

## Clinical 360°: Technology

### THE TAKE-AWAYS

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- A simple improvement to everyday handpiece technology can lead to new efficiencies.
- Adopting these upgrades can produce better outcomes for clinicians and patients.

## TAKING PRODRIVE FOR A SPIN

**Technology Editor Dr. John Flucke is won over after taking ProDrive Systems' new handpiece design for a test drive.** by Dr. John Flucke

### THE SET UP

*"The air-driven highspeed handpiece. Perhaps no instrument in the history of dentistry conjures more negative images and fears from patients. However, despite the fears it inspires, the handpiece is frequently a necessary evil in the everyday practice of dentistry. Here, I discuss a product I believe is leading the way in the next evolution of handpieces."*—**Dr. John Flucke, Team Lead**

Lasers have changed the way tooth preparation is performed in a variety of clinical situations, but between the cost of the devices and the individual cases that present themselves in the everyday practice of dentistry, they are not a panacea. Finances and cases dictate that the air-driven highspeed handpiece is still the method used for the vast majority of dental procedures involving the removal of tooth structure.

### Handpiece Status Quo

It's interesting that since the development of the air-driven highspeed in the middle of the 20th century little has been done to change or improve the device. Oh sure, we've had some minor updates. Things like ceramic, lube-free bearings have come along to reduce the damage done to the devices during sterilization, but that improvement is really a decrease in required maintenance and does nothing to change the clinical efficiency or overall patient experience.

In the 1980s, we had fiberoptic lights, but those have been rendered moot for many of us who are now using some type of accessory lighting attached to our surgical telescopes. My Orascoptic Zeon Discovery is so bright I don't even use track lights anymore.

We've had changes in grips and turbine speeds, but can you really remember anything Earth shattering—the kind of improvement you can really point to as changing things? Me neither.

The only drastic improvement in handpiece technology has been the development and implementation of the electric handpiece. For those using them, I hear great feedback with relatively few complaints, but their market penetration is still much lower than traditional air-driven units.

### Enter the ProDrive

So, you can imagine my response when I was approached by ProDrive Systems last year and asked to test drive their handpiece. Although they do sell handpieces, ProDrive is mainly a turbine company. Their sales model is to sell upgrade turbines at a price comparable to the cost of a turbine from the original manufacturer. Big deal you say? You can get replacement turbines from a variety of providers. This is true, but you can't get ProDrive turbines from anywhere but authorized ProDrive providers, and, trust me, you'll want to check them out.

My clinical test drive was pretty simple. I took a brand new (out of the box) original manufacturer handpiece and a new round shank bur. I compared that with a brand new (out of the box) ProDrive upgraded handpiece with the same style new ProDrive bur. The handpieces were identical other than the turbines. I spent two weeks running the test. I prepared all crowns using the two handpieces in a side-by-side comparison. I would perform half the lingual reduction with one handpiece and then the other half with the other. I repeated this process on every surface. Although I was skeptical before the trial began, I quickly was aware of a noticeable difference in efficiency with the ProDrive turbine.

### Setting itself apart

What makes the ProDrive turbine so different is it uses a special chuck design. Rather than having a chuck that is round and accepts a round-shanked bur, the ProDrive chuck is triangular and uses a bur with a triangular shank. While this difference seems slight, the principle is profound.

A round chuck with round shank provides slippage in the way the bur is gripped. Although you cannot feel this—I never noticed a feeling of slippage in all my years of clinical care—it definitely occurs. However, when a triangular chuck and a triangular shank are used, the bur cannot slip inside the chuck. It is locked in mechanically. This allows all the energy developed by the turbine to be delivered to the actual process of tooth preparation, and thereby allows the ProDrive turbine to cut more efficiently with less chatter.

In addition, because the bur cannot move in the chuck, the bur spins more concentrically, which translates to better and easier margin finishing. The bur shanks also have two concentric grooves that allow you to extend the bur—with the rings locking it in place—to allow you to continue cutting with the same bur but with a longer shank and without concern of it "walking out" of the chuck.

At the end of the trial, I was so impressed with the product I upgraded 10 handpieces to ProDrive turbines.

## Impression made

I can truthfully say the efficiency of the cut was noticeable and clinically significant. In clocking my procedure times, I find a crown prep takes less time and is easier to perform using the new turbines.

I love the efficiency for two reasons. The first and most important is it means less drilling for my patients. Anytime we can get a better or comparable outcome with less trauma to the patient, we should seriously consider the product. Second, less time with the handpiece means less hand fatigue and more time in the day. You can use this time to see an extra patient or to just relax and decrease your stress level.

The turbines are available for air-driven highspeed handpieces manufactured by Kavo, Star, and Midwest. The turbines can be purchased and installed by a ProDrive dealer and the price is similar to the cost of a stock replacement turbine.

Although not all handpieces from every manufacturer can be upgraded, more are being considered. If you are in the market for a new handpiece, ProDrive does sell one manufactured by Sirona and sold under the ProDrive label.

## Beyond the test drive

As far as durability, I have been using my upgraded handpieces since mid to late January 2009, and all 10 are still performing well with no turbines being replaced. The maintenance for sterilization is similar to stock turbines so there are no excessive or time-consuming steps involved in maintaining them. As far as my staff is concerned, there have been no changes in our pre- and post-sterilization protocols. The staff also likes using ProDrive as it increases the efficiency of the appointments and gives them a few extra minutes between patients. These little breaks can make a big difference in “catching up” in a busy practice.

The triangular-shaped burs are currently only manufactured by Meisinger. They come in every shape and size as their regular bur inventory. The cost of the burs is similar to the cost of round shanks, and both diamond and carbide are available. The manufacturing rights to make the triangular shank may be picked up by other bur manufacturers as well. Of course as you switch over to the new turbines, you'll need to use up your existing inventory of round shank burs.

There are lots of ways to improve patient care and efficiency in today's dental office, but this is one of the few things that impact an instrument used in almost every procedure. Because it means less time in the dental chair with the bur on the tooth and the handpiece in the mouth, patients will appreciate the time savings. Doctors will appreciate the time savings because it means lower stress—both mentally and physically—while helping to provide a superior clinical result.

ProDrive is available through many authorized ProDrive dealers. If you have handpieces that need turbines, give one the ProDrive make over and see the advantages for yourself. I went from skeptic to raving fan in less than two weeks.

## Six Tips for Caring for your Highspeed Handpieces

Having a handpiece you trust to get the job done is important, and proper care of that handpiece can be the key to making sure it's ready when the job calls.

The following six tips were shared by Hayes Handpiece CEO Joe Hayes. For a more detailed explanation of the items on this list see “Hidden Costs: Handpieces” at dentalproductsreport.com.

### 1. Have a good maintenance protocol.

Make sure you are using the best cleaner for the job and not cutting corners in your sterilization procedures.

### 2. Train and educate your staff.

Make sure your staff members are well-versed in the proper use and cleaning of your handpieces.

### 3. Properly set the air pressure.

Improper air pressure settings can negatively impact the function and life of a handpiece. Consider having a professional test and set your air pressure.

### 4. Have enough handpieces.

Keeping the right inventory means you are never rushing a handpiece through sterilization, or trying to speed the cooling-down phase.

### 5. Use the correct burs.

Using long surgical burs in a handpiece with a small head will cause undue leverage and wear.

### 6. Get them repaired by a pro.

Check with your handpiece manufacturer for a recommendation on a repair professional who knows the model you use.

**For more information on ProDrive Systems visit:  
[www.prodrivesystems.com](http://www.prodrivesystems.com)**