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Screw Retained Posterior Implant Crown Restorative Challenges

By Robert Winter (/spear-review/author/bob-winter/) on August 4, 2022 | (/bookmarks/bookmark/39935) SHARE

Implant (https://www.speareducation.com/spear-review/category/implants) restorations can be difficult as each patient may present with different challenges. The first step in this treatment is deciding between a screw retained or cement retained restoration. The optimal restoration is screw-retained (/spear-review/2014/01/understanding-screw-retained-implant-restorations) as it allows for more flexibility in adjustments and more secure placement. If a cement retained restoration is chosen there is a significant chance that cement is can be retained subgingivally, causing tissue inflammation and peri-implantitis. Once this is decided, the implant crown restorative challenges can occur during the procedure.

Creating the Optimal Implant Placement and Angulation

Determining the optimal implant crown placement and angulation can provide the next set of challenges. The more optimal the implant placement and angulation, the fewer insertion challenges (https://www.dentistrytoday.com/managing-implant-challenges-while-expanding-treatment-options/) there will be. The implant angle relative to the adjacent interdental tooth contours must be considered. Too often, the implant is surgically angulated strictly by evaluation of the adjacent roots rather than considering the angulation of the interproximal tooth surfaces. If the implant is placed off angle, changing from a straight to an angulated screw access may not solve the insertion path problem.

Most implant abutments extend into the head of the implant by several millimeters to take advantage of the Morris taper and engage in the timing of the “hex”. This insertion angle will dictate if the interproximal surfaces of the restoration can pass by the interproximal surfaces of the adjacent teeth.

Challenges with the Insertion Path

Additional challenges may be encountered when determining the best insertion path. Solutions can be reached through a possible change to the contour of:

- the adjacent interproximal surface, and / or
- the interproximal surface of the restoration.

The negative consequence of altering the implant restoration form interproximally to allow for this surface to pass by the adjacent tooth is the opening of the interdental gingival embrasure which may result in a lateral food impaction area.

There are two things that dictate the insertion path of a screw-retained restoration (https://decisionsindentistry.com/article/avoiding-complications-restorative-implant-dentistry/):

- the angulation of the implant, and
- the interproximal surfaces of the adjacent teeth.

If a restoration insertion path problem cannot be solved by altering an interproximal surface, a cemented restoration may be required. If a two-piece abutment and crown are fabricated, be certain you are aware that what goes into the implant dictates the insertion path in addition to the interproximal contacts of the adjacent teeth.

If you fabricate a separate abutment and crown with the plan of cementing them together to make a one-piece screw-retained restoration, caution is advised if you try them in independently. The crown insertion path of the abutment may be different than the insertion path of the abutment into the implant.

Visual Essay: Implant Crown Restorative Challenges and Solutions

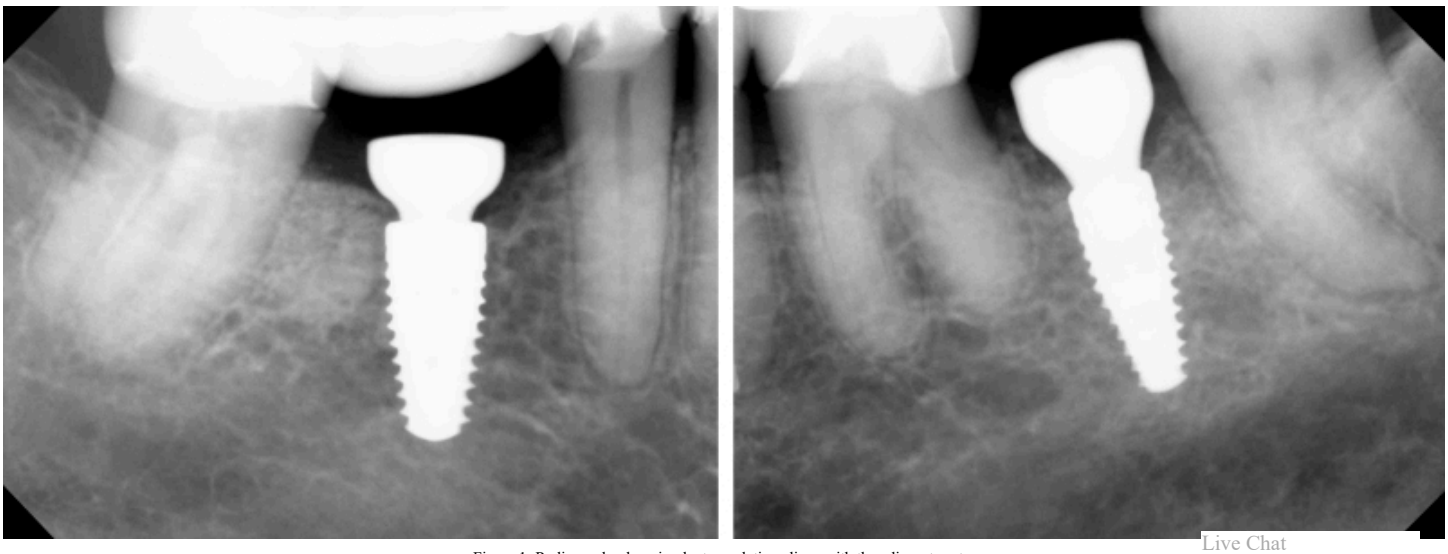

Figure 1: Radiographs show implant angulation aligns with the adjacent roots.

Figure 2: Three components for a screw-retained implant restoration.

Figure 3: The portion of the Ti base that extends into the implant.

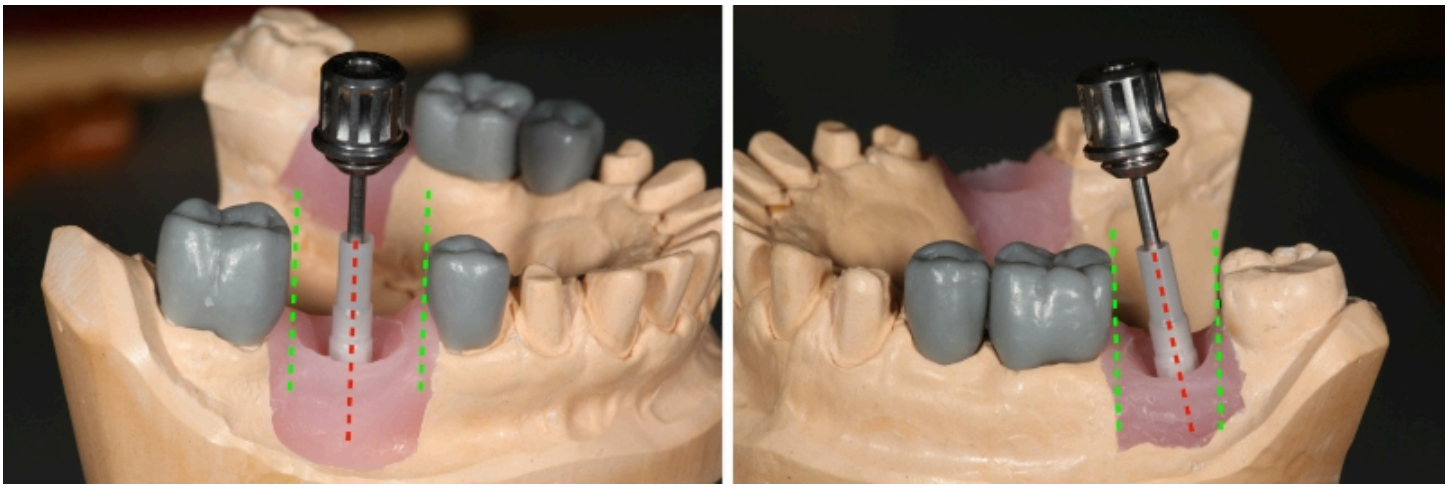

Figure 4: The implant angle will affect the path of insertion relative to the adjacent teeth.

Figure 5: An angled screw access will not change the insertion path of the restoration.

Figure 6: A cement retained crown on an abutment can change the insertion path.

Figure 7: A straight screw channel has a maximum of 10 degrees of leeway to change the access.

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Figure 8: The three components bonded together to make a one piece screw-retained restoration.

Figure 9: Final screw-retained restorations.

Summary

When conducting a screw-retained posterior implant restoration (https://online.speareducation.com/course/screw-retained-and-cement-retained-restorations), it is important to take into consideration the optimal implant placement and angulation as well as the insertion path intended. With careful planning, you can limit the impact of implant crown restorative challenges and improve the overall patient outcome.

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