Pica Syndrome: A Hidden Etiology of Frequent Bracket Debonding – Case Report

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Abstract
Mouthing syndrome is typically defined as the persistent eating of non-nutritive substances like metal pieces such as coins, wire needles. These habits were seen to be hidden and undiagnosed, because usually patient’s history isn’t given history of eating of non nutritive substances. This disorder is found among the group of south East Asian ethnic group in particular females.

Case presentation
17 year young female patient came with a complaint of forward place upper teeth and wanted to get treated. On thorough clinical examination all the first molars had severe occlusal wear and deepened occlusal fossae also clinical crown height reduced. 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. Patient was recalled for first regular/routine check up, on examination molar bands were chewed badly and complete posterior segment brackets were damaged. However on neat examining notches were deepened. Repair done and instructions were given visit after two week. On examining after two week only molar bands were squeezed. Consecutively visit days were reduced to weekly, still band were found chewed. Patient was referred to family physician for consent. Physician reported as patient suffering from pica syndrome.

Conclusion
Most commonly mouthing disorder occurs due to mineral deficiency and psychological disturbances. In Asian countries females are likely to take orthodontic treatment more as compared to males. Standard literature shows 20-28% young female with Asian (muslim) ethnic group show mouthing disorder. Also 8.1% female during pregnancy due to scarcity of minerals.

Keywords: Pica. Dislodgement, Appliances. Mouthing. Brackets

Introduction
Pica is Latin word for magpie, a bird that is reputed to eat almost anything. It can be defined as the persistent eating of non-nutritive substances including metal (wire, coins) clay, soil, sand, stones, grass, hair, faeces, lead, laundry starch, vinyl gloves, plastic, pencil erasers, ice, fingernails, paper, paint chips, coal, chalk, wood, plaster, light bulbs, needles, string, burnt matches and cigarette butts. This disorder is found among the group of south East Asian ethnic brown females.

Persistent eating of non nutritive substance can cause illness or death due to the nutrient composition of the substances ingested lead to excess amounts of restricted nutrients (Streltzer and Hassell, 1988). Life-threatening hyperkalemia (the presence of an abnormally high concentration of potassium in the blood) as a result of geophagia (clay or soil pica) has been reported in dialysis patients. Pagophagia (ice pica) presents a problem for the fluid restricted patient (Coltman, 1969). Most common in young girls, pregnant women, psychological disturbed group. Often it is Undiagnosed, under reported because patient reluctant to admit. Still research suggests, occurs in 25-33% of young girls and descends with age (Rose et al., 2000). Mouthing disorder rare widespread syndrome most commonly seen tribe-based societies of African countries, soil is sold for the purpose of ingestion (D.Barker et al, 2005). This case report undiagnosed rare and first case report in orthodontia history.
Case Presentations

A 17-year-young female came with the chief complaint of forwardly placed teeth with excessive gum exposure. However, medical history reveals that patient suffering with iron deficiency anaemia due On to eating of clay particles, discontinuity in mouthing habit showed significant improvement from anaemia. However, patient, parents were unaware of mouthing disorder. With regard to her medical history, she was on medication (iron supplements) therapy.

Intra oral Examination revealed a slightly atrophic and depapillated tongue. The oral hygiene level was seen to be reasonable and the periodontal health was good with no evidence of bleeding or significant pocketing. Molars relation, angle’s class II molar relation and proclaim upper incisor, increased Overjet deep bite. Significant loss or wear off of occlusal surface, tooth wear index suggestive grade IV (Smith and Knight Tooth wear Index).

Intra oral periapical radiograph reveals minimal bone loss associated with no evidence of pathological changes both tooth structure and periodontium. Considering with alternative systemic cause patient was referred for blood investigations. Haematological report cleared that ferritin level was low i.e 15mcg/l (normal range for post-menopausal women: 20-200mcg/l)

Case was set to start up with pre surgical orthodontic phase. The appliance chosen was MBT™ system with 022 slots was used in pre surgical phase. Separators were placed in relation to first molar for band pinching, and after three days band pinching, bonding done, with lacing back with 0.009 SS Ligature and 0175 co-axial wire placed. Regular check up (follow up) protocol was fixed every 4th week.

First (follow up) check up: - on intra oral examination, premolar brackets were debonded and TPA along with band material was damaged (band partially chewed). Rebonding of dislodged brackets and re cementation of bands, also instructions were given and recalled after 15 days.

Second (follow up) check up: - On intra oral examination, the similar kind of damages to appliances were seen. However patient was complaining about sensitivity. On thorough observation, occlusal surfaces were damaged sever, significant notches were seen. Patient was re-treated 016™ Niti round wire placed; instructions were given and recalled after 8 days.

Third (follow up) check up: similar type of breakages with increased sensitivity. Same kind of breakage to the appliance made us to rethink about case. Hence we recalled parents, physician for counselling, it revealed that patient suffering from mouthing syndrome (geophysia). Later, parent and patient accepted and admitted that the fact that patient had a habit of eating metal pieces like needle and lids. Thus Patient was recalled after every 4th day for check up

Later check up: - even after 4th day patient was unable to maintain, appliance though she was on medication. Thus Patient was recalled after every 4th day for check up; this protocol was followed for a year. Later patient was refused to go for complete surgical treatment.

Through this case report we would like to report / state that damage to appliance or repeated debonding is an extravagance challenge for orthodontist, should always consider a rare facts.

Discussion

Pica syndrome can be extremely dangerous in young children; especially prone to eat paint or plaster containing lead results in bowel problems, intestinal obstructions may cause death, also can cause dental injuries like attrition, deepening of occlusion sensitivity and parasitic infections. The patient reported was well educated with no history of mental illness or learning disability. However, cause for mouthing may be mineral deficiency, ferrites supplementation therapy was given. Here, patient didn’t admit that had habit of eating grit/ metal pins. Hiding of such, may mislead professionals; the pica had originally started at childhood; and there was a history of anaemia.

Tooth surface loss as a result of pica has been documented previously, was due to chewing and swallowing sand / metal pieces like needle, wires lids. The unique frequent dislodgement of band and bracket lead operator to think about the systemic cause for debonding / brackage: thus unacceptable nature of patient would have misled to bonding technique failure. However the, added adverse effects on the oral tissues due to mouthing syndrome were the oral manifestations of lead poisoning and iron deficiency anemia can be widely found in many oral pathology textbooks.

The effect of mouthing stones on the dentition in this case was frequent damage to TPA, bracket and molar bands was obvious. The only other possible oral manifestation of the condition was a atrophic tongue, a sign of iron deficiency anemia.

Treatment of pica requires a well-rounded approach including physical, psychological, environmental, and family assistance. First, a patient should undergo medical screening for anemia, lead poisoning, and parasites.
The patient and his parents can then work in behavioral counseling on learning the difference between food and non-food items, protecting oneself against eating offensive items by placing lemon or ammonia on the item, or learning to be physically restrained during cravings\textsuperscript{24,25,26,27,28,29}.

Behavioral counseling with a psychologist can assist the parents in guiding their children with consequences of eating non-food products, and positive reactions when eating normally\textsuperscript{26,27,28}.

Developmental disorders can be controlled by psychiatrist with help of medication. But In extreme cases, a social worker may be necessary to assist in evaluating any environmental situations that would be encouraging the pica\textsuperscript{26,27,28,29}.

**Conclusion**

In my case patient got controlled on medication, was not needed the psychiatrist assistant. Case was completed as only camouflage orthodontic treatment and fixed retainer was given, instructed parents to have continuous observation for at least eight months.

The prognosis of the case appears to be good, under regular review, voluntary control of mouthing and by maintaining a good level of oral hygiene.

Bonding is technique sensitive procedure, however, may not be a cause for bond failure.

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.

**References**


