Predictable Endo 102: Why warm and soft is so good

System ‘S’ for injectable or carrier-based GP

By John J. Stropko, DDS

The author has been in private practice and a continuing education faculty member for over 50 years. The first half was spent grading student endodontics, and the second half in a specialty practice limited to endodontics. On the road to predictability, it became apparent there was a relationship or interplay between root canal treatment, periodontal status, prosthetic considerations and endodontic procedures. Each operator has to decide what steps for a more predictable outcome they are willing to trust another to do. This article is an attempt to share some “secrets of success” and perhaps serve as a checklist for a system that will be in the attempt to achieve predictability of endodontic treatment.

During the earlier years of the past century, several techniques were devised for the obturation of the canal system after removal of the diseased pulp, or necrotic tissue. Some of the most popular were silver points, lateral condensation of gutta-percha (GP), Sargent paste and chloopercha. Currently there are seven techniques that utilize gutta-percha as the obturation material of choice:

1) Single cone
2) Lateral condensation
3) Chloropercha technique
4) Vertical compaction of warm gutta-percha
5) The apical opening should be kept as small as practical in all cases.
6) Use of the surgical operating microscope (SOM) for the entire endodontic treatment
7) The access is made as though there was an MB2, it is amazing how many times an MB2 is found. A general rule of thumb is, if you access for it, you are more likely to find it. A proper access and correct shaping.

The author believes that as long as the gutta-percha is introduced to the apical third of the canal system, pre-warmed and pre-softermed, the deformation and adaptation to the canal walls is more predictable, resulting in a better seal that is significantly more “sealer-dependent.” It has been shown that the pre-warmed techniques (Obtura and Thermafil) produce a better seal than lateral condensation.2

Due to the lack of deformity in root temperature, the techniques utilizing non-softermed GP are more “sealer-dependent.” The two most popular thermoplastic obturation techniques are the “carrier-based” (e.g., Thermafil) and “direct injection” (e.g., Calamus/Obtura).

The pros and cons of each will be discussed, but regardless of the technique used, the shape of the prepared canal system is of utmost importance and must be discussed.

Access and shaping the canal system

In the early ’70s, Schilder clearly stated the requirements for the proper shape using GP to achieve three-dimensional obturation of the canal system:
1) The root canal preparation should develop a continuously taping cone shape.
2) It should have decreasing cross-sectional diameters at every point apically and increasing at each point as the access cavity is approached.
3) It should have multiple planes, which introduces the concept of “flow.”
4) The access should not be transported.
5) The apical opening should be kept as small as practical in all cases.
6) There were several other requirements: were clinically de- finitive. Following are a few of them: All pre-warmed and pre-softermed techniques are more “sealer-dependent.” The access is made as though there was an MB2, it is amazing how many times an MB2 is found. A general rule of thumb is, if you access for it, you are more likely to find it. A proper access will also facilitate the creation of the continuously tapering shape of the canal, necessary for the GP technique. Occasionally after caries or old restorations are removed, a “pre-endodontic” restoration may be required to control and maintain a sterile environment until the endodontic treatment is complete. This can usually be accomplished using a bolus of gutta-percha.

Shaping should be confined to the anatomy of canal system, following the natural curvatures. instrumentation beyond the apex is unnecessary and may needlessly enlarge and deform the apical foramen.3 Using the Schilder protocol to achieve the desired shape of the canal system was a time-consuming process. It involved the tedious use of pre-cut files and reamers to follow the anatomical curvatures of the canal.

Other requirements that caused some controversy (and still do), besides the size of the access opening, was the need to keep the apical foramen as small as possible, and to maintain patency throughout the entire process. The majority of more recently published research and clinical studies have concluded the rational for an appropriate access and correct shaping.

In the early 1990s, technology brought about the introduction of rotary instruments, allowing the operator of considerable time spent creating an accept- able shape. The ProFile rotary burr ( Tulsa Dental) with 0.06 taper, was introduced to the profession. Creating the shape necessary for the success of the warm obturation techniques was made easier and faster.

By the beginning of this century, numerous designs gradually evolved utilizing varying tapers, active or passive cutting blades, etc. (Fig. 1). At first, the biggest problem with the rotary files was breakage during use. But modern nickel titanium (NiTi) metallurgy technology has developed more, and more dependable, rotary files. As a result, today the separation of a rotary instrument during use is of virtually little or no concern. It has also been shown that proper shape permits more thorough irrigation and the removal of significantly more debris from the prepared canal system.

Disinfecting irrigation should be used between each instrument during the entire shaping process and patency continually maintained with a #10 file. Note: The quantity of irrigants used is not as important as the frequen- cy of use. The irrigation protocol, instruments, fluids, etc., are in constant evolution and becoming more effective. However, a clean and sterile environment of the canal system prior to obtura- tion is still the objective.

Irrigation for cleaning the canal system

After shaping is completed, final cleaning can be effectively accomplished by the alternative use of:
1) Warm 5- to 6-percent NaOCl
2) 17 percent aqueous EDTA for approximately 30 seconds (mechanical removal)
3) Warm 5- to 6-percent NaOCl

The NaOCl can be effectively warmed by placing the irrigat- ing syringes in a beaker of wa- ter set on a small coffee warmer (Fig. 2). The canals are com- pletely flooded with the de- sired solution; an Endo Activato- tor (Dentsply) is appropriately used for the “tsunami effect,” then re-irrigated with the same solution for flushing of debris (Fig. 3). The NaOCl is then ef- fectively removed with a capil- lary tip (Ultradent) attached to a high-speed evaporator. Other
solutions (hydrogen peroxide, chlorhexidine, 17 percent aqueous EDTA, MTAD, etc.) can also be used alternately, depending on operator preference. Close observation with an SOM will clearly indicate complete cleaning of the canal system when no debris is flushed out during the irrigation process. During the evacuation with the capillary tip, it becomes apparent if there is a joining of the canal systems within the root. For example, if using the SOM as the MB1 canal is being evacuated and it is noted that fluid is simultaneously being drawn from the MB2 canal, there is a good indication that the system is complicated and does join at some point (Figs. 4a, b).

There are occasions, especially in lower molars, where the mesial root canal system unexpectedly joins with the distal root canal system (Fig. 4c, d). On occasion, the maxillary canal system will have the DB1 or MB1 canal system connected to the palatal system. These “surprises” are important to be aware of, before obturation of the canal system, especially when using either carrier-based or injectable GP.

Drying canals with F4+1+0E.
The canals are rinsed with 5 percent ethanoic (EverFresh available at local liquor store), agitation of the fluids are initiated with an activator for the tsunami effect, then 1:4:1-irrigated with the 5 percent ethanoic, and then evacuated with the capillary tip. The canal(s) are then heat dried by using a Stroppo irrigator on a dedicated, air-only syringe (DCS), but if a three-way syringe is used, be sure to ex-press all water from the line first (Fig. 5). Next, with a 27- or 50-gauge needle or sidevented needle (Monject), fit- ted to the Stroppo irrigator and heat as necessary, to easily dry the canal system (Fig. 6). Important note: It is essential to regulate the speed of air, as there is no syringe at 1 to 5 psi and use a side-vented or notched needle, to prevent any possibility of in-undertaking force and air through the apical foramen less, and achieved with an in-line regula- tor, the Chapman-Huffman Regu-lator, Gauge, Part #17-090-00 (Fig. 7).

As dentists, we are accustomed to a “blast” of air while using the usual air/water syringe (just high air pressure to the A/W syr-inges). With the air/stroppo irrigator fitted with an appropriate small gauge needle, only a “kiss” of air is necessary to create the flow necessary for thorough air drying of the canal. On occasion, one has to direct the air to a sensitive area on himself or herself to be sure the air is even flowing. Just watch- ing the evaporation that occurs within the canal while using the SOM, is enough to convince any operator that there is indeed a flow of air.

There is enough physiologic back pressure of the apical envi- ronment (1.5 mm Hg) to prevent the movement of the air just past the terminus in the correctly shaped canal. In almost 20 years, with many different doctors using the Stroppo Irrigator to “air dry” ca-nals, the author has only heard of one unfavorable incident. In that one case, the doctor did not use the correct needle and did not regulate the air pressure to the air syringe.

To repeat, when the Stroppo Ir- rigator is used with the properly regulated air pressure (1 to 3 psi) and the appropriate 27- to 90-gauge, side-vent/needles is used, there is no force of air into apical tissues.

Sealer application
To the SOM user, the ineffective- ness of drying the canal with a paper point is soon realized. It is also easy to observe how differ- ently the Kerr Pump Canal Sealer EWT (SybronEndo) acts when the canal is in fact not just blotched. After blotting with a pa-per point, the sealer tends to act like a drop of oil placed where the canal wall. But when the sur- face is dried, using alcohol and air as described above, the sealer readily spreads onto the canal wall, much like a coat of paint. The complete dryness of the ca-nal to the desired working length is checked with a clean absorb- ent point that fits to length. This also gives the operator an excellent chance to recheck the working length and dryness of the canal. Any sealer (Kerr EWT, Roth, AH Plus, etc.) can be used as long as the heat of the warm GP does not create a “flash set.” The end 5 mm of a sterile paper point is coated with the sealer of choice and placed into the canal to the working length.

The user keeps Pulp Canal Sealer EWT, mixed per usual di- tenuous techniques, but a little “on the thin side.” Using short, rapid apica-lal movements, the walls of the canal are completely coated with sealer. The use of the SOM is a great advantage when coating the canal wall by the sealer is complete. A slight absorbent point is used, in the same manner, to remove any excess sealer that may remain.

Depending on the amount of sealer placed at the beginning, more than one absorbent point may be necessary to get the “blotchy appearance” on the final point (Fig. 8). Only a thin coat of sealer is necessary for lubri-cation, so very little remains to be swept up. After thousands of canals were obturated using both of them, the author switched to the calamus when it was time to change the sealer. The SOM can be used in both carrier-based and injectable techniques.

One of the most common mis-takes, made at first, is using too much sealer. When this hap-pens, the excess sealer will be extruded back into the cham- ber, or apically when the warm GP is placed. In some cases, the GP may be prevented from completely filling the desired “hole.” Typically, only one or two points are normally needed once the operator achieves pro-ficiency at applying the correct amount of sealer to begin with. Thermoplastic GP techniques are easy to learn and depend more on the operator as a lubricant and facilitate the flow of the thermoplastic GP.

Important consideration between using injection or carrier-based obturation Essentially, there is one very significant dif- ference between the two tech- niques. The injection technique fills the canal system from the apical to the coronal, whereas the carrier-based techniques fill from coronal to the apical. This is important to take into account, especially in cases in which the operator does not want to fill the canal to the orifice or needs to control the “depth” of the fill. A good example would be in the case of treatment of a per- foration, where the “fill” can be accomplished rather easily, and both the sealer and GP can be applied to the perforation. MTX can then be added to the repair in a very controlled manner (Figs. 10a–c). When a post space is required, the GP can be injected to any level in the canal, but it is bet- ter to obturate the entire canal first, so uncontrolled resin will not corously in the canal won’t be missed.

Injection of thermo-plasti-cized GP with a Calamus or Obtura
After using the Obtura for more than a decade, the thermo-plasti-cized GP obturation, the author switched to the Calamus when it was introduced to the market some years ago. After thousands of canals were obturated using the 95 percent, several advantages were noted when comparing the two units (Table 1).

Both units are available as a sim- plex or dual unit, or a dual unit combined with a thermal handpiece for convenience (Figs. 11a, b). The consistent flow of the Calamus unit makes the learning curve quick and easy, and is less intimidating than the Obtura, because the relatively large muscle action of squeezing GP out of the cannula from patient to patient, or day to day, can be replaced with a much smaller muscle action of using a finger to press the collar of the Calamus is signif- icantly less, and the restorative flow of the GP can be pre-set for consistency.

The size of the needle used in the Calamus or Obtura (20 vs. 25 gauge) is generally a matter of preference and can also de-pend on what the canal wants. It does not make any difference, whether the canal is short, apical or coronal. The shorter the needle the apically into the canal the needle is placed, as long as it is not blocking. For example, a straighter and larger canal will take a larger needle. On some occasions, the 25-gauge needle will not be far enough apical to the orifice of the canal before binding. If the operator desires to get to the perforation, this is an indication to use the smaller, 25-gauge needle. As long as it is not blocked, whether the canal has the correct shape, the choice of the needle is up to the operator. If the canal is parallel in shape, the canal then becomes an extension of the needle. The control is severely handicapped. Shape is of the utmost impor-tance, especially in these tech-niques.

The settings on the Calamus are checked to assure the de-sired setting, before the operator has achieved (the author uses 160 C), and the flow rate is set cor- rectly (the author prefers 100 percent). When the unit reaches the desired heat, the collar is pressed onto the tip of the needle. Note: As a safety fea-ture, until the unit has achieved the pre-set parameters, the mo- torized plunger will not initiate and GP is not ejected. When all is ready, the collar is pressed un-til the initial GP is extruded and then the collar is released. The slight amount of GP at the tip is removed.

The needle is then placed into the canal apically, but in such a manner that the binding, and the collar is pressed to reactivate the plunger and initiate the flow of GP. It is good practice to barely move the tip, in a very slight apical-coronal direction. Using a 0.06 taper, the moment there is a sensa-tion of resistance, the operator takes a slight “pump” treatment, and the unit is readjusted. When the needle is placed into the canal, the moment there is a sensa-
Table 1. A comparison of thermo-plasticized GP obturation with Calamus vs. Obtura.

<table>
<thead>
<tr>
<th>Obtura</th>
<th>Calamus</th>
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<tbody>
<tr>
<td>1) More time consuming to clean</td>
<td>10) No patient response during obturation</td>
</tr>
<tr>
<td>2) GP pellets delivered several in a box</td>
<td>6) Easier to relate/teach proper use</td>
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<tr>
<td>3) Multiple needle use the norm</td>
<td>7) Unit difficult to turn to different angle</td>
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<tr>
<td>4) Barrier protection easy to place</td>
<td>8) Multiple apical stops and root fillings possible</td>
</tr>
<tr>
<td>5) Needle can be re-used 50 times</td>
<td>9) No patient response during obturation</td>
</tr>
<tr>
<td>6) Easier to use the obturation system</td>
<td>10) More time consuming to clean</td>
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To insulate complete adaptation to the walls of the canal, the warm GP needs to be compacted as it cools to overcome any shrinkage that occurs during setting. Since the softness of the GP is mass-dependent, the GP at the orifice level has the greatest mass and will stay softest for the longest time in the canal, regardless of which technique is utilized. Using the Calamus, a pre-filled Scheller #10 plugger, well short of binding, is then used to compact the GP to the pre-measured depth (Fig. 12).

The plugger is firmly pushed into the soft GP and held at the measured depth for just a few seconds to achieve compaction of the GP in the apical third. The plugger is now used to “shepherd” the GP from the walls of the canal into a “wad” and further compact the GP. The operator works toward the orifice in approximately 2-mm steps as the plugger “tugs” “wad onto wad” in the process. The shepherd- ing of the GP is continued until the desired depth in the orifice is reached. The mistake often made when working with warm GP is the tendency to “bounce” off the GP while compacting, instead of pushing the GP time to time to compact. Just a few seconds are needed for the newly compacted “wad” to cool.

Obluration with carrier-based GP (Thermofil)

Carrier-based GP (Thermofil) was first conceived by Dr. Ben Johnson of Tulsa, Okla., in 1975; published in 1979; and made commercially available to the dental profession in 1988 (Tulsa Dental). It has become one of the most popular and respected techniques in the world today. There are many types of the Thermofil concept and with innovations that conform to the design of various rotary burrs (Tulsa Dentist (Fig. 15)).

The technique saves the operator a significant amount of time during the obturation process, and excellent results have been supported by numerous studies over the years.

After shaping, cleaning, and disinfection is complete, the canal is still filled with fluid (NaOCl, CH3OH, etc.), a NiTi verifier is set to the same size as the maximum apical file (MAF) is selected. Using just the fingers, it is spun into the canal to working length. The verifier has to be passive when doing this step. Depending on the canal anatomy (straight vs. curved), if there is significant resistance with the selected verifier, such as traversing a curve of sufficiently sharp radius, then the carrier of the same size will meet the same resistance when it is placed. Therefore you would then drop down one size, test-spin that verifier to length, and would encounter less resistance. This then would be the correct size carrier to choose, regardless of what the final apical size was that you machined. Note: The carrier is automatically calibrated to the size of the preparation, but it is a dress rehearsal for how the carrier is going to behave when it is inserted into the space, it is verified that the carrier functions as a gentle spreader to assist in the lateral compaction and spread of the filling material, not to exceed beyond the apex. If the apical terminus of the canal may be ribbon-shaped and large in the M-D or B1-R1 direction, the apical third of the canal would be obturated in the conventional manner. Then an accessory carrier can be inserted alongside the initial carrier (Fig. 15).

Obluration of the second core of the second carri- er functions as a gentle spreader to assist in the lateral compaction and spread of the filling material so that no voids are elimi- nated.

Excess filling material

Historically, any time a case was obturated, there was much concern whether the material was extruded beyond the apical termi- nus. Many endodontic failures were reported because of extrusion, but in reality the cul- minating factor was an “under-filled” canal system.

As Schilder stated, “You only can fill a canal 100 percent. If the canal is filled 100 percent, any excess material extruded beyond the terminus will be of no consequence. In fact, if the author obturated a canal system and there was no excess filling material, the GP would automatically reobturated and re-obturated until there was. The point was, ‘How else could you be sure the canal system was obturated 100 percent unless you observed the excess filling material present at the apex?’ Cases that have a significant amount of excess filling material but are properly shaped, cleaned and packed do heal. Over time, the excess material will slowly become incorporated into the tissue. The biggest fear of the new user of injection or carrier-based GP is, ‘There will be a great amount of excess filling material at the terminus.’ The opposite is true, a coronal flare is actually a gentle spreader to assist in the lateral compaction and spread of the filling material, not to exceed beyond the apex. If the apical terminus of the

A good way to imagine what is happening, while using ther- mo-plasticized GP in a properly shaped and lubricated canal is to envision everyone in a theater rushing to get out the same door was big hurry. The GP molecules are relatively large and warm, so it will contain a gentle spreader to assist in the lateral compaction and spread of the filling material, not to exceed beyond the apex. If the apical terminus of the

The carrier is placed into the canal, and the apical core with a file and removing the excess material will slowly dissolve and be of no consequence. The value of the final size or “under-filled” canal system.

The simple technique is to segment a GP cone into approximately 5 mm sections prior to the obtura- tion process.

Immediately the Thermofil carrier is segmented with a Prepi bur (Dentsply) that is then used to apically compact the warm GP alongside the carrier.

The path of least resistance is the undetermined distance, hold brieﬂy and remove the plugger. Then, using one of the pre-cut segments of GP, place it into the void created by the plugger, and compact it into place.

More segments of GP may be necessary depending on the size of the canal. In cases when would translate to an average time of seven to 10 seconds for most canals from orifice to working length. With the larger carriers, you may experience a “rebound” effect after the carrier is inserted a few millimeters into the canal. Release the carrier and it will “rise” slightly from the canal space.

This is the GP version and pushing and pulling the carrier back out of the canal is undesirable. A #30 size verifier instead.

If all likelihood, the #25 will go in without significant resistance.

The resistance it encounters is a function of the carrier/lumen ratio being obturated. If the canal space, the greater the curvature, the greater the resistance. This is a result of the chance of contacting the carrier, and it is the key to the success of the shepherding process in two or more canals if done in a timely manner.

which is critical to the successful completion of the coronal technique.

The technique saves the operator a significant amount of time during the obturation process, and excellent results have been supported by numerous studies over the years.

After shaping, cleaning, and disinfection is complete, the canal is still filled with fluid (NaOCl, CH3OH, etc.), a NiTi verifier is set to the same size as the maximum apical file (MAF) is selected. Using just the fingers, it is spun into the canal to working length. The verifier has to be passive when doing this step. Depending on the canal anatomy (straight vs. curved), if there is significant resistance with the selected verifier, such as traversing a curve of sufficiently sharp radius, then the carrier of the same size will meet the same resistance when it is placed. Therefore you would then drop down one size, test-spin that verifier to length, and would encounter less resistance. This then would be the correct size carrier to choose, regardless of what the final apical size was that you machined. Note: The carrier is automatically calibrated to the size of the preparation, but it is a dress rehearsal for how the carrier is going to behave when it is inserted into the space, it is verified that the carrier functions as a gentle spreader to assist in the lateral compaction and spread of the filling material, not to exceed beyond the apex. If the apical terminus of the canal may be ribbon-shaped and large in the M-D or B1-R1 direction, the apical third of the canal would be obturated in the conventional manner. Then an accessory carrier can be inserted alongside the initial carrier (Fig. 15).

Obluration of the second core of the second carrier functions as a gentle spreader to assist in the lateral compaction and spread of the filling material, not to exceed beyond the apex. If the apical terminus of the canal may be ribbon-shaped and large in the M-D or B1-R1 direction, the apical third of the canal would be obturated in the conventional manner. Then an accessory carrier can be inserted alongside the initial carrier (Fig. 15).
A good example of an easy-to-use temporary is auto-cure Tenure A&B (Ultradent). Tenure A&B (Ultradent) is injected into the canal system and covered with a sterile cotton pellet (Fig. 19b). Then Tenure C-2 is used to condition the access opening (Fig. 19b). After just a few minutes, the auto-cure Core Paste (Dentin) is set completely, the occlusion is ready for any adjustments, to make sure there are no interferences left to irritate the tooth between visits.

On occasion, a patient is unable to keep the appointment return visit and may have to delay his or her return visit for weeks or even months. There may be an important change of events in his or her life, or the doctor may also have to change any scheduled visit. If a temporary is placed, such as Cavit, IRM or TempFill, all control of the bacteriological environment in the canal system is lost in a relatively short period if the patient does not return in a timely fashion.

Who would be better to control the situation than the treating endodontist before the following endodontic obturation than the “endo-doer,” while the case is isolated with a rubber dam in place? As Dr. Denny Southard of Tulsa, Okla., commented almost 15 years ago, “When we slap in Cavit and turn our heads, the patient is designed for contamination or worse [for perforation, for example].”

However, if a more definitive seal is maintained, that part of the equation becomes a nonissue.

An easy foundation restoration technique
After the obturation of all canals, the gutta-percha is removed to the depth in the orifice as required for retention. This is quickly and easily done using a Mume Bur at approximately 5000 rpm.

If a post space is required using carrier-based GP, a ProFile drill is used to achieve a little GP at a time, until the desired depth is reached. The remaining 1 to 2 mm of the endo-tube of the SOM and a precise flow of air from the Stroppo Irrigator (Airrotor) can aid in the removal of all bits of sealer and GP to maintain vision while cleaning the access of the post space is done.

After the mechanical cleansing of the access is accomplished, it is flooded with 95 percent ethanol, use a Versa Brush (Vista) turning at approximately 500 rpm to be assured of cleaning the space walls free of sealer. After this step, the post used can be set in due to its fits passively.

The Fibercore post kit (Pentron) has a very high degree of success when the coronal seal has been achieved. We have stated that more endodontically treated teeth are lost due to improper coronal seal than to endodontic failure.

More recently, it was shown that in 1.5 million people over an eight-year period, there was a 97 percent success rate for endodontically treated teeth. Of the five percent of failures, we have found that almost 80 percent of those had no coronal coverage.

It is necessary to apply some basic restorative/prosthodontist principles to establish a detailed, predictable technique we want to achieve with the System "S" protocol of treatment.

It has been shown that teeth do flex insertion into the newly fit posts, the less radicular structure present, the weaker the tooth will be. And the weaker the tooth, the more

flexes. The more it flexes, the more movement will occur, and it becomes only a matter of time before the tooth fails. The canal system can be contaminated due to micro leakage, fracture due to lack of radicular strength, or the crown/post/core can break or come off. If a restoration is placed, entirely based on the retention of the foundation restoration, it is not an issue of whether the restoration will fail; it is a matter of when it will fail. It is critical that a minimal circumferential ferrule of 2 mm be established for retention of the restoration. A biological width of approximately 2 mm is required for the osseous crest and the cervical margin of the restoration.

Therefore, a minimum of 5.5 mm is necessary between the intended cervical margin of the restoration and the osseous crest.

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tooth is lost to disease? Once the referring doctors are made aware of the favorable benefits that will be derived, it becomes difficult for a consen-
sus group of doctors to continue the concept of eliminating untoward possibilities that can lead to fail-
ure of treatment.

Conclusion

The System “S” protocol de-
mands thoroughness in treat-
ment of the entire canal system. The author uses a Calamus for ob-
turation, but carver-based tech-
niques of using warm GP can be used with the same de-
gree of success, as long as they are done correctly. System “S” requires a commitment to com-
plete all six steps to avoid the many pitfalls that present them-
selves during treatment of the entire endodontic canal system. A survey of endodontists taken
about nine years ago stated that 38 percent always used an SOM, 50 percent sometimes used it, and 52 percent never used it.12 Hopefully, things have changed.

The use of an SOM is essen-
tial for us, as “endo-doers,” to achieve the high level of predict-
ability that our current technology al-
lows us to deliver. We only know what we see, and if we don’t see it we don’t know it. A good ex-
ample is the high percentage of fourth canals (95 percent) that can be found in the maxillary molar segment.

The clinical use of the SOM sig-
nificantly increased the number of canals being treated.13 If these canals are not found,
and the operator doesn’t take the time to locate and treat them, the predictability of success will be far less. It behooves all of us to do everything humanly possible to give our patients dental treat-
ment that will create the health they expect from our profession.

In general, our current endo-
dontic vision has been directed to treatment of the apical half of the root canal system. It should not be a problem in degrading the basic principles of bonding technology, restorative prin-
ciples and post core placement into our new endodontic treatment protocol. We, as a specialty, should be thinking in terms of being responsible for delivering something.

Obviously, those endodontists are so con-
scious with the endodontic lack of respect for radicular structure that they have not witnessed what often happens to that same tooth when preparing it for a crown. It is im-
pairing for the endodontic and restorative to be a team, work-
ing together for predictability, in the interest of the patient.

Our job as “endo-doers” is to learn, become teachers and educate the patients, staff and doctors we work with, so we can achieve dental health as a team. Let’s not “cave into” the demands of public convenience or political pressure, but rather be governed by proven dental principles, so we can achieve predictable endodontic success, saving the teeth our patients are born with, but is what endo-
dontists is all about?

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Fig. 1. Stain Removal Study Results (UK, 2012).

Beverly Hills Formula - Over 20 Years Perfecting the Business of Smiling

By Chris Dodd, CEO Beverly Hills Formula

Manufactured in Ire-
land, the Beverly Hills Formula ranges are rapidly becoming the go-to whitening products, with many people opting to use these safe at-home whitening toothpastes over harsh and abrasive treat-
ments. The company is con-
tinually expanding its range and endeavors on being a whitening toothpaste to suit all pref-
erences. With over 20 years’ experience, the company, based in Ireland, has grown considerably in the past few years. In 2015 Nelson’s Check-
out Magazine named Beverly Hills Formula as one of the top five oral care brands. This is an appreciable achievement when one takes into consideration the vast number of whitening toothpastes available on the market today.

The success of Beverly Hills Formula comes down to a num-
er of factors:

• The company’s range of whitening products are safe to use at home.
• The company has ensured that their products are as ef-
fective as possible, and have proved themselves as leaders in expert stain removal.

Launched in 2012, the Perfect White Range has been viewed as a revolutionary way of al-
leviatingBuild up of exposed dentin without options for products containing high percent-
ages of peroxide, potentially devastating to teeth in the long term. The company responded to the need for quality and ef-
ficent whitening products in the market. New product develop-
ment has always been something that Beverly Hills For-
mula held in great importance, and owes much of its core to the fact that they have brought some of the most innovative and effective products to the market. Launching in 2013, Perfect White Black was the first of its kind on the market. The toothpaste, containing activated charcoal, took the market by storm. Charcoal is a centuries old method of clean-
ing teeth, and this cutting-edge product was well received by consumers. Although a num-
ber of copy-cat products have emerged in the market, none have seen the same success as Beverly Hills Formula’s very own Perfect White Black, with qualified dentist and cosmetic doctor Dr Martin Kinsella say-
ing: ‘I’ve tried the Beverly Hills Perfect White toothpaste and found it to be effective in removing stains and helping to achieve a whiter, brighter smile.” Following on from this, the company introduced Per-
fecr White Black Mouthwash in 2015, also the first of its kind. The ‘shock to activate’
charcoal mouthwash keeps breath fresh for up to 12 hours, whilst removing stains. Perfect White Gold toothpaste, contain-
ing real gold particles was launched later that year. Both of these products have seen considerable success in the market.

2016 will be a huge year for Beverly Hills Formula, with the company planning on in-
roducing an expert whitening product. Perfect White Expert toothpaste, containing effective and safe levels of peroxide, will offer a high performance whit-
ening boost. As well as this, the company will launch Perfect White Black Sensitive, the first charcoal toothpaste for sensi-
tive teeth. The brand will also add a charcoal dental floss and

* About the Author

John J. Stropko received his DDS from the University of Michigan in 1964. For 24 years he practiced endodontics in Chicago, IL, and in 1989 he received a certificate in Periodontics from the University of Buffalo and has recently re-
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