

HOWTO

REMOVE ZIRCONIA CROWNS

Using KOMET's 4ZR diamonds for efficient zirconia crown removal.

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Information provided by KOMET USA.

Recently, I was talking with a group of dentists about the advantages of implementing new materials within their practice to increase efficiency and office profit. I was surprised to discover that few of them had thought about upgrading their rotary instruments to accomplish this goal.

There has been some advancement in dental bur technology including how to handle materials such as zirconia, which is harder and stronger than most metals used for crowns and bridges. Over the years, scientific development in dental cutting instruments has significantly changed the conventional techniques used to remove caries, prepare teeth and even polish and refine restorations. The challenges of stronger and harder new materials, such as zirconia used in the fabrication of crowns, bridges, posts and implant abutments to name a few, have forced both bur manufacturers and clinicians to re-evaluate the traditional rotary instruments that cannot stand up to the challenge of these new materials.

Everyday diamond burs

For years, diamond burs have traditionally been the "workhorse" in the dental operator. Dentists use diamonds because of their versatility in removing

large or small amounts of tooth structure or dental materials. Diamond burs also can be used to finish and blend surfaces of materials and tooth structure. Clinicians have depended on diamond burs to operate smoothly. They do not expect them to grab or dig into a tooth surface like its carbide counterpart. Traditional diamonds have historically demonstrated several limitations such as the heterogeneity of grain shapes leading to decreased cutting effectiveness. There's also the deficient binding of the diamond to the blank, which also can lead to ineffective cutting and a short life span.

Working with zirconia

Today, zirconia is a commonly used material for both crowns and bridges. Because of this, it makes sense to incorporate a zirconia bur into your arsenal. Even the coarsest diamond instrument will not cut through a zirconia effi-



4ZR DIAMOND CROWN CUTTER FEATURES

- Special bond to ensure permanent embedding of the diamond grains
- Optimal substance removal
- Extended service life



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AT A GLANCE

1. Fractured porcelain from the buccal portion of a three-unit zirconia bridge.
2. An initial cut was made at the thickest portion of the bridge at the distal bar of the substructure.
3. A secondary cut was made at smaller anterior portion of the bridge.
4. Care was taken to not go beyond the zirconia material and cut into the tooth.
5. A final cut was made to separate the bridge.
6. An adequate enamel layer and excellent function in the final zirconia bridge.



plifies efficiency and helps improve both production and profits for today's dentists on the cutting edge. The following is a clinical example of the 4ZR at work.

Clinical example

A patient presented with fractured porcelain from the buccal portion of a three-unit zirconia bridge (Fig. 1). This can occur because of inadequate thickness of porcelain on the zirconia substructure from over-grinding during occlusal correction for cementation or insufficient reduction in vertical preparation. Several treatment options were discussed with the patient, and he chose to have me replace the bridge.

STEP 01 As the bridge was securely attached to both anterior and posterior abutments, the 4ZR bur was selected for reduction and removal of the zirconia substructure. An initial cut was made at the thickest portion of the bridge at the distal bar of the substructure (Fig. 2).

STEP 02 A secondary cut was made at smaller anterior portion of the bridge (Fig. 3).

STEP 03 Facilitated by the smooth and easy operation of the 4ZR, care was taken to not go beyond the zirconia material and cut into the tooth (Fig. 4). The feel of cutting zirconia with the 4ZR is like cutting enamel, without need of any additional pressure even due to the hardness of the material.

STEP 04 A final cut was made to separate the bridge (Fig. 5), and the bridge came off with ease. It should be noted that it took less than 2 minutes to cut through the zirconia substructure.

STEP 05 Final post-operative image of zirconia bridge replaced shows an adequate enamel layer and excellent function (Fig. 6). There was very little adjusting at the time of delivery.

Conclusion

With the proper armamentarium this procedure was stress free and easy for patient, dentist and team. ●

ciently. Without a zirconia bur, you will be trying to cut through this material for hours and spend five times the amount you will in purchasing diamond instruments because they quickly burn out. That's a complete waste in time, money and resources.

Top on the list of zirconia burs is KOMET USA's 4ZR, a diamond built to cut through all zirconia put in front of it. There are many factors that influence the quality of a diamond bur; however, KOMET has addressed three factors that have made a huge impact in the zirconia bur market—blank, binder and particle size.

Through thoughtful design and technological advances, the 4ZR exem-