

Topic: Implant therapy outcomes, surgical aspects

Background and Aim

To overcome the disadvantages of staged implant surgery and treatment, immediate loading concepts as well as flapless surgery approaches have been introduced in the last years. Specifically, promising results in terms of high success rates and remarkable esthetic outcomes have been reported for implants placed in extraction sockets and immediately loaded via provisional restorations. These techniques completely avoid a provisional removable denture and focus on preservation of the existing osseous and gingival tissues through immediate function or at least structural support.

The study examined the clinical performance of Astra Tech OsseoSpeed implants and its transgingival components in a one-stage procedure with immediate provisionalization in the esthetic zone.

Methods and Materials

In this prospective, bicenter study, 71 Astra Tech OsseoSpeed implants were inserted in 37 patients. All patients received immediate prosthetic restorations. Primary outcome variables were implant success, marginal bone levels and Pink Esthetic Score (PES).

Results

Mean primary stability at time of implant insertion was 24 Ncm; 7 further implants had to be excluded because of insufficient primary stability for immediate provisionalization (below 15 Ncm). There were 3 implant failures. Overall cumulative success rate was 95.6%. Mean follow-up for surviving implants was 12.4 months (range 4 to 24 months). Marginal bone loss averaged about 0.3 mm from the time of implant insertion to the 1-year follow-up. Mean PES ratings improved from 10.3 preoperatively to 11.6. In 83% of the implant sites it was possible to keep the gingival esthetics stable or even to improve it from the pre-operative examination to the final follow-up.

Conclusions

Survival rates and esthetic results suggest proof of principle for immediate provisionalization with Astra OsseoSpeed implants. Although marginal bone levels show small adaptive changes within the first year, PES ratings remained stable or improved in the vast majority of patients.



| Variables | | 0 points | 1 point | 2 points |
|-----------------------------|--------------------------------------|----------------------------------|--------------------------------------|-------------------------------------|
| mesial papilla | shape vs. reference tooth | absent | incomplete | complete |
| distal papilla | shape vs. reference tooth | absent | incomplete | complete |
| Level of soft tissue margin | level vs. reference tooth | major discrepancy more than 2 mm | minor discrepancy between 1 and 2 mm | no discrepancy or smaller than 1 mm |
| soft tissue contour | naturality, matching reference tooth | unnatural | fairly natural | natural |
| alveolar process contour | alveolar process deficiency | obvious | slight | none |
| soft tissue colour | color vs. reference tooth | obvious difference | moderate difference | no difference |
| soft tissue texture | texture vs. reference tooth | obvious difference | moderate difference | no difference |

Fig. 1 & Table 1: Pink Esthetic Score (PES) according to FÜRHAUSER and its criteria.



Fig. 2a: Pre-op aspect of upper premolar with recession.



Fig. 2d & e: Pre-op and 24-months post-op CB-CT.



Fig. 2c: Immediate provisionalization and bone reconstruction.



Fig. 2b: Root fracture causes facial bone resorption.



Fig. 2f & g: Radiographs at implant insertion and 24 months.



Fig. 2i: Delivery of zirconia abutment at 3 months.



Fig. 2c: Implant insertion in contact to the oral lamella.



Fig. 2f & g: Radiographs at implant insertion and 24 months.



Fig. 2j: Soft tissue regeneration at 24 months.



Fig. 3a: Pre-op aspect of incisor with recession and fistula.



Fig. 3d & e: Pre-op radiographs of incisor with root perforation.



Fig. 3b: Peri-implant mucosa indicates preservation of tissues.



Fig. 3b: Extraction socket with facial bone resorption.

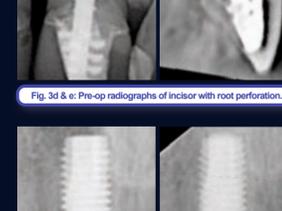


Fig. 3f & g: Radiographs at implant insertion and 1 year.



Fig. 3c: Delivery of zirconia abutment at 3 months.



Fig. 3c: Splinted immediate temporary restoration.

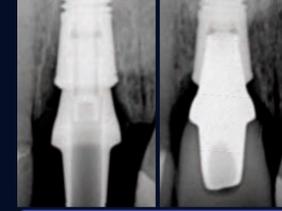


Fig. 3f & g: Radiographs at implant insertion and 1 year.



Fig. 3j: Facial soft tissue regeneration at 1 year.

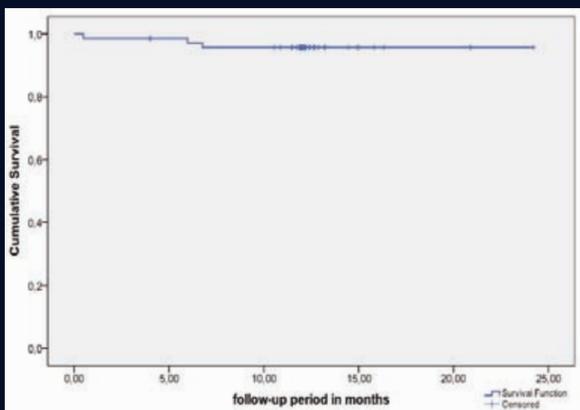


Fig. 4: Overall cumulative success rate was 95.6% within a time range up to 24 months.

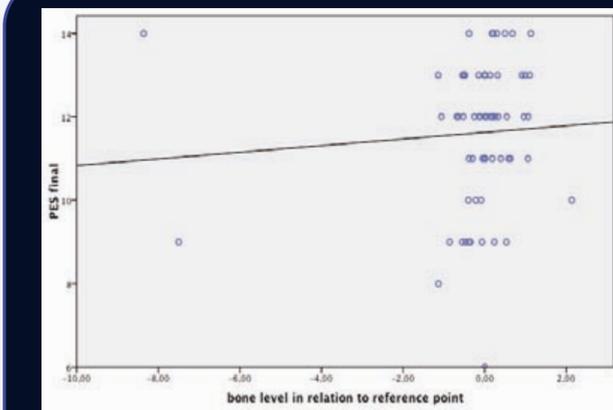


Fig. 5: No significant correlation between marginal bone level and esthetic outcome.

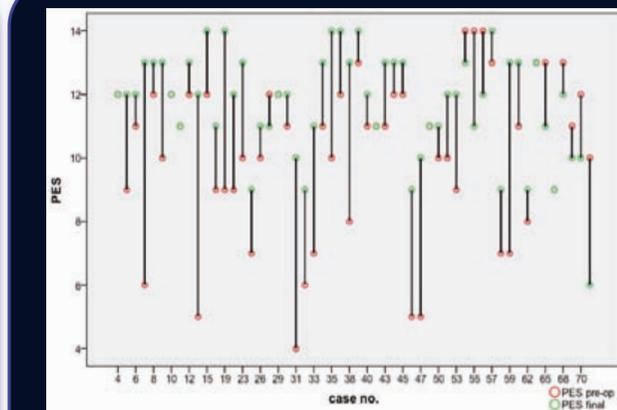


Fig. 6: Stable or improved PES ratings in 83% of the implant sites.

References

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- De Kok IJ, Chang SS, Moriarty JD, Cooper LF. A retrospective analysis of peri-implant tissue responses at immediate load/provisionalized microthreaded implants. Int J Oral Maxillofac Implants 2006; 21(3): 405-12

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