



Research Paper

Ultraconservative Management Modalities for Discoloured Teeth: Case Reports

Dr. Pradnya V. Bansode¹

Head of the Department, Professor, Department of Conservative Dentistry and Endodontics, GDC & Hospital,
Aurangabad/ MUHS, India

Dr. Seema D. Pathak²

Professor, Department of Conservative Dentistry and Endodontics, GDC & Hospital, Aurangabad/ MUHS,
India

Dr. M. B. Wavdhane³

Assistant Professor, Department of Conservative Dentistry and Endodontics, GDC & Hospital, Aurangabad/
MUHS, India

Dr. Priyanka B. Dongarjal⁴

MDS student, Department of Conservative Dentistry and Endodontics, GDC & Hospital, Aurangabad/ MUHS,
India

Corresponding Author: Dr. Priyanka B. Dongarjal

Abstract - Discolouration of anterior teeth causes considerable cosmetic and psychological impairment to the patient. Discolourations can be intrinsic or extrinsic depending upon the surface and time of involvement of teeth. Stains (whether intrinsic or extrinsic) are difficult to manage with single treatment modality alone. Hence, “combination techniques” are effective in selective patients, depending on severity of discolourations. This article describes ultraconservative treatment modalities like macroabrasion, microabrasion and composite restoration to primarily restore the aesthetic requirement of the patient, that secondarily also reduces the chair side time and excessive loss of the tooth structure.

Keywords: Discolourations, combination techniques, macroabrasion, microabrasion, composite restoration.

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I. INTRODUCTION

“Vogel” introduced two categories in discolourations of teeth, i.e. intrinsic and extrinsic staining^[1]. “Watts et al” has introduced third category called as internalized discolourations^[2]. Intrinsic stain results from pulpal necrosis, dental fluorosis, developmental anomalies involving enamel and dentin, haematological disorders, tetracycline stains and from process of aging^[2]. Extrinsic stains are the cause of absorption of materials from cigarettes, dietary intake of tannin rich foods like tea, coffee and soft drinks, etc^[3].

Whatever may be the cause, darkening of anterior teeth is a cause of special concern, specially in adolescents due to compromised physical appearance. Also, dental aesthetics has considerable impact in our beauty conscious society^[3]. Treatment modalities for managing discolourations include – microabrasion, macroabrasion, bleaching, composite or porcelain veneers and crowns. The main problem with invasive procedures is excessive loss of tooth structure while compromising the integrity of teeth in function^[4]. The enhancement of new procedures in the field of Conservative Dentistry has paved a way for new dimensions in the dental treatment of patients with discoloured teeth.

The aim of these clinical case reports is to focus on ultraconservative management treatment modalities and combination techniques that do not violate the subtle balance of tooth structure and renders the tooth to be healthy in function.

II. CASE REPORT 1

A fifteen year old female patient reported in the Department of Conservative Dentistry and Endodontics in Government Dental College and Hospital, Aurangabad with the chief complaint of stains in upper front teeth since the eruption of permanent teeth. Clinical examination revealed brown stains that were hard, non pitted and intrinsic in nature. Patient was provisionally diagnosed as having enamel hypoplasia with moderate discoloration affecting anterior teeth (figure 1). As the stains were moderately brown involving superficial enamel and the difficulty of the patient to report for multiple sittings, the patient was offered the option of “macroabrasion”. After obtaining patient’s consent, oral prophylaxis was done and procedure for macroabrasion started. A 12 fluted carbide bur (figure 2) in a high speed handpiece was used to remove the superficial defect. Air- water spray was simultaneously used as a coolant to maintain the teeth in hydrated state. After obtaining the desired aesthetic result (figure 3) topical fluoride (Fluor Protector) was applied for 4 minutes (figure 4) and a high fluoridated toothpaste was recommended to the patient.



Fig 1 : Pre-operative photograph

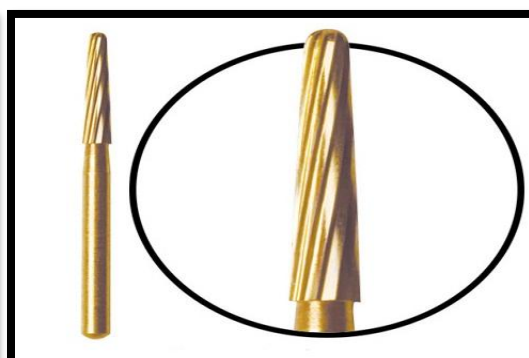


Fig 2 : 12 fluted long tapered carbide bur 8mm long



Fig 3 : Post-operative photograph



Fig 4 : Fluoride Varnish

III. CASE REPORT 2

A twenty three year old female patient reported in the Department of Conservative Dentistry and Endodontics in Government Dental College and Hospital, Aurangabad with the chief complaint of localized brown stain on left upper front tooth since eruption of her permanent tooth. Clinically the stain was dark brown, hard, pitted and intrinsic in nature. The patient was provisionally diagnosed as having localized enamel hypoplasia affecting the canine (figure 5 and 6). After determining the degree of staining, which was severe, it was decided to go for macroabrasion and microabrasion followed by composite restoration. The patient was explained about the treatment protocol and her consent was obtained. After localized prophylaxis procedure, **macroabrasion** was done using 12 fluted carbide bur followed by 30 fluted composite finishing carbide bur (figure 7). After this procedure, **microabrasion** was carried out after applying petroleum jelly to protect the soft tissues. Microabrasion was done using a slurry of 11% HCL and pumice using a contra-angle handpiece at slow speed. Figure 8 shows results after microabrasion procedure. Patient was recalled after 1 week to carry out final restoration with composite resin. SPECTRUM - microhybrid composite kit from Dentsply (figure 9) was used for final restoration. Figure 10 shows final result after etching, bonding, restoring and polishing of tooth.



Fig 5



Fig 6

Pre - operative photographs



Fig 7: After Macroabrasion



Fig 8 : After Microabrasion



Fig 9: Composite Kit



Fig 8 : Post-operative photograph

IV. DISCUSSION

Different modalities for management of discoloured teeth include - in office bleaching, night guard bleaching, laser assisted bleaching, micro and macroabrasion and combination techniques^[5]. Combination techniques are mainly useful in moderate to severe discolourations to outweigh the benefits of more than one treatment procedure.

Microabrasion involves removal of a small amount of surface enamel and classically incorporates both “abrasion” with dental instruments and “erosion” with an acid mixture^[6]. In contrast, macroabrasion is more appropriate when the defect extends deeper into enamel. In comparison to microabrasion, macroabrasion is indicated when the defect extends more than 0.3mm into the enamel but not more than a quarter of the thickness of the enamel^[7].

Teeth exhibiting yellow to orange intrinsic discolourations seem to respond better to vital bleaching. Most of the bleaching gels contain 30-35% hydrogen peroxide because of its low molecular weight which makes it easier to pass through enamel and dentin.

Composite veneers which require minimal removal of tooth structure by single appointment are one of the best choices for discoloured teeth when compared to ceramic laminate veneers.

V. CONCLUSION

The restoration of smile is the most satisfactory and gratifying service rendered by a dentist. The achievements done in the field of Conservative Dentistry helps to represent a new dimension in the treatment plan of the patient. The aim of this article is to focus on more conservative and ultra-conservative approaches available before choosing an invasive protocol which would not only be expensive from patient's point of view, but also compromise the biomechanical, structural and aesthetic integrity of the tooth.

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