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Tips for Minimizing Errors in Crown and Bridge Impressions

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An exact impression affects the accuracy of the definitive cast. This is essential to fabricating prosthesis with good marginal fit, proper interocclusal contacts and accurate, and outstanding esthetics. Recently, DENTSPLY Caulk introduced Aquasil Ultra Cordless Tissue Managing Impression System as a novel means of recording crown and bridge impressions (see www.AquasilUltraCordless.com). This new system includes design features such as a new tray and wash material with improved tensile strength, improved safeguards against work time violations, and a contribute visibility disperser. However, if factors such as tissue management, tray selection, and seating and placement are not properly practiced, impressions with observable errors may still result.

According to a notable study, 85% of impressions sent to the laboratory contain at least one observable error. Three of the common errors seen in this study were: violation at the finishing line, pressure of the tray on soft tissues, and air bubbles at the finishing line. Let’s take a look at how the factors listed above (tissue management, tray selection, and seating) can influence impression-taking and discuss what practitioners can do minimize these errors to consistently record optimal crown and bridge impressions.

Tissue Management

Tissue management during crown and bridge procedures begins with tray design. Properly designed, wash materials often require no further tissue management to prepare the surrounding gingiva and achieve fluid control. Instead, sub-gingival preparations may require more tissue displacement and more aggressive fluid control to create an environment that can be easily impressed.

There are several techniques used by dentists to create sufficient tissue displacement and fluid control for crown and bridge impressions. These include mechanical retraction using gingival retraction cord, chemical agents for gingival retraction or hemostasis, and fluid control, and surgical techniques such as electrocautery or lasers. In some cases the practitioner may utilize all three methods based on factors such as prep design, location of the impression, gingival contours, and root form.

Aquasil Ultra Cordless Tissue Managing Impression System is designed to be used without the need for retraction cord or retraction pads in most cases. However, proper fluid control (e.g., xerostomia, edema, or blood) is still vitally important and should be verified before undertaking the final impression. The assistant’s attention to detail (e.g., removal of exudate, Sutton tunnels) is recommended to facilitate fluid control in these cases.

Tray Selection and Seating

Closed tray (e.g., triple trays, double arch stainless trays) are popular choices for many practices. They can be effective when used for the right cases. For simple (1-2 prepared teeth) impressions in the same arch, the clinician can use a closed bite tray. For more extensive cases involving a bridge, more than two units in the same arch, or where there is a terminal abutment and no mesial root – always use a full arch stock or custom tray.

When placing the impression tray, the practitioner should take special care to align the tray so that it is parallel to the occlusal plane, and seat the tray along the long axis of the teeth. Avoid seating the tray too far into the embrasures of the teeth first, as is common practice in alginate impressions. When trays are not seated along the axis of the tooth, pull and drag can result. It is also recommended that clinicians practice seating the tray prior to taking the impression. If a closed bite tray is used, verify that the patient can bite normally in maximum intercuspation and does not shift their jaw to the retruded state.

If the wrong size tray is selected or the tray is seated incorrectly, two errors may occur: the patient may bite on the tray or the tray may contact the patient’s soft tissue. In both instances, the impression will be recorded in a distorted position and this may lead to an inaccurate cast and prostheses.

Material Placement

Because of factors such as access, tissue management, and allowable introral work time, the placement of wash material around the impression will be challenging. Cushion techniques that employ a Qwik Impression Putty or backfill strategy may offer limited control for material placement. In these cases, placing the material directly into the sulcus and keeping the tip in the wash material during placement may be difficult. This may result in errors that include air bubbles at the finish line or voids at the finish time.

To improve wash material placement, it is recommended that practitioners go around the tooth at least twice and stabilize seating at different locations. Practitioners may also continue syringing the wash material onto an abutment tooth so that when the impression is removed it is not in contact with the preparation. By doing this, if an air bubble or void occurs, it will be in a less critical area away from the prepared tooth.

Conclusions

The new Aquasil Ultra Cordless Tissue Managing Impression System offers some novel features to help practitioners make better impressions. However, some of the factors that influence the success of the impression procedure fall outside the features of this new system. If clinicians practice good tissue management, select and seat trays correctly, and syringe material effectively, they can further ensure positive outcomes in the form of outstanding impressions and well-fitting crowns.

For more information about Aquasil Ultra Cordless Tissue Managing Impression System visit www.AquasilUltraCordless.com or call 1-800-642-4567.

References: