

The Role of Polishing in Veterinary Dentistry

Alex J Smithson

Polishing teeth adds time and therefore cost to any dental procedure, it should thus be carefully considered whether this is a beneficial procedure or purely short-term cosmesis. It is important to understand that plaque is a soft biofilm and major causative factor of periodontal disease, whilst calculus is mineralised plaque (thus if plaque removal is effective calculus formation is prevented). Calculus does not cause periodontal disease but is a predisposing factor as it is a rough, plaque retentive material.

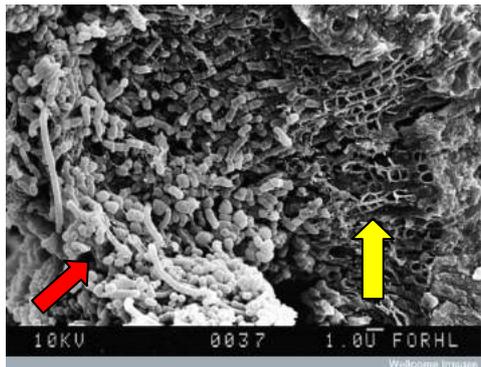


Fig 1: Plaque biofilm (red arrow) adhering to tooth surface and the honey-comb structure of calculus (yellow arrow).

Scaling, whether by hand, sonic or ultrasonic equipment, is used to remove calculus. Several aims are achieved:

1. teeth are made fully visible to the operator for assessment
2. areas of plaque trapping and stagnation are reduced
3. the smooth enamel surface is easily cleaned, assisting homecare (tooth-brushing)
4. the water spray irrigates the area, removing debris
5. plaque biofilm disruption

However small particles of adherent calculus remain on the tooth surface, creating a more plaque-retentive surface than clean enamel.



Fig 2: Calculus particles on the tooth surface after ultrasonic scaling.

The aims of polishing are:

1. Create a smooth tooth surface by removal of calculus fragments
2. Mechanically disrupt the plaque biofilm

Thus, both scaling and polishing are methods of biofilm disruption; if no calculus is present polishing may be more appropriate. Biofilms require mechanical disruption for removal – their organised adherence sequence and matrix makes them highly resistant to other forms of removal and antimicrobials.



Fig 3: Plaque biofilm adhering to tooth surface (SEM transverse sectional view)



Fig 4: Plaque biofilm adhering to tooth surface (SEM surface view)

Unfortunately scaling and polishing both pose potential risks:

1. Scratching and roughening of the enamel surface (especially if the tip of the scaler used or coarse paste, and/or a stiff prophylaxis cup).
2. Thermal pulpitis where power instruments are used inappropriately and for too long.

Where a client is willing and able to brush their pet's teeth polishing has a useful role in reducing plaque retention (via smoothing) and thus assisting homecare, oral hygiene and ultimately periodontal health. However if no homecare will be performed the potential risks inherent to polishing, in addition to time under GA to polish the teeth and its associated financial cost, would likely outweigh the possible benefits. It could be argued that where no calculus exists and an owner is willing to brush, they will disrupt the biofilm themselves once brushing at home. To achieve periodontal health plaque removal is required on a daily basis, without daily tooth-brushing following a scale and polish procedure benefit is transient and largely cosmetic.