Fast and Predictable Tooth Extraction Technique

When I first saw the ads for Physics Forceps®, I did not believe the claims could be true. At first glance, I didn’t see how this strange looking instrument could possibly allow dentists to atraumatically extract teeth, preserve buccal bone and not fracture the cortical plate. Fortunately, however, I had an opportunity to visit with the inventor, Dr. Richard Golden, and he clarified what was not obvious to me in the ads.

Doctor Golden invited me to come to his dental office in Detroit Michigan to see first hand what the Physics Forceps could do, and after observing him in action for two full days, I saw that he really does extract teeth quickly and predictably, sometimes in one minute or less. I also realized that, with a little practice, most general dentists would be able to do the same thing, and easily remove teeth they previously chose to refer.

I began to experiment with the Physics Forceps, and found that they worked even better than I expected. Their unique design utilizes a class one lever, and takes advantage of the basic laws of physics; hence the name. When I finally figured out the subtle nuances of the Physics Forceps techniques, I knew that extracting teeth would never be the same again.

The Physics Forceps are designed to apply controlled pressure roughly parallel to the long axis of the root. Traditional forceps grasp, squeeze, and twist (illustrated by figures 1 and 3) while the Physics Forceps employs a slow, steady force that literally “pops” the tooth free from the periodontal fibers (illustrated by figures 2 and 4).

**Figure 1.** Conventional forceps allows you to “grasp” a bottle cap, but does not offer a mechanical advantage to remove it.

**Figure 2.** Physics Forceps applies the mechanical advantage of a class one lever, similar to that of a bottle opener.

**Figure 3.** A “traditional” dental forceps removes a tooth similar to the way a pair of pliers removes a nail; lots of squeezing, teasing, twisting and pulling.

**Figure 4.** A claw hammer uses class one lever mechanics, with the head of the hammer as the fulcrum, and the claw as the short lever applied to the nail. The Physics Forceps utilizes a similar action to separate teeth from their alveolar attachment.
One of the Key Advantages of the Physics Forceps

In my opinion, most multi-rooted teeth should be sectioned to avoid spreading and traumatizing the alveolar bone. Because this can be a difficult and time-consuming process, I recommend sectioning teeth after the Physics Forceps have released them from the socket. A tooth only has to be elevated a couple of millimeters to make the sectioning process quick and easy.

Traditionally, teeth have usually been sectioned prior to the tooth being released from the bone, but this makes the process much more difficult than it needs to be. Waiting to section teeth after they have been loosened with the Physics Forceps makes the process much more efficient. This little trick virtually eliminates the problem of having to dig into the socket to remove broken roots.

Figure 5. The best time to atraumatically section a tooth is after the Physics Forceps “pops” it loose from the periodontal ligament. Yes, the tooth actually gives a slight “pop” when the periodontal fibers turn loose.

Figure 6. Use a curette or small elevator to slightly elevate the loosened tooth in the socket prior to sectioning. This not only reduces the likelihood of cutting the bone, it makes it much easier to visualize the ideal angulation of the bur.

Figure 7. A high-speed bur is used to section the already loosened tooth for easy removal of the roots.

Figure 8. Using the Physics Forceps to loosen the tooth followed by careful sectioning creates an atraumatic tooth extraction site.
The Physics Forceps works its magic utilizing class one lever mechanics. One handle of the device is connected to the “bumper,” which acts as a fulcrum during the extraction. The beak of the extractor is positioned on the lingual or palatal root of the tooth and into the gingival sulcus. The most difficult aspect of learning the proper use of the Physics Forceps is not squeezing the handles of the forceps. Once the beak is in position, the “bumper” is placed as far into the gingival sulcus as possible and light finger pressure holds the forceps on the tooth.

The forceps is then held in position under moderate tension for approximately one minute. Because there is no squeezing applied to the beak, the tooth does not split, crush or fracture. During the 1-2 minutes of constant pressure, the fibers that connect the periodontal ligament to the alveolar bone begin to snap and at a certain point the tooth literally “Pops” loose from the socket.

Once the periodontal ligament is released from the bone, the handle of the extraction device may be slowly rotated another few more degrees for 10 to 30 seconds. This action contributes to the creep rupture of the ligament and usually elevates the tooth a few millimeters in the socket. At this point the tooth is loose and ready to be removed using any pincer-like device, such as extraction forceps, or hemostats.

It is critical that the dentist does not become impatient while applying constant pressure for approximately 1-2 minutes. This technique requires a minimal amount of strength and a maximum amount of patience. As the fibers are breaking loose, the body is releasing collagenase to help remove damaged fibers and expedite healing.

Five Steps for using the Physics Forceps

**Step 1**  
Separate the gingival attachment from the tooth. Many upper teeth can be extracted without any sectioning. Lower molars often need to be sectioned (buccal lingual) to insure a more predictable extraction by significantly reducing resistance to extracting forces. If there is not enough solid tooth structure on the lingual, create a groove at the expense of the lingual root to provide the forceps a solid purchase point.

**Step 2**  
With the handles wide open, set the beak into the depth of the lingual or palatal sulcus on solid root surface. A secure purchase point on solid root surface is critical to successfully rolling out the tooth. When necessary, create a small trench with a small flame shaped diamond bur to engage the beak more securely on solid root surface.
Step 3 - Set the bumper perpendicular to the tooth at about the level of the mucogingival junction. Holding that position securely, Freeze don’t Squeeze the handles. Note: the greater the distance between the beak and the bumper, the greater the arc of rotation, consequently achieving vertical lift.

Step 4 - WITHOUT SQUEEZING THE HANDLES OR MOVING YOUR ARM, begin to apply a steady, very slow rotational force in the direction of the bumper. Patiently, continue to apply this steady force for 1-2 minutes. This force or creep will continue to build, allowing time for the periodontal ligament to release, the bone to slowly expand and the tooth to disengage.

Step 5 - The buccal rotation of the tooth and vertical lift is successful by rotating your wrist only. This wrist action is very similar to using a bottle opener. You will soon feel the tooth move and slightly elevate occlusally from the socket. Stop rotating at this point.

Step 6 - Initially, you may want to avoid unnecessary damage to the buccal plate by not proceeding with the Physics Forceps beyond the first sign of the tooth ‘popping’ loose. If the tooth has not elevated sufficiently to grasp it with your fingers, consider using a hemostat, rongeurs or conventional forceps to lift it out. If the roots are not parallel, rather than take a chance of fracturing the alveolus, section the tooth as shown in Figures 7, 13 and 14.
Create a lingual slot for improved mechanical advantage

The real secrets to using this forceps is to cut a lingual groove, and section most multi-rooted teeth after the Physics Forceps frees them from the periodontal ligament. Use a flame shaped diamond or bur to create a lingual slot at the expense of the root. This will allow you to remove teeth even if they are decayed or broken off at or below the crest of the bone.

![Image](attachment:image.jpg)

Figure 9 – With badly broken down teeth, you can dramatically improve the mechanical advantage by cutting a slot several millimeters below the crest of the bone (at the expense of the tooth).

Figure 10 – Note: the beak of the Physics Forceps can be extended below the crest of the bone for a better grip on the tooth. Remember, you should never “squeeze” the forceps, just let your wrist apply the necessary rotational pull on the beak.

Easily remove broken-down teeth, even when they are below the gum line

The Physics Forceps really excel when it comes to removing badly broken down teeth, even when they are decayed blow the crest of the bone. Cut a slot preparation in the lingual aspect of the root with a flame shaped diamond to allow the forceps beak to be seated firmly on solid tooth structure. The rotational force then “pops” the root loose in a coronal direction, unlike the lateral forces of traditional elevators, which tend to crack the alveolar socket to release the roots.

![Image](attachment:image.jpg)

Figure 11 – This would be a difficult extraction utilizing traditional techniques.

Figure 12 – This tooth would normally require laying a flap and removal of alveolar bone.
Avoid sectioning errors

With traditional sectioning techniques, you are basically cutting blind, but by loosening the tooth prior to sectioning (Fig 5–8), the dentist can raise the tooth in the socket enough to visualize the proper angle of the cut. Slightly elevating the loosened tooth also reduces the possibility of accidentally cutting into the alveolar bone.

Figure 13 – Prepare a slot in the lingual surface of the root deep enough to allow the beak to seat on solid tooth structure. Because the pressure is only on one side of the root, you will not risk root fracture common with standard forceps.

Figure 14 – By using the slot preparation, even “impossible” teeth roll right out of the socket. Apply slow, steady wrist motion until the root “pops” loose making subsequent removal easy.

Figure 15 - When sectioning the tooth, be aware of the fact that in most instances, the buccal/lingual cut should not be perpendicular to the occlusal surface.

Figure 16 – The red line represents the angulation most GPs use for sectioning lower molars, but the slight inclination of the blue line makes for a more accurate cut.
Using the Physics Forceps it is possible to perform difficult extractions (such as retained roots and endodontically treated teeth) in 1-2 minutes or less. In most cases it is not even necessary to reflect a flap.

Do not be in a big hurry to break the tooth loose from the socket. The goal is to systematically snap the tiny fibers that hold the tooth in the socket until the tooth “pops” loose.

Do not use traditional elevators to dislodge teeth. Elevators should be called bone spreaders because the forces they generate are lateral rather than parallel to the long axis of the root. These lateral forces tend to fracture the alveolar bone rather than cleanly luxate the tooth.

Do not try to remove the tooth until you free the tissue surrounding the tooth. Remember the goal is to atraumatically loosen and dislodge the tooth without damaging the alveolar bone (the hardest bone in the jaw), or supporting tissue. Alveolar bone preservation is critical for immediate loading of implants.

Use the Physics Forceps to loosen teeth, not to remove them. Wrist action is critical, and twisting and rotating the root is not needed or recommended.
Depending on the patients’ anatomy and degree of eruption, the Physics Forceps can occasionally be used on 3rd molars; however, there is a set of forceps specifically designed to remove third molars.

Extraction of endodontically treated teeth requires a greater distance between the bumper and beak, and requires a good purchase point. While extracting these teeth, one must go exceptionally slow.

Unlike conventional forceps, only one point of contact is made on the tooth being extracted. The beak of the instrument engages the tooth on the lingual below the CEJ; the bumper is placed low on the alveolar ridge, and the doctor rolls the tooth out of the socket.

If you follow a few simple rules and keep an open mind, you will be amazed how well these new instruments work, and how easy it is to become proficient in their use.

Patients appreciate not having to leave your office for most extractions and you will appreciate the extra stream of income. Using the Physics Forceps will reduce post-operative discomfort and patient healing time, while it increases your bottom line.

Incidentally, when you order a set of Physics Forceps, the manufacturer gives you a full 90 days to try them out. They do this because once you give them a fair trial almost no one wants to do extractions without them.