

## Diseases Surfacing Due to Lack of Oral Hygiene, Oral Health are addressed with Adequate Knowledge?

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### Abstract

Dental and Skeletal Fluorosis are neglected public health problems. Dental caries, affects children and adults and the prevailing concept is due to weak teeth and fluoride should be used to make the teeth stronger. Dental caries is considered by Dental Professionals as a fluoride deficiency disorder. This is a myth and not science. Dental caries is a bacterial disorder. This communication is addressing gum disease leading to anaemia and low birth weight babies, dental caries, dental fluorosis and extended effects, amylogenesis imperfecta, laminated veneering, advice how to take care of teeth.

**Keywords:** Dental diseases; Diagnosis; Patient care; Differential diagnosis; Awareness generation

### Introduction

While addressing oral hygiene and oral health issues, Fluorosis disease is on top of the agenda. Both Dental and Skeletal Fluorosis entities are to address as the 2 forms co-exist in some individuals. In the recent past "Linked Diseases" are new additions to Fluoride toxicity manifestations [1]. It has been of importance to reveal the hidden realities to students of dentistry and medicine to appreciate the issues having adverse impact on individual(s). However, one of the major problems that confronts those in Dentistry is that they still firmly believe in the age old concepts emerged in favoring fluoride [2], though it is a neurotoxin, hormone disruptor and an enzyme inhibitor causing a variety of dreadful disorders [3]. Very few Dental professionals are deeply involved in Dental research or are voracious readers of research literature to understand the underlying anomalies [4,5]. However, presenting a few case studies, of different profiles may be an option to create awareness. In view of the above facts, the aim of this "communication" is to present a few unusual Case studies to enlighten those who deal with or are interested in oral hygiene and oral health practices.

### Case Series

#### Case study 1

a) A Teacher in a Senior Secondary Girls High School, when assembled for an update, on how to improve health of the adolescent girls who are with low hemoglobin (Hb) < 12.0 g/dL, was very attentive and looked concerned. Students are poor in studies, take leave of absence due to various ailments, like cold, cough, soar throat, fever, etc.

b) The Teachers were trained and advised to ensure that the girls have hemoglobin > 12.0 gm/dL, through dietary sources with adequate iron and other nutrients. If Hb is low, causing anaemia can lead to any number of health problems. Produce low birth weight < 2.5 kg babies. High mortality rate prevails due to anemia. The Teacher sitting in the front row was very attentive, her gums were inflamed; red in colour and swollen, visible to the naked eye.

c) The Teacher was asked whether she has children; she said she has a baby born 6 months ago, the birth weight of the baby was less than 2.5 kg, ie., low birth weight, in spite of Iron and Folic acid supplementation, she was anemic as she was not absorbing nutrients. She neither was aware nor was advised in Antenatal Clinic, that her inflamed gums bleeds and she ought to consult a Dentist.

d) It is classical Gingivitis/Periodontitis. It needs attention.

e) It is caused due to unhygienic oral environment where bacteria breeds lead to infection. The teacher needs treatment for inflammatory gum disorder. Anaemia would be corrected when bleeding stops and the teacher would then enjoy good health and would function in the school with better efficiency.

#### Case study 2

An individual (male) a young scientist by profession was noticed with a good set of teeth. But between the 2 central incisors of the upper jaw, there was a black spot extending laterally. Teeth were being destroyed by acids produced by bacteria that are forming a cavity in both the central incisors from the inner surface.

Advised to consult a Dentist and get the cavity filled. Or else he will lose both the central incisors. It is the teeth which gives the charm on the face and healthy look in an individual. Neglecting the teeth at early stages of such infection, would lead to losing of teeth. He attended to the teeth without delay and the issue was resolved.

#### Case study 3

A lady in her seventies, with a good set of teeth, had cavities developed in the molar tooth in the lower end of the crown. The food debris collected in the cavities is the breeding ground for bacteria. Brushing the teeth after every meal is important. One should avoid using the toothpick to get the interdental space cleaned. Instead of toothpick one should use Interdental brush. Dentists should advise the use of Interdental brush for getting the food debris removed.

Interdental brush is conventionally advised for those who are using braces. Brushing, flossing and use of interdental brush, one is likely to have less problems in the teeth. A Dentist ought to advise a patient how to look after the teeth. The teeth are for a life time, like other organs.

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#### Case study 4

A young adult working as a sales person is handsome and educated. But when he speaks or smiles, one can see discoloration on the teeth, due to Dental Fluorosis and was unpleasant to view when he was speaking or smiling.

He was asked what happened to the teeth. He was aware that it is due to his drinking and cooking water with high fluoride contents. He was not sure whether his food has rock salt (CaF<sub>2</sub>) added for enhancing taste and aroma. He was informed to ensure rock salt with 157 ppm fluoride is not used for cooking food or preparing beverages as it can cause serious ailments. His mother during pregnancy having consumed fluoride in high content is the reason for the Dental Fluorosis. However, he was advised that if he wishes to mask it, he should get laminated veneering done in a Dental Clinic where such procedure is practiced. He was only happy to hear of the masking approach.

#### Case study 5

During the year 2000-2001, the French Embassy in New Delhi fixed an appointment for one of the French nationals living in India to consult his only son, 9 year old boy, who was diagnosed with Dental Fluorosis. As the mother was very unhappy, the father kept consulting various Dentists to seek their views. By the time they contacted the Foundation, consultation with 5 Dentists has taken place and all the 5 diagnosed the disorder of the child as Dental Fluorosis.

When the appointment was given for the child, it was specified to get a sample of drinking water of the boy and water sample should be brought in a plastic bottle and not glass bottle because the silica in the glass will bind with fluoride in the water, lead to erroneous result on testing water for F<sup>-</sup>. The body fluids (blood and urine) shall be drawn when the child visits the Foundation. These instructions were given, without knowing the full history of the patient. On arrival the history of the child was retrieved and it was noted that the child was born in France. On examination of the teeth, there was no sign of discolouration suggestive of Dental Fluorosis. The observation made was that the 2 central incisors in the upper and lower jaws were translucent as the teeth had defective collagen matrix and therefore not adequately calcified. It is hypo-mineralized teeth. It was found that the mother when she was pregnant was ill and was under treatment. The husband had prescriptions of the drugs administered and was shown.

The drug administered affected the formation/laying down of normal healthy collagen protein, which forms the matrix of the tooth; the defective collagen, would not calcify (mineralize) and shall reveal translucency. This condition is known as Amyogenesis imperfecta. It was Amyogenesis imperfecta and not Dental Fluorosis.

Water and urine fluoride levels tested, were within normal limits. The advice to the father was that not to have anxiety and when the child grows-up and if conscious of his teeth having two different shades, laminated veneering can be done and all the teeth shall have the same shade.

The 7th dental consultation, the father had fixed-up was on the same day afternoon also confirmed that the child has Amyogenesis imperfecta (without revealing our diagnosis). Dentists need to know how to make differential diagnosis of Dental disorders. It is most unfortunate all Dental professionals are not well informed on the diseases of the tooth.

#### Case study 6

A female patient aged 24, a Nurse by profession consulted a Physician at the All India Institute of Medical Sciences Hospital with a complaint of severe pain in the stomach, gas formation and having a feeling of bloated stomach. The patient was highly anaemic with Haemoglobin 7 gm/dL. The

investigations carried out were (1) X-ray radiograph of the forearm for bone changes, if any (2) upper Gastro-intestinal endoscopy (3) scanning electron microscopy of punch biopsy material obtained at endoscopy (4) testing of fluoride in drinking water, blood and urine, besides other routine tests.

The radiographs appeared normal and testing of drinking water quality revealed fluoride content within permissible limits. Urine and blood samples revealed raised fluoride levels compared to normal healthy controls. Endoscopy revealed diffused erythema (redness of the mucosa) with petechiae (minute red spots). Scanning electron microscopy revealed scanty microvilli and "cracked clay" appearance of the mucosa. These are due to Fluoride toxicity manifestations.

Further enquiry revealed that the patient had visited a Dentist with complaints of having discoloured teeth, and her condition was diagnosed as Dental Fluorosis. The Dentist carried out Laminated Veneering for masking the discoloured teeth. However, he advised the patient to rinse her mouth thrice a day using fluoride mouth rinse to have strong teeth!!! The patient was using the mouth rinse containing 900 ppm of fluoride after diluting with water. After use of the mouth rinse for a duration of 3 months, the patient developed severe non-ulcer dyspepsia (Irritable Bowel Syndrome), anaemia and weakness.

When it was discovered that she was using a fluoridated mouth rinse, the only advice given by the Physician was that she stops the use of the mouth rinse as it was the primary cause for her health complaints. She was advised to have a nutrient-rich diet.

The patient improved in a matter of a fortnight from all the health complaints. The Dental Professional correctly diagnosed Dental Fluorosis and masked the discoloured teeth so that her teeth look pretty. But to advise to rinse the mouth with fluoride to make the teeth stronger reveals the prevailing sad state of affairs in the knowledge of Dental Professionals.

#### Case study 7

Mrs. L.M. resident of Vermont in the U.S. consulted the Foundation through e-mail. The message conveyed is that her 12 year old daughter has Dental Fluorosis, "of the worst kind seen by her Dentist due to prescribed fluoride". Fluoride administration schedule and dose was as follows : figure 1

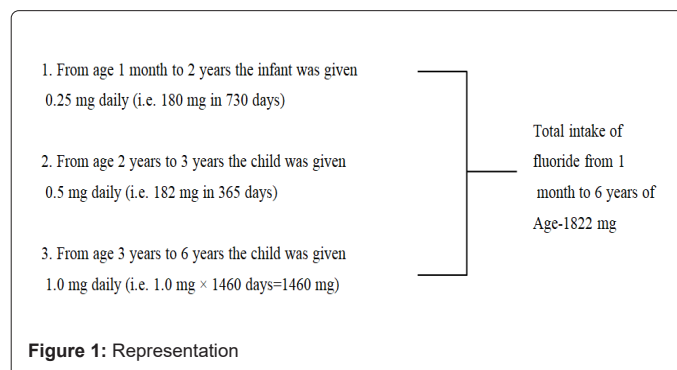


Figure 1: Representation

The child was brushing her teeth with fluoridated toothpaste. At the age of about 6 years, when the child's 2nd permanent teeth erupted, the Dentist informed the parents to stop fluoride as she was getting too much. (Possibly he could see discolouration on the erupting teeth due to Dental Fluorosis- reason for stopping fluoride intake).

The mother writes, "I had no clue what he was talking about. We didn't even know there was such a thing as too much fluoride". She adds, "You can imagine our shock".

S.No.	Patient details	Disorder	What was done	What required to be done
1	Teacher in a girls high school	Gum disease / Gingivitis / Periodontitis	Iron folic acid supplementation during pregnancy, with no effect Anaemia Low birth weight baby born	Required dental consultation Bleeding gums led to anaemia Anaemia leading to low birth weight babies Infant mortality - possibility
2	Scientist	Dental cavity formation initial phase	Nothing done - unawareness	Consulted dentist – cavity filled
3	House wife	Dental cavity	Cleaning of the cavity	Brushing, flossing, use of Interdental brush
4	Salesman	Dental fluorosis	Aware F <sup>-</sup> causative factor Masking was unknown	Avoid use of rock salt (CaF <sub>2</sub> ) with high fluoride content LV to mask DF
5	Boy -9year old French national	Amylogenesis imperfecta but diagnosed as Dental Fluorosis (DF)	Pregnancy ailment and treatment led to hypo-mineralized teeth - resulted in central incisors translucent . Dentists' diagnosed DF.	Advised for laminated veneering Incorrect diagnosis of DF due to lack of knowledge Amylogenesis imperfect was the disorder
6	Nurse	Dental Fluorosis; LV done Developed IBS + Anaemia due to F <sup>-</sup> mouth rinse mouth rinse recommended to make tooth stronger	Laminated Veneering (LV)for DF; fluoride mouth rinse recommended to make teeth stronger	DF was masked with LV Withdrawal of fluoride mouth rinse, essential. Wrong advice by dentist.
7	Girl – 12 year old US national	Dental Fluorosis due to fluoride treatment since infancy	Advice stop fluoride treatment; mother shocked. Pediatrician consulted. Pediatrician unaware of F <sup>-</sup> toxicity	Lack of knowledge among dentist / pediatrician DF has extended effects. Thyroid hormone derangements; has adverse effect.

**Abbreviation:** DF: Dental Fluorosis; LV: Laminated Veneering; IBS: Irritable Bowel Syndrome

**Table 1:** Showing summary of results of the 7 case studies

As a mother, she enquired whether there are any other health problems associated with DF that she should be aware of or that the child should be tested for. She also added that she asked her daughter's Pediatrician, he admitted that he did not know a lot about fluoride poisoning. Mrs. LM requested help from the Foundation. Any child with DF should be shown to a Paediatrician. He/she should know that the child should be tested for Thyroid hormone levels. Fluoride lead to derangement in hormone levels (T4, T3 and TSH) [6]. These levels would assist the Paediatrician to look after the child.

## Discussion

The results of the 7 Case Studies are summarized in Table 1. It is evident that the effects of fluoride on teeth are often not understood by Dentists and therefore they propagate the use of fluoride, which is an unscientific, unethical practice. It has disastrous consequences [7].

The 7 case studies reported, include patients from India and overseas. Each one had a history of its own. Very often the patients reached the Foundation after many years of suffering. Long years of experience, the Foundation provides the diagnosis and advice upon confirmatory tests are conducted.

## Conclusion

The communication is dealing with a toxic chemical fluoride and those who deal with it should be aware of its adverse effects on human beings. Excess Fluoride consumption can lead to a disease, Fluorosis, afflicting multiple tissues, organs and systems. It is believed or understood by Dental Professionals that it is a panacea for tooth ailments. Dental professionals should be aware Dental caries for which they recommend fluoride, is a bacterial disorder; it enhances systemic fluoride leading to a variety of disorders. The Case Studies reported in this study are a glimpse of what really happens and Professionals should exercise caution while advocating fluoride.

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