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Polishing After Scaling : A Literature Review

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Abstract:- One feels confident and fit when they have healthy teeth and gums. The tooth enamel becomes discolored as people go about their everyday activities and engage in diverse eating and drinking behaviors. The majority of dental offices have traditionally associated polishing with the prophylaxis treatment, which patients are aware of and anticipate. However, excessive polishing might wear down the tooth's surface structure. More local deposits would gather as a result of this. Additionally, the process of reestablishing the fluoride-rich layer of the tooth takes a long time. As a result, polishing is no longer recommended as a regular oral prophylaxis technique and is now done only when the patient requires it. The following article provides information on several issues.

Keywords:- *Stains, Polishing, Abrasives.*

I. INTRODUCTION

Microorganisms that colonize the tooth surface at or below the gingival edge are the root cause of periodontal disorders, which are multifactorial in nature.[1]

Thorough supra- and subgingival calculus and biofilm removal, a key component of periodontal maintenance therapy, is required for its treatment. Hand Instrument, sonic or ultrasonic scalars, or both, may be utilized for debridement. [2] . Even if instrumentation is carried out by skilled and well-trained doctors, using the instruments on a regular basis may make the surfaces of the teeth harsh in addition to staining them. [1]

In the majority of dental offices, tooth polishing is a procedure done as part of oral prophylaxis. It involves smoothing the tooth surfaces to give them a glossy, lustrous appearance. Although the professional removal of soft deposits and stains from tooth surfaces has been referred to as "polishing," in actuality, this encompasses both cleaning and polishing. Plaque, biofilm, stains, and acquired pellicle are all eliminated during the polishing process. [3]

- *Background*

Porte polishers were used historically to apply therapeutic substances, such as treating hypersensitive areas, or to remove extrinsic stains. The tips are made of wood. Different types of wood, usually orangewood, are utilized to make the wooden points [1]

Even while the practice of polishing teeth dates back to ancient Roman and Greek texts, it was only Pierre Fauchard, the Father of Modern Dentistry, who popularized the use of finely crushed coral, egg shells, ginger, or salt to remove dental stains. [4]

Through the years, tooth polishing methods and procedures have changed. In the past century, Dr. Fones , the father of dental hygiene, began teaching his assistants how to polish the coronal teeth of patients. Stains were shown to not be the cause of any harmful processes, hence the removal of stains was done for aesthetic rather than health reasons. [4]

Thus, Wilkins applied polishing as a selective procedure. Prior to the 1970s, patients considered polishing to be a required component of their dental appointments. [4]

More proof has been provided to back the use of selective polishing during the 1990s and 2000s. In many, if not most, dental hygiene procedures, the idea of complete mouth polishing is still employed.[5] However, instead of incorporating polishing at each professional maintenance session, several dental hygiene institutions across the world now advocate selective polishing as a routine protocol.

In regard to oral prophylaxis, tooth polishing is described by the American Academy of Periodontology as "the removal of plaque, calculus, and stains from the exposed and unexposed surfaces of the teeth by scaling and polishing as a preventive measure for the control of local irritational factors."[6]

The most popular technique for polishing teeth uses a rubber cup and pumice, and the most popular polishing paste is made of pumice powder, glycerin, color additives, and sodium fluoride (NaF) or stannous fluoride (SnF) for desensitizing effects.[1]

➢ *Selection of a Prophylaxis Paste[4]*

They should be carefully picked because prophylaxis paste might accidentally damage teeth while eliminating dental stains.

Coarse or medium-sized powders are the most successful at removing extrinsic stains, but they can also erode and harm the surface of the teeth the most. In actuality, overly vigorous exfoliation damages the enamel, giving it a less-polished appearance and ultimately causing it to reformate foreign stains more quickly and retain bacterial plaque. In contrast, prophylaxis paste with smaller particle sizes, such those in fine paste, will improve the cleanliness, luster, and smoothness of the tooth surface, making it more resistant to the formation of calculus, plaque, and stains in the future.

➢ *Contraindication of Polishing Paste[4]*

- No external stains were present
- Severe periodontal and gingival inflammation
- aesthetic repairs
- Intolerance to paste components
- Caries in teeth
- Decalcification
- Enamel hypoplasia
- Exposed cementum or dentin
- Hypomineralization
- Recently erupted teeth
- Individuals with respiratory conditions
- Recessions
- Sensitive teeth
- Xerostomia.

II. INSTRUMENT USED FOR CLEANING AND POLISHING

➢ *Rubber Polishing Points*

These are constructed of organic rubber. Its flexible nature allows the tip to fit over orthodontic bands and brackets as well as proximal surfaces and embrasures. [7]

➢ *Rubber Cups*

It comprises of a hollow interior and a rubber exterior that may or may not be webbed.

With a unique prophylaxis angle, these are employed in hand pieces. The disposable rubber cup or prophylactic angle should be sterilized after each patient. To reduce frictional heat, use a good cleaning paste that contains fluoride and keep it moist. [8]

➢ *Air Powder Polishing*

The first handpiece for an air polisher that delivered air-powdered slurry was utilized in the early 1980s. Extrinsic stains and soft deposits can be removed with the help of the Prophy Jet gadget. Warm water is provided for cleansing and rinsing while the slurry quickly and effectively eliminates stains by mechanical abrasion. On the surfaces of titanium implants, air powder polishing can be safely employed.[8]

➢ *Bristle Brush*

Wheel and cup shapes are both available. A polishing paste is applied with the bristle in the prophylactic angle. Due to the stiffness of the bristles, only the crown should be used to prevent damage to the gingiva and cementum. [8]

➢ *Dental Tape*

Used with the aid of polishing paste and on proximal surfaces, which are difficult to reach with conventional polishing techniques. Passing the tape interproximally requires a forceful labio-lingual motion. To avoid damaging the gingiva, one should exercise caution.

The abrasive agents is used to clean and polish the tooth surfaces. The abrasive ingredients in polishing paste are frequently the same as those found in toothpaste.

Pumice flour and calcium carbonate are the two abrasives found in polishing pastes that are most frequently utilized. Additionally, silicon carbide, aluminum silicate, silicon dioxide, carbide compounds, garnet, feldspar, zirconium silicate, zirconium oxide, boron, and calcium carbonate are utilized as abrasives in commercial prophylactic polishing pastes. [4]

Pumice is more abrasive than calcium carbonate, also known as chalk. It results in a highly reflecting surface with less scratching.

In the form of an off-white mineral on abrasive disks and strips, zirconium silicate is also used for polishing. The paste used for dental prophylaxis uses it, nonetheless, quite regularly. Pumice and glycerin are the two chemicals that are most frequently found in commercially manufactured polishing pastes, though manufacturers typically do not specify the exact amounts of the constituents in their products. [4]

In 1993, it was revealed that polishing paste containing perilite satisfies the three criteria for a perfect polishing paste, namely, good washing capacity, low abrasion, and simultaneous polishing. Similarly, it has been claimed that a paste made of perlite can polish teeth by eradicating surface stains without harming the dental structure or the soft tissues.[9]

When polishing, a series of ever finer abrasives must be used, moving from coarse abrasion (cleaning) to fine abrasion (polishing). Regularly, fine grit is utilized; instances requiring thick stains only call for medium or coarse pastes.

Since each surface, including tooth enamel, root surfaces, and restorations, has a different hardness value, only one polishing chemical can be used on all of these surfaces. [4]

There are both manual and motor-driven polishers available.

Unlike engine-driven polishers, which employ hand parts to polish, manual polishers are handheld machines.

➢ *Manual Polishers Are:*

Porte polisher: It is a hand-held device used with an orange wood points. With a wedge-shaped, tapered, or pointed wooden point, it rubs the abrasive substance against the tooth surface.

- *Advantages*

✓ it is portable
✓ Can be reached by tooth surfaces with an improper angle
✓ produces just modest thermal heat
✓ Very little bacterial aerosol. [4]

- *Disadvantage*

It takes longer to polish instruments since it needs time and hand strength.[10]

Polishing strips: They are a good choice for line angles and interproximal zones.

However, they are rather abrasive. When polishing, care must be given to prevent slicing or abrading the nearby soft tissues. .[10]

➢ *Engine Driven Polishers:*

These are frequently utilized by dental professionals and dental hygienists due to their effectiveness and efficiency. These polishers are connected to the proper prophy-angle, which can have a shank that is straight or inclined in the opposite direction, and the suitable hand piece. [10]

In an in vivo clinical trial, Christensen and Bangerter found that dental hygienists typically rotated at a speed of 2500 rpm.[11]

The slow speed handpiece is always rotated at the lowest rpm possible in clinical practice because it is challenging to estimate the rpm. If a "whining" or high-pitched sound appears, the rpm is too high.[12] .

The majority of surfaces may be polished in 2–5 seconds using a patting motion and a light, steady speed. According to Christensen and Bangerter, the rubber cup made contact with each tooth surface for an average of 4.5 seconds. .[11]

According to Miller and Hodges, standardizing polishing time in a study contrasting rubber cup and air-polishing revealed that it took 10 min (3.4 s per tooth) to treat the complete mouth. The applied pressure should be around 20 psi. [4]

➢ *Air Powder Polishers*

It has surpassed traditional rubber cup polishing paste methods because it is more practical for removing subgingival plaque and because it can access surfaces that a rotary device cannot. [13]

Air polishers also utilize abrasives such as aluminum trihydroxide, calcium sodium phosphosilicate, calcium carbonate, and glycine. The hand-piece for the air polisher can be used alone, with ultrasonic scalers, or directly to the air/water connector. [4]

The handpiece nozzle would launch the slurry onto the tooth surface when the foot control was activated. 3–4 mm should separate the nozzle from the tooth surface.

Using a steady circular motion, interproximal to interproximal sweeping or paint brush action, the spray should be directed towards the center third of the exposed tooth and should be tilted diagonally.[3]

According to Petersilka et al., it is possible to completely remove extrinsic stains while also lessening the abrasive effects on the root surfaces of air-polishing chemicals.[14]

- *Advantage*

✓ The tiredness of the operator and the patient is reduced.
✓ It saves time and is efficient.
✓ After using prophy-jet, dentinal sensitivity is decreased, which may be related to the possibility that bicarbonate crystals are blocking the tubular aperture.
✓ It eliminates plaque from locations that are otherwise challenging to reach, such as furcations, flutings, and near root proximities. [15]

- *Disadvantage*

They should be used with caution in patients who have titanium implants, respiratory, renal, or metabolic diseases, infectious diseases, youngsters, or who are on diuretics or long-term steroid therapy. An infection control risk could be presented by the aerosols produced during air-polishing. [15]

➢ *Vector-System*

The teeth are polished using the vector system's polishing fluid.

Plaque and endotoxins are removed although only a little portion of the cementum surface is removed. Braun et al. showed how to utilize hydroxyapatite- or silicon carbide-containing abrasive fluids with resonating devices that deflect vibrations directed at the tooth surface, reducing the forces required to remove tooth material. As a result, as the plaque is removed via fluid dynamics, less force is applied to the tooth surface. [4]

➢ *Assessment of the Polishing Procedure's Completion*

The teeth must be carefully examined after the polishing treatment utilizing a mouth mirror, intra-oral light, compressed air, and revealing solution. The surface must be re-polished or re-instrumented to eliminate any remaining biofilm or stains. Before flossing, finishing strips or dental tape that have been lightly coated with prophy paste help to remove any remaining interproximal stains. [3]

Effects on Restorative Materials, Sealants, Orthodontic Appliances and Implants.

In a recent study on patients with peri-implantitis, glycine powder dramatically decreased bleeding on probing six months following treatment, compared to patients who received mechanical debridement using curets and chlorhexidine.[15]

- *Concern on Health And Safety*

Flemmig revealed the results of his analysis of Health Device Alerts from 1977 to 2001, which indicated a total of 9 air emphysema and 3 air embolism occurrences connected to the usage of APDs.22.[16]

Gutmann recommended employing high-volume evacuation rather than a saliva ejector and pre-procedure rinsing prior to therapy to prevent any potential health hazards.[17]

III. CONCLUSION

A dental cleaning appointment used to always include tooth polishing. In order to prevent plaque and bacteria that lead to gingivitis, periodontitis, or cavities from sticking to teeth readily, dentists used to polish teeth. Only when stains are present that scaling was unable to eradicate warrant polishing of the teeth.

The abrasive/polishing agents and types of polishers available to dentists and hygienists nowadays are varied. In order to provide good care by selecting tailoring the treatment according to the patients' needs and with the least amount of concern for the loss of tooth structure, they can now utilize a variety of polishers and abrasives depending on the acceptance and condition of the patients.

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