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Patent-Based Socket-Shield Technique Utilizing Bone Trephine: A Case Series

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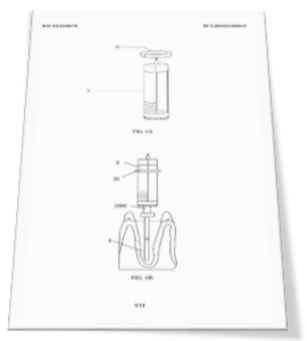
INTRODUCTION & AIM

Post-extraction bone remodeling, often accompanied by buccal bone loss, presents a challenge in implant dentistry, potentially complicating implant placement and compromising esthetic outcomes. The socket-shield technique (SST) preserves the buccal root fragment to mitigate these changes; however, conventional SST is technique-sensitive, time-consuming, and carries risks such as root injury or shield displacement. A guided trephine-based technique was developed to enhance accuracy and predictability in shield preparation

METHOD

This case series reports on three patients with non-restorable maxillary anterior teeth treated in a private practice. Surgical guides were digitally designed and fabricated to direct trephine burs, as described in a patented approach (WO 2024/038478 AI;USPTO No. 509030716). The guided trephine was used to prepare and preserve a precise buccal root segment to maintain periodontal and alveolar integrity. Immediate implants were placed in the palatal socket, and restorations were completed following a standard delayed protocol. Clinical and radiographic follow-up after loading demonstrated stable outcomes at 12months (Case 1), 6 months (Case 2), and 3 months (Case 3). Long-term data are not yet available



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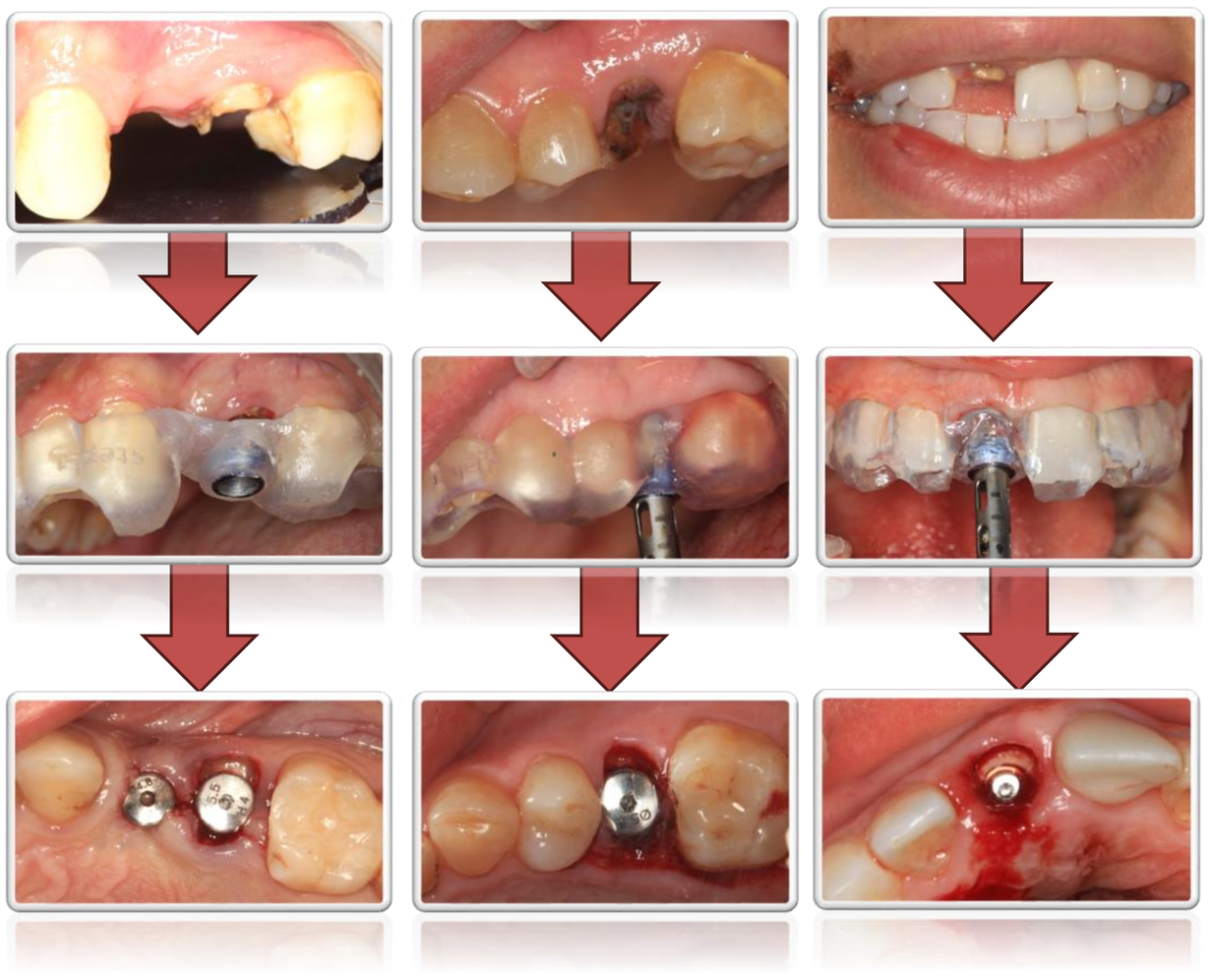
Case #2

Case #3

Cass #1 Case #2 Case #3



RESULTS & DISCUSSION

All cases showed successful preservation of buccal root fragments. With reduced operative time and improved surgical control based on the author's clinical experience. Radiographs and clinical assessments demonstrated stable peri-implant bone levels, maintained ridge contours, and indicated satisfactory esthetic outcomes. No complications, such as shield mobility or adjacent root damage, were reported.

CONCLUSION

The guided trephine-based socket-shield technique may offer advantages over conventional SST in terms of precision, reproducibility, and reduced chair time. However, the present report is limited by the inclusion of only three cases with very short follow-up periods. Although early results appear to be stable both functionally and esthetically, the technique requires validation through larger, well-controlled studies to confirm itsreliability and efficiency, thereby supporting wider adoption by clinicians.

FUTURE WORK / REFERENCES

I’m working toward publishing a research study and manufacturing the kit

1. Hürzeler MB, Zuhr O, Schupbach P, Rebele SF, Emmanouilidis N, Fickl S. The socket-shield technique: a proof-of-principle report. J Clin Periodontol. 2010 Sep;37(9):855-62. doi: 10.1111/j.1600-051X.2010.01595.x. PMID: 20712701.
2. Al Dary H, Al Hadidi A. The socket shield technique using bone trephine: a case report. Int J Dent Oral Sci. 2015; 5:1-5.
3. WO2024038478 – SOCKET SHIELD TECHNIQUE KIT