as a starter skill with children, but only brushes buccally). Dental floss is introduced between the teeth to disrupt the interproximal accumulation of OB.

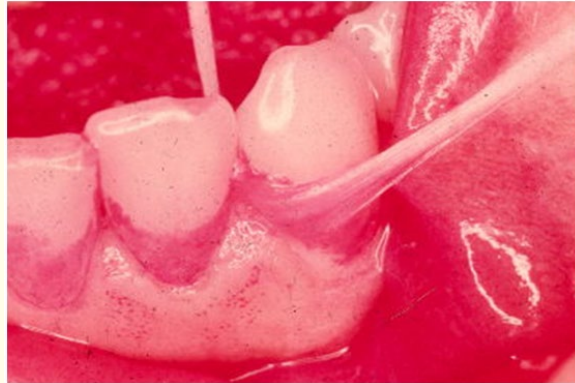
**Oral hygiene paraphernalia:** A whole variety of OH products are available. These include (i) Tooth pastes, (ii) Tooth brushes, (iii) Dental-floss; (iv) A. Tooth picks, and B. Gum stimulators, (v) Irrigators, (vi) Mouth- washes and (vii) Diet [3-5].

**Tooth-brushes:** The toothbrush may be manual vibratory, rotary and and/or battery powered. small miniature tufted brushes. Primitive brushes are made from roots or plant twigs; these are called The Miswaak, but they vary in physical properties. Animal hairs (hogs or horses were originally used) but contemporary plastics with controlled flexion, size, shape and abrasiveness are now used. The handles of tooth-brushes will also vary in size to facilitate hand-grips.

**Tooth-pastes:** Tooth-pastes are globally available in tubes, sachets, in tins or powders. All are flavored, some are colored or presented in stripes from tubes, but all registered recognized brand-named tooth-pastes, must conform to specific professional (ADA, CDA, BDA, FDI etc) standards to minimize abrasiveness. Many chemicals are added for flavor, foaming and bactericidal effects, but the most important addition is fluoride. Regular use of fluoridated tooth pastes ensure micro-loci of decalcification are arrested which prevents initiating dental decay.

**Floss:** Fine dental floss is used to clean the interproximal spaces from OB. The floss will be wound around a finger on each hand, stretched taught and inserted between the teeth. The floss is conceived as a twine of continuous threads which will spread out to a thin web, easily inserted between teeth. Small plastic holders are also available for floss use. See figure 3.

**Tooth-picks and gum stimulators:** Tooth-picks, made of plastic or wood, are manufactured into variety of shapes for practical removal of food morsels and debris after mastication. One end is usually sharp, and the opposing end may be flattened. They should be sterilized in manufacture and be soft so that use does not cause abrasion Tooth-picks may have some antibacterial molecule added and are often flavored. Tooth-picks are a helpful adjunct to help clean teeth, but are a poor replacement for brushing and flossing, and not very successful at removal of OB. Cocktail-sticks are not toothpicks, although many folks use cocktail sticks as toothpicks.



**Figure 3:** Teeth stained with a red dye (erythrosine) reveals OB which is seen around the cervical and interdental areas of the teeth. The dental floss is inserted between the teeth and flattens out as it removes the plaque remaining on the dentition after mastication.

**Gum stimulators:** Often a rubber pointed tip is placed on the other end of toothbrushes. This apparently to stimulate or massage the gingiva. A rubber gum-stimulator is a frivolous gimmick, at best a gratuitous device that is mildly effective as a toothpick, but at worst a misrepresenting marketing gimmick. Gum stimulators don't have any significant effect on removal of stagnant OB, and have little to no effect on the gum.

**Oral and tooth irrigators:** Squirted a focused liquid under mild pressure will remove soft OB. This is a valuable adjunct to brushing and flossing, and is especially useful for accessing spaces difficult to reach, like under fixed prostheses or into gingival crevices. It is a valuable tool for dispersing medicated mouthwashes.

**Mouthwashes:** Medicated mouthwash, termed collutorium, may contain chlorhexidine gluconate, or fungicides. Swishing for a mouth-full of mouthwash for 15 seconds and the subsequent expectorating is the basic technique to be demonstrated. The most common ubiquitous mouth-wash used for OH is a saline solution (about one teaspoon of table-salt (Na Cl), dissolved in 250 mls of water. Saline is bacteriostatic, decreases soft tissue edema, and does not upset the natural OB. Because acid in stagnant OB initiates decalcification, bicarbonate of soda is often added to saline to neutralize the acid. Saline is frequently prescribed for post-op OH, but also for daily use.

**Diet:** Advice on a healthy diet for teeth focuses on excluding consuming refined easily fermentable carbohydrates. Many solids (sweets, toffees and sweetened confections) and acidulated soft drinks (pop-sodas, coals and fruit drinks), contain these sweeteners. The mono- (fructose, glucose and galactose) and disaccharide (maltose, lactose, and sucrose) sugar sweeteners are all acidogenic and are all cause-related to dental ravages, including decay. Proper sustained OH using fluoride toothpastes significantly constrains the development of decay and gingivitis, even with people who consume high fermentable carbohydrates. Eating fruits and vegetables, like apples and/or carrots, hard pears and/or celery, as "Nature's own tooth-brush as a 'detergent chew'.... is fallacious as, eating these foods do not remove stagnating OB neither at the vulnerable interproximal and cervical dental sites, nor from the deep pits and fissures where most caries start.

### Concluding Remarks

Brushing and flossing is regarded by many as removal of remnants of food. This is part of OH, but the main purpose of OH is removal of OB from dental stagnating areas. Probably the most important dental consultation in any person's life is the first-time dental oral hygiene

instruction to learn oral hygiene skills. Whatever method is used for brushing, it should not be done with excess rigor so as to cause 'Tooth-brush abrasion'. Oral hygiene Instruction should be effective, cogent, intelligent and motivating, in the fervent hope that patients will be self-motivated to take care of their teeth for life. The TOHC is inexpensive to set up and will save the patient tens of thousands of dollars by preventing future suffering, development of tooth-decay, extractions and breakdown, which will demand hugely expensive rehabilitation through oral rehabilitation in senior years. Using a TOHC effectively ensures prevention remains the best dentistry of all [2]. The TOHC could be decorated to soften the ambience.

A special oral hygiene teaching cubicle facilitates instructing, learning, demonstrating and integrating behavior-change of personal OH into daily routines. The TOHC should be part of every successful dental clinic. Teaching young people and all patients the benefits of oral hygiene remains among the most important lessons to be learned in life and the TOHC facilitates in securing this for global oral health.

### Author's Statement

The author has no conflicts of interest to declare.

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