# Complications of Pediatric Denture Misuse: A Case Report

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**Summary:** The multiple loss of primary molars due to caries or other reasons in the primary or mixed dentition can lead to severe mutilation of the developing dentition. It is advisable to construct a removable appliance to maintain the relationship of the remaining teeth and to guide the eruption of the developing teeth in order to prevent the child from developing psychological and speech problems. However, parental and patient cooperation are imperative if the pediatric patient is to exercise the necessary care to maintain the denture in a clean and healthy condition. This case report identifies the complications that can arise from the uncontrolled misuse of a pediatric denture.

It is concluded that as well as the parents, the pediatric dentists play an important role in the follow-up of the young patients for whom pediatric dentures are constructed. Additionally, patients should be re-called for check-up visits or instructed to refer to the dental clinics in 6-month intervals. Brochures that inform the patients and their parents about the application and care of pediatric dentures and space maintainers should be given.

**Key words:** pediatric denture, complication

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The multiple loss of primary molars due to caries or other reasons in the primary or mixed dentition can lead to severe mutilation of the developing dentition. A removable appliance should be constructed to maintain the relationship of the remaining teeth and to guide the eruption of the developing teeth in order to prevent anterior drifting of the permanent molars which may occur after the premature loss of primary molars (Budtz-Jorgensen et al, 1983, Dean et al, 2000). Reduced masticator function is additionally undesirable from a nutritional point of view. Pediatric dentures prevent the child from developing psychological and speech problems and they assist in achieving normal function and aesthetics to a certain degree (Dean et al, 2000).

In spite of these benefits, the acrylic denture space maintainer is not without its disadvantages and parental and patient cooperation are imperative as the child by himself is unlikely to exercise the necessary care to keep the denture clean. (Budtz-Jorgensen et al, 1983). The accumulation of plaque material and food debris after the loss of normal cleansing function will often result in increased dental caries activity and gingival inflammation.

Denture stomatitis which may occur as an erythematous lesion of the denture-bearing mucosa with a multifactorial etiology, is a frequent condition among denture wearers, in the adult population (Keng and Lim, 1996; Kulak et al, 1997; Nater 1978). It is reported that three most commonly cited aetiological factors, ill-fit, trauma, and unclean dentures, poor denture hygiene is probably of greatest clinical significance (Hinrichs, 2002; Kharbanda et al, 2003). Deposition of residual food and oral flora are responsible for the plaque

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**Fig 1** Initial view of the case.

**Fig 2** The inner surface of the denture with debris and plaque formation.

that forms on the denture surface. Acrylic resin-mucosa interface creates an ideal environment for the denture plaque. Plaque formation is further enhanced by the irregularities on the acrylic resin surface and by intra-oral temperature. (Abelson, 1981; Jeganathan et al, 1996). Because denture plaque is an important factor in stomatitis; cleaning of dentures and the removal of the plaque are crucial in the maintenance of good oral health (Budtz-Jorgensen et al, 1975).

The aim of this case report is to summarize the complications that can result from the uncontrolled misuse of pediatric dentures.

## CASE REPORT

A seven-year-old boy was referred to the Cukurova University, Faculty of Dentistry, and Department of Pediatric Dentistry in April 2003. The patient complained of pain and discomfort while eating. His dental history revealed that all upper primary teeth and lower primary molar teeth had been extracted due to caries under general anaesthesia in January 2001. Complete upper and partial lower over-dentures incorporating the permanent first molars were constructed soon after the extractions. The child was not taken for subsequent check-up appointments by his parents even though they had been instructed by his dentists to do so. He wore these dentures continuously for almost two years.

A denture stomatitis on the palatal surface of the denture and over-grown gingival tissues on the maxillary first permanent molars were detected at the intra-oral examination. In addition extensive smooth-surface-like caries lesions were observed on the maxillary first permanent molars. Maxillary permanent right central incisor was un-erupted (Fig 1). The upper denture revealed a dense deposit layer on the palatal fitting surface, although the polished surfaces of both dentures were clean (Fig 2).

The patient was instructed not to wear the dentures any more and routine oral hygiene procedures were explained. The maxillary permanent first molars were conservatively restored with composite resin without any endodontic treatment. After a month, the patient was called for a follow-up visit at which time it was observed that the hyperplastic gingival tissue and denture stomatitis had regressed. Furthermore, the upper left central incisor had erupted (Fig 3).

The parents of the patient refused to allow a new denture to be constructed. They were asked to come after a year for a yearly check-up (Fig 4).

## DISCUSSION

Pediatric dentures are used until the permanent teeth erupt when the primary teeth are lost early or permanent teeth are congenitally missing. These dentures have to be checked regularly, since they might prevent eruption of the permanent teeth and obstruct growth and development (Budtz-Jorgensen et al, 1983; Dean et al, 2000). This complication is verified in the case presented here, since the

**Fig 3** One month after the removal of the denture. Note that maxillary right permanent incisor has erupted.

**Fig 4** The view of the case in the one-year recall visit.

maxillary permanent right central incisor could not erupt due to denture pressure.

Observing the huge amount of deposit in the fitting surface of the denture can be explained by stagnation, pooling of saliva, and the absence of contact with the tongue. It seems likely that the background of the carious lesions in the patient presented here is also denture plaque.

Removal of the plaque and cleaning of the denture is needed in order to keep adequate oral hygiene. The presence of removable partial dentures induces not only quantitative changes in dental plaque but also cause qualitative alterations that shift the flora to a more pathogenic state (Collis and Stafford, 1994). Both mechanical and chemical methods are cited in the literature to maintain a clean and healthy denture (Moore et al, 1984; Tarbet et al, 1984). Of these the brushing is the most common and easy way. It must be emphasized that denture hygiene directly affects oral hygiene and cause caries. As with other acrylic appliances, pediatric dentures should be cleaned with denture brushes. The high levels of plaque observed in the presented case must be considered as a failure of the information and of instructions provided for plaque control.

Case selection is important in connection with suitable individual prophylactic interventions. Furthermore high levels of parental vigilance and supervision are needed to ensure that children perform adequate oral hygiene procedures. There was a lack of motivation owing to parents in the present case.

It is thought that denture stomatitis presented in this case is caused by plaque, formed on the fitting surface of unclean upper denture. As a result, after the causative factor was removed, hyperplastic and hyperaemic tissues made a spontaneous recovery without using any anti-fungal or any other anti-microbial agents.

## CONCLUSION

As well as the parents, pediatric dentists play an important role in the follow-up of the young patients for whom pediatric dentures are constructed; pediatric dentists should provide oral hygiene instructions both for the children and for their parents. Control of the microbial denture plaque by an appropriate technique is necessary in order to maintain an adequate oral health and parents should reinforce the children for cleaning of the teeth and the dentures especially in younger ages. Patients should be re-called for check-up visits or instructed to refer to the dental clinics at six-monthly intervals. Brochures that inform the patients and their parents about the application and care of pediatric dentures and space maintainers should be given.

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