IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Precision in Periodontics: Exploring Curettes for Effective Subgingival Instrumentation

DR ARJUN MR, DR SWATHI S, ATHIRA CHANDRAN, ASWIN
READER DEPT OF PERIODONTICS, POST GRADUATE STUDENT DEPT OF PERIODONTICS, UNDERGRADUATE 3&4,
MAHE INSTITUTE OF DENTAL SCIENCES AND HOSPITAL MAHE PONDICHERRY.

Abstract : Periodontal curette is a tool that is used in dentistry and dental hygiene. It is used to perform scaling and root planning procedures. There are mainly 2 types of periodontal curettes, area specific and universal curette.
Dr Clayton Gracey and Hu-Friedy launched a collection of tools designed to address periodontal diseases.
There are guidelines for using Gracey curettes and only Gracey curettes are covered by the italicized guidelines.

KEY WORDS

Universal Curette, Area Specific Curettes, Displacement Blade, Area Specificity, Single Cutting Edge Used, Gracey Curettes, Extended -Shank Gracey Curette, Blade Curves In 2 planes, Mini Bladed Gracey Curette,Periodontal maintenance Curettes

INTRODUCTION

The periodontal curette is a manually operated tool used in dentistry and dental hygiene to perform scaling and root planning procedures. The periodontal curette is divided into 2 main types Universal curette and Area specific curette. Periodontal curettes have a single surface, one or two sharp edges, and a rounded back and tip. They are usually the preferred tool for removing calculus below the gum line. (1)

Universal and Area specific curettes are commonly utilized in the non- surgical treatment of a patient's periodontal care during dental hygiene procedures. The aim of non-surgical periodontal therapy is to reduce inflammation and restore the patient's oral health. (1)
Treatment of multirooted teeth with bifurcation is a challenge for dentists and the results are unpredictable. Due to the anatomical complexity, instrumentation of this inter-furcation region can also be caused by cervical enamel protrusions, radicular hollow canals, root proximity, root fusion and enamel pearls. [1]

HISTORY

During the 1940's, Dr Clayton Gracey and Hu-Friedy launched a collection of tools designed to address periodontal disease. These curettes were created for use on particular tooth surface in order to enhance fitting and removal of deposits The Gracey designs that are specific to certain areas have become the preferred instruments for performing periodontal procedures.

Periodontal care has changed over the past 50 years. Scaling and root planning have become a standard part of treatment, and doctors are now treating even deeper periodontal pockets. Hu-Friedy developed the After Five and Mini Five curette.

- **DIFFERENT TYPES OF CURETTES**

UNIVERSAL CURETTE

The working end of the universal curette are designed in pairs, so that all tooth surface can be treated with a single double ended instruments or a matching single ended instrument. In each quadrant when approaching the teeth from the facial side , one side of the universal curette adapts to the intermediate surfaces and the other end to the distal surfaces. In the same quadrant, approaching from the lingual side, the double pointed universal curette must be reversed, because the blade are mirror images. This means that a head that adapts to the medial surfaces of the facial side also adapts to the distal surfaces of the lingual side and vice versa. Both ends of the universal curette are used for incisor instrumentation. However, in the posterior teeth, since access to the distal surfaces can be machined with a single working head using both cutting edges. To do this, the instrument is first placed on the mesial surface so that the handle is almost parallel to the mesial surface so that the handle is almost parallel to the mesial surface. Since the surface of the universal curette blade is at a 90degree angle to the ground blade, when the bar is positioned so that it is perfectly parallel to the surface being instrumented, the tooth blade angle is 90 degrees. To close this angle and thus obtain the correct working angle, the lower hand must be slightly inclined towards the tooth. The distal surface of the same posterior tooth can be instrumented with the opposite cutting edge of the same blade. This cutting edge can be adjusted to the correct working angle by positioning the handle so that it is perpendicular to the distal surface. (3)

When installing a universal curette blade, as much of the cutting blade as possible should be in contact with the tooth surface, except on narrow curved surfaces such as linear angles. Although the entire blade should touch the tooth, pressure should be concentrated on the lower third of the blade during scale strokes.(3)

But when planning the root, the lateral pressure must be evenly distributed along the cutting edge.(3)

The main advantage of these curettes is that they are designed for universal use on all tooth surfaces in all areas of the mouth.(3)

However, universal curettes have limited adaptability to treat deep pockets where apical displacement of the bracket has exposed furcation, root curvatures and deformities. Therefore, many clinicians consider Gracey curettes and new variations of Gracey curettes to be site-specific and specifically designed for subgingival scaling and root planning in periodontal patients.(3)

AREA SPECIFIC CURETTES

Gracey curettes are regional instruments designed by Dr. Clayton H. Gracey of Michigan in the mid-1930s. Four design features make Gracey cleavers unique:(3)

- they are zone specific
- each blade has only one cutting edge
- the blade is curved in two planes
- the blade is offset.(3)
- Area specificity

The set includes seven pairs of running shoes. Gracey curettes number 1-2 and 3-4 are used for anterior teeth. Gracey number 5-6 can be used for both incisors and incisors. The facial and lingual surfaces of the posterior teeth are instrumented with Gracey curettes number 7-8 and 9-10.(3)

Gracey #11-12 is designed for mesial surfaces of posterior teeth and #13-14 adapts to distal surfaces of posterior teeth.(3)

Although these usage guidelines were originally developed by Dr. Gracey, the Gracey curette can be used in areas of the mouth other than those for which it is specifically designed, as long as the general principles of these curettes are understood and applied. The Gracey curette should not be reserved for periodontal patients only. In fact, many doctors prefer Gracey calipers over universal scales because of their superior adaptability.(3)

Single cutting edge used

Like the universal curette, the Gracey curette has two cutting edges. Unlike the universal curette, the Gracey instrument is designed to use only one blade. To determine which of the two is the best cutting edge for the tooth, the blade should be held face up and parallel to the floor. From this angle you can see the blade curving to the side. One cutting edge forms a larger outer arc and the other a shorter, smaller inner arc. The larger outer curve, also called the "lower cutting edge" or the cutting edge further from the handle, is the correct cutting edge.(3)

- **Blade curves in 2 plane**

The Gracey curette's toe curls upward, just like the universal curette's. But as was already indicated, the Gracey curette's toe likewise curls to the side. When the working end of the blade is advanced around the tooth, its distinct curve improves its ability to adapt to convexities and concavities. During instrumentation, just the lowest third or half of the Gracey blade comes into contact with the tooth. However, a universal curette blade's cutting edge is not curved to the side, therefore it is less flexible when it comes to accommodating root concavities.(3)

Displacement blade

Because Gracey curette blades are ground at an offset angle, their faces are not parallel to the lower shank.(3)

DIFFERENCE BETWEEN UNIVERSAL AND AREA SPECIFIC CURETTE

	GRACEY CURETTE	UNIVERSAL CURETTE
AREA OF USE	Designed for certain areas and surface	Designed for all areas and surface
CUTTING EDGE USE	Only one cutting edge is used	Both cutting edges are used
CURVATURE	Blade is curved up and to the side	Blade is curved up and not to the side
BLADE ANGLE	Beveled at 60degree to the shank	Beveled at 90degree to the shank

- **Principles of use**

The broad guidelines for using Gracey curettes are virtually the same as those for the universal curette; only Gracey curettes are covered by the italicized guidelines.(4)

- Choose the appropriate cutting edge. Visual inspection of the blade is the first step in determining the proper cutting edge, which should then be verified by gently fitting the selected cutting edge to the tooth where the lower shank parallel to the tooth's surface.(4)
- If the right cutting edge has been chosen, then with the toe directed in the direction to be scaled (e.g. mesial with a #7-8 curette), just the back of the blade is visible. In the event that the incorrect cutting edge is used, the blade's glossy, flat face will be visible.(4)
- Verify that the bottom shank and the surface to be instrumented are parallel. The part of a Gracey curette's shank that lies between the blade and the first bend in the shank is called the lower shank. When using Gracey curettes, parallelism of the handle or upper shank is not a suitable reference because the shanks' angulations differ. The mesial, distal, frontal, or lingual surfaces of anterior teeth should be parallel to the lower shank of the Gracey #1–2, #3–4, or 5–6. The lower shank of the #7-8 or 9-10 on posterior teeth should be parallel to the lingual or facial surfaces of the teeth; The mesial surfaces of the teeth should line up with the lower shank of the #11–12 and the distal surfaces of the teeth should line up with the lower shank of the #13–14.(4)

- For optimal control and wrist-arm action, maintain the fourth and middle fingers together in a built-up fulcrum while employing intraoral finger supports. (4)When working on the maxillary posterior teeth, use extraoral fulcrums or mandibular finger rests for the best possible angulation. (4)
- For ideal angulation when working on the maxillary posterior teeth, use mandibular finger rests or extraoral fulcrums.(4)
- When removing calculus, especially on line angles or when trying to break away a calculus ledge by starting at the lateral edge, focus on using the lowest third of the cutting edge. (4)
- Rather of flexing the fingers, let the wrist and forearm do the work of the stroke.(4)
- To maintain the blade's adaptation as the working end is advanced around line angles and into concavities, roll the handle gently between your thumb and fingers. (4)

EXTENDED -SHANK GRACEY CURETTE

Extended-shank Gracey curettes, like the After Five curettes, are made with the same method but with a terminal shank that is 3 mm longer than the ordinary Gracey curettes. Because of the longer terminal shank's improved access, particularly to deep mesial and distal pockets, they work well in deep pockets on the posterior teeth of the maxillary and mandibular bones. An extraoral fulcrum enables for improved access and adaptation to all of the maxillary posterior teeth, even though the larger lower shank facilitates access when using a traditional intraoral finger rest. elongated shank Patients requiring periodontal maintenance and having

deep residual pockets should utilize Gracey curettes with regular, finishing shanks; those with stiff shanks should be used for scaling thick calculus.(4)

MINI BLADED GRACEY CURETTE

- Gracey curettes with mini-blades, including the Mini Five and Gracey curettes , feature a 50% shorter blade and a terminal shank that is 3 mm longer than those with regular Gracey curettes. Compared to Mini Five curette blades, Micro Mini Five curette blades are 20% smaller. With the following notable exceptions, these small-bladed tools are often used in the same way as the Gracey-curettes: Regular Gracey or extended shank Gracey curettes should not be substituted with mini-bladed curettes. Rather, they ought to be employed in conjunction with traditional curettes and ultrasonic devices in hard-to-reach places such as furcation's, line angles, and deep, narrow, or tight pockets.(4)
- Because the bigger handle diameter improves control over the little blades, large #4 handles are advised for any instrument with a mini blade.(4)
- Toes can be pointed mesial or distally when scaling with mini-bladed curettes. In fact, when the blade is inserted with the toe directed distally and when strokes are activated from the mesial toward the distal line angle, these curettes often adapt to the root curvatures of numerous posterior teeth more efficiently. (4)
- To remove calculus, use mini-bladed curettes with stiff shanks. When performing maintenance, use the smaller, standard-shank mini-bladed curettes for de-plaquing.(4)
- Use intraoral finger rests near the working region when employing mini-bladed curettes to remove calculus. You can use extraoral fulcrums or intraoral rests for light root planning and de-plaquing. Typically, in order to reach deep pockets on the maxillary second and third molars, extraoral fulcrums are required.(4)
- Straight, vertical strokes are the norm when using mini-bladed curettes.(4) They can also be utilized with oblique or horizontal strokes, although unless the tissu e is very retractable, the short blade may prevent these strokes from extending subgin givally far enough. (4)

Minibladed curettes are best utilized horizontally in the cementoenamel junction or in the developing depressions directly below it.(4)

Mini bladed gracey curettes, when utilized correctly, offer previously unheard of access and efficacy for both nonsurgical and surgical root debridement.(4)

According to one study, Gracey Curvettes outperformed regular Gracey curettes in deep ante rior pockets.(4)

These tiny curettes offer superior tactile sensitivity and great adaptability in places like linea ngles, furcations, and narrow, curved, facial, or palatal root surfaces compared to modified, slim ultrasonic tips.(4)

Studies also showed that on deep mandibular anterior pockets, furcations, and furcation entrances, Gracey Curvette curettes outperformed ultrasonic thin tips.

Until minibladed curettes are extensively utilized, no comparison between modified, slim ultrasonic tips and hand instruments can be drawn. (4)

PERIODONTAL MAINTENANCE CURETTES

The latest innovation in the Gracey curette is a category called periodontal care. Gracey curettes, introduced in Novembith strip tissue instruments, are intelligence drugs for the vial

menstrual year, recovery and pocket depth of patients after periodontal treatment or lease surgery. They can also be used in correct periodontal doses in nursing patients without loss or retraction of the appendix. In both cases, patients require a small, thin blade to facilitate subgingival thrust .This newer blade is 1mm shorter and 20% thinner, with the face of the blade angled 60 degrees away from the connector shank, compared to other Gracey models that are offset 10 degrees. This slight change in the angle between the blade and stem and the angle between the finer, narrower blade allows for easier compression and better access to the root surfaces in denser stands. litigation and foreclosure. Functional angles are achieved without tissue swelling, which increases patient comfort. The three-quarter blade length of this new type of Gracey curette falls between the length of the standard and mini-blade Gracey curette. A shorter blade adapts more easily to root anatomy and furcation areas and helps prevent overstretching of the root canals. The stem length is 2mm longer than the standard Gracey curette, but 1mm shorter than the extended stem Curette. This length allows better access to cheek areas where attachment is lost, but still allows easy use in frontal areas where a very long stem is not necessary. The shaft angle of the new Gracey #11-12 is between the standard Gracey #11-12 and Gracey #15-16, and the shaft angle of the new Gracey #13-14 is between the standard Gracey #13-14 and Gracey #17 -18. These stem angle modifications were developed to improve access to the mesial and distal surfaces of posterior teeth.(4)

The shank of these newer instrument are stiff so they can withstand a lot of pressure when it is necessary to remove the remaining polished calculus. However, they are not intended for moderate or severe tartar removal. The doctor must consider that the blade of the instrument is slightly closed angle than usual. (4)

Gracey curette, so if more difficult or stubborn calculus appears, the doctor should slightly open the corners of the blade, or change to a rigid regular Gracey curette, or use another guideline or ultrasound device.(4)

LANGER AND MINI-LANGER CURETTES

Langer and Mini Langer cuvettes are a series of three cuvettes that combine a stem design. Of standard Gracey curette number 5-6, 11-12 and 13-14 with a universal blade ground 90 degrees instead of the offset blade of the Gracey curette. This combination of Gracey and the universal curette model allows you to combine the advantages of a region-specific handle with the versatility of a universal curette blade. Langer #5-6 curette meets the mesial and distal surfaces of the incisors; Langer #1-2 curette (Gracey #11-12 stem) adapts to mesial and distal surfaces of mandibular posterior teeth; and a Langer #3-4 curette (Gracey #13-14 stem) is adapted to the mesial and distal surfaces of the maxillary posterior teeth . These instruments can be installed on both mesial and distal teeth without changing instruments. Standard Langer curette shanks are heavier than the Gracey finish but less stiff than the stiff Gracey. Langer curettes are also available with a rigid or terminal stem, and are available with an extended stem (After Five) and a mini-blade (Mini Five).(4)

CONCLUSION

The Gracey series of curettes provide a good basis for performing high quality scaling and root planing procedures. However, modifying the original method proposed by Gracey gives a better result in an easier, faster and more efficient way. The principle of modified use of periodontal curettes is the parallelism of the lower part of the instrument to the long axis of the tooth. An alternative method would be useful in daily practice.[2]

REFERENCE

1 Salomão, L. P., Da Silva, M. M. T., Souza, A. a. E., Da Cruz Galhardo Camargo, G. A., Barroso, E. M., & Zuza, E. C. . Analysis of the characteristics of periodontal curettes used for scaling the roof of the furcation by manual versus digital method. Revista De Odontologia Da UNESP/Revista De Odontologia Da UNESP

2 Cc, T. (1990). Modification of clinical usage of periodontal curettes. *PubMed*, https://pubmed.ncbi.nlm.nih.gov/2094861

3 Newman, Michael G., Takei, Henry H., Klokkevold, Perry R., Carranza, Fermin A.. *Newman and Carranza Clinical Periodontology*, *13th ed.* (13). : Elsevier

4 Klokkevold, E. B. M. G. N. H. H. T. P. R. *Carranza's Clinical Periodontology*. http://ci.nii.ac.jp/ncid/BA55015805

I.