Clinical performance and outcomes of a platform switched, multi-level surface implant system – a prospective clinical study

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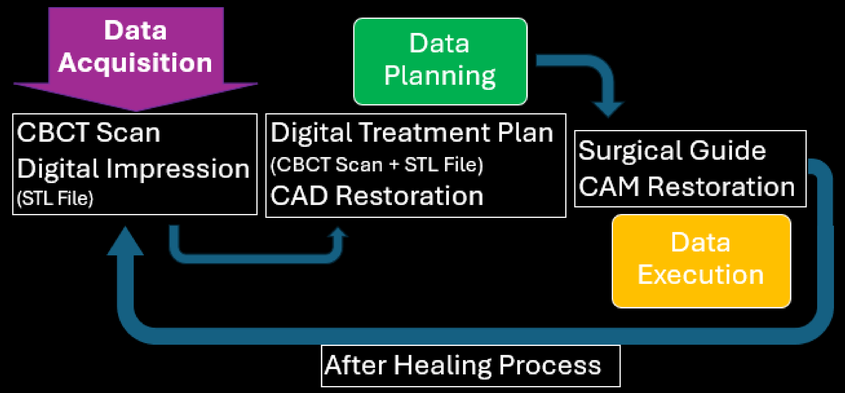
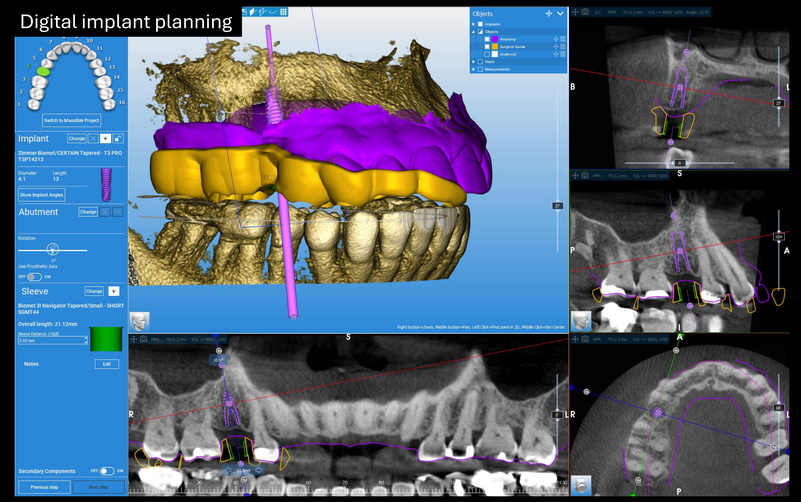
INTRODUCTION

Development of implants with increased thread depth accelerates initial bone to implant contact[1,2] allowing for immediate and early loading protocols[3].

An implant with deeper apical threads that allows higher insertion torque (IT) and initial implant stability (ISQ) at implant placement, with a built-in platform switch design was developed.

Aim: Prospective observational clinical study to evaluate the clinical performance (IT, ISQ, probing depth, bleeding on probing and implant survival), bone loss and patient reported outcomes of this implant design up to 1-year follow up.





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MATERIALS AND METHODS

Patients with edentulous areas in need of a dental implant were enrolled in this clinical study (IRB# 4572).

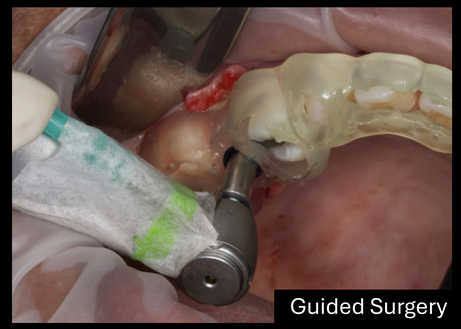
Implants were placed in the edentulous sites and IT, ISQ values were recorded.

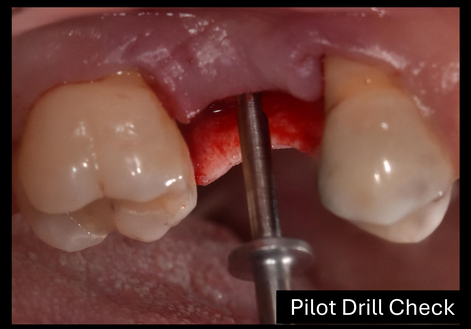
The implants were restored using immediate or delayed loading protocols.

Probing depth [PD], bleeding on probing [BOP], bone levels (standardized), implant survival and patient satisfaction were recorded at prosthesis delivery and 1-year follow-up.

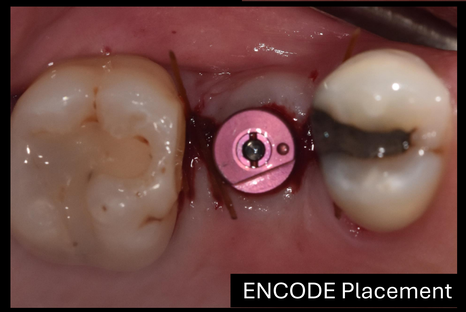
The results were analyzed using descriptive statistics for all parameters.

Bone levels were analyzed using paired t test.


Guided Surgery


Pilot Drill Check

ISQ Peg


ENCODE Placement

Radiographic Control

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RESULTS

30 patients (13 male; average age: 61) were recruited (31 implants).

23 implants were placed using a one-stage approach, 6 received immediate temporary crowns.

19 maxillary implants: IT ranging 15-80 Ncm; average ISQ of 67.8.

12 mandibular implants: IT ranging from 12-80 Ncm; average ISQ of 81.2.

22 final prosthesis delivered; 11 maxillary with average ISQ 79 and PD of 3.83 mm and 11 mandibular with an average ISQ 83.7 and PD of 3.05.

No BOP or implant failures observed.

All patients (n=11) reported excellent satisfaction with the overall treatment, comfort and speaking, 81% of the patients reported excellent satisfaction for eating. Study is ongoing.

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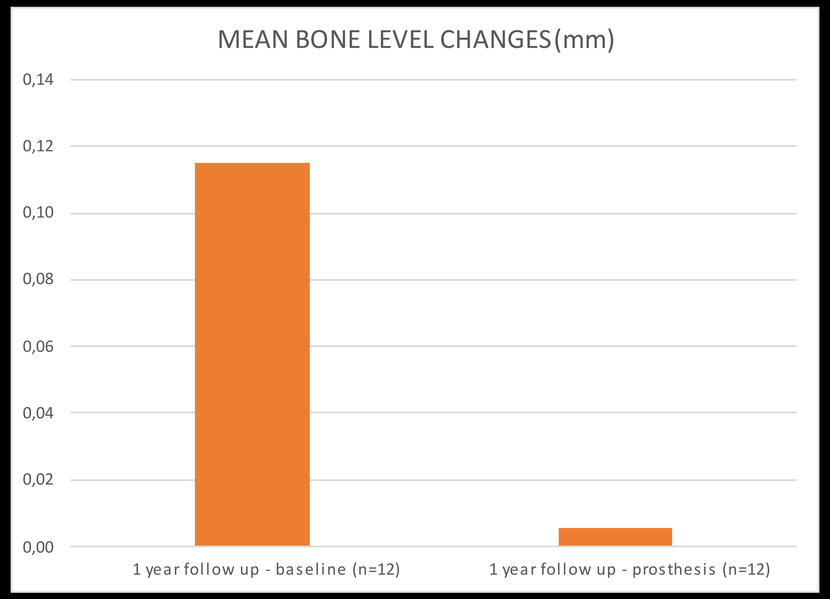
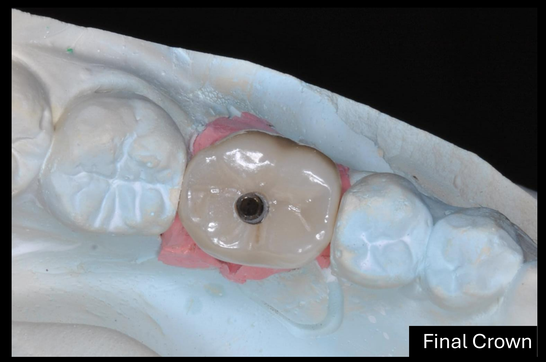


Bone Level Changes:

1 year follow up – baseline: 0.12 mm (p=0.07)

1 year follow up – prosthesis placement: 0.01 mm (p=0.861)

Non-significant small increase in bone levels observed from baseline.



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DISCUSSION

Majority of the implants received a temporary crown or a healing abutment (83%).
After 1 year follow up of 11 patients (12 implants), we found an average of 0.12 mm bone loss, suggesting a trend of minimal bone loss.

CONCLUSION

The platform-switched, progressively-deep-threaded implant system achieved higher IT and ISQ values with acceptable clinical performance like PD, BoP, Implant survival and at 1 year follow up showed minimal bone loss. Overall patient satisfaction was excellent.

ACKNOWLEDGEMENTS

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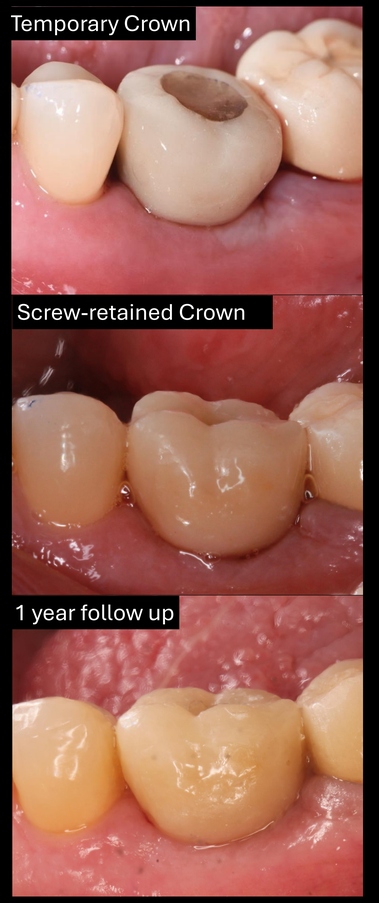
3. Ryu HS, Namgung C, Lee JH, Lim YJ. The influence of thread geometry on implant osseointegration under immediate loading: a literature review. J Adv Prosthodont. 2014 Dec;6(6):547-54.