



MID - An Overlooked Paradigm for Caries Management

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Minimal intervention dentistry (MID) is a contemporary dental treatment approach provided with the most important endeavor to conserve as much of the natural hard tooth tissues as possible. It involves caries risk assessment and focuses on the early diagnosis, prevention and intervention of dental caries. The concept of MID has evolved due to our deeper insight into caries disease process and the advent of better biorestorative materials and incorporation of modern technology in dental profession. It has now been globally accepted that early detected non-cavitated carious lesion in enamel and dentine can repair through remineralization. This thinking invalidates GV Black's proposed 120-year old philosophy of surgical intervention using hand pieces and burs. Prof. Elderton and his team extensively worked on caries and restoration cycle and finally established that 'eliminating' carious lesions through restorative procedures does not keep teeth functional for whole life of all the patients receiving dental restorations. The MID concept reiterates that preventive and non-operative local interventions should be employed conjointly with restorative treatment. Unlike Black's proposal the MID brings an end to using dental drill as a primary treatment for dental caries treatment and strives to make certain that teeth of a person should remain in function for life time.

Walsh and Brostek very adequately mention basic principles of MID as 4R: Recognition: Early diagnosis and caries risk assessment through analysis of an individual's life style, saliva quantity, pH, buffering capacity and number of cariogenic bacteria present in plaque. Reduction: To diminish caries risk factors by altering diet and eating habits and increasing the pH of the oral environment. Diet alteration aims at reducing frequency and amount of cariogenic food and incorporating cariostatic snacks and food stuff in the daily diet. Regeneration: To reverse early uncavitated carious lesions, using appropriate topical agents like fluoride gel, fluoride

varnish, Chlorhexidine varnish and casein phosphopeptides-amorphous calcium phosphates. Repair: When cavitation has occurred and digging and filling is required, conservative caries removal is carried out to maximize the repair potential of the tooth and retain natural tooth structure.

Conservation of natural tooth tissues is the prime objective of MID philosophy which requires early detection of the carious lesion. Detecting caries with naked eye and probe remains no more tenable as very delicate technology has been introduced to detect dental caries in the incipient stage with optimal competence. The technology used for this purpose employs an array of technologies including transillumination, laser fluorescence, electric current-impedance, tomographic imaging and image processing. Based on the fluorescence theory, a multifunctional LED camera has also been marketed in France which unites magnification, fluorescence, picture achievement and a therapeutic concept called light-induced fluorescence evaluator for diagnosis and treatment (LIFEDT).

In 1995, the concept of MID was first presented in a seminar with the aim to save human teeth from unnecessary destruction by dentists' drills. Almost a quarter of the century has elapsed but evidence suggests that application of MID principles to improve the standard of oro-dental care has not been internationally recognized by general dental practitioners. Many research studies have shown that benefit of this conservative philosophy may seem obvious to most of dental clinicians, yet the practical incorporation of these principles into everyday dental practice has not been completely accepted and employed.

The logical reason behind this lack of acceptance may be that dental undergraduates in their dental schools are still trained in a restoration-centric mode of caries management which they continue when get involved in their private practices. As an examiner and

teacher in the subject of Operative Dentistry of which Cariology is an integral part, author's experience is that students are theoretically taught in detail about MID concept of caries management but when it comes to treatment, they follow the Black's principles. These poor students are bound to go behind the traditional surgical way of caries treatment because they are assessed in their examination on the basis of conventional cavity preparation, pulp protection and restoration. During Viva Voce examination, examiners like to listen answers based on old theory of caries management. In most of dental schools in subcontinent and Middle East, students in preclinical exercises learn caries classification and management based on Black's viewpoint which effectively served the purpose when dental amalgam was the only option available to practicing dentists. Recently consensus statement of experts of the subject from various countries has been published. It vibrantly outdates the prevailing surgical model of caries management and emphasizes not to intervene in a carious lesion which is inactive. It mentions that active non-cavitated lesions and cavitated cleansable lesion should be managed non-invasively but cavitated lesions which are not cleansable require invasive/restorative management, to restore form, function and esthetics.

In the light of findings of the studies done on clinical implementation of MID concept, there is an urgent need to focus on necessary curricular changes in Cariology and Operative Dentistry courses to implement contemporary caries management at undergraduate level teaching. Dental teachers and practitioners who have been trained on surgical mode of caries management may necessitate some persuasion to employ the new approach. Emphasis through lectures, short courses and hands-on workshops may be helpful to remove this barrier.

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