



Geophagia: A Concealed Spring To Extinction of Orthodontic Treatment Progress – Case Report

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ABSTRACT

Introductions : Geophagia is defined as the deliberately eating of soil, clay .i.e. eating of non-nutritive substances like metal pieces such as coins, wire needles. In South Africa it is socially permitted for pregnant women to eat to fulfill of mineral deficiencies, also it believed that along with mineral balance, vomiting during pregnancy can be avoided. These habits were seems to be hidden and undiagnosed, because usually patient doesn't give history of geophagia.

Case presentations : 17 year old girl patient came with a complaint of forward place upper teeth, unable to close lips and excessive gum exposure. Intra oral examinations, molars were anlage class I relation with short clinical crowns, wear off deep facets. Incisors were proclaimed with increased over jet, impressions were taken for Study Model analysis and cephalometric analysis reveals that bimaxillary dentoalveolar protrusion with excessive gummy smile. Premaxillary setback was the treatment objective. Case was started with fixed appliance 0.022 inch slot brackets (Roath prescription) were placed in both mandibular and maxillary arches.

On regular activation appointment, dislodgment of premolar and molar brackets with hard deposit in posteriors along with severely chewed TPA and bands were observed repeatedly. After counseling with previous medical history patient revealed history of eating clay.

Conclusion : Geophagia psychological disorder helps to fulfill the mineral deficiencies in female body. Treatments were terminated with satisfying only first phase of pre surgical orthodontic treatment.

KEYWORDS

Geophagia . Dislodgement, Appliances. Mouthing. Brackets

Introduction

Soil /clay play a vital role on natural environment and health, as reservoir of chemical and biological agents. Heavy metals, radioactive gases etc are the chemical agents where as microorganisms, both beneficial, Rhizobium spp. - nitrogen fixing microorganism and pathogens such as Clostridium tetani and parasitic worms (Bowman et al., 2003)¹. Thus soil, its usage, consumption, impact on health and interrelated environment, is recognized by WHO (2002)^{1,2}.

Geophagia, defined as deliberately eating non-nutritive food, mainly clay, soil, metal pieces, is considered as deviant eating disorder, and associated with high degree of morbidity and mortality, common among pregnant women, school going children and psychiatric patients².

Constant deviant eating habit may result in perforations of stomach, intestine and may lead to death due to excess amounts of restricted nutrients (Streltzer and Hassell, 1988)^{1,2}. Few studies have reported that it may lead to cause hyperkalemia³.

Epidemiological study of geophagia reports, pregnant women, young school going girls and psychological disturb groups⁴. However, orthodontic treatment seeking age group is similar. This syndrome is still undiagnosed, as patient hide and unaccepted the fact of eating soil/clay (Rose et al., 2000)⁵.

Geophagia is rare , in south Asia, but most commonly seen in African blacks , this case report is the first among in society of orthodontia (D.Barker et al, 2005)⁶. Through this case report I would like to suggest reader that any frequent dislodgement of bracket,

Case presentations:-

A 17-yearold girl reported to department of orthodontia, mansarovar dental college research centre Bhopal, with forwardly placed teeth with excessive gum exposure. Patient reveals that suffering from iron deficiency anemia, due to deviant eating habit mainly clay, has quite habit and presently on iron supplements.

On intra-oral examinations, oral hygiene was acceptable, classic feature of iron deficiency anemia were seen. Molars were in relation to angle's class II relation with occlusal wear , deep facet, suggestive of IV grade of tooth wear index.

The most classic and negligent finding was deposits(plaque) surround the posterior teeth , brown deposit(plaque) , was remnants of clay, was thought plaque and sent for oral prophylaxis.OPG and IOPA , revealed no significant finding of hidden pathology of bone loss, tissue destruction. Considering, physical appearance patient was referred to blood investigations. Haematological report cleared that ferritin level was low i.e 15mcg/l (normal range for post-menopausal women: 20-200mcg/l).

Cephalometric and model analysis were done (table1, 2), case was set to be maxillary set back, pre surgical orthodontics started. The appliance chosen was MBT™ system with 022 slots was used in pre surgical phase. Regular check up appointment was set every month.

First (follow up) check up: - on intra oral examination, premolar brackets were debonded and TPA along with band material was damaged (band partially chewed). Similar brown deposits were seen in relation with upper and lower posteriors. Re-paired and re-bonded was done recalled after 15 days.

Second (follow up) check up: - On intra oral examination, apart from de-bonding, laceration and sensitivity, chip off enamel was seen. Patients were instructed and counseling was done. Instruction was given to visit along with parents, previous reports (x-rays) 15 days later.

Two week later when patient was reported along with parents, was seen similar type of damages, deposits laceration, pain was sever with abdomen. The clinical finding made us re think about case to be continued or not. Patients were sent for physician counseling and abdominal x-ray. X-ray report was cleared that silica particle were seen.

Recall visit were set twice a week, pre-surgical phase was completed and case was de-bonded with removable retainer. Patients were instructed not to have stainless steel crowns; there may be chance of swallowing it.

Discussion:

Geophagia is the intentional intake of loam or non-food substances, proficient in among the Aborigines parts of Asia, Australia, and the United States of America, in Germany, Turkey, and South Africa^{1,2}.

Studies on geophagia have been reports that to maintain mineral balance in body pregnant and lactating women seeks from natural soil. However, geophagist also sometime known as psychological disturbed patients, furthermore, their unconscious response to deviant habit leads to gastro-intestinal disturbances, perforations and death^{1,2,3}.

The study found that, chronic cases have significant impact on liver, intestine; blocks the absorption of mineral and vitamins etc, resulting in anaemia. Among these patient 50% are the iron deficiencies anaemic. As we have noticed that our patient was suffering from iron deficiency anaemia and associated dental abnormality like attrition, deepening of occlusion sensitivity and parasitic infections^{1,2,3,4,5,6,7}.

Most of the studies and epidemiological survey reported, geophagia is seek of nutritional and mineral balance maintenance of body from nature. Furthermore, can be notices in poor socio-economic region. Our case was from well educated family with, no history of mental illness or learning disability. But, as patient was suffering from anaemia, geophagia, was put on iron supplements^{8,9,10,11,12}.

Repeatedly breakages, increase sensitivity, lacerations, deposits were clear indications that patient was persistent of deviant food habit. However, frequent dislodgement of appliance in unique pattern leads to extinct the progress of treatment^{10,11,12}.

Control on geophagia includes, systematic and symptomatic approach to physical, psychological, environmental, and family assistance. Requires, related screening, for anaemia, parasite infections, abdominal x-rays and behavioral counseling. My case had abdominal x-ray revealing that deposits of silica, clay and related soil elements.

CONCLUSION

In my case patient was persistent with habit, hence orthodontic treatment progress was extinct in pre-surgical phase.

The prognosis of the case appears to be good, under regular review, but presence of silica in abdominal x-ray, low Hb%, eliciate that case was not fit for surgery.

Bonding is technique sensitive procedure, although, low shear bond strength, still keen history and observation is must to evaluate the hidden cause for success of treatment.

This case highlights significance of applying knowledge to explore the aetiology, before treating case. Thus, we should always remember that unique pattern case gives hint of unusual aetiology.

Hence this case report gives a comprehensive knowledge of rare hidden entity of frequent appliance damage may not be due to orthodontic technique / low quality material but can be due to the patients hidden disorders.

Photographis

Broken pieces of Transapatal arch with crushed bands



Radiographs showins mudd deposited in abdomen



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