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Complete full mouth rehabilitation in a case with severe dental fluorosis-A Case Report

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ABSTRACT: Prosthodontic rehabilitation is the art and science of restoring and developing form, function and aesthetics of a patient. Treatment of severe worn out dentition with surface defects require full mouth rehabilitation to restore form and function of the masticatory apparatus to as near normal as possible. Full mouth rehabilitation continues to be the biggest challenge to any clinician in Restorative dentistry. It requires efficientdiagnosis and elaborated treatment planning to develop ordered occlusal contacts and harmonious articulation in order to optimize stomatognathic function, health and aesthetics which then translates to patient's comfort and satisfaction. In this case report full occlusal reconstruction of generalized attrition with loss of vertical dimension was done using segmental arch technique with reorganizing approach following Pankey Mann Schuyler philosophy. Treatment plan requires an interdisciplinary approach with periodontal and endodontic therapies to achieve acceptable esthetics and function.

Keywords: Full mouth rehabilitation, Worn out dentition, Pankey Mann Schuyler philosophy, Aesthetics, Functional rehabilitation, Dental Fluorosis.

I. INTRODUCTION-

With nearly 14% of total fluoride available in the Earth's crust present in India, Dental Fluorosis is endemic and is still a serious problem in nearly 15 states of our country. The highest incidence is seen in Andhra Pradesh, Haryana, Karnataka, Punjab, Rajasthan and Tamilnadu. Fluoride in water is akin to a double edged sword, while it is required in concentrations of 0.5mg/L of ground water in tropical countries where the drinking water consumption is more for calcification of the bones and teeth, larger concentrations than this can lead to debilitating dental manifestations that range from mild, moderate to severe. Severe dental fluorosis causes pitting/mottling of the enamel with increased predisposition to decay, fracture, wear, premature loss leading to degeneration of occlusal stability and hence the masticatory mechanism. It compromises not only the oral health of the patient but also their psychological bearing due to the mutilation and discoloration of affected teeth and impaired function.[1]

The severity of fluorosis depends on the duration, frequency and timings of the exposure during tooth development. The appearance of the affected teeth varies from white streaks (mild form) to brown (moderate form) to dark brown or black (severe form) discolouration. Severe fluorosis sometimes presents with enamel surface defects. The classical appearance of fluorosis is characterised by banding following developmental lines of enamel and by substantial symmetry on homologous teeth.[3]

Dental fluorosis becomes a cosmetic concern particularly if it affects the anterior teeth. The causes and characteristics of dental fluorosis have been widely reported, fewer studies have discussed the proper treatment of fluorosed teeth. The selection of an appropriate treatment plan depends on the severity of fluorosis. Bleaching and micro-abrasion have been recommended for treating mild cases of fluorosis; however, in moderate to severe cases, bleaching and micro-abrasion are either ineffective or may lead to only transient improvement , while composite restorations are prone to discoloration, chipping, and de-bonding. Ceramic veneers and full crowns are the restoration of choice for moderate to severe cases of fluorosis given their colour maintainability, wear resistance, and biocompatibility.

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Dean's fluorosis index

Classification	Criteria—description of enamel
Normal	Smooth, glossy, pale creamy-white translucent surface
Questionable	A few white flecks or white spots
Very mild	Small opaque, paper white areas covering less than 25% of the tooth surface
Mild	Opaque white areas covering less than 50% of the tooth surface
Moderate	All tooth surfaces affected; marked wear on biting surfaces; brown stain may be present
Severe	All tooth surfaces affected; discrete or confluent pitting; brown stain present

II. CASE REPORT:-

A 30 year old female patient ,moderately built with good general health and no systemic ailments reported to the Department of Prosthodontics and Implantology. She complained of discolored and multiple decayed teeth with "chipping off" in the posteriors. The patient gave a history of residence since her birth at Bagalkote, Karnataka which had high fluoride levels in the ground water and informed of the same problem with her siblings. Her medical history was non-contributory. Neither allergy to medicine or foods nor addiction to any deleterious habits.

On clinical and radiographic examination it was seen that she suffered from generalized dental fluorosis with severe mottling of the enamel and dark brown discoloration (Deans Fluorosis Index: Severe). Multisurface caries with occlusal wear in all the posterior teeth, Grossly decayed tooth wrt 26 and root stump wrt 43 was seen, which required extraction. Missing teeth wrt 13 & 22. Severe attrition wrt12, 23,24,25,27,31,32,33,34,35,36,37,41,42,&46, which required root canal treatment. Extraction was advised wrt 38.

Patient was given various treatment options and she consented for a Full mouth rehabilitation. Diagnostic impressions were made with irreversible hydrocolloid and the maxillary cast oriented to the articulator axis with a facebow record. Protrusive occlusal registration was made with fast setting polyvinylsiloxane bite registration material and the articulator adjusted. Diagnostic occlusal assessment was done and any interference during centric closure noted and removed in the patient's mouth. A permissive occlusal splint fabricated in clear auto-polymerizing resin on the articulated casts was then given both as a definitive deprogrammer and also to assess the possibility of increasing the vertical dimension by 1mm if and when required, given her occlusal wear.

A diagnostic wax up was made on the articulated models and two Putty Silicone were made on the Diagnostic wax up models, one complete for fabrication of the temporaries and the other sectioned to aid as a guide during tooth preparation. When after using the splint for 6weeks, the patient reported of no discomfort, a reorganized approach to the full mouth rehabilitation with individual porcelain fused to metal crowns and Group function occlusal scheme through a simultaneous full arch technique was planned. The maxillary and mandibular teeth were

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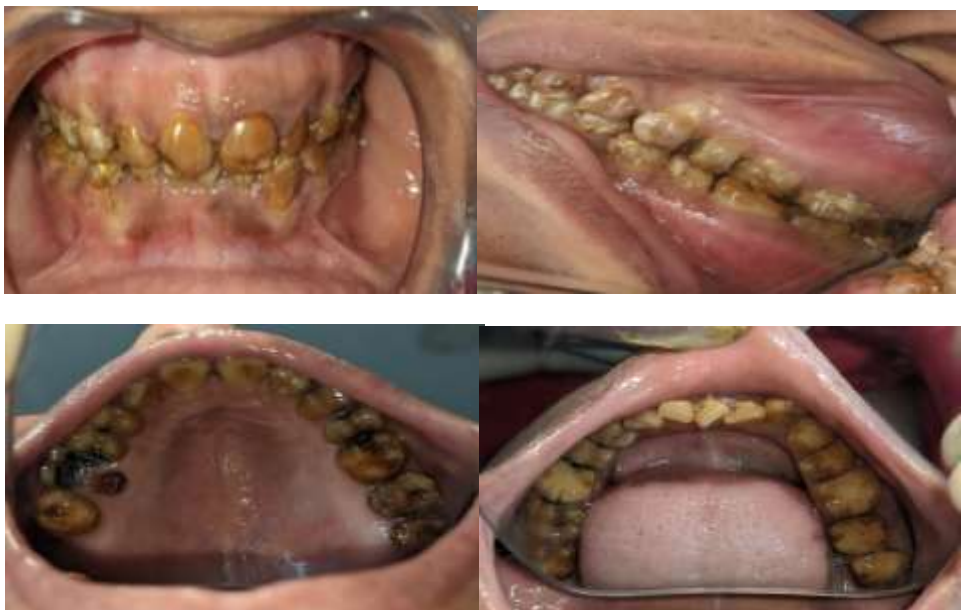
prepared simultaneously and impressions made with poly vinyl silicones.

Complete arch dies were prepared and the casts mounted using renewed facebow, centric and the protrusive interocclusal records. Temporization was done indirectly using the Putty Silicone index from the diagnostic wax up. Metal coping trial was made to confirm fit and marginal integrity. Ceramic (IPS Classic, IvoclarVivadent) was fired onto the copings and was followed by the bisque try-in. Final occlusal adjustments to the modified incisal guidance during protrusion were made and Unilateral group function on the working sides was adjusted and confirmed. The crowns were finally stained and Full Mouth Rehabilitation with Group Function, glazed and cemented with a glass ionomer (GC FujiI) luting cement. Patient was then put on a strict oral hygiene regimen and recall schedule.

PRE-OP Intra Oral Pics



PRE-OP OPG

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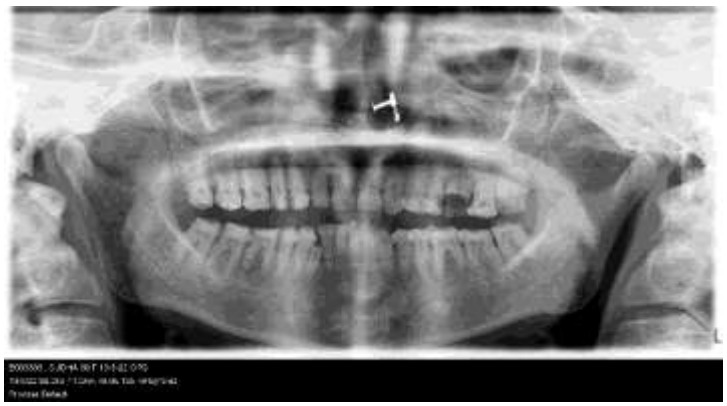
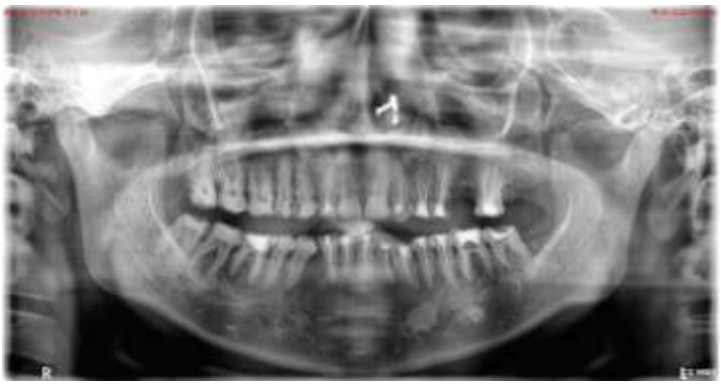


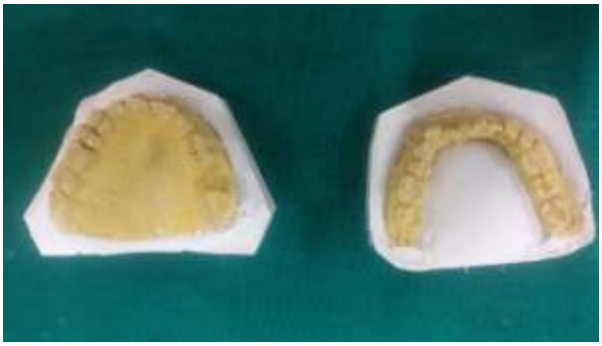
OPG post endodontic treatment and Extraction



Clinical procedure:-

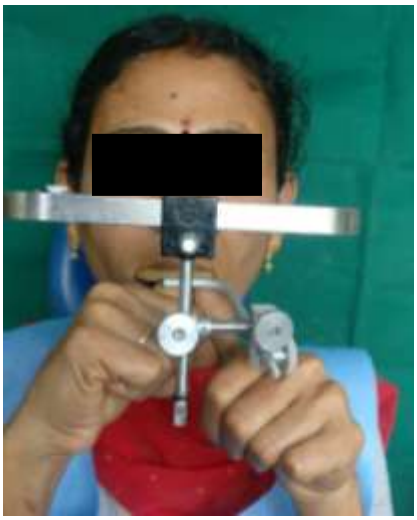
Diagnostic impression

Primary Casts



Facebow transfer and mounting was carried out.

Facebow transfer



Mounting on Hanau articulator

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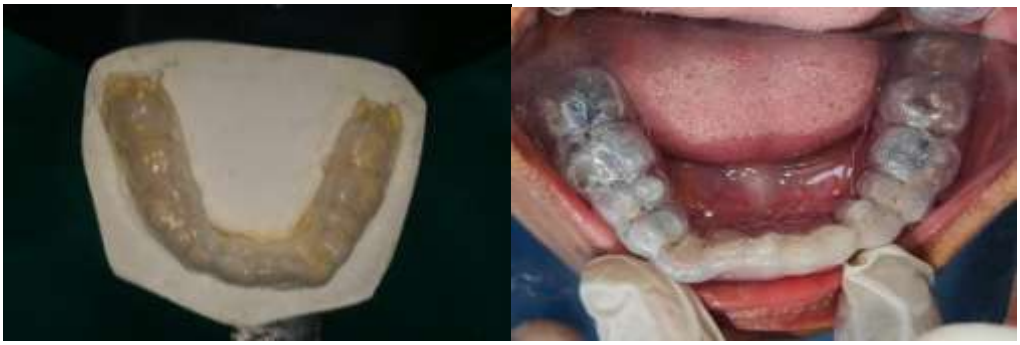
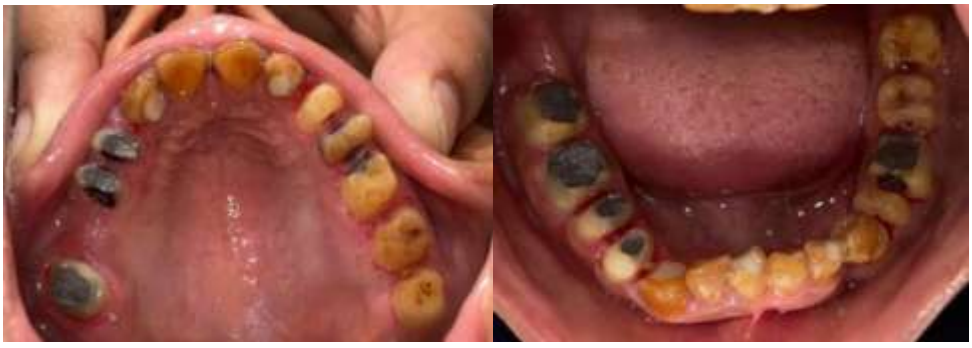
BOPA

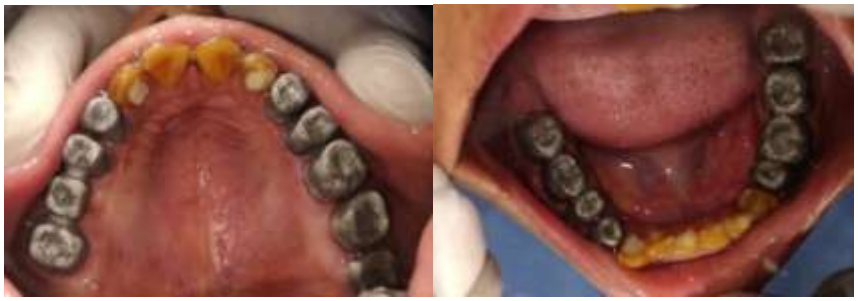
Splint Fabrication for Increase in Vertical Dimension



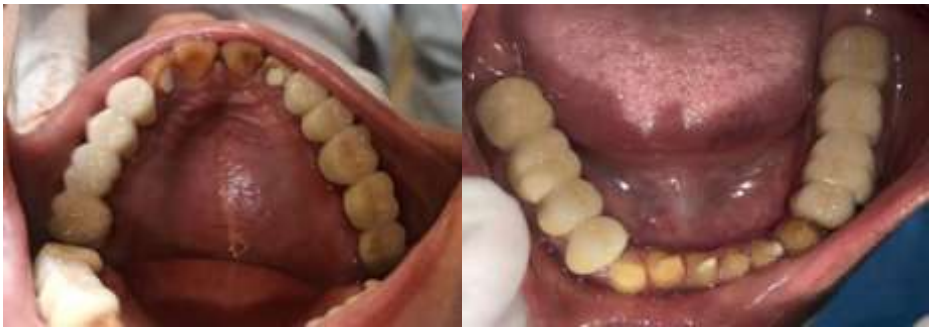
Tooth Preperation done for posterior teeth to receive pfmcrowns



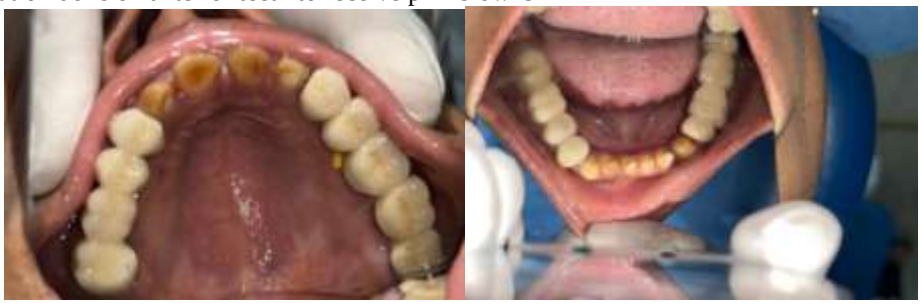
Metal trial



Final Prosthesis Cementation on Posterior Teeth



Tooth preperation done on anterior teeth to receive pfm crowns



Metal Trial

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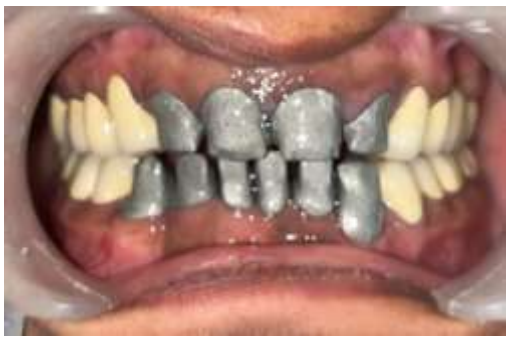
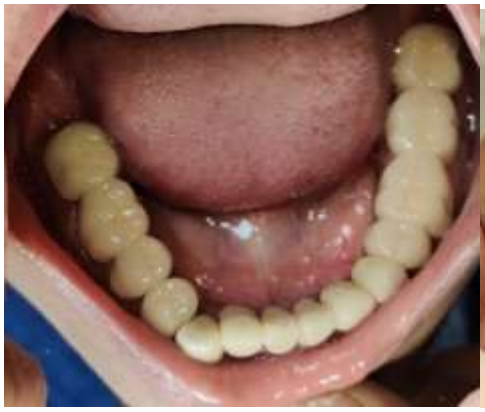
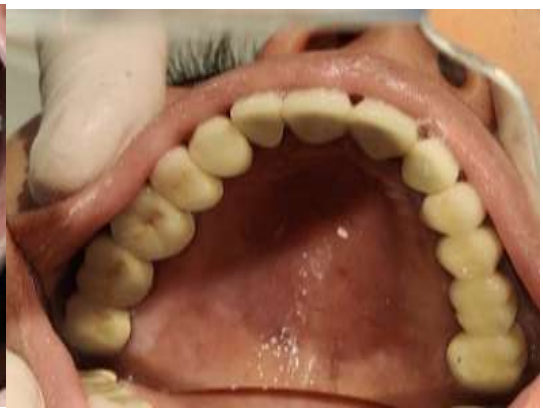
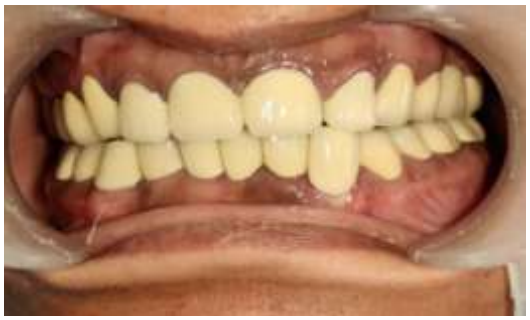


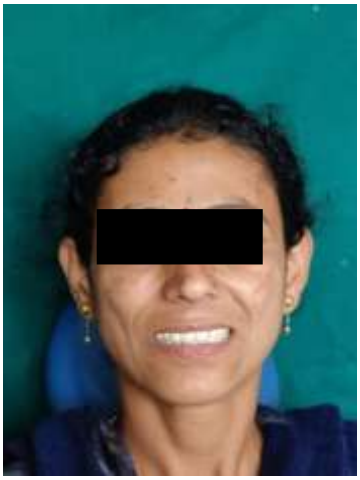
Final Prosthesis cementation on anterior teeth







Post op



III. DISCUSSION:-

Tooth wear is loss of tooth substance by means other than dental caries. Tooth wear can be because of congenital abnormalities of teeth, parafunctional habits or hypo-mineralisation of teeth secondary to dental fluorosis. Restoration of worn out dentition requires a multidisciplinary approach with cessation of parafunctional activity, endodontic intervention, periodontal therapy and in severe cases full mouth rehabilitation. Complete Mouth rehabilitation is restoration of teeth, with or without dental implants, with fixed dental protheses in the maxillae and mandible. It is carried out with the objective to convert all unfavorable forces on the teeth which inevitably induce pathologic conditions, into favorable forces which permit normal function and therefore induce healthy conditions. There are many philosophies to follow for an occlusal rehabilitation; most important among them is Hobo's philosophy and Pankey Mann Schuyler philosophy. PMS philosophy is one of the most practical philosophies forocclusal rehabilitation. It offers multiple advantages like it's a well-organized logical procedure, divides the procedure into easy lab and clinical steps, requires to prepare less than 8 teeth at a time, there is no danger of losing patient's vertical dimension, the functionally generated path and centric relation are rebuilt at the desired vertical dimension and requires no complicated instruments.

IV. CONCLUSION:-

Optimum oral health should be the prime objective of all rehabilitation procedures because the ultimate goal will always be to restore the mouth to health and function and preserve this status throughout the life of the patient. Abnormal occlusal conditions are overlooked in many patients because of negligence or lack of knowledge, the key to success is a multidisciplinary treatment approach. In the treatment of severely worn teeth, an anterior guidance should be established in harmony with functional jaw movements and all posterior teeth should discluded during any eccentric jaw movement. Taking the guidance into account during provisionalization, ensures minimal adjustments in the definitive restorations and greater long term predictability. PMS technique is a reliable, predictable, understandable and functional technique for a successful full mouth rehabilitation of dentition.

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