

# RUBBER DAM ISOLATION – WHEN AND WHY TO USE IT? PART 1

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First described by Dr Barnum over 150 years ago, the rubber dam ought to have its place definitively within our restorative armamentarium now more than ever before.<sup>1</sup> A search via PubMed generates over a thousand papers available on its online database with the key term 'rubber dam' included in their titles.

This is the first of a two-part series of articles aimed at highlighting the indications and advantages of using rubber dam. In the second paper, I will be presenting clinical tips for implementation in practice.

Beyond simply being taught as a mandatory prerequisite for endodontic treatment,<sup>2</sup> rubber dam has many indications for its use, and as such it should be laid out on the bracket table ready for use during a wide variety of operative procedures within everyday restorative dentistry. These include, but are not limited to:

- Bonding composite resins
- Placing fibre-based endodontic posts
- Luting all-ceramic or gold/non-precious metal indirect restorations and
- Can also prove helpful with diagnostics for suspected cracked teeth.

There are also indications for use within paediatric dental treatments, including endodontic therapy on carious/traumatised permanent teeth as well as for any direct bonded restorations.

In response to the coronavirus pandemic this year, dentistry as a profession globally has been required to become even *more* focussed on the setting and maintenance of extremely high standards for cross-infection control. Rubber dam, along with all the other protocols for hygiene and disinfection, offers clear safety benefits for both the clinical team and patients alike<sup>3</sup> – of the many reasons to use it.

At dental school, every student is taught the fundamentals of the dam: how to place it and why it is so important. Beyond this, it is our individual duty as practitioners to reach for it routinely and when indicated.

Furthermore, all dental students should already have access to typodont models in the clinical skills teaching laboratories of their respective institutes. Here one can experiment with different isolation techniques that are taught to them in the pre-clinical years, focussing on improving their isolation protocols on the phantom heads before putting these new skills to the test on adult restorative clinics.

So what are the other advantages of using a rubber dam?

## Excellent moisture control

- It acts as a physical barrier between the selected operator field and the oral cavity, which prevents saliva, blood, gingival crevicular fluid, humid exhaled air, and other debris from interfering with the restorative treatment.

## Soft tissue retraction

- When correctly inverted, it successfully retracts the gingivae, thereby allowing improved access to deep interproximal carious lesions for direct restoration as well as to prepare and subsequently indirectly

restore teeth with equi-/sub-gingival margins.

### Patient safety

- The safety aspects associated with its use during root canal treatment and also when removing existing amalgam restorations are well established. It eliminates the risk for potentially harmful dental materials, chemicals (notably, sodium hypochlorite), and small instruments from being ingested into the gastro-intestinal tract, or worse, inhaled into the lungs.

### Prevention of infection transfer

- During long operative procedures, it is not uncommon for patients to feel a need to cough, which is considered a ballistic event that releases significant aerosol droplets that may potentially contain infectious respiratory micro-organisms (e.g. SARS-CoV-2).
- The patient's saliva may also harbour infectious disease particles that may pose risk to both the dentist and dental nurse during an aerosol generating procedure (AGP), against which the dental dam acts as a preventative barrier essentially reducing the infection transfer risk posed by AGPs.<sup>4</sup>
- It provides an aseptic field during endodontic treatment thereby preventing intra-canal contamination by oral microbes that may lead to treatment failure through persistent infection.

### Stress-free dentistry

- *For the dentist:* Isolating the field of view improves both access and visibility. This helps the clinician to focus better during the operative procedure without distraction from the local soft tissues, a fogged-up mirror, a talkative patient, and also by blocking view of the rest of the dentition during treatment. It is particularly helpful during root canal treatment when many dentists will use magnification (in the form of loupes or a microscope) as their attention can be immediately positioned on the correct tooth, thereby reducing eye fatigue during longer procedures.
- *For the nurse:* By both covering and retracting the soft tissues, as well as protecting the patient's airway, it frees up the dental nurse during the procedure who can therefore focus on delivering suction, instruments, and materials more readily.
- *For the patient:* Surveys into the experience

of patients who received treatment with rubber dam highlight how many find it to provide a more relaxing and comfortable experience. They do not feel the intrusion of instruments, hands, and liquids in their mouths as much.<sup>5</sup>

### Protected tissues

- Covered soft tissues are by default also offered a barrier of protection, albeit a relatively weak one, shielding from the bur's cutting action or other sharp instruments. This is most apparent when working posteriorly – on second or third molars – where access is limited and proximity to an active tongue can make the procedure more demanding.

### Enhanced adhesive potential

- The clinical protocol for use of resin-based materials, either in direct composite restorations or when bonding indirect prostheses demands a contaminant-free field for optimal adhesive results that translate into long term treatment success. Whilst this concept makes sense, it is worth noting that a large Cochrane review from 2016 revealed further research is needed since there is conflicting, limited quality evidence to prove a direct link between the use of rubber dam in restorative dentistry and lower failure rates.<sup>6</sup>

All in all, there are no real disadvantages for the use of rubber dam, rather only excuses to justify *not* using it. Those that claim that it is unnecessary, expensive, intrusive, difficult to use, takes time to place, or that the patient does not like it are simply failing to appreciate its obvious benefits. Most of these barriers to use are because the dentist has not made the effort to practice using it, or may simply not be taking the time to properly communicate these benefits to their patients. Unfortunately, despite it being taught from the very beginning of our training and with an ever-growing body of evidence to support its clinical advantages, surveys of dental students<sup>7</sup> and general dental practitioners have highlighted a reluctance amongst many to adopt its use routinely.<sup>8</sup>

Of course, there will always be a small cohort of patients for whom it may be acceptable to refrain from its use. Contra-indications might include certain patients with disabilities, severe asthmatics and patients with respiratory conditions who rely on mouth breathing, patients with

genuine allergy to the material (although latex-free, nitrile-based rubber dams are widely available now), psychosomatic intolerances, known epileptics who suffer from regular seizures, and patients with extreme claustrophobia. In these cases, we can instead rely on alternative methods for isolation which include cotton rolls and an OptraGate.

As with all the other learnt practical skills, any dentist will attest to the fact that it is only with years of daily dentistry post-qualification where proficiency is achieved. Fortunately, there is not much to the skill of the dam, so it shouldn't take long before you are very confident using it. And despite what the clinical photos posted on social media platforms may imply, rubber dam doesn't have to be placed picture-perfectly, tear-free, with multiple unnecessary floss tie ligatures, and neatly folded around the frame in order to work well. Seek inspiration and aim to learn from the photos posted online for others to see, many of which will be accompanied with an educational caption from which we can all gain knowledge.

To conclude, if you weren't already a firm believer in the benefits of using a rubber dam prior to reading this, and especially now during the COVID-19 pandemic, I certainly hope this has offered you more reasons to isolate.

### References

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