

got vibes?

Optimize the debride.



Marie Furin George, RDH, MS
Class of 1983

Operational Variables

- Frequency
- Power Input
- Water Flow
- Tip Design

Technique Variables

- Adaptation
- Angulation
- Lateral Force
- Tip Design

Vibration

Irrigation

Cavitation

Acoustic
Microstreaming

Table 3.6 Relationship of Ultrasonic Operating Variables and Mechanisms of Acoustic Power

Variable	Displacement Amplitude (DA)	Cavitation(CA) & Microstreaming (AMS)	Force (F)
Power Input	+ correlation ↑ electrical input = ↑ DA	+ correlation ↑ electrical input = ↑ DA = ↑ CA/AMS	+ correlation ↑ electrical input = ↑ DA = ↑ F
Tip Diameter	variable	+ correlation ↑ tip diameter = ↑ CA/AMS	+ correlation ↑ tip diameter = ↑ F
Water Flow at Tip	- correlation High DA = fine mist	+ correlation ↑ water at tip = ↑ CA/AMS	

Table 4.1 Key Elements of Ultrasonic Tip Design

Element	Description	Impact
Tip Dimension	Diameter (width) of the active area of the tip	- Degree of force - Amount of cavitation
Tip Shape	Shape of the active area in cross section	Degree of contact
Tip Geometry	Number of planes crossed by the shank	Access to treatment site
Tip Profile	Number of bends in tip	Degree of contact

Table 4.4 Tip Selection Guide

Type of Deposit	Tooth Surface Contour	Element of Design			
		Tip Diameter	Tip Shape	Tip Geometry	Tip Profile
Moderate Calculus	Flat or Curvaceous All coronal surfaces All root surfaces	Standard	Cylindrical or Rectangular	Straight	1 – 3 bends
Biofilm / Light Calculus	Flat or Minimally Curvaceous All coronal surfaces Anterior root surfaces	Slim or Ultra-Slim	Cylindrical Rectangular (coronal surfaces only)	Straight or Curved	1 or 2 bends Triple bend (coronal surfaces only due to rectangular shape)
	Highly Curvaceous Posterior root surfaces	Slim	Cylindrical	Curved	Not applicable to curved tips

Table 4.5 Left and Right Curved Tip Utilization Guide

Sextant	Right	Anterior	Left
Maxillary Arch			
Buccal/Facial	LEFT Curved	RIGHT Curved	RIGHT Curved
Palatal	RIGHT Curved	LEFT Curved	LEFT Curved
Mandibular Arch			
Lingual	LEFT Curved	RIGHT Curved	RIGHT Curved
Buccal/Facial	RIGHT Curved	LEFT Curved	LEFT Curved

Table 4.7 Authors' Recommendations for Basic (Minimum) Tip Setup

Tip Design	Indication for Use	Rationale for Inclusion
Standard 1-bend	Removal/reduction of moderate-heavy calculus	The longer length of a tip with 1-bend ensures adequate penetration to the base of the pocket
Slim Left curved Slim Right curved	Definitive debridement of biofilm & light calculus	Ensures adequate adaptation to highly curvaceous tooth contours AND to less curvaceous/flat contours, negating the need for a slim straight tip
Ultra-slim	Definitive debridement of biofilm & light calculus	Facilitates access to areas where even slim diameter is too broad, such as tight contacts and areas with healthier or tight tissue tone

Table 6.4 Working Parameters for the Stages of Ultrasonic Instrumentation

Working Parameter	Scaling Stage	Debridement Stage
Tip Diameter	Standard	Slim or Ultra-Slim
Tip Shape/Alignment	Cylindrical or Rectangular; Straight	Cylindrical; Straight or Curved (depending on site anatomy)
Power Setting	Medium to Med-High	Med-Low to Medium
Lateral Pressure	≤ Exploratory (.5N)	> Exploratory (1-2N) < Manual Scaling
Angulation	0-15°	0-15°

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Marie D. George
Philip M. Preshaw
Timothy G. Donley