

**Micro abrasion with new & effective made in India product anti-vet for mild to moderate discoloured tooth: A case report**

<sup>1</sup>Dr Vinaykumar G S, Senior Lecturer, Department of Conservative Dentist & Endodontist, MM, NGHIDS & RC, BELAGAVI – 590019

<sup>2</sup>Dr Veena Pai, Professor, Department of Conservative Dentist & Endodontist, Dayanada Sagar College of Dental Sciences, Bengaluru

<sup>3</sup>Dr Parvathy J, Dentist, Department of Conservative Dentist & Endodontist, Dayanada Sagar College of Dental Sciences, Bengaluru

<sup>4</sup>Dr Arpita P, Post graduate Student, Department of Conservative Dentist & Endodontist, Dayanada Sagar College of Dental Sciences, Bengaluru

<sup>5</sup>Dr Jibin K, Post graduate Student, Department of Conservative Dentist & Endodontist, Dayanada Sagar College of Dental Sciences, Bengaluru

<sup>6</sup>Dr Nivas Kumar, Post graduate Student, Department of Conservative Dentist & Endodontist, Dayanada Sagar College of Dental Sciences, Bengaluru

**Corresponding Author:** Dr Vinaykumar G S, Senior Lecturer, Department of Conservative Dentist & Endodontist, MM, NGHIDS & RC, BELAGAVI – 590019

**Citation of this Article:** Dr Vinaykumar G Suryavanshi , Dr Veena Pai, Dr Parvathy J, Dr Arpita P, Dr Jibin K, Dr Nivas Kumar, “Micro abrasion with new & effective made in India product anti-vet for mild to moderate discoloured tooth: A case report”, IJDSIR- December - 2021, Vol. – 4, Issue - 6, P. No. 272 – 276.

**Copyright:** © 2021, Dr Suryavanshi Vinaykumar G, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License. Which allows others to remix, tweak, and build upon the work non commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**Type of Publication:** Case Report

**Conflicts of Interest:** Nil

**Abstract**

Micro means small in Greek & abrasion means scraped off in Latin. Ideally, this technique involves 0.1 mm removal of enamel in order to lighten any discoloration. . It was 1st put forth by Dr Walter Kane, 1916 by rubbing anterior tooth with hydrochloric acid under flame of alcohol torch. Later McCloskey used same acid along with pumice. Croll named it as micro abrasion. But doing

it in a patient who has undergone orthodontic treatment adds to the complexity due to the residual composite remnants on the tooth surface post de bonding. Many techniques have been tried to remove the remnant composite but the damage to enamel is inevitable. Anti-vet by MDC, Gujarat is one such micro abrasion kit produced in India recently showing promising results. It contains of 21% hydrofluoric acid. Also the post-

operative sensitivity is negligible. It's a good micro abrasion kit at affordable price & immediate results requiring long term follow up. Magnification with help of loupes of 3.5X by Cricdent, was useful in removal of composite & locating the fluorosis stains. A proper diagnosis is important & extent of fluorosis should be evaluated. Mother's history, medical history, neo natal & early childhood illness, drugs consumed, trauma, fluoride supplement, area of residence, tooth brushing habits, swallowing of toothpaste habit should be noted. This case has a 1 year follow up with no reversal of stains or new stains suggesting a good long term prognosis.

**Keywords:** Anti-vet, MDC, VITA, Cricdent

### **Introduction**

Micro abrasion is one such procedure used for long time successfully with various techniques. It was 1st put forth by Dr Walter Kane, 1916 by rubbing anterior tooth with hydrochloric acid under flame of alcohol torch. Later McCloskey used same acid along with pumice. Croll named it as micro abrasion. Micro means small in Greek & abrasion means scraped off in Latin. This techniques involves approximately 0.1 mm removal of enamel.

Fluorosis, primarily shows a subsurface hypo mineralization extending deeper as its severity increases and may have yellowish brown discoloration. Its disadvantages is mainly due to systemic absorption during the developmental stages of tooth.

Orthodontic correction includes correction of mal-positioned tooth for a better form & function. It thus adds to the esthetics but there have been issues with adhesion of brackets, their bond strength required & limited risk to enamel surface. After de bonding there has been remnants of resin material present which clinically influences the esthetics & if not removed properly interferes with surface smoothness resulting in staining of resin & enamel. Many techniques have been tried to remove the

residual bonding material like using diamond / tungsten bur, polishing disc, aluminum abrasives etc. But iatrogenic damage to enamel is inevitable.

A proper diagnosis is important & extent of fluorosis should be evaluated. Mother's history, medical history, neo natal & early childhood illness, drugs consumed, trauma, fluoride supplement, area of residence, tooth brushing habits, swallowing of toothpaste habit should be noted.

Here in the case below we will discuss about residual resin removal with tungsten bur under magnification, followed by a new micro abrasion kit by MDC Gujarat, India called as "Anti-vet."

### **Case**

A 22 year old female patient visited Dept. of Conservative Dentistry complaining of discolored anterior tooth. She had undergone orthodontic correction for 2 years & de bonding was done 2 months back and was satisfied with occlusion but complained of brownish discoloration along with white spots. She had no history of dentinal hypersensitivity and wanted minimally invasive procedure. Thorough intra oral examination was carried out. It was diagnosed as moderate fluorosis of tooth using Dean's Fluorosis index. Her smile line reflected till premolar on either side and deep stains on canine & central incisors were noted.

Pre-operative clinical photographs were recorded. Oral prophylaxis was done to remove any extrinsic stain. Radiograph was taken to rule out any other cause of discoloration. The teeth were isolated with liquid dam available in the kit, it was flash cured for 40 seconds. Shade was recorded with VITA shade guide. The procedure was done under 3.5X magnification under dental loupes by CricDent. Slow speed right angle latch type micro motor at 1000 rpm with tungsten bur was used to remove left over resin cement without abrading the

enamel surface. After observing the labial surface in 3.5X magnification it was noted that satisfactorily resin cement was removed from tooth surface. Then the shade selection was done again & surface of teeth showing mild to moderate fluorosis stains were identified. Here pumice wasn't mixed in hydrochloric acid but in plain saline. Then the saline pumice slurry was rubbed on anterior tooth with rubber cup attached to micro motor at 1000 rpm under high vacuum suction. This was carried out for 2 minutes. Then it washed out with water & repeated for 3 times.

After completion of this 21% hydrochloric acid stabilized solution was dispensed in tray provided. The enamel spots with more discoloration were identified & with the cotton holder provided it was rubbed on the surface for 2 minutes till the cotton pellet discolored. It was wiped with gauze. Washed with water & again repeated till a favorable change was seen. This was done for each tooth separately. Usually a favorable outcome was seen in mild discolored surface in 2 applications where as moderate discolored surface needed 3-4 applications. After completing the 1st appointment photographs were recorded. There was appreciable change in color of tooth. Patient was called for follow up after 7 days. Again the procedure was repeated. Note that pumice saline slurry was done only for 1st time. The shade change was recorded & patient was recalled after 7 days. The patient came for a follow up after 10 days where she was happy with the outcome. So a total of 3 appointments were required with 7 days gap in between allowing the saliva to remineralize the labial abraded tooth surface. The 2nd solution in kit was applied for 2minutes & washed off. This solutions helps to neutralize any leftover acid & stabilizes color value. The patient was advised not to smoke, drink alcohol, stained food items for 48 hours. 1

year follow up was recorded with no reversal of stains or new stains.

### **Discussion**

Colors of teeth are outcome of combination of intrinsic & extrinsic factors. Extrinsic factors such as smoking, dietary intake, metal salt (Iron, tin). Intrinsic changes are structural modifications in dental hard tissues. Chromogenic material is present inside the enamel & dentin that is incorporated either during odontogenesis or after eruption. Pre eruptive causes include medications like tetracycline & fluorosis, hematological diseases whereas post eruptive causes include dental caries, trauma, restoration etc. Teeth discoloration varies depending on etiology, localization, severity, age, oral hygiene status & vitality of tooth & so does the treatment protocol differ.

Dental fluorosis is a defect occurring due to excessive & chronic intake of fluoride during amelogenesis. It's seen in specific areas of India where fluoride content in water is high and characterized by diffused enamel opacities present bilaterally in symmetric distribution. The severity of fluorosis dependent upon duration, timing & intensity of exposure to fluoride. Tooth are discolored from mild yellow to dark brown or blackish discoloration. Micro abrasion is an excellent technique to remove enamel stains and remove any superficial irregularities acquired after de bonding of orthodontic appliances. The actual depth of enamel porosities is very difficult to judge & it can vary surface to surface on same tooth. Using micro abrasion before trying out any other procedure is advisable as its ultra-conservative & has no or minimal drawbacks / side effects. Recurrence of stains is not seen in this cases even after a year follow up.

Possible failure type after bracket debonding is adhesive between enamel & resin, partially adhesive & cohesive in the resin mix. Alessandri Bonetti et al reported that

20.8% of resin is still left after using tungsten carbide bur at high speed followed by finishing with superfine sof-lex discs. Some people use diamond burs which have more potential to cause enamel abrasion no matter how carefully it is done. Use of bur does create a surface roughness thus a magnification was used in this case. This roughness needs to be finished & polished. Aluminum oxide disc had no roughness reducing effect in a study done by Eliades et al. Even the polishing brushes aren't sufficient to overcome the scratches created by burs. Thus, a pumice saline slurry was used treated with low speed polishing cup to reduce the surface roughness formed by bur after resin removal followed by micro abrasion.

The combination of mechanical abrading & chemical action of hydrochloric acid to penetrate into floristic enamel crystals, leaches out the fluoride ions & reduces the stains. This leads to compaction of minerals into sub surface organic layer of enamel. Thus the subsurface stains are camouflaged with optical properties of newly micro abraded surface. This phenomenon is called "abrasion effect / enamel glaze." The resultant surface presents a glossy glass like surface finish. The only drawback of this procedure is it requires multiple appointments along with repeated follow up & in this case took nearly a month to come to favorable outcome. The saliva helps remineralize the tooth surface along with the stabilizing solution applied in the end, thus the 7 day follow up is required. The reflective & refractive indices of micro abraded enamel surfaces are altered. So this helps mask the deeper layer of stains even if the stains aren't physically removed.

### **Conclusion**

The present case report suggests that diagnosis is important which helps to come to treatment plan more easily. As this was a case of moderate fluorosis, micro

abrasion was chosen treatment plan. It doesn't have any stain reoccurrence & post-operative sensitivity. The new anti-vet kit is available in India at an affordable rate and is efficient enough to treat mild to moderate fluorosis teeth. While there are range of other treatment option available including bleaching & veneers, but micro abrasion still stands as the 1st conservative treatment of choice.

### **Disclaimer**

Some of the clinical photographs have been tilted & cropped. But no other digital editing has been done on any of photographs. The authors of this article certify that they have no proprietary, financial, or other personal interest of any nature or kind in any product, service, and/or company that is presented in this article.

### **References**

1. Sundfeld RH, Croll TP, Briso AL, de Alexandre RS, Neto DS. Considerations about enamel microabrasion after 18 years. *Am J Dent.* 2007;20:67–72.
2. Wong FSL, Winter GB. Effectiveness of microabrasion technique for improvement of dental aesthetics. *Br Dent J.* 2002;193:155–8.
3. Donly KJ, O'Neill M, Croll TP. Enamel microabrasion: a microscopic evaluation of the "abrosion effect". *Quintessence Int* 1992;23:175–9. [PubMed] [Google Scholar]
4. 13. Croll TP, Helpin ML. Enamel microabrasion: a new approach. *J Esthet Dent* 2000;12:64–71. 10.1111/j.1708-8240.2000.tb00202.x [PubMed] [CrossRef] [Google Scholar]
5. Welbury RR, Carter NE. The hydrochloric acid-pumice microabrasion technique in the treatment of post-orthodontic decalcification. *Br J Orthod* 1993;20:181–5 [PubMed] [Google Scholar]
6. Ashkenazi M, Sarnat H. Microabrasion of teeth with discoloration resembling hypomaturation enamel

defects: four year follow up. *J Clin Pediatr Dent* 2000;2013:29–34

7. Lynch CD, McConnell RJ. The use of microabrasion to remove discoloured enamel: a clinical report. *J Prosthet Dent* 2003;2013:417–19 [PubMed] [Google Scholar]
8. Croll TP. Enamel microabrasion: 10 year s experience. *Asian J Aesthet Dent* 1995;2013:9–15.
9. Ardu S, Stavridakis M, & Krejci I (2007) A minimally invasive treatment of severe dental fluorosis *Quintessence International* 38(6) 455-458.
10. Aoba T, & Fejerskov O (2002) Dental fluorosis: chemistry and biology *Critical Reviews in Oral Biology & Medicine* 13(2) 155-170.

**Legend Figures**



Figure 1: Pre-operative



Figure 1: Post-operative