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FEATURES OF THE USE OF MILLED ZIRCONIUM DIOXIDE ABUTMENTS WITH CERAMIC  
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## ABOUT ARTICLE

**Key words:** zirconium dioxide, individually milled abutments, implant-supported prosthetics.**Received:** 30.01.2024**Accepted:** 04.02.2024**Published:** 09.02.2024**Abstract:** Due to its special properties, zirconium dioxide is today the material of choice for prosthetics on implants. In practice, the conditions for prosthetics are not always ideal. When teeth are manufactured at the level of the implant platform using an individual milling cutter, there is no need for special equipment or additional costs for the manufacture of additional expensive crowns. This clinical case shows that the use of individually milled zirconium dioxide abutments and ceramic veneers has many undeniable advantages in screw-fixed restorations.

## INTRODUCTION

High-tech ceramics based on zirconium dioxide have been used in dentistry since 1993 [2]. Their excellent properties of biological inertia and abrasiveness create the most favorable conditions for the durability of dental restorations. Smooth, hard surfaces of zirconium dioxide abutments and crowns do not adsorb microorganisms on their surface. This creates conditions for the long-term functioning of implants and artificial teeth. The special properties of zirconium dioxide make it the material of choice for implant restorations today [3]. Traditional approaches to implant-based prosthetics required an abutment (standard or custom-made) and a crown. In practice, the requirements for prostheses are not always ideal. Prosthetics on implants with standard abutments has

a number of undeniable disadvantages. The first is the topographic discrepancy between the contour of the gum and the ledge of the standard abutment. This is an example of a situation that often occurs. Depending on the clinical situation, the gingival margin can be narrow, and the standard abutment has to be shaved to bring its protrusion in line with the height of the gingival margin. This inevitably leads to a decrease in the thickness of the abutment wall and, as a result, a decrease in the strength characteristics of the prosthesis. Another option is a wide gingival contour. If the diameter of the neck of the abutment is much smaller than the gingival cuff, then the standard abutment may not be wide enough to create an aesthetic gingival contour. Secondly, abutments require special tools. For the manufacture of standard abutments, milling equipment must be used, for example, a high-speed turbine with water cooling when using zirconium abutments. Thirdly, these are additional costs. It is necessary to make a frame for future crowns, which significantly increases the cost of working with the patient. Fourth, in aesthetically important areas, in most cases, the prosthetic implant platform is located apically relative to the gum level, and in the interproximal region this distance can be quite large. In such cases, the correct installation of the crown and the removal of excess cement can be extremely difficult. In such cases, peri-implantitis is more likely. Fifth, another advantage of transocclusal screw fixation of prostheses based on implants is that, if necessary, you can visually inspect the area of the implant platform without destroying the artificial tooth. If the teeth are made according to the height of the implant platform using an individual milling cutter, then none of the above disadvantages are present. It is very important that there is no need for additional expensive crowns. Below are examples of restorations with screw fixation made of zirconium dioxide at the level of the abutment and the implant platform. The initial condition of the oral cavity is the absence of teeth 2. 4; A deficit in the volume of tissues between teeth 2.3 and 2.5 due to atrophy of the alveolar bone; the incision is displaced palatally between teeth 2.3 and 2.5, the muco-periosteal flap is moved anteriorly to eliminate the aesthetic deficit. An implant was installed; intraoral condition after 2 months. a - Impressions taken with an open spoon using silicone impression material. b - Impressions taken with an open spoon using silicone impression material. c - Impressions taken with an open spoon using silicone impression material. Making a model. Milling of an individual zirconium abutment with an anatomical shape of future teeth and a central rod for a fixing screw. Ceramic vinification of the zirconium frame was carried out. Finished ceramic restoration. Intraoral view. Clinical observation of these restorations for four years showed favorable results.

## **CONCLUSION**

The use of individually treated zirconium dioxide abutments with ceramic veneers has many undeniable advantages over screw-fixed restorations.

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