Rubber Dam Refresher for COVID-19

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RUBBER DAM: THE NEW NORMAL

COVID-19
COVID-19 TRANSMISSION

Summary of ADA Guidance During the COVID-19 Crisis

The COVID-19 pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has caused major disruption in the lives of dental teams in the USA and many other dental associations have updated their guidelines to reflect new emergency mandates. Some states or local governments have mandated that the ADA continues to urge dental offices to follow closure recommendations. Safety of the dental team and patients or people accompanying patients is essential while treating emergency patients and following this crisis.

COVID-19 is different from the flu, and the common cold and SARS-1 and may require different precautions than dental teams have been employing since the early 1980s.

The emerging science is indicating that:

- COVID-19 is “stickier” than previously seen viruses — infection is easier
- COVID-19 causes serious symptoms in persons over 65, and those with underlying medical conditions
- COVID-19 can be spread through an airborne route, meaning that tiny droplets remaining in the air could cause disease if others even after the infectious is no longer in the air
- COVID-19 may be spread through aerosols generated by high and low speed handpieces, ultrasonic scalers, air/water syringes, or an infected patient coughing, and even when taking into oral radiographs
- Individuals infected with COVID-19 may be shedding virus and communicating the disease even before they show symptoms, including transmission through saliva
- Children may be asymptomatic and infectious
- COVID-19 remains an environmental concern for various periods of time, including indoor and outdoor settings, as found in the dental offices.

This has various implications for the dental team, in terms of personal protective equipment (PPE), treatment- and droplet- and droplet-transmission and treatment of patients. It is important that dental and medical teams thoroughly understand the risks of infecting patients, the need to continue treating patients with emergency and health issues, as they may present in hospital emergency rooms or emergency rooms, and the realities of what PPE is available to dental practices.

During the active COVID-19 crisis and beyond, risk must be minimized during dental treatment:

- Gowns for dental emergencies using isolation or other remote methodologies, minimizing the risk of transmission
- Fully utilize available PPE, understanding that surgical masks, which do not seal around the nose and mouth, are not adequate in completely spread aerosol-based transmittance
- Take extreme precautions wherever possible; minimal techniques may reduce coughing
- Reduce aerosol production as much as possible through use of hand instrumentation and employment of dental dam and high-speed suction
- N95 masks with gaskets and respiratory masks or respiratory masks in clusters, with the N95 mask should be worn when seeing patients in close proximity to their respiratory system, as similar to the protocol for medical teams performing intensive care. If N95 masks are not available, a surgical FFA-approved mask must be worn for each patient and not re-used, in conjunction with proper utilization of gowns, gowns, and gloves.
WHAT DOES THE EMERGING SCIENCE ON COVID-19 TELL US AS DENTAL PROVIDERS?

Covid-19 is different from the flu, the common cold and SARS-1 and may require different precautions than dental teams have been employing since the early 1980s.
While rubber dams have always played a critical role in patient safety, operative field isolation, and tissue retraction, the ADA and CDC recommend rubber dam use with a high volume saliva ejector to reduce the spread of highly contagious COVID-19.
HISTORY

Dr. Sanford C Barnum
March 15, 1864
AEROSOL CROSS-INFECTION
DROPLET VS. AEROSOL

Judson 2019
Results

When hand-pieces or ultrasonic devices must be used, the use of a rubber dam is indicated as this significantly reduces the amount of aerosol containing saliva and/or blood, providing a 70% reduction of droplets.

The efficacy of the rubber dam as a barrier to the spread of microorganisms during dental treatment

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Results

When all data were combined there was a reduction in microorganisms by 90% to 98%.
During many general procedures, the use of a rubber dam will eliminate virtually all contamination arising from saliva or blood. If a rubber dam can be used, the only remaining source for airborne contamination is from the tooth that is undergoing treatment.
The use of rubber dam results in a significant reduction in the microbial content of air turbine aerosols produced during operative procedures, thereby reducing the risk of cross-infection in the dental practice.

INCENTIVES OF RUBBER DAM USE

- Protects the patient’s oropharynx from possible aspiration or swallowing of instruments
- Retracts and protects the soft tissues
- Improving the access to operating field by retraction of soft tissues.
- Improving visibility by providing a dry field, reducing mirror fogging and enhancing visual contrast.
- Facilitating the practice of four handed dentistry.
- Reducing flooding of the oral cavity with fluids
- Minimizing patient’s conversation during treatment and encouraging them to maintaining their mouths open.
Rubber dam placement is not universal.
Rubber dam use during routine operative dentistry procedures: findings from The Dental PBRN

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SUMMARY

Rubber dam use during operative dentistry procedures has been questioned based on questionnaires completed by dentists. However, to our knowledge there are no reports based on use during actual clinical procedures other than in dental materials studies, and none based on routine care. Our objectives were to: (1) quantify how commonly the rubber dam is used during operative dentistry procedures; (2) test the hypothesis that certain dentist, restorative, and patient-level factors are associated with its use.

A total of 129 dentist-practitioner-investigators in "The Dental Practice-Based Research Network (DPRBN)", participated. DPRBN comprises five regions: Alabama, Mississippi, Florida, Georgia, Maryland, Pennsylvania Dental Associates, and Scandinavia. Practitioner-investigators collected data on 9,190 consecutive restorations done in previously untreated tooth surfaces in 5,616 patients.

Most dentists (65%) did not use a rubber dam for any restoration in the study. A rubber dam was used for only 12% of restorations, 83% of which were used in our DPRBN region. With region accounted for, no other dentist characteristics were significant. A multi-level multiple logistic regression of rubber dam use was done with restorations, and patient-level variables modeled simultaneously. In this multi-variable context, these restoration-level characteristics were statistically significant: tooth-arch type, restoration classification, and reason for placing the restoration. These patient-level characteristics were statistically significant: ethnicity, dental insurance, and age.

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The DPRBN Collaborative Group comprises private practitioners, faculty investigators, and staff investigators who contributed to the DPRBN activity. A list of these persons is at http://www.dphi.org/pubs/publications/Dental.aspx
Results

63% of dentists did not use a rubber dam for any restoration in the study.
RESULTS

77% of dentists reported never using a rubber dam when placing an amalgam in posterior teeth, 59% never use a rubber dam when placing anterior composite restorations, and 52% never use a rubber dam for posterior composites.
Rubber dam use during root canal treatment

Findings from The Dental Practice-Based Research Network

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The rubber dam has been used in dental care for decades. It is considered the reference standard in root canal treatment (RCT) because of the advantages that it offers with regard to infection control, patient protection and treatment efficacy. Nonetheless, its use during RCT is hardly ubiquitous; studies have observed wide ranges of usage. The results of the small number of studies of dentists in the United States have shown low usage rates. The investigators of the most recent study found that 11 percent of general dentists never used a rubber dam during RCT and only 58 percent used one during every RCT. The results of a study in England regarding whether dentists used other isolation methods during RCT showed that the use of cotton rolls without a rubber dam also was common.

The Dental Practice-Based Research Network (DPBRN) was a consortium of dental practices with a broad representation of practice types, dentists and treatment philosophies that conducted research with the ultimate goal of improving patient care and outcomes in oral health care. The DPBRN conducted a study to investigate whether certain procedures were performed routinely. The authors conducted a study to quantify rubber dam use during root canal treatment (RCT) among general dentists and to test the hypothesis that certain dentist or practice characteristics were associated with rubber dam use.

Methods. DPBRN practitioner-investigators (P-I) answered a questionnaire that included items about rubber dam use and other forms of isolation during RCT. DPBRN enrollment questionnaire data provided information regarding practitioner and practice characteristics.

Results. A total of 729 (74 percent) of 991 P-I responded; 524 were general dentists who reported providing at least some RCTs and reported the percentage of RCTs for which they used a rubber dam. Of these 524 P-I, 44 percent used a rubber dam for all RCTs, 24 percent used it for 21 to 99 percent of RCTs, 17 percent used it for 1 to 50 percent of RCTs, and 15 percent never used it during RCT. Usage varied significantly by geographic region and practice type.

Conclusions. Similar to other reports in the literature, not all DPBRN general dentists used a rubber dam during RCT.

Clinical Implications. Because the clinical reference standard is to use a rubber dam during RCT, increasing its use may be important.

Key Words: Rubber dam; root canal treatment; practice-based research; dentists.


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LOW RUBBER DAM USAGE RATE


isolation of teeth and their surrounding areas.

of isolation of the operating field has not been ascertained. Further studies of these factors would be warranted.
“PROBABLY NO OTHER TECHNIQUE, TREATMENT OR INSTRUMENT USED IN DENTISTRY IS SO UNIVERSALLY ACCEPTED AND ADVOCATED BY THE RECOGNIZED AUTHORITIES AND SO IGNORED BY THE PRACTICING DENTISTS”

DISINCENTIVES OF RUBBER DAM USE

- Perceived inconvenience
- Perceived as unnecessary
- Inexperience
- Lack of practice and habit - haven’t use it since dental school
- Lack of confidence in rubber dam use
- Difficulty taking radiographs
- Staff unfamiliar with its use
- Difficulty in swallowing
- No one else recommends it in practice
- Patient’s don’t like the rubber dam
A dental or rubber dam, also known as a lip retractor, is a thin, six-inch, latex or nitrile square sheet that is used in dentistry as a shield to isolate one or more teeth from the remainder of the mouth during a dental procedure. The rubber dam is used in dentistry mainly for endodontic, fixed prosthodontic (crowns and bridges), and restorative procedures. Aside from isolating the treatment or operative site, the purpose of the rubber dam is to prevent saliva from interfering with the dental work, such as contamination of oral mucous membranes 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 aspirated, swallowed, or damaging the mouth.” Consider this analogy: A doctor uses surgical drapes to isolate the area of the body being operated on to prevent bacterial contamination from occurring.
DISINCENTIVES OF RUBBER DAM USE?

“First do no harm”
Rubber Dam Placement

Tips and Tricks to Make Rubber Dam Placement Efficient For Both The Patient and the Clinician

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Rubber Dam Advantages

- Material acts as a barrier
- Only selected teeth are visible through the dam
- Infection control barrier
- Safeguard for the patient’s mouth
- Protection from accidental inhalation/swallowing of debris
- Protection from contamination for the tooth
- Moisture control device
- Improves access and opens field of vision
- Increase efficiency
CONTRAINDICATIONS

- Patients with severe asthma.
- Patients that can’t breathe through nose.
- Teeth that aren’t fully erupted & can’t hold clamp.
- Child that is unable to understand directions to breath through their nose.
RUBBER DAM

Educating Patients is Key

- EXPLAIN RUBBER DAM TO PATIENT IN TERMS THEY CAN UNDERSTAND

- BENEFITS
  - EASIER ON PATIENT
  - LONGER SUCCESS FOR TREATMENT
  - LESS WORRY ABOUT EXCESS WATER IN ORAL CAVITY
Rubber Dam Material

- Latex or latex-free material
- Two precut sizes (6×6 inches for adults and 5×5 inches for children)
- Available in a wide range of colors, from light to dark (dark is preferred because of the contrast)
- Available in various scents and flavors
- Three thicknesses (gauges): thin (light), medium, and heavy
Rubber Dam Frame

- Stabilizes and stretches the dam so it fits tightly around the teeth and out of the operator’s way
- Available in various plastic and metal frames
  - U-shaped frame
  - Young frame
  - Otsby frame
- Napkin
Rubber Dam

Template and Stamp

Dental Dam Stamp and Template

The dental dam stamp and inkpad are used to mark the dental dam with predetermined markings for the average adult and pediatric arches.

- Use of a dental dam template, which has holes where the teeth should be marked, provides greater flexibility when one or more teeth are out of alignment.
Rubber Dam Punch

- Working end has adjustable stylus and punch plate with 5 to 6 holes
- Hole sizes range from large to small
Rubber Dam

Forceps

Used in the placement and removal of the dental dam clamp

- The beaks of the forceps fit into holes on the jaws of the clamp
- A sliding bar keeps the handles of the forceps in a fixed position
- The handles are squeezed to release the clamp
- The beaks of the forceps are turned toward the arch being isolated
• Rubber Dam Stencil or Stamp
• Rubber Dam Forceps
• Rubber Dam Punch

• Rubber Dam Clamp
• Cord Packing or Composite Instrument

• Patient Rubber Dam Napkin
• Floss or Wedget
• Scissors
Retainers / Clamps

Clamps are identified by numbers

Two Types:

• Winged
  have projections at the jaws

• Wingless
  is designated by a “W” which precedes its number

The bow of the clamp is positioned on the distal of the tooth

An “A” following the number identifies a clamp with subgingival jaws
Premolar:
Use a small, flat-jawed clamp, (i.e. #00, #2)
or curved-jawed clamp (#1) for maxillary premolar
Mandibular Molar:
Use a flat-jawed clamp, (i.e. #3, #7)
Maxillary Molar:
Use a clamp with curved jaws (i.e. #8, #56, #4)
RUBBER DAM PLACEMENT

Rubber Dam Placement

• DAM FIRST

Rubber Dam Placement

CLAMP FIRST
RUBBER DAM

Steps For Placement

- Determine area to be isolated
- Match curve of arch to patient and location of teeth
- Determine Rubber Dam Clamp to be used
- Punch Rubber Dam material
- Place Rubber Dam
- Invert Rubber Dam
- Place Saliva ejector under Rubber Dam to aide with excess oral fluids
Rubber Dam Tips and Tricks
RUBBER DAM CLAMP PLACEMENT
Loading Rubber Dam Clamp W/Single Tooth Endo Placement

**Difficult to do this method with a non winged clamp.**
NO CLAMP PLACEMENT W/WEDGET AND RUBBER DAM MATERIAL (ANTERIOR)
RUBBER DAM PLACEMENT

Trick for patient comfort
Rubber Dam Placement Anterior Clamp

**Ortho wax or sticky wax works best to stabilize clamp**
References

- https://decisionsindentistry.com/article/transmission-precautions-for-dental-aerosols/
- https://iits.dentistry.utoronto.ca/rubber-dam-isolation
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