

An innovative protective barrier kit to confine Aerosols produced during dental procedures

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Abstract

The present invention relates to a protective barrier kit for dental patients. The object of the proposed invention is to provide a wearable low-cost protective kit to prevent aerosols transmission to dentist. The proposed invention is a protective barrier which is box type apparatus to prevent aerosols transmission during dental treatment procedures requiring use of drilling instrument like air-rotor or scalers. This invented protective box is helpful to prevent the aerosols transmitted to the dentist and assistants while treating patients with full precautions and safety.

Key Words: Patient protective kit, Aerosols

Introduction

Dentists are high risk group while treating patients suffering with respiratory transmissible diseases like COVID-19 ¹. The medical and dental communities have long recognized the need to shield practitioners from harmful substances, such as: infected body fluids, tissue debris and bone chips that are produced in medical and

dental procedures. In particular, dental procedures like access cavity preparation in RCT, restoration of decayed teeth, tooth preparations, scaling which are common procedures for dentists produce an aerosol that becomes suspended in the air around the site of the operation and which may contain virus, if the patient is infected. Such aerosols can come into contact with mucus membranes of personnel in the operating field and may infect such personnel with the virus or other infectious diseases.²

Such airborne viruses float around the operating room and may encounter and invade a dental practitioner in the operating room. In light of the deadliness of the virus and the need to remove virtually the entire virus-carrying aerosol produced in a dental procedure, present systems are inadequate.³

Although the prior art systems provide dental practitioners with some protection, the recent COVID-19 epidemic has produced the need for providing greater protection for

health care workers. The current technology is inadequate for this purpose.

Hence the present invention provides a protective kit for dental patients which provide a protective barrier to prevent aerosols transmission to dentist and assistants during dental treatment.

Object of the invention

Primary object of the present invention is to provide a protective barrier which prevents aerosols transmission to dentist and assistants during dental treatment procedures. Another object of the present invention is to provide a wearable and low-cost protective kit for dental patients.

The proposed invention is a protective barrier which is like a box type apparatus to prevent aerosols transmission during dental treatment procedures requiring use of drilling instrument like air-rotor or scalers. This invented protective box is helpful to prevent the aerosols transmitted to the dentist and assistants while treating patients with full precautions and safety.

A detachable box (fig 1) is made with stainless steel rod. There is provision for resting the box on the shoulder of the patient with the help of two horizontal rods with the bend. The whole box is covered with detachable cover made up of imperviable material (Fig 2). After placing box with cover on the patients, there is provision to tighten it around the neck which helps to restrict operating area and provide seal against leakage of aerosols. The front, right and left side of the cover is provided with transparent sheet for clear vision during treatment and the patient does not feel claustrophobic. Also, in case of suffocation, procedure can be stopped and after settlement of aerosol particles, operator can allow air to flow from inlets. It helps to confine the procedure to small area thereby preventing spread all over operating room. Two inlets with elastic in the lower front part is provided which allows the operator to place hand along with operating

equipment and provide tight seal around hand. There is one similar inlet each, in the side (left and right) and one on the top of the cover for the dentist and the assistant to operate in different operating positions and facilitate use of instruments like saliva ejector or suction tips (Fig 3). The inlets which are not in use can be closed with rubber bands to prevent aerosol leakage.

In the preferred embodiment the framework is auto cleavable or can be disinfected with the chemical disinfectant and the cover is either disposable or reusable.

Conclusion

Hence using the proposed protective kit can enhance the efficiency of the dental team in terms of time and efforts for disinfecting the complete operatory area. So, there is better and effective protection of the patients, doctors and assistants during and after dental procedure.

Reference

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Legend Figures



Figure 1

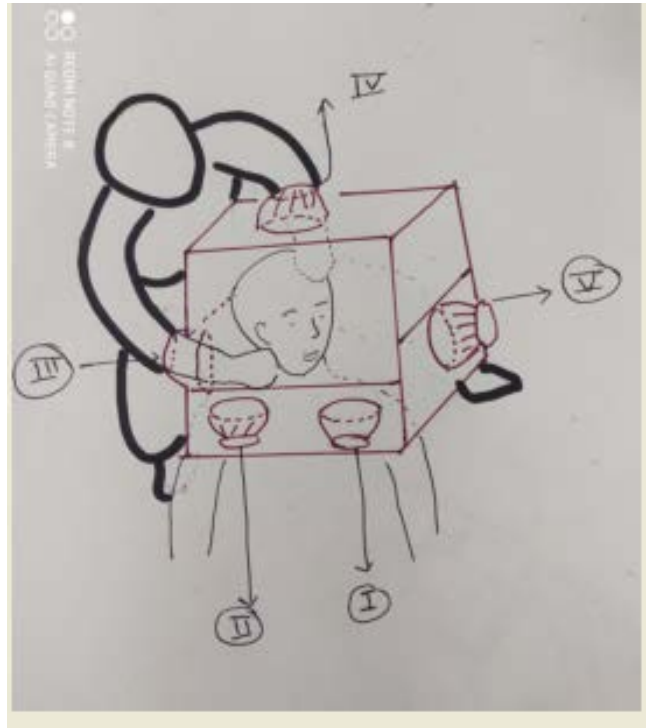


Figure 3



Figure 2