SDM
College of
Dental Sciences
& Hospital

"INFLUENCE OF STORAGE MEDIA AND DURATION OF FRAGMENT IN THE MEDIA ON THE BOND STRENGTH OF THE RE-ATTACHED TOOTH FRAGMENT- AN IN VITRO STUDY"

By

DR. JALANNAVAR PRASHANTKUMAR

Dissertation Submitted to the
Rajiv Gandhi University of Health Sciences, Karnataka, Bangalore

In partial fulfilment
of the requirements for the degree of

t-100H

MASTER OF DENTAL SURGERY

in

PEDODONTICS AND PREVENTIVE DENTISTRY

Under the guidance of

DR. ANAND. K. TAVARGER

PROFESSOR AND HEAD

DEPARTMENT OF PEDODONTICS AND PREVENTIVE DENTISTRY
S.D.M. COLLEGE OF DENTAL SCIENCES & HOSPITAL, DHARWAD.

April 2014

ABSTRACT

Background and Objectives: Fracture of anterior teeth by trauma is the most frequent type of injury in the permanent dentition, especially among children and young adolescents. With the advent of adhesive dentistry and storage of fragment, restoration of such traumatized incisors by reattachment of the original fragment is the most conservative treatment approach. So this in vitro study was conducted to evaluate the influence of storage media and duration of fragment in the media on the bond strength of the reattached fragment.

Method: 104 human maxillary central incisors were collected and tooth samples were randomly and equally divided into four groups of 26 teeth each and groups were further divided into two groups. Tooth samples were marked 3mm apical to the incisal edge. Then samples were sectioned using a diamond disk and stored in already labelled respective ice trays for storage media as follows:

STORAGE MEDIA	12 HOURS STORAGE	24 HOURS STORAGE
	Samples (n)	Samples (n)
TAP WATER	13	13
ARTIFICIAL SALIVA	13	13
SODIUM FLOURIDE	13	13
TOOTH MOUSSE	13	13

All the fragments were preserved in the respective storage media for 12 hours (A_1, B_1, C_1 and D_1) and 24 hours (A_2, B_2, C_2 and D_2) and teeth were stored in distilled water. Tap water was taken as a control group.

After 12 hours and 24 hours, all the fragments were reattached with respective apical portion of teeth using composite restorative material.

All the samples were mounted on an acrylic block up to 1mm apical to the cingulum. Then specimens were loaded on the universal strength testing machine & bond strength of each specimen was tested and measured in kiloNewton (kN) and collected data was tabulated using a Kruskal Wallis and Mann Whitney tests.

Results: Bond strength of Group D_1 (Tooth Mousse) at 12 hours and Group D_2 (Tooth Mousse) at 24 hours had significantly highest bond strength mean values than other groups. 24 hours duration had significantly highest bond strength mean values than 12 hours duration when compared.

Conclusion: Storage of fragment plays a vital role in the enhancement of bond strength of reattached fragment. Storage media which is rich in calcium i,e Tooth Mousse has significant effect on the bond strength of reattached fragment compared with Sodium Fluoride, Artificial Saliva and Tap Water. The force required to fracture the fragments kept for 24 hours duration in the storage media was significantly higher than 12 hours storage duration.

Keywords: *Reattachment; storage media; bond strength*