TECHNICAL PROCEDURE

Disposable Dust Chamber for Home-visit Prosthodontic Treatments

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Clinical significance

This article introduces the procedure for preparing a low-cost self-made dust chamber for home-visit prosthodontic treatments. This chamber can be used not only for home-visit prosthodontic treatments, but also at any dental chair-side.

Abstract

Purpose: The aim of this article is to describe the procedure for preparing a disposable dust chamber for use in home-visit prosthodontic treatments, that is economical and can be made from materials that are easy to procure.

Methods: After cutting off both ends, the main body of a PET bottle (capacity: 1.5 to 2.7 liters) is trimmed to a length of about 15-20 cm. A disposable glove is slipped over each cut end of the PET bottle. The finger and palm portion of the gloves at both ends are then cut off.

Results: Users can work on prostheses within this dust chamber, without dispersing the flying particulate waste produced by the grinding into the ambient air. After use, the chamber can be washed with tap water, and be reused after disinfection. This device also effectively reduces the noise produced by the cutting and grinding.

Conclusion: A low-cost handy disposable dust chamber that can be made easily is presented.

Key words: home-visit dental treatment, prosthodontic treatment, denture treatment, dust chamber, dust-proof

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Received on March 24, 2006/Accepted on March 29, 2006

Introduction

It has been reported that many home-visit dental treatments are related to fitting of dentures.¹⁻⁴ In such cases where adjustment, repair and relining of the dentures are needed, cutting and grinding of the dentures are often required. One of the major problems under this circumstance is the dispersal of the fine particulate waste produced by the grinding into the ambient air.

The aim of this article is to report the procedure for preparing a disposable dust chamber for use in home-visit domiciliary prosthodontic treatments, which is economical and can be prepared using materials that are easy to procure in everyday life.

Materials and methods

A PET bottle with a capacity of 1.5 to 2.7 liters forms the main part of this dust chamber (Fig. 1). For the gloves, any disposable glove for operations or examination made of latex can be used (Fig. 2). The glove size would vary with the hand size of the user of the dust chamber. Gloves made of plastic or vinyl may also be used, as long as the diameter at the wrist constriction is smaller than that of the PET bottle body being used.

Both ends of the PET bottle are cut off and the main body of the bottle is trimmed to a length of about 15 to 20 cm (Fig. 3). This forms the central part of the dust chamber (Fig. 4). The cutting lines on the bottle should be planned so as to preserve the grooves of the bottle near the cut ends (Figs. 3 and 4; arrows).

Then, the gloves are slipped over the cut ends of the trimmed PET bottle (Fig. 5). If the gloves are slippery, turning them over might improve the friction. Although gloves made of plastic or

Fig. 1 A PET bottle with a capacity of 1.5 to 2.7 liters comprises the main part of this dust chamber. In the following figures, a 2.7-liter PET bottle (right) is shown.

Fig. 4 Main part of the dust chamber. Note the preserved grooves near the cut ends (arrows).

Fig. 2 Any disposable gloves used for operations or examination made of latex can be used. The glove size would vary according to the hand size of the user.

Fig. 5 The wrist constrictions of the gloves are slipped over the cut ends of the trimmed PET bottle unit.

Fig. 3 The ends of the PET bottle are cut off and the main body is trimmed to a length of about 15 to 20 cm. The cutting lines should be planned so as to preserve the grooves of the bottles near the cut ends (arrow).

vinyl cannot be stretched like latex gloves, selection of the proper sizes may allow a good fit despite the lack of elasticity.

After checking that the gloves do not separate from the main unit even if pulled (the grooves on the bottle help to keep the gloves from slipping), the finger and palm portions of the gloves are cut off (Fig. 6). A completed dust chamber is shown in Fig. 7. The size and tension of the holes in the gloves can be adjusted according to the requirements of the user.

Difference from the conventional method

During use, the prosthesis and a motorized hand tool are inserted from either end of the chamber. The prostheses can be ground within this dust

Fig. 6 After checking that the gloves do not separate from the main PET bottle dust chamber even if pulled, the finger and palm portions of the gloves are cut off. Note: The preserved groove helps to keep the gloves from slipping off the PET bottle unit.

Fig. 8 Users can cut their prostheses within this dust chamber, without unwanted dispersal of the waste arising from the grinding into the ambient air.

Fig. 7 An example of a completed dust chamber.

Fig. 9 After use, the chamber can be washed with tap water and reused after disinfection.

chamber, while keeping the flying particulate waste arising from the grinding from being dispersed into the ambient air (Fig. 8). Even if the fit of the hands into the glove holes is not tight, wide scattering of the flying particulate waste can still be prevented.

After use, the chamber can be washed with tap water and reused after disinfection (Fig. 9).

Effect or performance

This device also reduces the noise produced by the cutting and grinding so effectively that its use can be recommended not only for home-visit prosthodontic treatments, but also at the chair side in a dental clinic. It should be noted, however, that if either the prosthesis or the motorized tool comes into contact with the PET bottle,

a somewhat louder noise will be produced.

Since sometimes, the bad smell cannot be sufficiently shielded by this equipment, efficient room ventilation and combined use with an extra-oral vacuum equipment are recommended.

Conclusion

Although there are some similar products available in the market, we have introduced a low-cost self-made unit as a disposable dust control chamber. Besides its ease of fabrication and utilization, it also has an additional merit of allowing freedom of modification by the users themselves.

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