

Knowledge and Practice of Rubber Dam Usage among Dental Practitioners

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Abstract

Background: The purpose of the present study is to determine the rubber dam usage among dental practitioners, specifically focusing on endodontic treatment, evaluate the problems they encountered, and gather information about their prospective presumptions about using it in future. **Aim:** The aim of this study is to evaluate the information regarding the use of rubber dam among dental practitioners. **Materials and Methods:** The usage of rubber dam use has been quantified based on the questionnaires which were distributed to dental practitioners. Questions were asked about areas where the practitioners used rubber dam, its advantages and difficulties, and whether they agreed or disagreed with some aspects of the rubber dam. The questionnaire was then collected and evaluated. Descriptive statistics were calculated. **Results:** About 78% of the dental practitioners have adequate and satisfactory education regarding the use of rubber dam. **Conclusion:** Rubber dam makes dentistry easier, faster, safer, and more satisfying for the operator. This research concludes that it is necessary to increase the knowledge and awareness of dental practitioners about the rubber dam and its application

Keywords: Clinical practice, practitioners, rubber dam

INTRODUCTION

A dental dam or rubber dam, designed in the U. S. in 1864 by Sanford Christie Barnum,^[1] is a thin, 6" square sheet usually latex or nitrile, used in dentistry to isolate the operative site (one or more teeth) from the rest of the mouth. It is used mainly in endodontic, fixed prosthodontics (crowns, bridges), and general restorative treatments. Its purpose is both to prevent saliva interfering with the dental work (e.g., contamination of oral micro-organisms during root canal therapy, or to keep filling materials such as composite dry during placement and curing), and to prevent instruments and materials from being inhaled, swallowed, or damaging the mouth. In dentistry, the use of a rubber dam is sometimes referred to as isolation.^[2]

The advantages and absolute necessity of the rubber dam must always take precedence over convenience and expediency (a rationale often cited by clinicians who avoid its use).^[3] When properly placed, the rubber dam facilitates treatment by isolating the tooth from obstacles (saliva, tongue, lips, and cheeks) that can disrupt any procedure. Salient advantages of using rubber dam in endodontics include patient protection from aspiration of endodontic instruments^[2,4] tooth debris,

medicaments, and irrigating solutions.^[5] It improves visibility and helps in soft-tissue retraction and protection, thereby increasing efficiency. A surgically clean operating field is isolated from saliva, hemorrhage, and other tissue fluids. The dam reduces the cross-contamination of the root canal system, and it provides an excellent barrier to the potential spread of infection. The rubber dam minimizes patient conversation during treatment and the need for frequent rinsing. Clinician is protected from litigation because of aspiration or swallowing of an endodontic file by the patient.

Rubber dam offers an excellent means of infection control during dental treatment by mainly reducing bacterial contamination of any dental preparations or root canal systems.^[6,7] Furthermore, rubber dam prevents the transmission of any infectious agents. The rubber dam has been considered as a standard of care during operative and endodontic procedures,

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because of its many advantages.^[8,9] Rubber dam provides an infection control barrier during dental procedures by reducing the bacterial contamination of any dental preparation and root canal system.^[10,11] It also provides an infection control barrier for the dentists and patients by preventing the transmission of any infectious agent between them.

The purpose of this survey was to assess the usage of rubber dam among general dental practitioners and to analyze the different aspects of rubber dam usage in routine endodontic treatment.

MATERIALS AND METHODS

A cross-sectional questionnaire study was conducted among 100 dental practitioners, in Chennai. Convenient sampling methodology was used and the practitioners willing to participate and those who were present on the day of the survey were included in the study. Those practitioners not willing to participate in the survey were excluded from the study.

A self-administered questionnaire containing the items about the attitude and opinions of practitioners toward the usage of rubber dam was designed. Then, the questionnaire was piloted and distributed to 100 practitioners, and information about the opinions and attitudes of dentists toward the use of rubber dam were collected. Information related to the year of graduation, practice type and gender of the respondents, use of rubber dam in operative and endodontic procedures, practitioners' attitude to the use of rubber dam, and information related to dentist's reasons for using or not using rubber dam were sought in the questionnaire. The collected data were statistically analyzed. If the questionnaire was not filled completely, it was not excluded as a whole, and the completely filled questionnaire was taken into consideration in statistical analysis. Descriptive statistics were used to give the frequency and percentage distribution of the data.

RESULTS

About 78% of the dental practitioners have adequate and satisfactory education regarding the use of rubber dam. The greatest advantage offered by the rubber dam is the provision of isolation and an aseptic working area, prevention of swallowing or aspirating instruments, and prevention of ingestion of irritants [Figure 1]. Around 58% of practitioners accept that rubber dam is difficult to apply and the major factor for this is a selection of the clamp and its adaptation, placement of the rubber dam, and frame. About 58% of the dental practitioners find that rubber dam is difficult to apply. About 86% of the practitioners use it only during restorative procedures [Table 1]. Rubber dam is more necessary while working in the mandible (59%) than maxilla (31%). The rubber dam usage is extensively limited by 23% in third molar, 23% in malposed tooth, 18% in latex allergy patients, 13% in fractured tooth, and 18% in root stump [Table 2].

The major factors that make rubber dam application a difficult procedure are a selection of the clamp and its adaptation (54%),

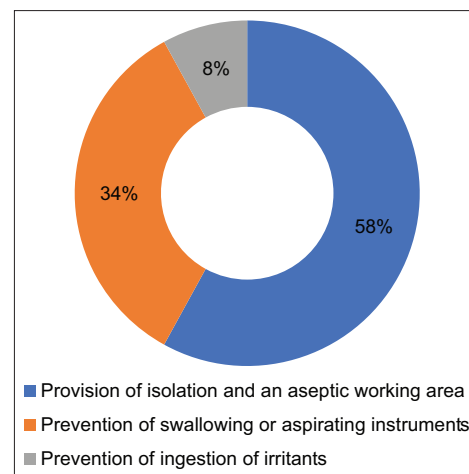


Figure 1: Study participants responses regarding the greatest advantage offered by the rubber dam

placement of the rubber dam (36%), and placement of the frame (10%) [Figure 2]. About 41% of dental practitioners use dam and clamp together method, rubber dam's first method is 34%, and clamp first method (25%). Around 86% of the dental practitioners use rubber dam during restorative procedures. Endodontic treatment can be used during access cavity preparation, root canal shaping, root canal filling, following anesthesia, and identification of root canal orifices [Table 3]. About 39% of undergraduate practitioners responded that they intended to use rubber dam during all procedures, 43% of the practitioners intended to use it only during restorative procedures and 18% of them intended to use only during root canal treatment.

In the present study, 72% of the practitioners said that rubber dam usage shortens the treatment duration, whereas 28% of the practitioners reported that rubber dam usage extends the duration of treatment [Figure 3]. In the study, 82% of the practitioners preferred to use winged clamps and 18% of them preferred wingless.

DISCUSSION

Rubber dam is mostly used for root canal treatment and the placement of composite fillings.^[12,13] The frequency of rubber dam usage increases significantly with increasing percentage of direct payments. Dentists are motivated more to use rubber dam as a quality standard method of operation field isolation in treatment. Barriers to the use of rubber dam apparently include lack of experience, underestimation of its benefits, and a lack of motivation^[14] Another reason is that the amount of time required to place rubber dam is often overestimated.^[15] Furthermore, dentists are often concerned that patients will not tolerate rubber dam.^[16] If instructed properly, most patients tolerate rubber dam very well; many of them even find treatment with rubber dam more comfortable and bearable.^[17] Another disadvantage of rubber dam has been reported as the difficulty of mounting radiographs in the proper position with the dam in place. On the other hand, the removal of the

Table 1: Distribution of study participants based on their attitude towards rubber dam usage

Questions	Responses given by the study participants	
	Yes (%)	No (%)
Do you think rubber dam consist of too many components?	44	56
Do you think you have been given adequate and satisfactory education regarding rubber dam?	78	22
Do you use rubber dam during restorative procedures?	86	14
Rubber dam is difficult to apply	58	42

Table 2: Distribution of study population based on their rubber dam usage during endodontic treatment

Responses by study participants	Percentage
Third molar	23
Malposed tooth	23
Latex allergy patients	18
Fractured tooth	13
When only root stump is present	18
Others	5

Table 3: Distribution of study population based on their opinion about limitation of rubber dam usage

Responses by study participants	Percentage
Following anesthesia	32
During access cavity preparation	35
Following identification of root canal orifices	17
During root canal shaping	9
During root canal filling	7

dam during radiography cannot be accepted as this step is specifically performed with an instrument within the root canal to determine the working length. During this step, the patient is generally left alone at the radiography site and there is no possibility of intervention in case of hazards occur. Therefore, radiographs should definitely be taken with the rubber dam placed in position. In other countries like Belgium, 64.5% of practitioners did not use rubber dam routinely, whereas only a very minor proportion (3.4%) believed rubber dam to be a standard procedure.^[18] Stewardson and McHugh also indicated that the experience of the dentist and their level of skill influence the patient’s opinion and suggested that proficiency regarding the utilization of rubber dam must be gained through frequent usage. Whitworth *et al.* stated that the negative perception regarding patients’ dislike toward rubber dam may be related more strongly to practitioner attitude. In general, the presence of latex allergy was not asked to the patients by almost half of the practitioners, higher than the ratio reported by Mala *et al.* This result may suggest that more attention must be directed toward the possibility of latex allergy prior to application of the rubber dam considering some cases published.^[13] The high percentage of practitioners who did not use rubber dam for child patients (89.1%) also exceeded the ratio (68%) reported by Mala *et al.*^[13] This issue, however, needs to be considered from a pedodontic standpoint,

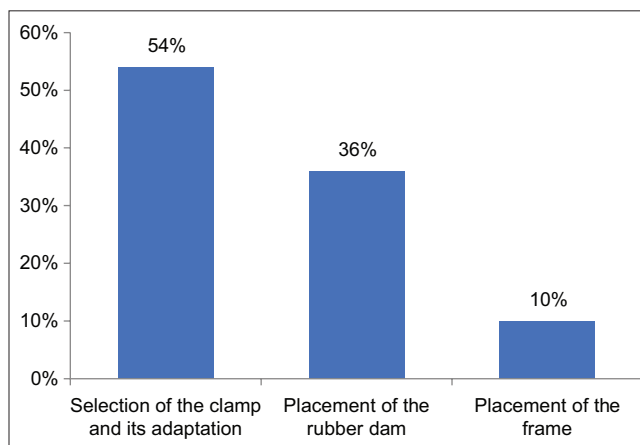


Figure 2: Distribution of practitioners with regard to factor that makes rubber dam application a difficult procedure

probably in a future study focusing on this group of patients. Recently, there has been increasing effort to implement a malpractice law in the country, encompassing all health-care givers. This will necessitate taking more intensive measures by both practitioners as well as authorities for the provision of patient. Unlike the reasons cited by Marshall and Page (1990) in their study,^[8] for not using rubber dam, the main reasons mentioned in our survey by the private practitioners in the UAE were patient discomfort minutes.^[19] In addition, the extra time spent in placing the dam is more than compensated with better working conditions offered by the dam including controlling the saliva contamination and eliminating the need to frequently change cotton rolls as well as limiting the movements of the patient’s tongue and lips. As it is already evident that rubber dam may reduce the incidence of posttreatment disease during root canal treatment.^[20] The use of rubber dam in root canal procedures is considered the minimum safety standard of care.^[21] The importance of the safety of the rubber dam is highlighted by the list of endodontic instruments that have been ingested or inhaled. Despite this, performing endodontic treatment without the rubber dam risks harming the patient and is considered legally indefensible.^[21]

CONCLUSION

It must be necessary to increase the awareness of dental practitioners to the benefits of rubber dam use by means of continuing education and stressing on its importance in studies. Rubber dam is mostly used for endodontic treatment and for the

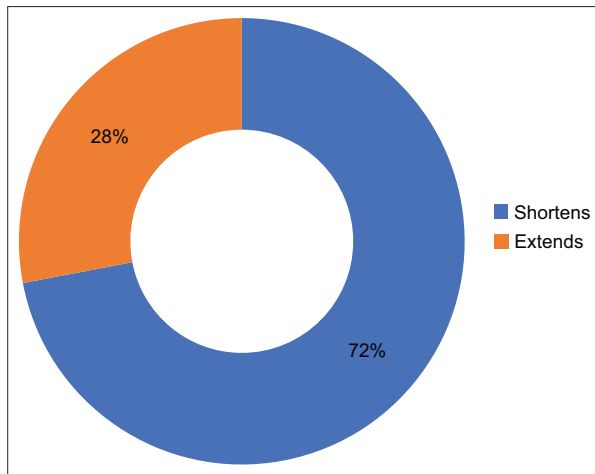


Figure 3: Responses of practitioners for the question, “rubber dam shortens/extends treatment Duration”

placement of composite fillings. Rubber dam makes dentistry easier, faster, safer, and more satisfying for the operator. It allows the practitioner to deliver a better quality of care and improved patient comfort.

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Conflicts of interest

There are no conflicts of interest.

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