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Research Article

Chairside Replacement of Artificial Maxillary Anterior Teeth In Existing Complete Denture Prosthesis

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Abstract: An insincere student can always outsmart his peer and finish his allotted work without actually delivering the deserved goods to his patient. Such a probability is more in institutes with less teacher student ratio and with overburdened staff. An elderly male patient undergoing complete denture treatment by an intern had received a denture with poor aesthetics and stability. The patient was anxious, embarrassed and demanded an immediate replacement of the denture. Examination of the maxillary complete denture revealed severely proclined denture teeth as a major source of the problem. Treatment planning involved an attempt to correct existing dentures using a novel chairside approach which, if found unsatisfactory, would result in the fabrication of new denture. The technique involved using a centric relation record to do a clinical remount on a mean value articulator following which the faulty anterior teeth were removed and replaced using a denture over impression. The advantage of this chairside technique is that it allows a clinician/patient to perform/approve a denture trial, while disadvantage is the union between the artificial teeth and the denture base is with self - cure repair resin.

Keywords: internship, complete denture, denture trial, retention, esthetics.

INTRODUCTION

An internship is a part of medical professional training where a student or a trainee works in a particular hospital, with or without financial reimbursement, in order to gain hands on opportunity to work in a particular department. For a student, it is an excellent chance to apply their course knowledge without the anxiety of preparing for examinations. When done appropriately and under supervision the candidate becomes equipped with a work experience, essential skills and improves his self-confidence before entering the real world of professional independence. Since most medical internships occur at an age where the transition from immaturity begins, it is the first step of developing the sense of social responsibility especially when one is dealing with patients. According to most dental curriculums, an intern is required to complete a certain quota of complete denture patients under staff supervision in the subject of prosthodontia. However, since the staff is not available to an intern as per interns convenience, some students find it an opportunity to work independently and refrain from showing their work to the allotted staff. The problem of students cheating and academic dishonesty has been a problem for many dental schools (Andrews, K. G. *et al.*, 2007; & Ford, P. J., & Hughes, C. 2012). In fact, research has found a positive correlation between cheating in medical schools and dishonesty in patient care (Sierles, F., & Hendrickx, I. 1980). A study has also investigated the method to enhance students' ethical behavior (Koerber, A. *et al.*, 2005). While a student during his years may practice ethical behavior, students doing internship do not have any such restrictions, which is why a sense of responsibility in patient care has to prevail.

This article in the form of case report describes a case of an elderly man who was treated by one such intern and resulted in receiving a complete denture prosthesis whose maxillary anterior teeth were severely proclined that impeded denture retention and stability. The patient besides being embarrassed and anxious was also subjected to unnecessary financial expenditure which prompted us to perform a novel chairside correction of the existing denture.

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CASE REPORT

An elderly male patient aged 68 years reported to a staff member personally about his denture which was delivered to him by an intern in the department of prosthodontics sometime back. The natures of his chief complaints were both personal and related to the prosthesis. Personal complaints ranged from financial expenses, time spent during treatment, embarrassment suffered publicly, anxiety which was compounded by his anger and furiousness towards the staff and the department. Denture complaints were poor aesthetics, denture instability, falling of denture on speaking or lip retraction and lack of retention. His frustration could be gauged by his statement stated as quoted " I want to return the denture and never come back for any treatment here". Preliminary investigations revealed that the denture was fabricated by an intern of the department, who had failed to approve his clinical work by his supervisor during/after jaw relation recording. Examination of the complete denture prosthesis revealed maxillary proclined anterior teeth, which were a potential source of problem since denture borders and jaw relations (vertical and horizontal) were satisfactory.

Figure 1: (a) Maxillary denture, (b) and (c) Interocclusal centric relation record lateral view, (d) Maxillary anteriors removed, (e) New profile contour established (f) Teeth rearranged for a denture trial (g) New relation of maxillary anteriors in relation to mandibular anteriors

Treatment plan presented to the patient was a chance for a chairside correction, which if found unsatisfactory will lead to the fabrication of new complete denture prostheses with a full refund of his transportation charges. The patient consented for chairside correction at the same appointment. A novel chairside correction of the maxillary denture was initiated by taking a centric relation record using low fusing compound (Pinnacle, DPI) **(Fig.1 a, b)**, following which petroleum jelly (Vaseline, Unilever, India) was applied to tissue surface of the denture **(Fig.1 c)** and both dentures were mounted clinically on a mean value articulator (Ampro, India). Maxillary denture was separated from the cast and the anterior teeth were removed **(Fig.1 d)** following which modelling wax was rebuilt on anterior denture and profile contour of maxillary lip was recorded in the patient **(Fig.1 e)**. Maxillary anterior teeth were then arranged according to the new profile contour **(Fig.1 f)** and necessary corrections in occlusion was carried **(Fig.1 g)** following which a denture trial was done with the patient.

Figure 1: (a) Making overimpression (b) Teeth placed within overimpression (c) Relation between denture and tray after using posterior teeth indentation within impression (d) New teeth arrangement (e) and (f) Verifying centric during trial (g) Finished complete denture

After patients' denture trial approval, a chairside correction of maxillary anteriors was done by placing the denture on the same articulated cast at a predetermined vertical and horizontal position. A perforated and modified partial edentulous stock tray (PSM, Ghaziabad, India), an alginate over impression (CA 37; Cavex, Haarlem, Holland) of the maxillary denture was made **(Fig.2 a)** making sure that the alginate aligns and supports the denture posteriorly. The denture was removed from the impression and anterior teeth were removed from the denture and placed within the confines of their respective positions within the alginate overimpression **(Fig.2 b)**. Each tooth was additionally stabilized to the overimpression using self cure denture base acrylic (Fortex; Lucite Intl, Durham). Wax from the anterior part of the denture was then eliminated following which the denture was placed over its support in the impression **(Fig.2 c)** so that the space that was occupied by the wax was now clearly visible **(Fig.2 c)**. The surface of the maxillary denture was then cleaned and liquid monomer (Fortex; Lucite Intl, Durham) was applied over the anticipated area of self-cure denture base repair resin. The self-cure powder and liquid were alternately placed in the gap between the denture teeth and the denture base using a sprinkle on method. Once self-cure was partially polymerized, the denture was removed, finished and polished using conventional procedures **(Fig.2 d)**. The denture was tried in the patient's mouth and minor occlusal corrections were done using the same clinical remount procedure **(Fig.2 e-g)**. The patient was educated about the difference between the attachment of the anterior teeth from previous dentures. The patient was also informed that if he was unsatisfied with the esthetic and functional outcome of the complete denture, he may return to the department at any time with the department taking financial responsibility for his transportation and other charges. The patient till date did not return back.

DISCUSSION

A novel chairside technique that follows basic principles of material selection and complete denture prosthesis fabrication has been described in this article. The main feature of the technique is that it allows the clinician and the patient to verify and approve the new teeth arrangement through a denture trial. While we used irreversible hydrocolloid for making an overimpression, other materials that are more stable like elastomers can be used for better results. Under normal conditions, the patient presented in this case report would have had to undergo a new complete denture fabrication or a minimum of replacement of anterior teeth with a heat cure denture base resin. Fortunately, novel technique described in this report maintains

scientific standards besides the advantage of being economical, less time consuming, allowing development of a new labial profile contour and performing a denture trial before giving the denture. Drawbacks include the use of self-cure resin between the heat cure denture base and the new artificial resin teeth since self-cure resins have less favorable properties than the heat cure denture base resin including their ability to be finished and polished. The adhesion between the heat cure denture base and the repair material is improved by chemical etching of the surface (liquid monomer) (Grajower, R., & Goultschin, J. 1984; & Vallittu, P. K. *et al.*, 1994) which changes the morphology and chemical properties of the base (Mijovic, J.S., & Koutsby, J.A. 1977). Other chemicals that can be used are organic solvents like acetone or chloroform (Anusavice, J.K. 1996). The choice of using a self-cure, repair material over the heat cure was determined on two important facts. Firstly, the interest of patients was mandatory in this case and secondly use of heat cure acrylic would have also contributed to the distortion of the denture base (Dyer R.A., & Howlett, J.A. 1994). However, heat cure should be preferred since the transverse bending strength of heat polymerized acrylic resin reaches 80% of the strength of the original denture base resin as compared to 60% with chemically activated resin (Stanford, J.W. *et al.*, 1955).

Another significant feature that this article highlights is the necessary attitude that a student should have during his internship. There are many challenges that one faces during the course of doing an internship and one of the difficult challenge is to develop competence while having professional independence. One of the key factors to overcome such challenge is learning the art of responsibility especially in patient care. While an intern faces problems like unnoticed work, non-cooperative and/or busy staff, allotment of undesired work or inadequate compensation the staff on the other side is overburdened with teaching and administrative duties. In this tussle between staff and students, patient usually suffers despite the hospital administration, providing free treatment and in this case free transport. At the same time, both students and staff must realize that despite providing free treatment to the patient, they also face many difficulties while undergoing free treatment and their sacrifices must be respected by providing utmost care. The reason why an intern did not choose to show his/her work to allotted staff is a subject of study and such studies in the Indian subcontinent are non existent.

CONCLUSION

A novel chairside technique to replace denture teeth has been described which can be utilized for replacing mandibular anterior teeth also. The technique has many advantages, but its indication is solely dependent on rare circumstances like as described in this report. Long term outcome of the corrected denture has yet to be determined.

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