

Comparison Of Working Time In Placement Of Rubber Dam Sheets Using Different Punching Techniques

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ABSTRACT

Introduction: A dental dam or rubber dam is a thin sheet of 6 inch usually made up of latex or nitrile. It is used in the field of dentistry to isolate the operative tooth from the rest of the mouth. There are many advantages of using rubber dams on teeth such as isolation, visibility, protection, reduction of time while following a procedure.

Materials and methods: For this study rubber dam sheets, template, punching machine, forceps, clamps, typodont and markers were used. 20 students were asked to punch once, twice and then thrice of marked size of tooth on the separate rubber dam, place it on the typodont and then clamp with forceps. This time of placement of all 3 procedures were recorded respectively. Comparison of working time in placement was done between the three punching techniques.

Results: On placement of rubber dam with one punch, two punches and three punches on to the tooth, working time of placement of three punches was found to be less when compared to the other two punches.

Conclusion: Rubber dam is considered to be used in the treatment of the tooth. On comparison of working time in placement of rubber dam using different punching techniques, the rubber dam with three punches was found to be less.

Keywords: Rubber dam sheet, punching techniques, elasticity and working time.

INTRODUCTION

Rubber dam technique is the method used in dentistry to isolate the operating field from the rest of the mouth with a rubber sheet [1]. It was introduced in dental practice by Dr Sanford Barnum in 1864 [2]. It has been introduced to endodontics over the past 120 years [3]. The technique used to apply the dental dam is selected according to the tooth requiring treatment [4]. Several techniques can be used including single tooth isolation, multiple tooth isolation or split dam technique [5]. It is still the most ideal means of isolation till date [6]. Rubber dam prevents contamination of the operating field from invasion of saliva, blood, or gingival crevicular fluid [7]. Its use provides better control of cross-infection, prevents soft tissue damage, contact of soft tissue with chemicals, and improves treatment efficiency [8].

Rubber dams are usually made of latex, with natural rubber as the raw material [9]. The physical properties of latex make it very suitable for isolation of the tooth crown from the oral cavity, providing a tight seal [10]. Excellent elasticity of latex is the key factor for easy and successful use of rubber dams [11]. Rubber dam is stretched over the clamp jaws [12]. At this point, the rubber dam should be seated below the jaws of the clamp and sealed at the tooth's cervical portion [13]. The dam is placed between each tooth [14]. Many unfounded reasons have been cited for its lack of use [15], including concerns over patient acceptance [16], time required for application [17], cost of equipment and materials [18], insufficient training [19], difficulty in use and low treatment fees [20]. The contradiction of rubber dams in isolation of multiple teeth is incorrect placement of sites for punching holes [21].

The stability of the RD basically depends on the selection of a properly fitting clamp corresponding to the tooth and its accurate positioning [22]. The dentist can select the proper rubber dam clamp by using a method that is based on measurement of the tooth [23]. Rubber dam clamp is placed with the help of rubber dam forceps according to the size of the clamp [24]. Hence, the aim of this study is to compare the working time in placement of rubber dam sheets using different punching techniques to overcome all the difficulties which limits its use in the dental practice.

MATERIALS AND METHODS

In this study rubber dam sheets, template, punching machine, forceps, clamps, typodont and markers were used. 20 students were told to mark and punch a molar size hole on the rubber dam sheet with the help of marker and punching machine and place it on the typodont, and then they were asked to place the clamp of the molar size on the rubber dam to

hold the tooth with the help of forceps. The time for the placement of rubber dams with one punch, double punch and tripod punch techniques were recorded separately. The time taken for the three techniques were then compared respectively.

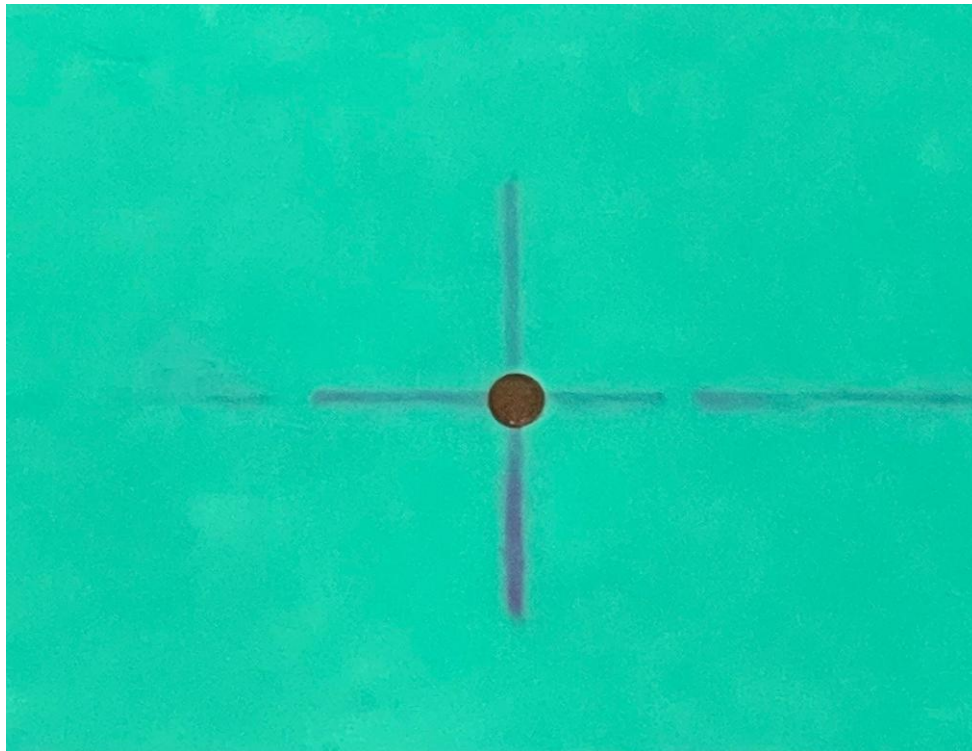


Figure 1: Rubber dam with one punch technique.



Figure 2: Rubber dam with two punch techniques.



Figure 3: Rubber dam with three punch technique.



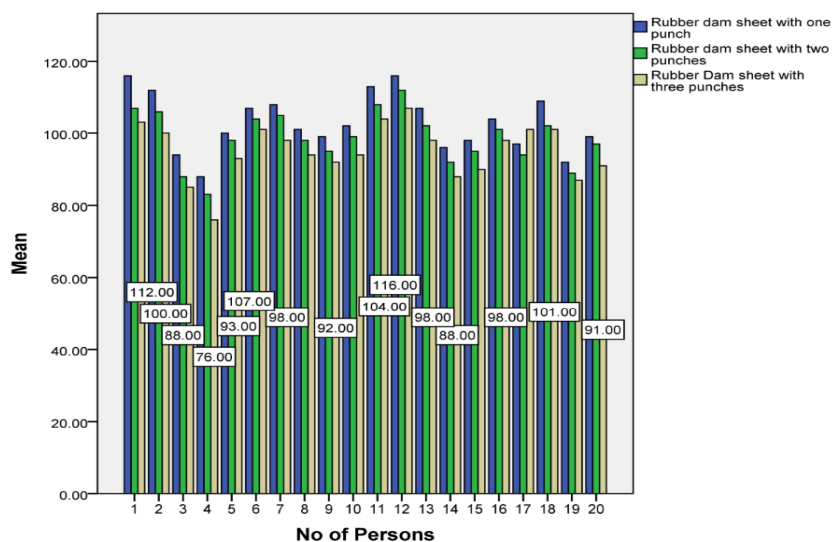
Figure 4: Placement of rubber dam to the teeth.

RESULTS

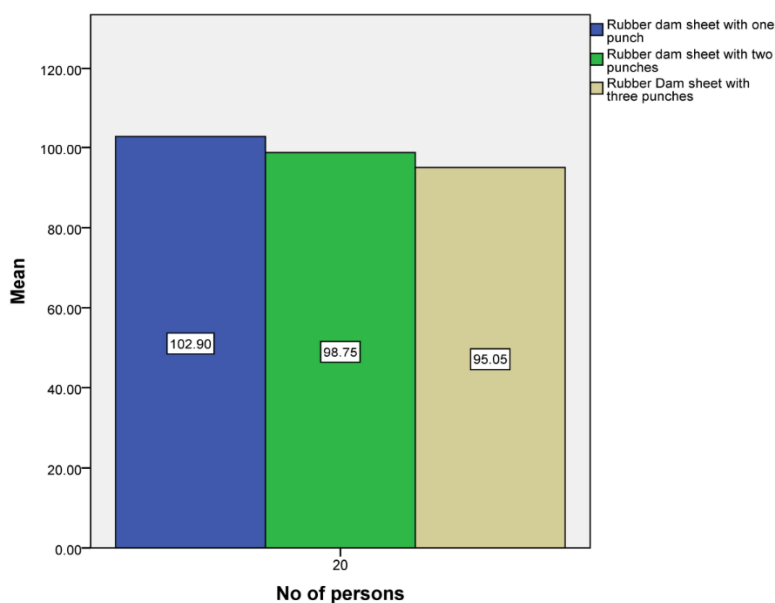
20 people were asked to punch once, twice, thrice on a rubber dam sheet and place it on tooth properly with clamp by a clamp holder, their time required for the placement was recorded. In comparison with time, three punches made on rubber dam sheet and its placement with clamp on tooth took less time than two punches followed by one punch. As shown in the first graph blue color depicts rubber dam sheet with one, green depicts rubber dam sheet with two punches and yellow

rubber dam sheet with three punches individually. Blue color was seen the highest, followed by green color and then yellow color according to the time consumed by the persons. In the second graph, mean time was taken on average of 20 persons.

As in the first graph, the colours coded remains the same. Blue color coded for rubber dam sheet with one punch the percentage of time calculated was said to be 102.90, green color coded for rubber dam sheet with two punches the percentage of time calculated was said to be 98.75 and yellow color for rubber dam sheet with three punches the percentage of time calculated was said to be 95.05, which was seen to be significantly reduced in response to time.



Graph 1: x-axis represents the number of persons performed the study individually. The Y-axis represents the number of seconds to punch and place on the tooth with clamp. Blue represents the rubber dam sheet with one punch. Green represents the rubber dam sheet with two punches. Yellow represents the rubber dam sheet with three punches. Comparatively for the one, two , three punches the time required in placing the rubber dam with clamp has been reduced for every person.



Graph 2: x-axis represents the number of persons performed the study. The Y-axis represents the number of seconds, on average, to punch and place on the tooth with clamp. Blue represents the rubber dam sheet with one punch. Green represents the rubber dam sheet with two punches. Yellow represents the rubber dam sheet with three punches.

Comparatively for the one, two, three punches the time required in placing the rubber dam with clamp has been reduced on average.

DISCUSSION

For restorative dental treatments involving acid etch techniques, application of rubber dam is indicated [25]. Rubber dam is found to be reliable in application because of its simplicity and its flexibility [26]. It is effective in control of invasion of microorganisms and moisture [27]. Use of rubber dams indicated 70 to 88% of reduction in microorganisms when tested [28]. Rubber dams were also found to be useful in preventing cross contamination and reduction in spread of communicable diseases [29]. Proper isolation using the rubber dam is the first stepping stone for the success of any dental procedure [30]. Punching the holes at the proper place and placing the rubber dam sheet on the tooth is the essential step of the whole procedure [31]. The dry field and proper separation of the tooth helps in doing efficient treatment for the patient [32]. The use of rubber dams with association of irrigants, instruments and radiographic techniques is found to be an indicator of good practice in endodontics [33].

In a study by Bhavin Bhuva concluded that the rubber dam usage should be universally implemented in treating all the endodontic cases [34]. There are no articles or findings opposing this statement.

In another study by Shanon Patel et al, showcases the importance of using rubber dams in reducing the contamination of the aerosols, reducing the time of the treatment as well as increasing the quality of the treatment [35]. There are other articles supporting this statement.

In another study conducted by Isabel. C, rubber dams were found to be superior compared to cotton rolls in primary molars for composite restorations [36]. There are no articles opposing this statement.

From the above statements it can be evident that rubber dams are important in daily clinical practice and can be used in proper isolation of teeth.

CONCLUSION

Rubber dam when punched with once, twice and thrice, the working time and placement time of rubber dam with three punches was noted to be less compared to one punch and two punches and the effort in placement of rubber dam to the tooth was considered less. By this, we can conclude that by punching thrice on the rubber dam, the time and effort of placement of rubber dam was made easier to the routine one punch technique, which is useful for the dentists in treatment for an isolated tooth.

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