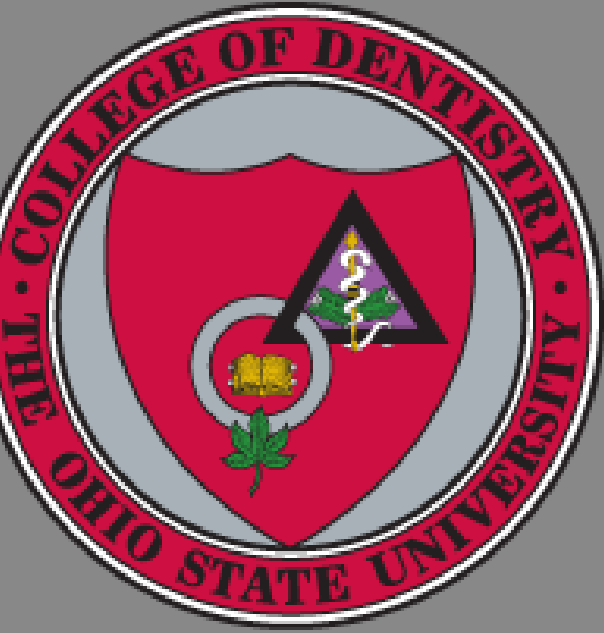




Computer-aided design and manufacture of implant indexing device for accurate repositioning of non-engaging abutment



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Patient Presentation

- 64-year-old female presents with a dislodged three-unit implant fixed prosthesis.
- Failure due to screw loosening and screw fracture.
- Prosthesis was screw retained to implants #3, #4 and to angled, non-indexed abutment #5 (Astra Tech, OsseoSpeed Tx, Dentsply).
- Accurate repositioning of the dislodged abutment would not be possible because it is non-engaging.

Aim

- To describe an implant indexing device to accurately position a non-engaging abutment.
- To describe the computer-aided design and manufacture process of this indexing device.

Methods

- Implant analogs were connected to abutments. (1)
- Non-engaging abutment was connected. (2)
- Definitive cast was poured. (3)
- Prosthesis was removed, leaving abutment. (4)
- Healing abutments (Ø 4.5 4 mm, Astra Tech OsseoSpeed Tx, Dentsply) were placed on implant analogs of #3 and #4. (5)
- Definitive cast with oriented abutments was scanned using benchtop scanner (E3, 3Shape A/S).
- Index with abutment screw access hole was designed using surgical guide module of implant planning software (Blue Sky Plan, Blue Sky Bio). (6)
- Index was printed (NextDent 5100, NextDent SG, 3D Systems, Inc.). (7)

- After second-stage surgery, healing abutments were placed at site 3 and 4. (8)
- Abutment was placed and oriented using index. (9)
- Abutment screw was placed through access hole and torqued to 25 N/cm. (9)
- Healing abutments were removed, and prosthesis was placed. Passivity was verified. (10)
- Pero-apical radiograph was taken to confirm complete seating of all abutments. (11)

Results

Implant indexing device can orient a non-engaging stock abutment and maintain abutment position during torquing of abutment screw.

Conclusion

Difficulties in abutment positioning can be predictably overcome with digitally designed indexes.

