Choosing your orthodontic instruments is about more than just price

Consider this fact: “All orthodontic instruments are not created equal!” Today, many companies are in the business of manufacturing orthodontic instruments, each with varying differences that affect the quality and life expectancy of instruments. Different grades of steel, finishes, tipping processes distinguish the quality of one instrument over another.

Due to high patient volumes orthodontic instruments are subjected to more processing cycles on a daily basis than a dental instrument. This additional processing requires higher quality materials and additional steps in the reprocessing. Ultrasonic cleaning in a well-functioning ultrasonic unit with proper solution, thorough rinsing, and the use of surgical milk prior to autoclave sterilization is recommended to protect your instrument investment during processing.

When choosing orthodontic instruments, the determining purchasing factor should not be based on price alone. Many orthodontists are unaware of the differences in the manufacturing process of their instruments and that not all instruments are created with equal care and attention. In many instances, the price of an instrument is not reflective of the quality received, which is an important aspect to consider when selecting instruments for usage.

Finding the Right Fit

Each instrument has a specific application in the orthodontic office. To maintain instrument sharpness, ligature, wire, and distal end cutters, all have specific wire size restrictions. Instruments are often misused. For example, cutters are used on wires that are larger than the recommendations or for completely different applications altogether. If a cutting instrument is used for wire sizes beyond its recommendation or used in another application, it can result in: tip scoring, dulling sooner than recommended usage provides, or even chipping of the cutting surfaces. When a hinged pliers is continually misused (Weingart, Howe), such as for crimping stops on an archwire, the tips of the instrument can often become warped and fail to meet flush together.

Orthodontic assistants using instruments that are in excellent working condition have an increase in chairside and procedure efficiency, as well as a decrease in frustration. They are able to complete procedures without needing to leave the patient to get replacement instruments that are functioning properly. By making certain you are purchasing the correct instrument for the correct application.
you allow the instrument to work properly and maintain function for an extended period.

Instruments of the highest quality surgical stainless steel withstand the high repetition of autoclave or dry heat sterilization processes in the orthodontic practice. Many instruments on the market have chrome plating, which usually covers a lesser quality steel. During use and processing, the chrome finish can become scratched enabling the lesser quality steel to become exposed. Once exposed, this steel can rust and/or corrode during autoclave sterilization. Once this corrosion starts, it can pass to otherwise healthy instruments during the sterilization process.

Any instruments that begin to show signs of rust and/or corrosion should be immediately removed from the instrument rotation until they can be repaired or replaced. This will help reduce the spread of corrosion to other healthy instruments. A periodic audit of all instruments for rust, corrosion, residual adhesives or other products will further assist in maintaining your instrument investment. Removal of all products (adhesives, sealants, etc.) should be done chairside prior to replacing the instrument into the cassette and inserting the cassette into the ultrasonic cleaning unit. This unit is designed to remove debris from instruments but will not remove adhesives or sealants.

There are several types of joints currently available with orthodontic instruments. The joint type can affect how the tips meet after multiple uses and sterilization processes. The orbit joint can be realigned if the instrument tips come out of alignment. The box joint will allow more flexibility in the joint that may cause the tips to come out of alignment if not properly maintained.

Instruments that have cutting surfaces, such as ligature and wire cutters, will often have carbide inserts at the tip of the instrument. This insert allows the instrument to perform its intended function without dulling or retaining scoring marks. The carbide material can cause corrosion and rust during the sterilization process if not treated prior to processing. If the instrument was not manufactured properly, the tip can have a higher risk of separation, as this is an attachment to the instrument. Higher quality instruments use the same grade surgical stainless steel used in all parts with an increased level of carbon and chromium in the tips to stay sharp longer. If a lesser grade stainless steel is used or if the instruments are not manufactured properly there can be an increase in corrosion during instrument reprocessing.

Most manufacturers of orthodontic instruments offer some of their instruments with a longer handle. As more and more orthodontists are placing brackets on second molars these longer handles have become more popular. It is important to try the instrument in the office prior to making a large purchase. Some technicians may not be able to comfortably use the longer handles and would prefer a more traditional length. Fitting an instrument to its operator is an important step in the instrument selection process. For example, if the instrument in consideration is for wire bending, the doctor may be the main operator of the instrument and should be the decision maker on the type, tip and length of handles.
WARRANTIES AND “WRAP-UP”

Each manufacturer and distributor offers specific warranties on their instruments. Many manufacturers produce more than one quality level of instrument. Manufacturers may also produce instruments for another company to the company specifications. All of these factors can affect the warranty that is provided. A thorough understanding of the warranty and sterilization requirements necessary to maintain the warranty is imperative.

Many manufacturers offer that their instruments can be autoclaved (although it is stated that dry-heat sterilization is recommended), but the process that is required during the sterilization process is unachievable by orthodontic offices with a higher volume of patient visits each day. The recommendations for sterilization in certain autoclave sterilizers include:

- Drying the joint and tip thoroughly with compressed air or a towel to ensure that the joint and tip are free from moisture.
- Placing instruments flat on autoclave tray with jaws open.

If the sterilization recommendations are not strictly followed and any damage is incurred to the instruments the manufacturer can void the warranty. One company states, “The use of rust inhibitor and silicone lube in the instruments’ joints is required after each cleaning and sterilization.” The practicality of this happening in a busy orthodontic practice is rare. Failure to comply with this would void the warranty for these instruments. It is always important to read the fine print before purchasing products.

The warranty will usually include a timeframe on the sharpening of the cutting tips for ligature cutters, wire cutters, and other cutting instruments. Again, this varies by company and manufacturer so it is necessary to review this when comparing instruments.

Your instruments are an investment and how you handle these expensive tools after their purchase will affect the longevity of the instruments. If instruments are loosely thrown into an ultrasonic cleaner and vibrated together without protection, damage is almost inevitable. The tips can become chipped or broken, instruments can get scratched, and fine tips can become bent. The investment of quality instruments needs to be secured by protecting them throughout cleaning and sterilization processes. Cassette processing will assure you that your instruments are protected during cleaning and sterilization. With cassette processing, instruments are held securely in place and not allowed to rub against other instruments during the ultrasonic cleaning and sterilization cycle, resulting in less damage — if any. Each clinician will have the necessary instruments in excellent working condition to complete procedures, saving time and allowing them to concentrate on providing quality patient care.

The use of high quality instruments and cassettes will not only protect your instrument during processing, but also demonstrate to your patients, their parents, and other dental professionals, that you are a responsible clinician. If instruments are corroded, rusty, or have residual adhesive or debris left on them, patients and parents have reason to question the level of sterilization and/or care you are providing. Patients are becoming more accustomed to seeing a wrapped sterile package of instruments when they are seen for dental procedures. Using wrapped cassettes will assure each patient that you have their protection and best interest in mind and your referring dentists will be confident you are providing the quality care they expect for their patients.

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