Evaluation of the Efficacy of Aloevera, Sodium hypochlorite, Glutaraldehyde, Idophor and Phenol as Disinfectant on Irreversible hydrocolloid.

INTRODUCTION

Making of an impression is a routine procedure in the dental clinic that involves selection of an appropriate impression material and technique. The impressions will be then poured with dental stone for use as study models, or models and dies for the fabrication of appliances, indirect restorations and prostheses. An appropriate infection prevention protocol must be followed before, during and after impression taking to avoid cross-contamination and the risk of disease transmission.

Set impressions have been found to contain microorganisms – bacteria, fungi and viruses – following their removal from the patient’s mouth, through transport to the laboratory and have also been shown to transmit microorganisms into stone and plaster while models are being poured.\(^1\) As such, they represent a risk for disease transmission to dental healthcare workers, transporting personnel, and laboratory personnel through indirect contact. Therefore, an appropriate infection control protocol must be followed to prevent cross contamination and the transmission of disease.\(^2\)

An impression is made by placing a viscous impression material into the mouth via a custom or stock dental impression tray. The material, then sets on cooling or through a chemical reaction to become a solid, and, when removed from the mouth, provides a detailed and stable negative of teeth. A plethora of materials are available for the purpose of impression making, which is considered as one of the most important steps in prosthodontics. Each of these materials has certain advantages and disadvantages. An understanding of the
physical characteristics and limitations of each material is necessary for its successful use in clinical dentistry. The most commonly used materials for dental impressions are sodium alginate, polyether and silicones. In early days, plaster of Paris, zinc oxide eugenol and agar have been used.

Of all materials used for impressions, hydrocolloids and elastomers are the most important in this field. The hydrocolloids are subdivided in reversible and irreversible. Alginate is an example of irreversible hydrocolloid and is the most commonly used material in Dentistry since it is easy to manipulate, does not imply specialized equipment and is low-priced. Alginate is based on natural substance extracted from brown seaweed. As irreversible hydrocolloids are composed of 80% of water they are subject to the phenomena of imbibitions and syneresis.

Dental impressions become contaminated with the patient’s saliva, bacterial plaques, and blood. This offers a significant cross-infection vehicle for dangerous pathogens. The control of cross-infection is an imperative issue when dealing with dental impression materials and the lack of procedures for its control is currently a real problem. Irreversible hydrocolloid being partly organic, hydrophilic, irregular and porous in nature provides for retention and growth of microorganisms. Dental impressions need to be washed and disinfected immediately after making, to control transfer of infectious diseases from saliva and blood of the patient to dentists and technicians. It is now a requirement of standard cross-infection protocols that impressions are delivered to the laboratory after disinfection.

The routinely used disinfectants such as sodium hypochlorite, glutaraldehyde, phenol and iodophor have several deleterious effects on both health and environment which can include burning sensation of mouth and throat, irritation of eyes, watering of eyes etc. ALOE VERA has been used medicinally for a few thousand years and also finds vivid use in dentistry as well.
Amongst the various species of aloe vera, that are available the one with medicinal value is ALOEVERA BARBADENIS\textsuperscript{7}. The main advantage of use of aloe vera as a disinfectant is that it being a natural product has no or minimal side effects, easily available and most importantly being 100 percent biodegradable, does not cause any harm to the environment.

Hence this study is planned to evaluate the efficacy of aloe vera, sodium hypochlorite, glutaldehyde, idophor and phenol as disinfectant on irreversible hydrocolloid.