Case study 2

A Retrospective Multi-Center Study on the Spiral Implant

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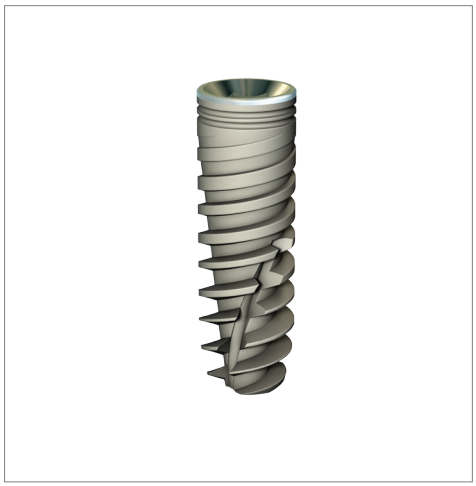
Purpose

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.

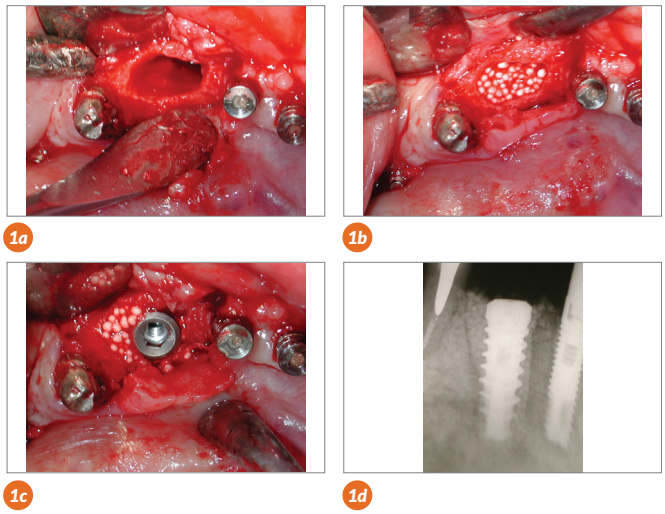
Materials and Methods

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).

1 The advanced SPIRAL implant for demanding situations.



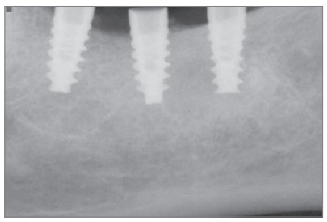
2 A-D: Achieving primary stability to 50 N/cm with only 1 mm of bone.

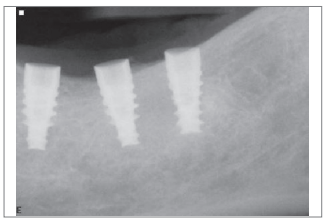


1a 1b 1c 1d

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.

3 A-C: Self drilling, self tapping.


3a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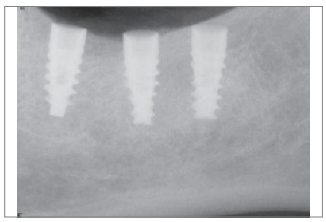

3c

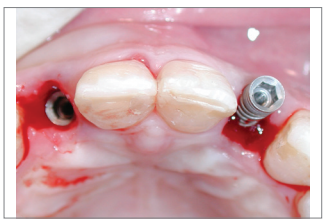
In Figures 3A-C, the drilling was 6 mm length and afterwards 3 SPIRAL implants of 10 mm length were inserted, close to the inferior alveolar nerve.

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 sited 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.

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

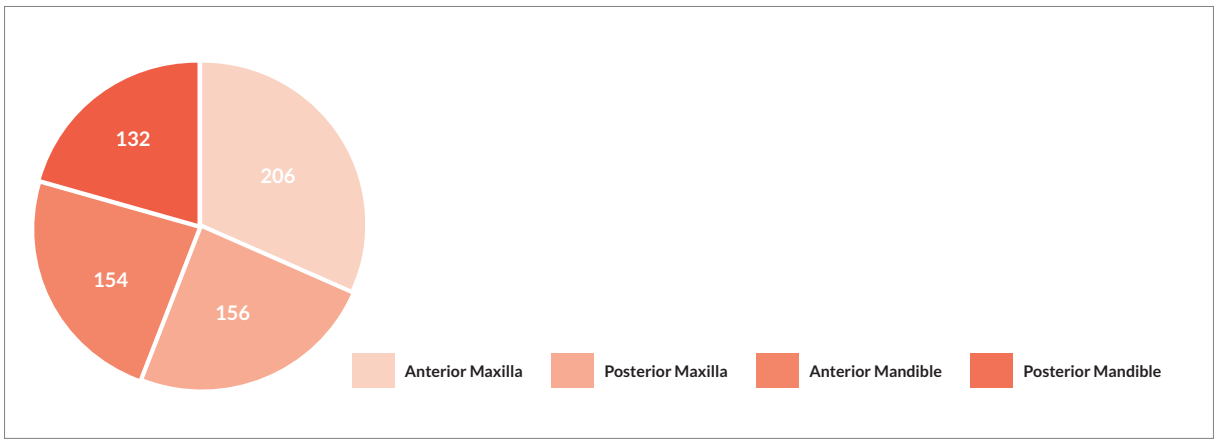

4a


4b


4c

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.

5 Implant distribution according to implant Location

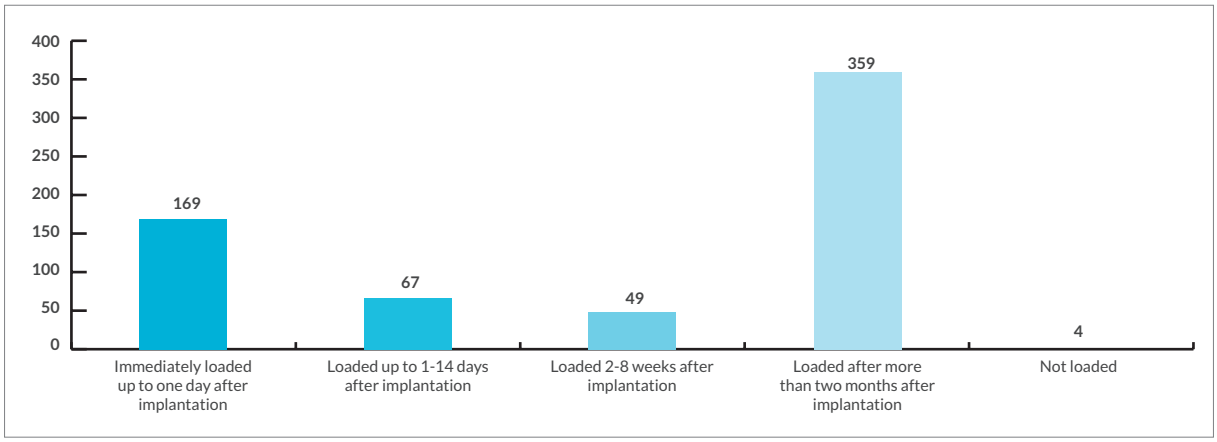


Implant distribution according to implant Location

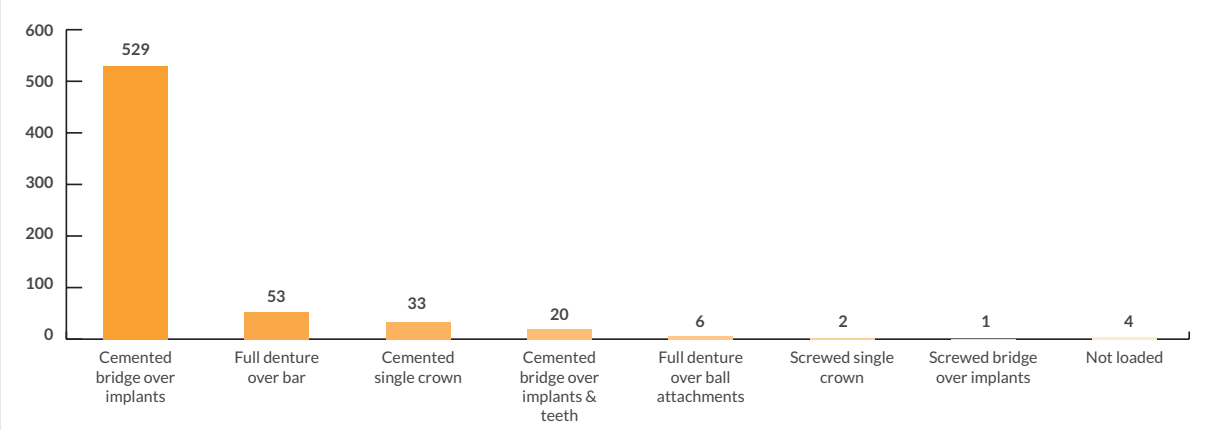
Table 1: Implants distribution according to Implant size

	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

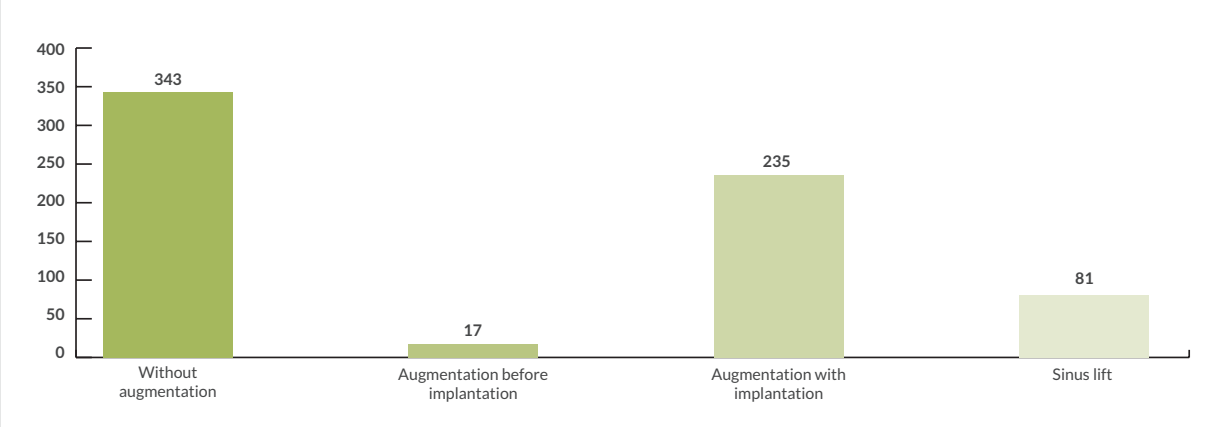
6 Implant distribution according to loading mode



7 Implant distribution according to loading mode

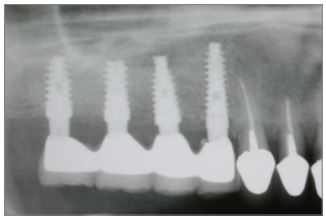


8 Implant distribution according to Augmentation procedures.



Follow up

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



9a

9a

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 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 1: Implants distribution according to Implant size

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%.

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