



MIS[®] | SEVEN[®]

Research Overview: SEVEN Implants

December, 2020

This research overview document examines numerous studies involving the MIS SEVEN implant system, conducted over the past 15 years. MIS SEVEN implant has been a best-seller in the MIS portfolio and gained widespread global acceptance among both surgeons and prosthodontists.

Surgeons appreciate the SEVEN implant due to its ease of placement and predictable primary stability. Prosthodontists value the simplicity of its connection and the wide range of available abutments, enabling the preparation of either screw-retained or cemented implant-supported restorations. Recently, an updated version of the SEVEN has been released with several improvements, helping to reinforce its market-leading position.

With the SEVEN implant being on the market for approximately 15 years to date, more long-term data is becoming available. This data covers a diverse array of cases and protocols, ranging from standard delayed loading protocols to immediate loading of implants placed in fresh extraction sockets. The studies examined in this overview originate from Europe, Asia, and the Far East, providing a comprehensive analysis of the SEVEN implant's performance and clinical outcomes.



An up to 4-year evaluation of 294 SEVEN implants

Implant Dentistry, Vol 20,number 4, 2011 (DOI: 10.1097/ID.0b013e318218123b)

Retrospective Multicenter Evaluation of Tapered Implant With a Sandblasted and Acid-Etched Surface at 1 to 4 Years of Function

Min-Su Bae, DDS¹; Dong-Seok Sohn, DDS, PhD²; Mi-Ra Ahn, DDS³; Hyun-Woo Lee, DDS⁴; Heui-Seung Jung, DDS⁴; Im-Hee Shin, MD, PhD⁵

¹Resident, Department of Dentistry and Oral and Maxillofacial Surgery, Catholic University Hospital of Daegu, Daegu, Republic of Korea. ²Chairman, Department of Dentistry and Oral and Maxillofacial Surgery, Catholic University Hospital of Daegu, Daegu, Republic of Korea. ³Clinical Instructor, Department of Dentistry and Oral and Maxillofacial Surgery, Catholic University Hospital of Daegu, Daegu, Republic of Korea. ⁴Private Practice, Daegu, Republic of Korea. ⁵Associate Professor, Department of Medical Statistics, Catholic University Hospital of Daegu, Daegu, Republic of Korea.

Study Objective

The aim of this retrospective study was to evaluate the cumulative survival rate of tapered implant with a sandblasted and acid-etched surface placed in edentulous patients.

Materials and Methods

A retrospective study was performed by evaluating MIS SEVEN implants consecutively placed from December 2004 to January 2008. The MIS SEVEN implant used in this study is a tapered, self-tapping implant with a SLA surface. Total of 294 implants were placed in 92 patients at 3 centers. The observation period after implantation ranged from 22 to 59 months, with a mean of 38 months. The survival rate of the implants was analyzed, and radiographic evaluation was performed.

Results

The observation period after implantation ranged from 22 to 59 months, with a mean of 38 months and the average loading time was 31 months.

The cumulative survival rate of MIS SEVEN implants was 97.3% (Table 1).

- After 1 year of functional loading, the mean marginal bone loss was 0.33 mm.
- The survival rate was 96% in the maxilla and 99.2%.
- No failure was observed for MIS SEVEN implants placed in immediate extraction sites.

Conclusion and Clinical Implications

- Favorable clinical outcomes were observed for up to 59 months of follow-up. Therefore, this retrospective study demonstrates that the SEVEN implant system gives clinically reliable results.
- Tapered designs can facilitate immediate implantation after extraction of teeth, as the design more closely approximates natural tooth root morphology than do cylindrical implant designs.
- **When the tapered implants were placed in low-density bone, such as in fresh extraction sockets, the bone was compressed and the primary stability of the implant increased.**

Table 1. Cumulative Survival Rates

Interval (mo)	Implants at Start of Interval	Failed Implants	Cumulative Survival Rate
1 to 12	294	6	97.9
12 to 24	288	2	97.3
24 to 36	286	0	97.3
36 to 48	286	0	97.3
48 to 60	286	0	97.3



A 3-year study of immediately loaded SEVEN implants

Clinical Oral Implants Research , Vol 26 number 3, 2015 (doi: 10.1111/clr.12506)

Effect of implant design in immediate loading. A randomized, controlled, split-mouth, prospective clinical trial

Gerard Torroella-Saura¹, Javier Mareque-Bueno¹, Josep Cabratosa-Termes², Federico Hernandez-Alfaro¹, Eduard Ferres-Padro¹, Jose Luis Calvo-Guirado³

¹Department of Oral and Maxillofacial Surgery, School of Dentistry, Universitat Internacional de Catalunya, Barcelona, Spain. ²Department of Prosthodontics, School of Dentistry, Universitat Internacional de Catalunya, Barcelona, Spain. ³Department of General and Implant Dentistry, School of Medicine and Dentistry, University of Murcia, Murcia, Spain.

Study Objective

To evaluate the effect of two different designs, tapered vs cylindrical, on the primary stability of implants placed with an immediate loading protocol in edentulous mandibles to support fixed prostheses within occlusal contacts during the first 48h.

Materials and Methods

A total of 20 tapered implants (test group) (SEVEN Implant System) and 20 cylindrical implants (control group) were placed. All implants were loaded immediately with provisional fixed prostheses during the healing period before the final restoration. The implants were evaluated at the implant placement by analyzing the insertion torque values (ITVs) and the resonance frequency analysis (RFA) and after the healing period of three months, the success of those implants and the marginal bone loss were evaluated.

Results

- Two cylindrical implants were mobile within the same patient and no tapered implants failed, resulting in implant survival rates of 90% and 100%, respectively after 3 months.
- The ITVs were statistically significantly different ($P = 0.02$) for the tapered implants than for the cylindrical implants.
- No statistically significant differences in RFA values were found ($P = 0.61$) when comparing the implant designs and the primary stability measured with implant stability quotient (ISQ) values.
- The control group (cylindrical implants) resulted in a mean bone loss after three months of 0.91 mm while the test group (tapered implants, SEVEN) resulted 0.42 mm.

Conclusions and Clinical Implications

The results obtained in this study showed that tapered implants achieved higher primary stability values compared with the cylindrical implants measured with ITV and RFA and less marginal bone loss.



3-year study of immediately placed and loaded SEVEN implants in the Maxilla

Clinical Oral Implants Research, Vol 26 number 3, 2015 (doi: 10.1111/clr.12336)

Marginal bone loss evaluation around immediate non-occlusal microthreaded implants placed in fresh extraction sockets in the maxilla: a 3-year study

Jose L. Calvo-Guirado¹, Gerardo Gomez-Moreno², Antonio Aguilar-Salvatierra², Javier Guardia², Rafael A. Delgado-Ruiz³, Georgios E. Romanos⁴

¹Department of Implant Dentistry, School of Medicine and Dentistry, University of Murcia, Murcia, Spain. Faculty of Medicine, University of Belgrade, Belgrade, Serbia. ² Department of Pharmacological Research in Dentistry, Dental School, University of Granada, Granada, Spain. ³Department of Prosthodontics and Digital Technology, School of Dental Medicine, Stony Brook University, Stony Brook, NY, USA. ⁴School of Dental Medicine, Stony Brook University, Stony Brook, NY, USA.

Study Objective

To evaluate marginal bone loss over 3 years around immediate microthreaded implants placed in the maxillary anterior/esthetic zone and immediately restored with single crowns.

Materials and Methods

Seventy-one implants (SEVEN, MIS) were placed in fresh extraction sockets in the maxillary arches of 30 men and 23 women (mean age 37.85 ± 7.09 years, range 27- 60). Clinical evaluation of each patient was performed day after implant placement (baseline) at 1, 3, 6, 9 months and a follow up of 1, 2, and 3 years.

Results

- **No implants failed, resulting in a cumulative survival rate of 100% after 3 years.**
- Marginal bone loss from implant collar to bone crest measured at baseline (peri-implant bone defect at the fresh extraction socket) and after 3 years was $0.86 \text{ mm} \pm 0.29 \text{ mm}$.

Table 1. Marginal bone-level changes between baseline and at 1-, 2-, and 3-year follow-up. Marginal bone loss in millimeters (mean $\pm$ SD). Descriptive statistics of the sample.

Time of measurement	Descriptive statistics						
	N	Range	Minimum	Maximum	Mean	Median	Std. deviation
1 year	71	0.42	0.46	0.88	0.67	0.67	0.22
2 years	71	0.46	0.56	1.02	0.79	0.79	0.23
3 years	71	0.58	0.57	1.15	0.87	0.86	0.30

Conclusions

This prospective study found minimal marginal bone loss and a 100% implant survival rate over the 3-year follow-up for microthreaded immediate SEVEN implants subjected to immediate non-occlusal loading.



Long-term follow-up up to 7 years of immediate loaded SEVEN implants

Applied Science, Vol 8, number 3, 2018 (doi.org/10.3390/app8030377)

Aesthetics and Survival of Immediately Restored Implants in Partially Edentulous Anterior Maxillary Patients

Roni Kolerman¹, Haim Tal¹, José Luis Calvo-Guirado², Eitan Barnea³, Liat Chaushu¹, Manar Abu Wasel⁴, Joseph Nissan⁵

¹Department of Periodontology and Dental Implantology, The Maurice and Gabriela Goldschleger School of Dental Medicine, Tel-Aviv University, Tel Aviv, Israel; ²Oral Surgery and Implant Dentistry, Universidad Católica San Antonio de Murcia (UCAM), Murcia, Spain; ³Specialist in Oral Rehabilitation, Private Practice Tel-Aviv, Tel-Aviv, Israel; ⁴The Maurice and Gabriela Goldschleger School of Dental Medicine, Tel-Aviv University, Tel Aviv, Israel; ⁵Department of Oral Rehabilitation, The Maurice and Gabriela Goldschleger School of Dental Medicine, Tel-Aviv University, Tel Aviv, Israel

Study Objective

This retrospective study was undertaken to determine survival rates and aesthetic outcomes of immediate placement of multiple implants at anterior maxilla sites.

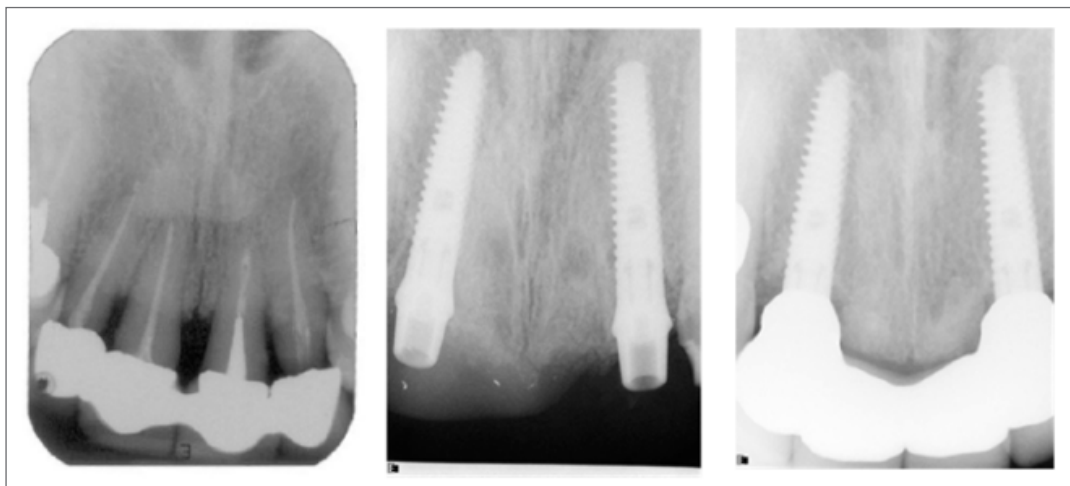
Materials and Methods

118 implants placed in 39 patients were immediately restored (24–72 h after placement). Aesthetic assessment, radiographic bone loss, and biological and prosthetic complications were evaluated. Treatment included maxillary multiple-tooth implants according to the concept of immediate nonfunctional loading. Radiographs were obtained before and immediately after implant placement, six months later, once yearly, and at the time of data collection (1–7 years after bridge installation). Depending on the local bone quality, the last drilling was accomplished with a final drill at least 1 mm smaller in diameter than the implant width in order to attain the desired stability.

Twenty-eight (72%) patients were diagnosed as having chronic advanced adult or aggressive periodontitis, and 11 (28%) were diagnosed with gingivitis and/or mild adult chronic periodontitis.

Results and clinical Implications

- The present study presents 100% cumulative survival rate and an approximately 90% success rate for the immediate restoration procedure in a cohort of 39 patients (118 implants) followed-up for a mean of 32.3 months. During the 12–84 months follow up, no implant was lost. **Survival rate was 100%.**
- Within the limitations of the present study, aesthetic and radiographic parameters support immediate restoration of partially edentulous maxillae.
- 106 out of 118 (89.8%) implants had no more than 1.5 mm of bone loss by the end of the first year and an additional 0.2 mm for each successive year.



Radiographs taken before treatment, at transfer verification, and 40 months after bridge installation.



Long-term follow-up of SEVEN implants up-to 7.5 years

Corresponding poster abstract published in COIR, Vol 30, issue S19, September 2019

Do crestal bone levels change gradually with time? An up to 7.5-year study on SEVEN and C1 implants

Research Group: Alper Sağlanmak¹, Karabuda Z. Cuneýt², Szmukler-Moncler Serge³

¹Istanbul University, Turkey; ²Istanbul University Dentistry Faculty Department of Oral Implantology, Turkey; MIS, Israel

Background

The distinction between survival rates and success rates has been around for several decades; it is widely used to compare implant performance over time. Survival rates consider functioning implants only while success rates includes the measurement of crestal bone loss (CBL) over time on both proximal implant sides. To be considered as a success, the accepted criteria of CBL is 1.0-1.5 mm during the first year and then 0.20 mm per additional year. This concept supposes a gradual CBL over time.

Study Objective

To measure the Crestal bone loss (CBL) as a function of time for 2 distinct time periods on 2 different implant systems. The CBL over a period of 2.5 - 5.5 years was first considered on an implant with a conical connection (C1 implant); then a 4 - 7.5 year period was considered on an implant with an internal hex. (SEVEN implant).

Material and Methods

A total of 62 implants (36 SEVEN, 26 C1, MIS) have been placed in the mandible and were followed over time. Follow-up time of the C1 was 31 to 69 months (median 55) and follow-up time of the SEVEN implants was 48 to 91 months (median 79). Crestal bone loss around the implants was measured on panoramic radiographs on the mesial and distal sides. Implants on unreadable radiographs were excluded. Implants that underwent clear radiographic signs of peri-implantitis (noticeable U-shape bone defect) and implants that had a CBL difference between the mesial and distal sides > 1.2 mm were considered to have suffered from a non- 'physiological' progressive CBL. They were not included in this survey because the aim of this study was to measure a 'physiological' homogeneous progressive bone loss that is supposed to occur with time at a rate of 0.20 mm per year of function after the first year. The Kendall rank correlation coefficient was used to test the association strength between CBL and time.

Results

- Mean CBL of the C1 implants was 1.11 ± 0.73 mm; mean CBL of the SEVEN implants was 1.44 ± 0.72 mm.
- The difference was statistically significant (Mann-Whitney U test, $P = 0.021$; $P < 0.05$).

Conclusion and Clinical Implications

- Within the limitations of this study, the present data obtained with the SEVEN and the C1 implant systems suggests that **there is no association between crestal bone loss and time of implantation** for periods between 2.5 to 7.5 years.
- The amount of CBL widely used to assess survival rates of implants and compare implant performances over time might need refinement.