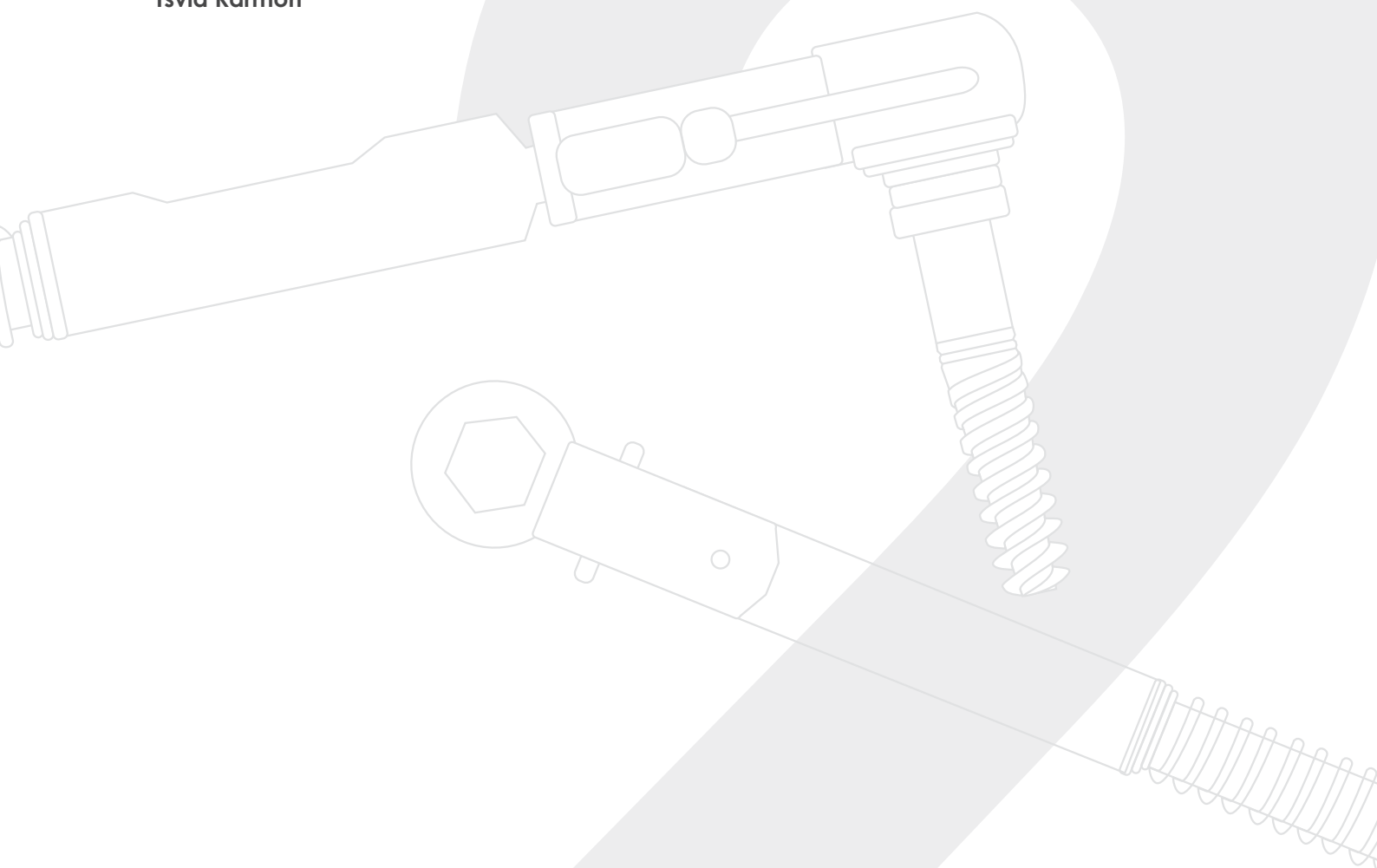




A Retrospective Multi-Centre Study on the Spiral Implant

**Benny Karmon DMD¹, Jerry Kohen DMD²,
Ariel Lor DMD³, Yiftach Graciany DMD⁴,
Zvi Laster DMD⁵, Gideon Hallel DMD MPA⁶,
Tsvia Karmon**



A poster presented at the World conference 2007, Las Vegas, Nevada, USA

¹Petach Tikva, Israel, ²Holon, Israel, ³Tel Aviv, Israel, ⁴Petach Tikva, Israel, ⁵Kinneret, Jordan Valley, Israel, ⁶Tel Aviv, Israel

A Retrospective Multi-Centre Study on the Spiral Implant

Benny Karmon DMD, Jerry Kohen DMD, Ariel Lor DMD, Yiftach Gratcianny DMD, Tsvi Laster DMD, Gideon Hallel DMD MPA, Tsvia Karmon

Purpose

To assess the survival rate of the SPIRAL implant with its special advanced design, (*Alpha-Bio Tec, Petach-Tikva, Israel*) in regular and complicated cases.

Materials and Methods

Consecutively placed SPIRAL implants in six centers were retrospectively followed-up according to a stated protocol. Patient history data and information from the performed treatment were computerized in a database. Failures types and causes were also registered.

The advanced SPIRAL implant design (Fig. 1) incorporates several features including:

Excellent primary stabilization (Fig. 2)

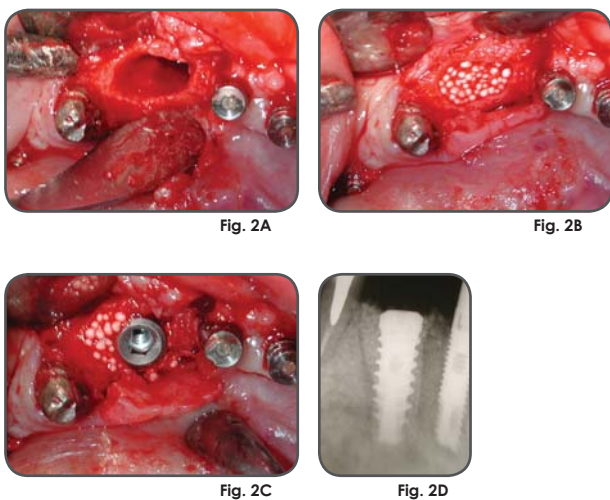
Self-condensing, self-tapping and self-drilling (Fig. 3).

Other features allow placement in narrow osteotomies and controlled direction of the insertion path (Fig. 4).

Fig. 1. The advanced SPIRAL implant for demanding situations.

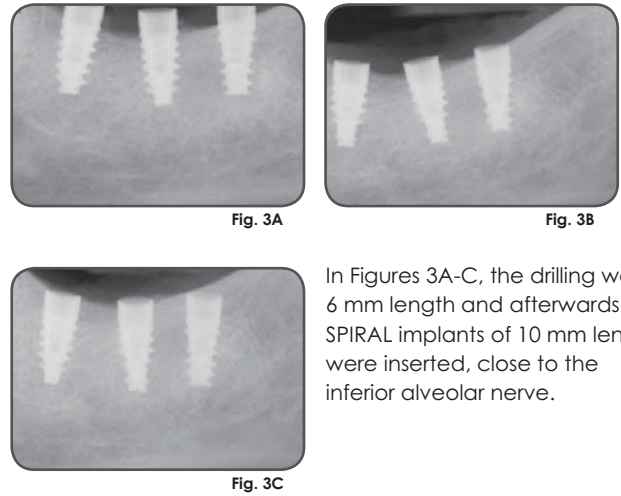


Figures 2 A-D: Achieving primary stability to 50 N/cm with only 1 mm of bone.



In Figures 2A-D the SPIRAL implant is inside a large defect and fixated in only 1 mm of bone. The defect around the implant is filled with a synthetic bone augmenting material.

Figures 3 A-C: Self drilling, self tapping.

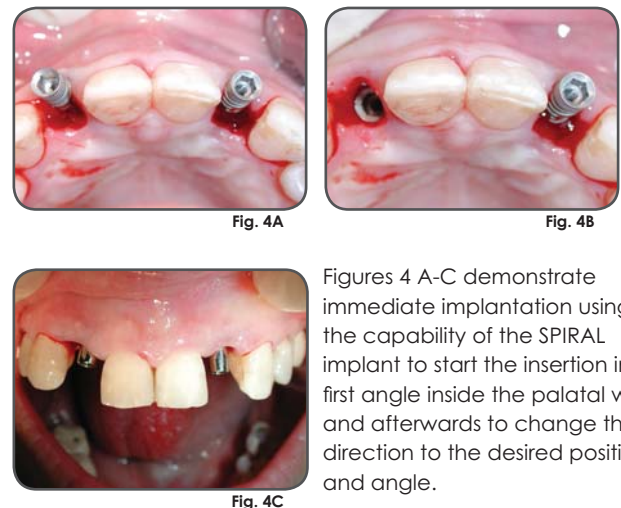


In Figures 3A-C, the drilling was 6 mm length and afterwards 3 SPIRAL implants of 10 mm length were inserted, close to the inferior alveolar nerve.

A total of 648 implants were placed in 251 patients; 362 implants were placed in the maxilla and 286 implants in the mandible. 55% of the implants were placed in the anterior and 45% in the posterior regions of the jaws (Fig. 5). Implant diameters of 3.75, 4.2 and 5.0 mm were used in 53.1, 30.1, 16.7 % of the sites, respectively and 1 implant of 6 mm width. The 13 mm long implant was the most frequently used with 274 implants followed by the 10 mm with 145 implants placed, 11.5 mm with 130 implants placed, 16 mm with 99 implants placed (Table 1).

The surgical procedure included; delayed loading with a one-stage procedure and immediately and early loaded implants 36.4% (Fig. 6). Most of the restorations are cemented bridges 81.6% (Fig. 7). Both healed and extraction sites were included. Previous augmentation procedures had been performed for 2.3% of the implant sites, 24.1% of the sites were augmented at the time of implant placement, 12.5% more of the implants were inserted in augmented maxillary sinuses (Fig. 8). The current follow-up period range from 12 to 48 months (mean-time 27.4 months) following implant insertion.

Figures 4 A-C: Changing the direction during the insertion.



Figures 4 A-C demonstrate immediate implantation using the capability of the SPIRAL implant to start the insertion in a first angle inside the palatal wall and afterwards to change the direction to the desired position and angle.

Fig. 5: Implant distribution according to implant Location

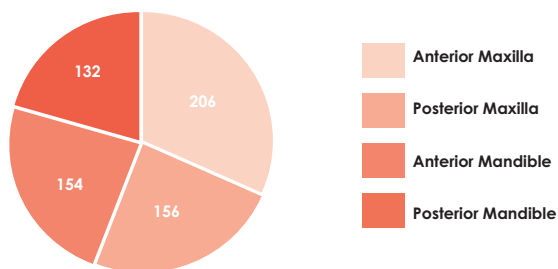


Table 1: Implants distribution according to Implant size

	10 mm	11.5 mm	13 mm	16 mm	Total
Ø 3.75 mm	77	54	153	60	344
Ø 4.2 mm	35	51	81	28	195
Ø 5 mm	33	25	39	11	108
Ø 6 mm	0	0	1	0	1
Total	145	130	274	99	648

Fig. 6: Implant distribution according to loading mode

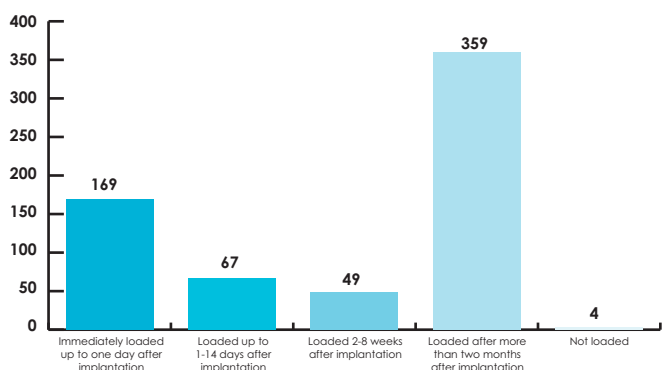


Fig. 7: Implant distribution according to the restorations performed.

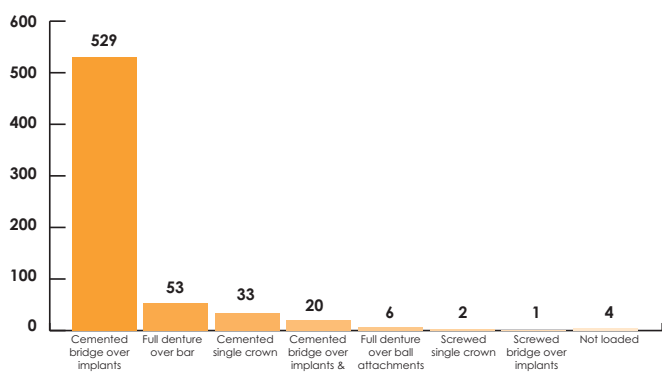
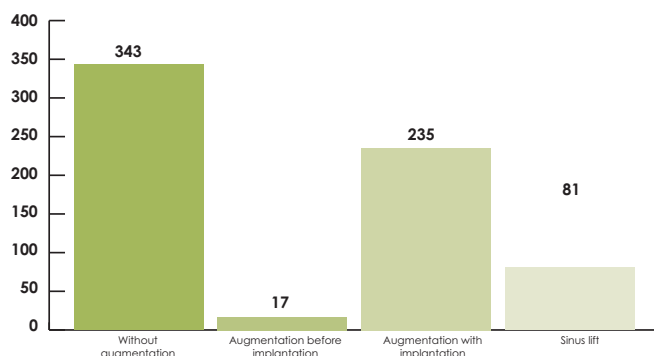
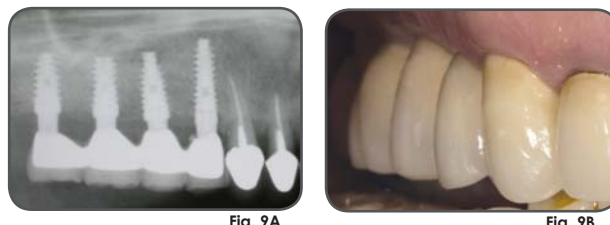


Fig. 8: Implant distribution according to Augmentation procedures.



Follow up

Figures 9 A-B: Follow up of 4 years with "platform switching".



Figures 9A-B demonstrate one case of 4 SPIRAL implants in the right posterior maxilla, with "platform switching". After 4 years of follow-up, minimal or no apparent bone resorption.

Results

Eleven implants (1.7%) have failed, 7 of them within the first month following placement. Cumulative survival rate is presented in Table 2.

Table 2. Life table analysis and 4-year success data for 648 implants

Interval (years)	No of implants	Failure	CSR%
1	648	9	98.9
2	625	1	98.5
3	358	1	98.3
4	110	0	98.3

CSR – Cumulative Survival Rate

Conclusion

This initial report demonstrates a survival rate of 98.3% after 4 years follow-up of the advanced SPIRAL implant. This high survival rate, which is similar to values reported in other studies, was achieved although 76.1% of the implants were inserted in very demanding situations like immediate implantation 31.8%, immediate and early loading (up to 14 days from implantation) 36.4%, implanting together with augmentation 24.1% and simultaneously with sinus lift procedures 11.7%.

References

1. Albrektsson T. A multicenter report on osseointegrated oral implants. *J. Prosthet. Dent.* 1988;60:75-84
2. Adell R, Eriksson B, Lekholm U, Branemark P-I, Jemt T. A long term follow-up study of osseointegrated implants in the treatment of totally edentulous jaws. *Int. J. Oral Maxillofac. Implants* 1990;5:347-559
3. Engquist B, Bergendal T, Kallus T, Linden U. A retrospective multicenter evaluation of osseointegrated implants supporting overdentures. *Int. J. Oral Maxillofac. Implants* 1988;2:129-134
4. Jemt T, Lekholm U, Adell R. Osseointegration implants in the treatment of partially edentulous patients: A preliminary study on 875 consecutively placed fixtures. *Int. J. Oral Maxillofac. Implants* 1989;4:211-217
5. Szmuler-Moncler S, Reingewirtz Y, Weber HP. Bone response to early loading: the effect of surface state. In: Davidovitch Z, Norton LA (eds). *Biological Mechanisms of Tooth Movement and Craniofacial Adaptation*. Boston: Harvard Society for the Advancement of Orthodontics, 1996: 611-616.
6. Szmuler-Moncler S, Salam H, Reingewirtz Y, Dubruille JH. Timing of loading and effect of micro-motion on bone-implant interface: a review of experimental literature. *J. Biomed. Mater. Res.* 1998; 43: 192-203.
7. Esposito M, Hirsch J-M, Lekholm U, Thomson P. Biological factors contributing to failures of osseointegrated oral implants. (I) Success criteria and epidemiology. *Eur. J. oral Sci.* 1998;106:527-551
8. Roos J, Sennerby L, Albrektsson T. An update on the clinical documentation on currently used bone anchored endosseous oral implants. *Dent. Update* 1997;24:194-200
9. Van Steenberghe D, Quirynen M, Naert I. Survival and success rates with oral endosseous implants. In: Lang NP, Karring T, Lindhe J. (eds). *proceedings of the third European Workshop on periodontology: implant Dentistry* Berlin: Quintessenz, 1999;242-254.
10. Albrektsson T, Zarb G, Worthington P, et al. The long-term efficacy of currently used dental implants: a review and proposed criteria for success. *Int. J. Oral Maxillofac. Implants* 1986; 1: 11-25.
11. Alpha-Bio LTD. Instruction for use, Surgical Manual.
12. Brocard D, Barthelet P, Baysse E, Duffort FJ, Eller P, Justumus P, Marin P, Oscaby F, Simonet T. A Multicenter Report on 1,022 Consecutively Placed ITI Implants: A 7-Year Longitudinal Study. *Int. J. Oral Maxillofac. Implants* 2000;15:691-700
13. Bahat O., Branemark System Implants in the Posterior Maxilla: Clinical Study of 660 Implants Followed for 5 to 12 Years. *Int. J. Oral Maxillofac. Implants* 2000;15:646-653
14. Branemark PI, Hansson BO, Adell R, et al. Osseointegrated implants in the treatment of the edentulous jaw. Experience from a 10-year period. *Scan. J. Plast. Reconstr. Surg.* 1977; 11 (suppl 16): 1-132.
15. Sullivan DY, Sherwood RL, Porter SS. Long-term performance of OSSEOTITE® implants: a 6-year follow-up. *Compendium* 2002; 22(4): 326-333.
16. Friberg B, Jemt T, Lekholm U. Early failures in 4641 consecutively placed Branemark dental implants: a study from stage I surgery to the connection of completed prostheses. *Int. J. Oral Maxillofac. Implants* 1991; 6: 142-146.
17. Cooper L, Felton DA, Kugelberg CF. A multicenter 12-month evaluation of single-tooth implants restored 3 weeks after 1-stage surgery. *Int. J. Oral Maxillofac. Implants* 2001; 16: 182-192.
18. Schwartz-Arad D., Kidron N., Dolev E. A long-term study of implants supporting overdentures as a model for implant success. *Journal of Periodontology* Vol. 76 (pp. 1431-1435) 2005



 **AlphaBio**^{TEC}
Simplantology

www.alpha-bio.net

Alpha-Bio Tec Ltd.

7 Hatnufa St. P.O.B 3936
Kiryat Arye, Petach Tikva
49510, Israel

Israel

T+972-3-9291000
F+972-3-9235055
sales@alpha-bio.net

International

T+972-3-9291055
F+972-3-9291010
export@alpha-bio.net

MEDES LIMITED

5 Beaumont Gate, Shenley Hill,
Radlett, Herts WD7 7AR,
England
Tel / Fax: +44 1923859810