Poster
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CLINICAL
INNOVATIONS

MARGINAL BONE SUPPORT AND SOFT TISSUE AESTHETIC RESPONSE OF THE TRANSMUCOSAL VERTICAL NECK® IMPLANT: A THREE-YEAR PROSPECTIVE STUDY

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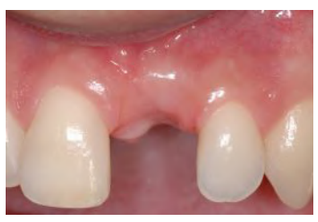
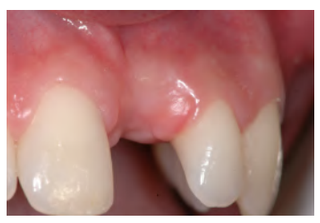
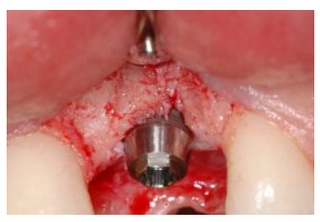
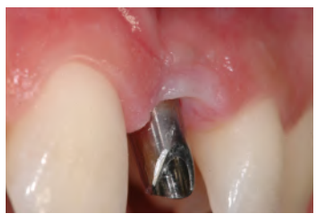
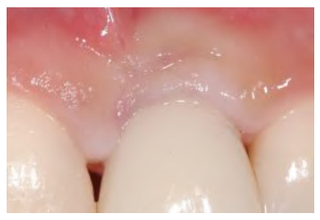
Abstract

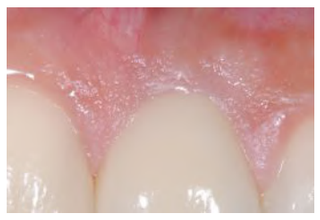

Preoperative photograph: front view.

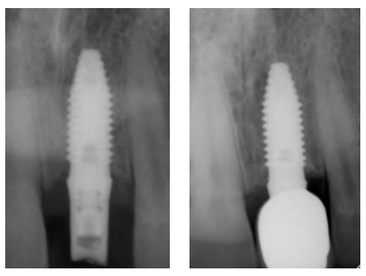

Preoperative photograph: lateral view.


Implant positioning in site 21


Gingiva on the abutment, after a first, immediate, adaptation around the emergence profile of the provisional crown.


Provisional crown just cemented.


Definitive crown cemented after six years.


Periapical radiographs before crown delivering and after six years.

Background and Aim

In these recent years, implant therapy has been focusing on esthetic outcome as an important goal to be achieved in addition to the osseointegration. Esthetics is primarily based on no-very limited crestal bone loss during healing, integration and proper remodeling of the periimplant tissues around an artificial crown. The concept of a coronally flaring out of the implant neck and abutment was thought respectively to increase the implant stability after placement and shape the soft tissues during healing. This concept have been challenged by this new design were a diameter reduction of the neck and the presence of grooves as opposed to microthreads around it, would preserve the crestal bone from a detrimental pressure and in turn resorption. In addition, a peculiar convergent-walls-transmucosal segment in continuity with the abutment might allow a coronal soft tissue development to be subsequently shaped by a well designed provisional before the final crown is delivered.
This study examines the clinical performance (survival rate, bone loss [BL], marginal bone levels [MBL] and Pink Esthetic Score [PES]) of the transmucosal Vertical Neck® implant placed into edentulous sites after a follow-up of at least 36 months.

Methods and Materials

44 patients (20 male, 24 female with average age of 59 ± 13.55 years) without periodontitis, systemic disease or contraindications to surgical therapy (ASA 1 or 2), with good oral hygiene (FMPS < 20 %, FMBP< 20%) and at least a single gap either in maxilla or in mandible received 67 single transmucosal Vertical Neck® implants. All implants were placed after full thickness flap elevation without releasing vertical incisions and papilla involvement whenever possible.
The featheredge type of the preabutment-abutment complex allowed the surrounding tissues to freely develop coronally and be shaped by the crown margin (provisional and/or definitive crown) according to the CEJ of the adjacent teeth and the desired tissue level. Implants with 3.7, 4.1, 4.8 mm diameters and lengths of 8, 10, 12 mm were used in this study.
All restorations were designed with the CAD-CAM technology, made of zirconium and ceramic layering and retained with cement or screw.
Interproximal MBL was determined by standardized periapical radiographs and calibrated through the ImageJ software (NIH – Bethesda - USA) measuring from the implant shoulder to the first bone implant contact; implant success was assessed according to the criteria established by Buser[1], and the PES according to the Furhauser[2] criteria.

Results

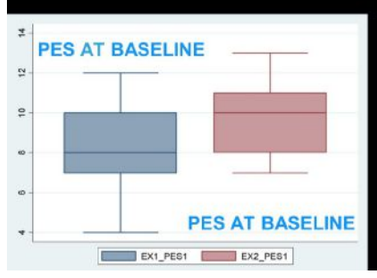
All Vertical Neck® implants were still in function at 36 months follow-up reporting a survival rate of 100%.
Marginal bone height at the level of the implant shoulder averaged 0.13 ± 0.94 mm at baseline and -0.82 ± 0.87 at the final follow-up. The cumulative Bone Loss average -0.69 ± 1.50 mm at 36 months follow-up and seemed to be influenced by the Vertical Neck® implant diameters.
The mean PES ratings were 9.0 ± 2.0 (range, 7-11) at baseline and 12.5 ± 1.5 (range, 10-14) at the final follow-up. In 100 % of the patients, the PES was improved, reaching an almost perfect result according to Cosyn[3] observations.
No difference between cement and screw-retained crowns were found for all parameters.

IMPLANTS N=67 PATIENTS N=44	DIAMETER 3,7	DIAMETER 4,1	DIAMETER 4,8	CUMULATIVE
BL (Bone Loss)	-O,46	-0,97	-0,75	-O,69

SURVIVAL: 100 % 67 IMPLANTS, 44 PATIENTS

COMPLICANCES: NEITHER BIOLOGICAL OR MECCANICAL

PES	INITIAL PES CROWN DELIVERY	PES (40 MONTHS)	TIME (MONTHS)
TOTAL CROWNS (N=27)	9,05 ± 2,0	12,5 ± 1,5	40,65
CEMENTED (N=22)	9,1 ± 2,1	12,5 ± 1,5	41,7
SCREW-RETAINED (N=5)	8,6 ± 1,4	12,4 ± 2,0	39,6

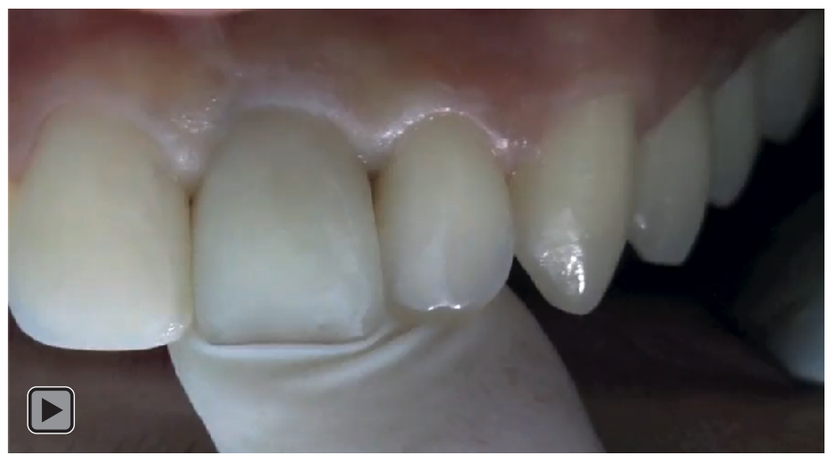


Conclusions

Success rates, MBL, BL, and esthetic results suggest that Vertical Neck® implants may have the ability to preserve the marginal bone height after a follow-up of 36 months.
Vertical Neck® seems to be a promising implant system predictable and reliable.
The peculiar configuration of its transmucosal component would directly influence marginal bone remodeling and soft tissue level.
Remarkable final PES improvement warrants further investigations on the Vertical Neck® implant concept.

References

Buser D, Weber HP, Lang NP. Tissue integration of non-submerged implants. 1-year results of a prospective study with 100 ITI hollow-cylinder and hollow-screw implants. Clin Oral Implants Res. 1990 Dec; 1(1):33-40.
Fürhauser R, Florescu D, Benesch T, Haas R, Mailath G, Watzek G. Evaluation of soft tissue around single-tooth implant crowns: the pink esthetic score. Clin Oral Implants Res. 2005 Dec; 16(6):639-44.
Cosyn J, Eghbali A, De Bruyn H, Dierens M, De Rouck T. Single implant treatment in healing versus healed sites of the anterior maxilla: an aesthetic evaluation. Clin Implant Dent Relat Res. 2012 Aug; 14(4):517-26.



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