Case Report: Impression of steeply angulated implants

Impression of steeply angulated implants: A new method

Authors: Profs. Gregory-George Zafiropoulos & Oliver Hoffmann, Germany

In the present case report, a new method that allows impression taking of implants inserted at a steep angle is presented. The use of implants for the rehabilitation of the partially or fully edentulous patient has become a routine treatment modality. Improvements in the field of implant surgery and in implant prosthetics allow for functionally and aesthetically satisfying treatment results in the vast majority of cases. However, implants may have been placed at an incorrect angle or in excessive...
proximity to another tooth or the natural teeth. Although rather rare, these situations render impression taking and the consequent restoration of the placed implants difficult.\textsuperscript{3,4} In the present case report, a method to allow for treatment in such a situation is described.

\textbf{Case report}

A 60-year-old male patient reported to our office for restoration of two implants placed in regions 29 and 30 three months earlier at a different office (Fig. 1).

According to the records obtained from the previous treating dentist, a surgical guide was not used when placing the implants.

Implant 29 had been placed at an inadequate angle. Owing to the angulation of the implant, the simultaneous placement of two impression posts was not possible, rendering it impossible to take an impression (Fig. 2).

Since the implant was placed in proximity to the inferior alveolar nerve, removal of the integrated implant was not advisable.

The following approach was used to solve this problem:

\begin{itemize}
  \item Implant 30 presented with a minor mesial tilt. Therefore, a prefabricated impression post, together with the corresponding impression coping, could be placed (Fig. 3).
  \item Fig. 4. The 25-degree angulated abutment used.
  \item Fig. 5. CAD/CAM-fabricated impression coping placed on the abutment.
  \item Fig. 6. The coping covered with resin to increase retention.
  \item Fig. 7. Impression posts with copings in place.
  \item Fig. 8. Impression with implant analogues in place.
  \item Fig. 9. Custom-made abutments in place on the cast.
  \item Fig. 10. Metal-ceramic crowns in place on the cast.
  \item Fig. 11. Panoramic radiographs with the abutments in place.
  \item Fig. 12. The final restorations in place.
\end{itemize}
Various prefabricated angulated abutments were tried on implant 29. An abutment with a 25-degree angle was chosen because it was comparatively parallel to the impression post on implant 30 (Figs. 3 & 4).

The selected abutment was scanned and an impression coping was fabricated from non-precious metal (cobalt–chromium alloy; Zenotec NP, Wieland Dental) using CAD/CAM technology (Fig. 5). The coping was covered with a thin layer of resin (PATTERN RESIN, GC) and small spheroids were modelled coronally, labially and lingually to increase retention (Fig. 6).

The impression post, together with the coping, was placed on implant 30. The 25-degree angulated abutment, functioning as an impression post, together with the coping, was placed on implant 29 (Fig. 7).

An impression was taken using a polyether material (Impregum, 3M ESPE; Fig. 8).

Two custom abutments were fabricated, as well as two individual porcelain-fused-to-metal ceramic crowns (Figs. 9 & 10).

The abutments were placed on the implants using a custom-made key and torqued to 35 Ncm (Fig. 11). The crowns were then cemented on to the abutments using provisional cement (Figs. 12 & 13).

**Conclusion**

The method described allows for the successful restoration of malpositioned implants.

However, proper treatment planning should precede any implant placement to guarantee the ideal position and thus eliminate any additional treatment steps.

---

**Fig. 13** The panoramic radiograph after placement of the final restorations.

---

**Editors note:** A complete list of references is available from the publisher.

---

**Gregory-George K. Zafiropoulos, DDS, Dr. dent.,**

is a specialist in periodontology certified by the German Society of Periodontology. He received his PhD in Periodontology from the Philipp University of Marburg in Germany. He has been in private practice in Düsseldorf in Germany since 1993 and is a professor at the Università Cattolica del Sacro Cuore in Rome in Italy. Prof. Zafiropoulos has completed postgraduate studies in preventive dentistry (University of Athens in Greece), periodontology (Saarland University and Philipp University of Marburg in Germany), oral implantology (University of Göttingen/German Association of Dental Implantology) and implant prosthodontics (RWTH Aachen University in Germany). He worked as an adjunct professor at the University at Buffalo in the US. He is a diplomate of the International Congress of Oral Implantologists and a specialist in implantology certified by the German Society of Oral Implantology, and has published 130 articles internationally in the fields of periodontology and implantology.

---

**Oliver Hoffmann, DDS, MS, Dr. med. dent.,**

received his dental and doctoral degrees from the University of Würzburg in Germany in 1997. He received his certificate in periodontics and his master’s degree from Loma Linda University in the US. Furthermore, he is an associate professor at the Department of Periodontics at Loma Linda University and is an associate along with Prof. Zafiropoulos at a practice in Düsseldorf. Prof. Hoffmann is a diplomate of the American Board of Periodontology and an active member of the American Academy of Periodontology and the Academy of Osseointegration.

---

**Contact:**

Prof. Gregory-George K. Zafiropoulos
Blaues Haus
Sternstr. 61, 40479 Düsseldorf
Germany
zaifiropoulos@prof-zaifiropoulos.de
www.prof-zaifiropoulos.de