

# Initial report from a retrospective multi-centre study on the SPIRAL implant

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## Purpose

The purpose of this retrospective study was to assess the survival rate of the SPIRAL implant (Alpha-Bio, Petach-Tikva, Israel) with its special novel design, in regular and complicated cases.

## Materials and Methods

Consecutively placed SPIRAL implants in six centres were retrospectively follow-up according to a stated protocol. Patient history data and information from the performed treatment were computerized in a database. For failures, type and cause were registered. The novel 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).

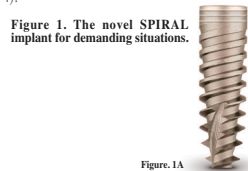
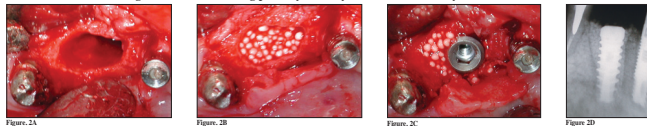


Figure 1. The novel SPIRAL implant for demanding situations.

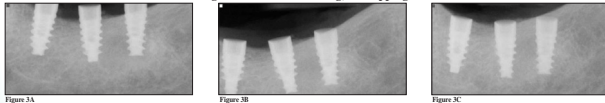
Figure 1A

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



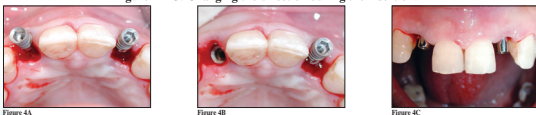
In Figures 2A-D the SPIRAL implant is inside a large defect and fixated in only 1 mm of bone. The defect around the implant is filled with a synthetic bone augmenting material.

Figures 3A-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, by self drilling to unprepared bone, close to the inferior alveolar nerve.

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



Figures 4A-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.

A total of 648 implants were placed in 251 patients; 362 implants were placed in the maxilla and 286 implants in the mandible. Fifty-five percent 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.

Figure 5: Implant distribution according to implant location

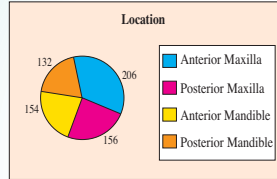


Table 1: Implants distribution according to Implant size

Implants Diameter (mm)	Implants Length (mm)				Total
	10	11.5	13	16	
3.75	77	54	153	60	344
4.2	35	51	81	28	195
5	33	25	39	11	108
6	0	0	1	0	1
<b>Total</b>	<b>145</b>	<b>130</b>	<b>274</b>	<b>99</b>	<b>648</b>

Figure 6: Implant distribution according to loading mode

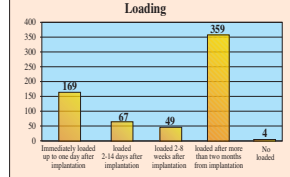


Figure 7: Implant distribution according to the restorations performed.

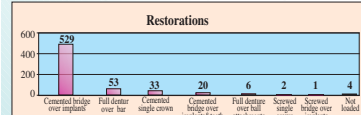
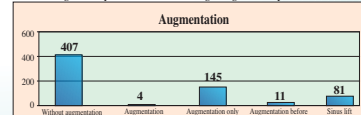


Figure 8: Implant distribution according to Augmentation procedures.



## 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 - 4 year survival data for 648 Implant

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

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

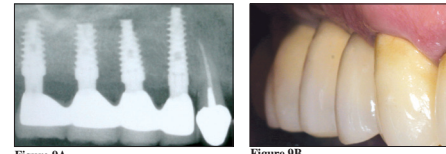


Figure 9A

Figure 9B

Figures 9 A-B demonstrate one case of 4 SPIRAL implants in the right posterior maxilla, with "platform switching". After 4 years of follow-up, minimal or none bone resorption.

## Conclusion

This initial report demonstrates a survival rate of 98.3% after 4 years follow-up of the novel SPIRAL implant. This high survival rate, which is similar and higher than 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%.

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