

# MULTIDISCIPLINARY MANAGEMENT OF A PATIENT WITH PAPER PIN BITING HABIT: A CASE STUDY

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## ABSTRACT

Habits can, and all too frequently do, cause aesthetic or functional problems in the mouth. For this reason, destructive habits need to be diagnosed and corrected as early as possible. Many patients are unaware that even holding pins or needles in mouth can cause severe dental problems. This clinical report demonstrates successful multidisciplinary approach to a full mouth rehabilitation of a 50-year-old patient with paper pin biting habit whose dentition had been esthetically and functionally compromised because of dentition wear, and reduced vertical dimension. The objective of complete mouth rehabilitation was to reconstruct, restore, and maintain health of the entire oral mechanism. Anterior bite plane was used after the decision of increasing vertical dimension, constructed using anatomical landmark, facial and physiologic measurement. The treatment entailed using posts and cores, metal-ceramic restorations, and a fixed partial denture. This case report shows that a satisfactory clinical result of severely worn dentition can be achieved by multidisciplinary approach.

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## KEY WORDS

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## [I] INTRODUCTION

Habitual use of the teeth for purposes other than chewing food is known as a "factitious habit" (or a "parafunctional habit"). Examples include biting fingernails, trimming fishing line, chewing ice or popcorn kernels, paper pin biting and resting the front teeth on sewing needles, bobby pins or nails. Placing various types of pins, needles, or even bobby pins in mouth is not an uncommon habit, particularly among people who knit and sew or have a stressful office job [1]. These habits can cause chipping or cracking of the teeth, which can further lead to severe attrition of teeth and loss of vertical dimension of occlusion (bite collapse).

Bite collapse can result in damage to the jaw joints; severe pain or dysfunction in the jaw joints (temporomandibular dysfunction, or TMD). A critical aspect for successful treatment is to determine the occlusal vertical dimension (OVD) and the inter-occlusal rest space (IRS) [2]. Articulated study casts and diagnostic wax-up can provide important information which is helpful for the evaluation of treatment options [3]. A systematic approach for managing tooth wear can lead to a predictable and favourable prognosis [4].

This clinical report demonstrates successful multidisciplinary approach to a full mouth rehabilitation of a patient with paper pin biting habit whose dentition had been esthetically and functionally compromised. Written consent was obtained from the patient(s) or their relative(s) for publication of study".

## [II] CASE HISTORY

A 50 year old man, moderately built with good general health reported to the department of Conservative dentistry and Endodontics, Dr HSJ Institute of Dental Sciences and Hospital, Chandigarh, with a chief complaint of difficulty in chewing and poor aesthetics because of worn out teeth. Patient's medical and family history was non contributory. His personal history revealed that he was biting on paper pins for past 15yrs.

Intra oral examination revealed a generalized loss of dental substance that was greater in the maxillary and mandibular anteriors [Figure-1A-C]. Maxillary left canine was worn to the gingival level. Maxillary right first molar and mandibular left first molar were absent. Maxillary right second premolar was palatally placed along with disto-palatal rotation of maxillary right first premolar [Figure-1B]. Multiple teeth were carious. Dentofacial analysis demonstrated a visually shortened facial height for the lower third of the face and enlarged interocclusal space, implying loss of vertical dimension of occlusion.

Radiographic examination included full mouth IOPA and OPG showing features of generalized attrition and pulp exposure [Figure-2]. Diagnostic maxillary and mandibular casts were prepared. On the basis of clinical and radiographic examination, full mouth rehabilitation was planned to restore the function, esthetics, speech and comfort of the patient. The patient was

informed of the diagnosis and the treatment planning. His consent was taken before the start of the procedure.



Fig: 1. A) Frontal, B) Maxillary, and C) Mandibular view of severely attrited teeth



Fig: 2. Pre-operative OPG

### [III] TREATMENT

Root canal treatment of maxillary and mandibular anteriors and premolars was started. During the treatment, root of maxillary left central incisor got fractured and root of mandibular right lateral incisor was found to be calcified. Therefore, they were planned for extraction. Carious teeth were restored. Sidewise orthodontic treatment for the derotation of maxillary right first premolar was planned. Maxillary right first premolar was mesio-lingually and maxillary right first molar was disto-lingually present due to the presence of maxillary right second premolar between the two teeth. Therefore, it was decided to

extract maxillary right second premolar and to derotate the two malaligned teeth. The first molar was banded with a preformed band (0.005" X 0.180") having triple buccal tube (0.022" slot Roth) welded on the buccal side and a weldable lingual button on the lingual aspect of the molar band. The first premolar was also banded with a self fabricated band from premolar band material (0.004" X 0.150") and a weldable lingual button was welded onto it on the lingual side [Figure-3A]. A closed coil NiTi spring ( 9mm length) was then attached to the two lingual buttons with the help of a stainless steel ligature wire (0.009" diameter) to provide reciprocal force ( disto-lingual on the premolar and mesio-lingual on the molar) to bring about the correction of the rotations. The corrections took about 2 months

after which both the bands on the premolar and the molar teeth were removed.

Initially this case was overwhelming, as there were so many factors necessary to achieve a successful treatment outcome. After mounting and studying the casts, it was obvious that the patient's vertical dimension had to be increased to a proper, comfortable position, which has been called the physiologic neuromuscular position. For this the patient's casts were mounted on a semi-adjustable articulator (Hanau TM Modular Articulator; Whip Mix Corp., Louisville, USA) using a face-bow record and an interocclusal record that was made with the aid of bite wax material.

The new VDO was set by 5 mm increase in the incisal guidance pin of the articulator, utilizing which an anterior bite plane was made.

Anterior bite plane is a modified Hawley's appliance with a flat ledge of acrylic behind the upper anteriors [Figure-3C]. When the patient bites, the mandibular incisors contact the bite plane thus disoccluding the posteriors which are then free to erupt<sup>5</sup>. Along with the plate two acrylic teeth were also added to temporarily replace missing molars and maxillary left central

incisor. He was advised to wear the splint throughout the day and night.

The adaptation of patient to the increased VDO of 2mm was evaluated during 1-month trial period. No muscle tenderness and temporomandibular discomfort was found. Next increment of 3mm was further added for another 2 months.

Composite build-ups of maxillary right central incisor, lateral incisor, canine and maxillary left lateral incisor, canine first and second premolar were done. Prefabricated metal posts were placed in mandibular left central and lateral incisor and mandibular right central incisor and composite build-ups were done.

The crown and bridge work was divided into 4 stages. Firstly the maxillary anteriors followed by mandibular posteriors, then mandibular anteriors and finally the maxillary posterior teeth [Figure-3D-F]. Postoperative OPG is shown in Figure-4. During the prosthetic work, intentional root canal treatment of maxillary left second molar was planned. The patient was followed up for one year on a regular three month recall appointment schedule and he was satisfied with the results.

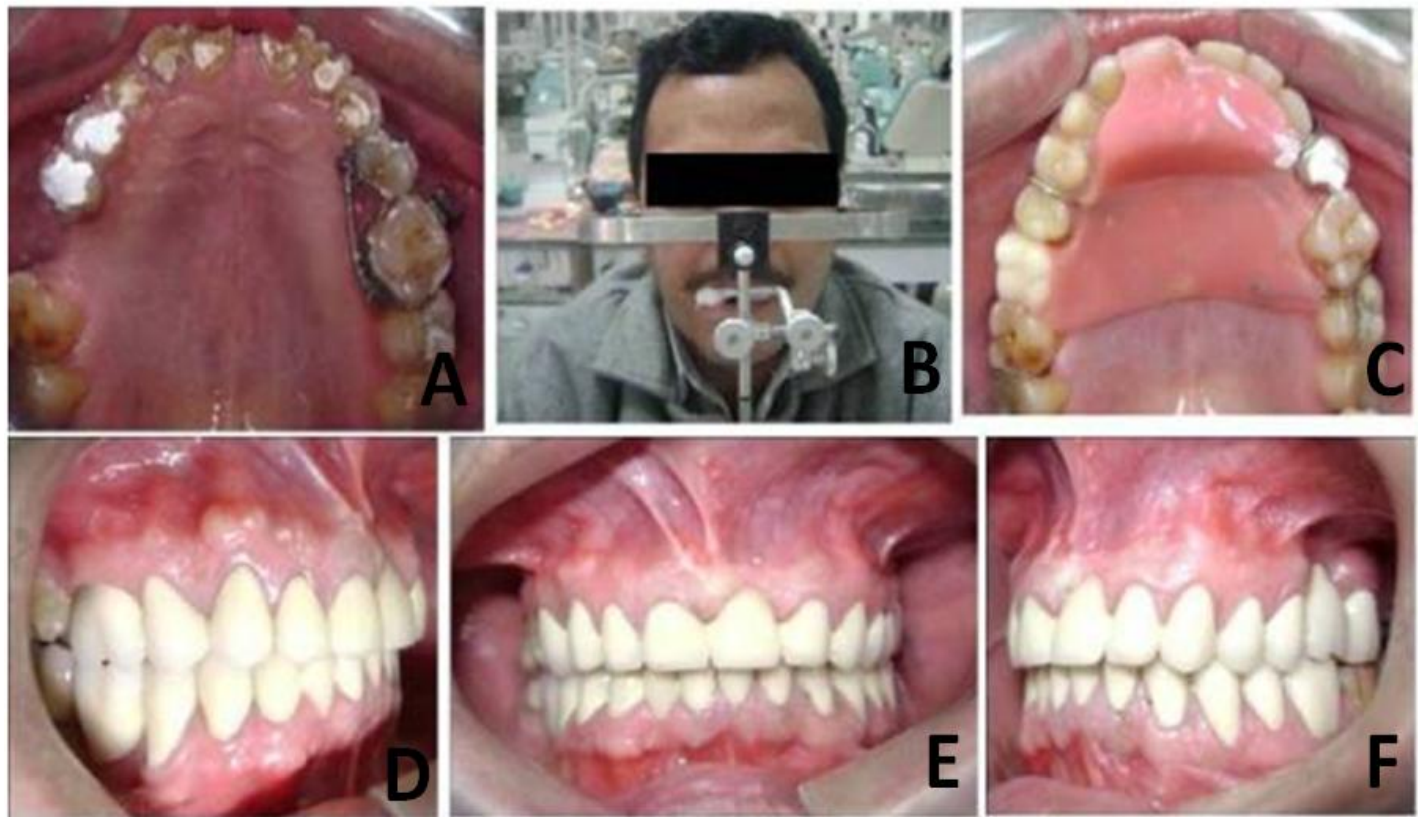


Fig: 3. A) Maxillary molar and premolar are banded for derotation, B) Face bow transfer to record in vertical dimension, C) Anterior bite plane occlusal view, D) After treatment intraoral view, right lateral view, E) Frontal view, and F) Left lateral view

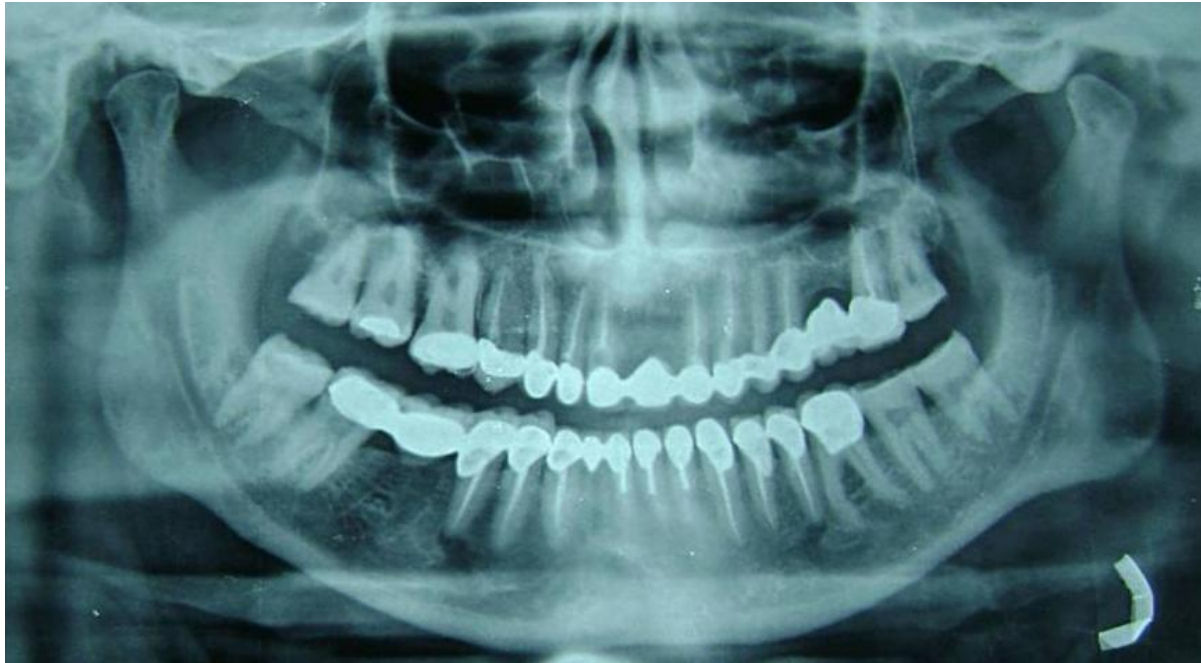


Fig: 4. Post-operative OPG

#### [IV] DISCUSSION

A habit can be defined as the tendency towards an act that has become a repeated performance, relatively fixed, consistent and easy to perform by an individual. Habits are acquired as a result of repetition [6]. In the initial stages there is a conscious effort to perform the act. Later the act becomes less conscious and if repeated often enough may enter the realms of unconsciousness. Certain habits either temporarily or permanently are harmful to teeth and supporting structures. Thus, patient may require full mouth rehabilitation after a certain time period.

The objective of complete mouth rehabilitation must be the reconstruction, restoration, and maintenance of the health of the entire oral mechanism [7].

Depending on the degree of tooth wear, full-mouth rehabilitation of worn dentitions can be accomplished by conservative composite resin restorations, resin bonded ceramic crowns and post-and-core and cast restorations [8-10]. The use of composite resins for severely worn dentitions is a relatively cost-effective option when patients cannot afford an expensive restorative rehabilitation, but a successful treatment is linked to patient-related factors, such as oral hygiene and feeding habits [11], treatment plan-related factors, including occlusal adjustment, bruxism control and GERD treatment [12], in addition to the technique and materials to be employed [13]. Nonetheless, the composite resin restoration could not be used for the patient in this case as the remaining tooth structures were too small to have sufficient retention of composite. Therefore, the conventional treatment modality that includes splint, careful monitoring, and definitive prosthesis, was chosen.

The increase of VDO was determined not by standardized aesthetic golden proportion of anterior teeth but by patient's physiologic factor like interocclusal rest space and speech. Anterior bite plane was used as a means to raise the vertical dimension of occlusion (VDO) for 3 months. Basic function of a splint is referred to as muscle deprogrammer and it helps the condyle in returning to their centric relation position [14]. The patient was carefully monitored for 3 months to evaluate the adaptation to the removable occlusal splints.

In this case fixed partial dentures were preferred over implants because of financial reasons.

#### [V] CONCLUSIONS

Treatment of patients with destroyed dentition is very difficult clinical procedure and challenging for dental profession. The use of diagnostic elements and a preoperative treatment plan allows the clinician to identify areas of concern, allows the desired protocol for restoration. The normal healthy function of the masticating apparatus is the ultimate aim of full mouth rehabilitation.

#### FINANCIAL DISCLOSURE

This work is not supported by any financial assistance.

#### CONFLICT OF INTERESTS

The authors declare that they have no conflicts of interest.

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