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Case Report

Suction cup induced palatal hyperplasia in maxillary complete denture: A case report

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ABSTRACT

Although various methods have been applied for getting a Complete Denture with perfect retention, but it is difficult to attain. Residual ridge resorption creates an ill-fitting denture, hence causing difficulty while eating and even dislodging during talking, even adding to the patient's embarrassment. Suction cup has been widely used for the retention & stability of dentures, but is known to carry few complications like palatal perforations and oro-antral communications. Here we present a case report of palatal hyperplasia due to the suction cup.

1. Introduction

The primary difficulties experienced during denture usage are discomfort, algesia, usual noises like clicks and snaps chewing difficulties, change in phonetics and dislodgment of the prosthesis while talking or even chewing.[1] To withstand these issues suction cups were used. But continuous use of these suction cups destroys the tissues even leading to perforation of the palate. They create a negative pressure on the mucosa causing a destructive effect on the palatal tissues. This occurs as it reduces the blood circulation of underlying tissues leading to hypoxia and necrosis of the underlying bone leading to tissue perforation.[2] The pathological changes are severe with the habit of continuous denture usage for 24 hours a day. But suction cups are used when the diameter is less than one millimeter and has no risk of irritating the tissues/building up bacteria.[3]

Maxillary complete denture causes inflammatory papillary hyperplasia, usually involving the hard palate, occasionally extend to the mucosa of the residual ridges. Mostly the patients are unaware of its presence. Other terms for the Papillary hyperplasia of the hard palate are Inflammatory papillary hyperplasia, papillomatosis, pseudo-epitheliomatous hyperplasia and denture stomatitis.[4]

Papillary hyperplasia is a pain-free and irreversible lesion of the keratinized oral mucosa. The negative pressure is an important factor involved in the formation of papillary hyperplasia. The tissues under the ill-famed suction cup are subjected to a negative pressure. A similar condition exists while the "vacuum chamber" is used in the upper denture.[5,6]

2. Case Report

A fifty eight years old male was enrolled to treatment for a new pair of dentures in the Department of Prosthodontics, Himachal Dental College Sundernagar (HP). The patient was using this denture for more than ten years and as a result presented with severe occlusal wear, reduced vertical dimension and ill adapted denture bases. During the clinical examination, it was noted that the upper denture presented a vacuum chamber in the palatal area filled with an inflammatory hyperplasia (Figure 1). On the intaglio surface

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of the old denture a suction cup was there (Figure 2). A maxillary impression was made for record as well as for future reference and cast was poured (Figures 3 and 4). The treatment instituted was removal of the cup as it was obviously the cause of the problem.

The denture was then lined with tissue conditioner and reinserted. After the material had set, the conditioning material that occupied the area of the lesion was removed from the denture. The patient was asked to wear the denture and an appointment was scheduled for further evaluation. Four days later, oral examination showed that tissue response was good. Signs of clinical inflammation had subsided considerably. The depth of the lesion was reduced 0.5 to 1.0 mm, and the patient felt relief from pain and discomfort. The liner was replaced and the same procedure was performed on the area of the lesion. Another impression was taken for comparison. When the patient was examined after one month for evaluation, there was no sign of inflammation. The palatal lesion had healed completely and all surrounding tissues appeared normal (Figure 5). A primary impression was made for a new complete maxillary and mandibular denture. The case was carried to completion using conservative treatment.

Fig. 1: Papillary hyperplasia

3. Discussion

The tissue-conditioning resins remain relatively plastic and continues to flow under pressure. In this way, the applied stresses are distributed evenly while maintaining intimate contact with the underlying mucosa, as the sloughing and healing of tissue occurs. The healing time is accelerated by 3-4 days, when the tissue-conditioning resin is used in place of the zinc oxide dressing. But the superiority of the resins lies in the fact that they are more comfortable and permit the individual to wear the modified denture during the entire healing interval. According to Kawano et al[7,8] and Graham et al,[9] the tissue conditioner provide more effective

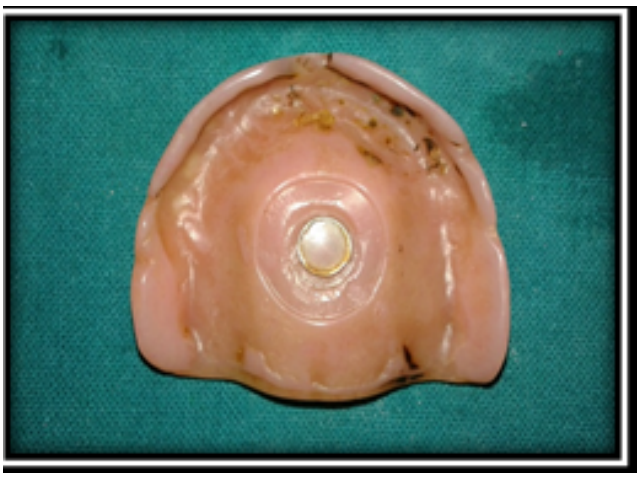

Fig. 2: Intaglio surface showing suction disc attached

Fig. 3: Maxillary impression

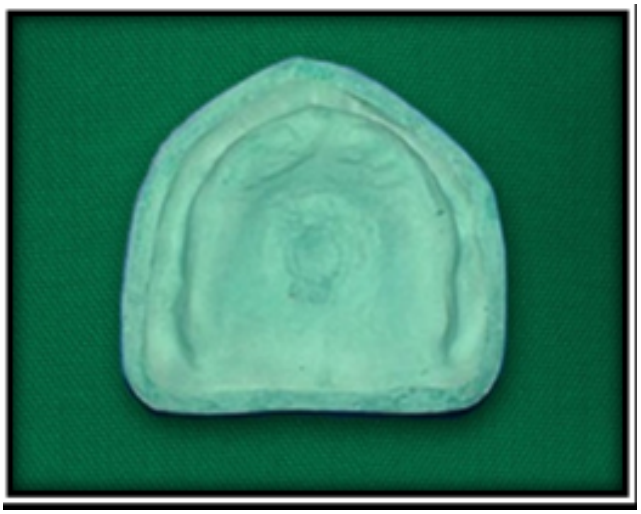

Fig. 4: Defect shown in the cast

Fig. 5: Tissues were normalized after one month

results due to better compressibility and absorbs more of occlusal stresses, being transmitted to the liner and more effectively "cushions" the recovering supporting tissues.[10] Abdel Razek[9] used Coe-comfort as a tissue conditioner, as it is soft, flexible, pliable, hence allows the bruised and distorted soft-tissues getting to their normal size and shape. It also decreased inflammation and swelling. Douglas and Walker while supporting Abdel Razek reported that the tissue conditioning materials like Coe-comfort exhibit some fungicidal properties for a limited time and also contains bactericidal and fungicidal agents to retard the growth of bacteria and fungi. The powder in this resin is a "methyl methacrylate" mixed with inert fillers and the liquid contains alcohol solvents and a plasticizer.[11] In the present study, Coe-Comfort tissue conditioner was used as it gives better results in decreasing squamous epithelium hyperplasia, and increase in fibrosis which indicates healing and recovery of abused tissues.[12]

4. Conclusion

It can be concluded that the severity of inflammatory papillary hyperplasia increases considerably on wearing dentures through day-night. Denture hygiene is not a significant factor in severity of inflammatory papillary hyperplasia, when compared to wearing the dentures 24 hours a day. Inflammation caused by suction cup can be reduced significantly by both the methods, i.e., using a tissue conditioner as well as discontinuing the denture (tissue rest) for about two weeks, while the healing was better when tissue conditioner was used.

5. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

6. Source of Funding

None.

References

1. Rao Y, Yadav P, Singh J, Patel D, Aggarwal A. Surgical and prosthetic management of suction cup induced palatal perforation: case report. *J Clin Diagn Res*. 2013;7(9):2086–7.
2. Vaaka P, Donga SK, Ganapathi AK, Devi PB, Kaluvakolanu S, Mohammad Z, et al. Suction Cup Induced Palatal Fistula: Surgical Closure by Palatal Rotational Flap. *Ann Med Health Sci Res*. 2016;6(2):129–32.
3. Priyadarshini SR. Styloid Process Elongation - A Cross-Sectional Study in North Western Part of India. *Int J Sci Study*. 2013;1(2):9–15.
4. Lambson GO. Papillary hyperplasia of the palate. *J Prosthet Dent*. 1966;16:636–45.
5. Jermyn AC. Multiple suction cup dentures. *J Prosthet Dent*. 1967;18(4):316–25. doi:10.1016/s0022-3913(67)80007-6.
6. Campbell RL. Relief chambers in complete denture. *J Prosthet Dent*. 1961;11:230–6.
7. Fairchild JM. Inflammatory papillary hyperplasia of the palate. *J Prosthet Dent*. 1967;17(3):232–7.
8. Kawano F, Tada N, Nagao K, Matsumoto N. The influence of soft lining materials on pressure distribution. *J Prosthet Dent*. 1991;65(4):567–75.
9. Graham BS, Jones DW, Thomson JP, Johnson JA. Clinical compliance of two resilient denture liners. *J Oral Rehabil*. 1990;17(2):157–63.
10. Nikawa H, Yamamoto T, Hamada T, Rahardjo MB, Murata H, Nakanoda S, et al. Antifungal effect of zeolite-incorporated tissue conditioner against Candida albicans growth and/or acid production. *J Oral Rehabil*. 1997;24(5):350–7.
11. Razek MK, Mohamed ZM. Influence of tissue-conditioning materials on the oral bacteriologic status of complete denture wearers. *J Prosthet Dent*. 1980;44(2):137–42.
12. Murata H, Toki K, Hong G, Hamada T. Effect of tissue conditioners on the dynamic viscoelastic properties of a heat-polymerized denture base. *J Prosthet Dent*. 2002;88(4):409–14.

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