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## Tooth Isolation: the Rubber Dam

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The need to work under dry conditions, free of saliva, has been recognized for centuries, and the idea of using a sheet of rubber to isolate the tooth dates almost 150 years! The introduction of this notion is attributed to a young American dentist from New York, Sanford Christie Barnum, who in 1864 demonstrated for the first time the advantages of isolating the tooth with a rubber sheet. At that time, keeping the rubber in place around the tooth was problematic, but things soon improved a few years later, when in 1882 S. S. White introduced a rubber dam punch similar to that used still now. In the same year, Dr. Delous Palmer introduced a set of metal clamps which could be used for different teeth.

This said, it seems incredible that even today, two centuries later and living now in the third millennium, there are still dentists who are not convinced of the usefulness of this very simple rubber sheet. On the other hand, it is also incredible that the Scientific Associations who are in charge of laying down the “Guidelines” do not say that the use of rubber dam is *mandatory* to perform any kind of nonsurgical endodontic treatment. The Quality Assurance Guidelines of the American Associations of Endodontists<sup>2</sup> says that “cleaning, shaping, disinfection and obturation of all canals are accomplished using an aseptic technique with dental dam isolation *whenever possible*”. According to the author’s opinion, when it is not possible, the clinician has two options: one is to make it possible and the other is to extract the tooth! There is no other choice.

The operative procedures that are performed in the patient’s mouth must be seen as larger or smaller surgical procedures. In dentistry, as in general surgery, isolation of the operative field is imperative, even for a simple filling.

Even more so than in restorative dentistry, the rubber dam is *obligatory* in Endodontics,<sup>15</sup> so much so that Endodontics should not be performed without a dam.

Furthermore, an endodontic treatment should not be undertaken unless the tooth – particularly if damaged – has not been reconstructed to allow easy positioning of the rubber dam. There should be no excuse for not using the rubber dam in Endodontics; the law should severely punish the dentist who causes serious injury, including death, to a patient because he did not use one.<sup>8,16,18,21,26</sup> Patick Wahl in a recent article says that in the United States any law suit is lost if the rubber dam has not been used.<sup>27</sup>

The only tooth that may be treated without the rubber dam is the tooth that is so severely damaged that the only instruments to be used are the extracting forceps. As Aiello<sup>1</sup> states, one must recall that the rubber dam clamp occupies the future position of the marginal closure of the prosthetic crown. It is therefore unthinkable to endodontically treat a tooth on which the rubber dam cannot be assembled, since it is not known whether and how the tooth will be restored.

A contraindication to the use of the rubber dam is a patient’s allergy to the chemical constituents of rubber.<sup>5,11</sup> In this circumstance, albeit rare, the teeth may be isolated with polythene sheets,<sup>22</sup> which impose limitations related to the lack of elasticity of this material as compared to rubber. Today “no-latex” dam is available,<sup>17</sup> to be used on allergic patients (Fig. 10.1).

There are odd rumors about the use of the rubber dam; for example, it is claimed that it takes too much time to assemble. Cragg<sup>10</sup> correctly states that “that which takes more time, with respect to the rubber dam, is trying to convince the dentist to use it”.

It is worth spending a few seconds to assemble the rubber dam for use in endodontic procedures and thus improve the entire treatment.

In Endodontics, use of the rubber dam confers the following advantages:

1. The patient are protected from the ingestion<sup>26</sup> (Figs. 10.2, 10.3) or, worse, the aspiration<sup>16</sup> of small



Fig. 10.1. No-latex rubber dam, for allergic patients.



Fig. 10.2. This photograph, taken during gastroscopy, shows a large root canal reamer among the folds of the gastric mucosa.

instruments, dental fragments, irrigating solutions, or irritant substances.

2. The opportunity to operate in a clean surgical field.
3. Retraction (very important for working in the posterior areas) and protection of the soft tissues (gums, tongue, lips, and cheeks), which are sheltered from the cutting action of the bur.
4. Better visibility in the working area. The advertisement of a famous manufacturer of instruments for the assembly of the rubber dam correctly reads: "Do better what you see and see better what you do".
5. Reduction of delays: the patients, with fortunately rare exceptions, cannot converse except with great difficulty; besides, they will not have to rinse their mouth every five minutes.



Fig. 10.3. This radiograph shows the presence of an endodontic instrument among the intestinal loops. Few weeks later, the patient died!<sup>12</sup>

6. The dentists and dental assistants are protected against infections which can be transmitted by the patient's saliva.<sup>9</sup>
7. The dentists are more comfortable, as they may work at a more leisurely pace and may be permitted to answer an important telephone call, leaving the patients well protected with the rubber dam and the dental assistant close to them.
8. Better tactile sensitivity during the cleaning and shaping procedure. Without the rubber dam, the dentists, aware of the risk of causing the patients to ingest or aspirate an instrument, holds the files in such a way that they will not slip from their fingers. The pressure they apply to the handle of these instruments reduces the sensitivity of their fingers and precludes the use of the instruments to perform delicate procedures. With the rubber dam in place, on the other hand, they may hold the instruments delicately, without fearing that they may slip from their hand.<sup>19</sup>
9. The patients are more comfortable, as they do not feel that their mouth is invaded by hands, instruments, and liquids.

Patients increasingly appreciate the use of the rubber dam. On occasion, they may ask whether it is a new invention,<sup>24</sup> and once they have tried it, they do not want to do without it in the future.