DISINFECTION OF DENTAL IMPRESSIONS PRIOR TO HANDLING AT MUHIMBILI NATIONAL HOSPITAL, TANZANIA.

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Abstract

Aim:To determine if impressions are disinfected prior to handling at the dental laboratory of the Muhimbili National Hospital.
Materials and Methods: A retrospective survey of received impressions at the Dental Laboratory [June 2004 to May 2005] was obtained from the register. To determine the percentage of impressions disinfected prior to their handling, accompanying work authorization vouchers and a structured questionnaire were used. All four dental technicians who handled the received impressions were interviewed. Questions asked were on practice and attitudes and responses were on different point scales. Results are based on information gathered from the dental technicians.
Results: Of the 1,453 impressions received none were reported to have been disinfected nor had disinfection been indicated on the accompanying work authorization prescriptions. The only protective gear worn by dental technicians was a laboratory coat and the known method of disinfection was placing of the taken impression under running water. Technicians were of the attitude that they should be responsible for ensuring impressions are disinfected prior to their handling. It was also agreed that a policy should be in place regarding disinfection of impressions prior to being handled and wearing protective gear should be compulsory.
Conclusions: Within the limits of this study, it was observed that none of the received impressions were chemically disinfected prior to handling and a laboratory coat was the only protective gear worn and could pose a risk of cross contamination at the dental laboratory of the Muhimbili National Hospital.

Key Words: Disinfection, Dental Impressions, Tanzania.

Introduction

Infected impressions made in the clinic are the potential route of transmission to dental laboratory personnel[1] and could act as a vehicle for the transfer of both bacteria and viruses.[2] The risk of microbiological transmission into the dental laboratory via dental stone models also exists [3]. There are about 40 infection hazards for the patient and dental personnel in the dental surgery[4], with Hepatitis B and the acquired immunodeficiency syndrome (AIDS) being few of the serious diseases because of their poor prognoses [5]. The increasing awareness of the latter (HIV/AIDS) has highlighted the need for adequate precautions against cross contamination and has caused many dental researchers and clinicians to become more interested in disinfection and sterilization procedures including that of dental impressions[6].

Since heat sterilization of impressions is not possible, because of the high temperature and time needed, disinfection is the method of choice.[7] The most popular chemicals used for disinfection are household bleach, chlorhexidine and glutaraldehyde.[8]Personnel and managers should be aware of the potential cross-contamination hazards posed by the presence of a range of opportunist pathogens in dental
technology laboratories, namely pumice slurry, impression agar and curing water baths [9]; hence all members of the dental team must bear the responsibility of ensuring adequate disinfection of dental impressions and appliances [4]. The aim of this study was to determine if impressions were disinfected prior to their handling at the dental laboratory of the Muhimbili National Hospital.

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Materials and Methods

A retrospective survey of received impressions at the Dental unit of Muhimbili National Hospital, Tanzania over a period of one year (June 2004 to May 2005) as obtained from the Dental Laboratory register. To determine the percentage of impressions disinfected prior to their handling accompanying work authorization prescription and a structured questionnaire were used.

All four dental technicians who had collectively handled the received impressions were interviewed. Questions asked were four n attitudes and seven on practices and responses were on different point scales (Table 1). Results are based on information that was gathered from four dental technicians.

Table 1. The questions

Quest. No.	Wording of question	Answer options
1.	Have you handled any dental impressions received at the dental laboratory during the study period that has been disinfected	Yes or No
2.	If yes, how many	-
3.	Dentist indicate on the accompanying work authorization prescription if the impression has been disinfected	Yes or No
4.	A policy exits in regard to method of disinfected of dental impressions prior to their handling	Yes or No
5.	Regardless of an impression being disinfected or not, I still handle it?	None Place under running water Use of chemical disinfectant
6.	Known method of disinfected practised	Laboratory coat Goggles Mask Gloves
7.	The type of protective gear worn when handling impressions is	Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree
8.	It is the responsibility of the dental technician to ensure that impressions are disinfected prior to their handling	Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree
9.	If an impression has been disinfected it should be indicated in the work authorization prescription	Strongly agree
10.	It is important to have a policy in regard to disinfected of impressions prior to them being handled	Agree Neither agree nor disagree Disagree Strongly disagree
11.	Regardless of impressions being disinfected or not, wearing of protective gear is important	Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

Results

Of the 1,453 impressions received at the dental unit during the study period (June 2004 to May 2005) none of the dental technicians reported any of the impressions to have been chemically disinfected. Neither had any of the dentists indicated on the accompanying work authorization if the impression had been disinfected. Despite an impression not being disinfected all the dental technicians reported to have handled the impressions wearing only a laboratory coat as protective gear. None of the technicians knew of any practiced policy in regard to method of disinfection of dental impressions prior to their handling. If at all practiced, the known method of disinfection was placing of the taken impression under running water.

All technicians had a positive attitude that it should be their responsibility to ensure impressions are disinfected prior to their handling and should be indicated on the work authorization prescription. Technicians were in agreement that a policy should be in place regarding disinfection of impressions prior to being handled and wearing protective gear should be compulsory.

Discussion

On receipt of an impression and work authorization prescription from a dental surgeon the dental laboratory technician is delegated the task of fabricating the desired prosthesis[10]. The work authorization prescriptions in use at the dental unit contain all other information except the information if impressions were disinfected prior to being sent to the dental laboratory [11].

Data collection had limitations as most of the required responses were not indicated on the work authorization prescriptions. Responses obtained from the four trained dental technologists at the Muhimbili National Hospital have been generalized and applied to all impressions received during the study period.

It has been reported that nearly all materials sent from dental offices to dental laboratories[1] or delivered appliances[12] are contaminated with bacteria and opportunistic pathogens which pose a risk of cross contamination. One of the cheapest and popular chemicals used for disinfection of dental impressions is household bleach[8]. It has been recommended[7] that the most effective means of disinfecting impressions is to immerse them in disinfectant solution (eg.) for 30 minutes. Other methods of disinfection include spraying with disinfectant and placing the impression in a sealed plastic bag according to manufacturer's recommended time or performing internal disinfection (replacing water with disinfectant before impression taking)[7].

Regardless of the disinfection technique used, it is strongly suggested that all impressions are thoroughly rinsed with water after disinfection to prevent incorporation of the disinfectant in the cast[13] which would otherwise lower the quality of the cast by softening it. In this study, none of the dental impressions or appliances was disinfected using any of the recommended methods of disinfection though sometimes the taken impressions were placed under running water prior to being sent to the laboratory. Hyde and McCord [14], however, classified washing of an impression under running tap water as disinfection and Sofou and co-woker's[3] reported no difference in the number of bacterial growth recorded regardless of impressions being disinfected or not. To date Tanzania has no policy in regard to handling of dental impression or who is responsible for the disinfection of impressions. If this specification was included in the work authorization prescription it would guide the technician in knowing if the impression had been disinfected and would ensure documentation. The lack of such policy could place the dental practitioner, technician and patient at risk of being a victim of cross contamination.

Conclusion

Within the limits of this study, it was observed that none of the received impressions were chemically disinfected prior to being handled and a laboratory coat was the only protective gear worn and could pose a risk of cross contamination in the dental laboratory of the Muhimbili National Hospital.

Recommendation

While handling dental impressions, wearing of protective gear has to be advocated so as to minimize cross contamination Randomized controlled trials need to be done to compare use of running water with various disinfectants on impression materials in order to determine the risk of cross contamination. A policy on handling of dental impressions is required.

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