EVALUATION OF HAND INSTRUMENT, ULTRASONIC SCALER AND Nd:YAG LASER ON SUBGINGIVAL CALCULUS AND ROOT SURFACE.
(AN SEM STUDY)

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The role of plaque in the initiation and progression of periodontal disease has been convincingly demonstrated. The role of calculus is not as well defined[7,19, 20,27,34,35], the recognition that the porosity of calculus allows for retention of toxic products would suggest that calculus plays more than a passive role. The subgingival mineralization clearly results from the interaction of the plaque with the influx of mineral salts that accompanies the inflammatory exudate[35]. These deposits if allowed to remain in situ, contribute to the chronicity of the disease[7,35]. Epidemiologists have reported a positive correlation between the presence of calculus and periodontal disturbances. The significance of subgingival dental calculus in periodontal disease has been attributed to the presence of metabolically active plaque on its surface[19,35].

Dental plaque formation is influenced by the surface energy of the bacteria and by the free energy and roughness of its plaque - accumulating substratum. Results from a 1990 in vivo study indicate that the influence of surface free energy on plaque accumulation and plaque composition is less important than the influence of surface roughness. Professional instrumentation of periodontally diseased teeth should include complete removal of plaque, calculus, and other bacterial components from tooth surfaces with no or minimal sacrifice of healthy tooth substance and no production of surface roughness[32].

Considerable controversy exists concerning the best methods of treating periodontal disease. Calculus and its associated microbial plaque are the primary etiology of periodontal disease, whatever the treatment modality chosen by the clinician, scaling and root planing are two procedures considered fundamental to successful therapy[6].

Studies related to root planing, have shown that complete removal of calculus is usually difficult. Despite the best efforts of the best clinicians to thoroughly