

# YEAR **RESULTS**

## Optimal bone remodeling around Axiom<sup>®</sup> BL REG implants

- Outstanding bone stability
- Excellent esthetic results

Results from a prospective 5-year multicentre randomized controlled clinical trial

**6** centers **58** patients **112** Axiom<sup>®</sup> BL REG implants





Highlight of the original publication in Clinical Trials in Dentistry

## **INVESTIGATORS**





Center 1 **Dr Sergio** SALINĂ

**Dr Federico** GUALINI

## **SUMMARY**

recorded by blinded assessors. years after loading the implants.





Center 3 **Dr Fabio** RIGOTTI



Center 4 **Dr Cristian** MAZZARINI



Center 5 Dr Diego LONGHIN



Center 6 Dr Mauro GRIGOLETTO

Sixty partially edentulous patients at six centers requiring two single implantsupported crowns (Axiom<sup>®</sup> BL REG implants) had both sites randomly allocated according to a split-mouth design to either 0.5 mm or 1.5 mm subcrestal implant placement; implants in esthetic areas were submerged for 3 months while those in non-esthetic areas were not. Provisional acrylic crowns were fitted and replaced with definitive metal-ceramic crowns after 2 months.

Patients were recalled at 1, 3 and 5 years after loading. Outcome measures were: crown and implant failures, complications, esthetics assessed using the pink esthetic score (PES), peri-implant marginal bone level changes and patient preference,

This document focuses on two key performance indicators for dental implant restorations, Marginal bone loss and Pink Esthetic score. Both are excellent in the two groups, at 5 years post loading, indicating a very good predictability of subcrestal placement with no difference on performance, nor patient preference observed, 5



## MARGINAL BONE LOSS

The mean bone loss observed in this clinical study, 5 years after loading the implants is low (Fig 1), and well below the threshold of 2 mm mentioned by Misch et al. in 2008<sup>1</sup> in its definition of clinical implant success.

These results were compared with the literature (Table 1). Only publications with similar protocols were selected: single restorations, and a minimum of 3 years follow-up.

This analysis confirms the excellent results obtained within the framework of this controlled and randomized clinical study, since the average bone loss observed is lower than the figures noted in the literature<sup>2,5,6</sup>.

	NUMBER OF IMPLANTS	FOLLOW-UP (years)	SINGLE UNIT	MEAN PATIENT AGE	MARGINAL BONE LOSS (mean, mm)
PRESENT STUDY	112	5	Х	53,4	<b>0.53</b> ± 1.43 (0,5mm group) <b>0.31</b> ± 0.98 (1.5mm group)
Arnhart et al. (2012) <sup>2</sup>	71	3	Х	49,5	<b>0,89</b> ± 1,65 (conical connection implants)
Lops et al. (2013) <sup>3</sup>	85	6	Х	54	- <b>0,5</b> ± 0,3 (titanium abutments )
Palmer et al. (2000)⁴	15	5	Х	MD	mesial : <b>0</b> * distal : <b>0,1</b> * *calculated according to Palmer et al. (2000) <sup>4</sup>
Vigolo et al. (2009)⁵	97	5	Х	37	<b>0,6</b> ± 0,2 (Platform switching implants)
Zembic et al (2013) <sup>6</sup>	40	5,6	Х	41,3	mesial : <b>0,14</b> * distal : <b>0,10</b> * (titanium abutments) *calculated according to Zembic et al. (2000) <sup>6</sup>

#### TABLE 1: RESULTS REPORTED IN THE LITERATURE, FOR STUDIES WITH SIMILAR PROTOCOLS

#### MD = Missing data

#### Bibliography

1- Misch, Carl E., et al. «Implant success, survival, and failure: the International Congress of Oral Implantologists (ICOI) pisa consensus conference.» Implant dentistry 17.1 (2008): 5-15. 2- Arnhart, Christoph, et al. «Comparison of variable-thread tapered implant designs to a standard tapered implant design after immediate loading. A 3-year multicentre randomised controlled trial.» Eur J Oral Implantol 5.2 (2012): 123-36. 3- Lops, Diego, et al. «Zirconia and Titanium Implant Abutments for Single-Tooth Implant Prostheses After 5 Years of Function in Posterior Regions.» International Journal of Oral & Maxillofacial Implants 28.1 (2013). 4- Palmer, Richard M., Paul J. Palmer, and Brian J. Smith. «A 5-year prospective study of Astra single tooth implants.» Clinical Oral Implants Research: Case report 11.2 (2000): 179-182. 5- Vigolo, Paolo, and Andrea Givani. «Platform-switched restorations on wide-diameter implants: a 5-year clinical prospective study.» International Journal of Oral & Maxillofacial Implants 24.1 (2009). 6-Zembic, Anja, et al. «Five-year results of a randomized controlled clinical trial comparing zirconia and titanium abutments supporting single-implant crowns in canine and posterior regions.» Clinical oral implants research 24.4 (2013): 384-390.



Fig 1 - Representative X-Rays from 2 patients (Center 3, Dr Rigotti), showing the bone stability, 5 years after loading.



## **PINK ESTHETIC SCORE**

In this clinical study, the Pink esthetic score was assessed (Fig 2) by an independent, blinded assessor (Dr Luca Sbricoli, Padova University). The average scores obtained for the two groups, close to 11, qualify the results obtained as "good esthetics", as indicated by Furhauser in 2016<sup>9</sup>. They were compared to the literature, by selecting publications with similar protocols (single restorations, minimum 3 years follow-up) <sup>78,9,10</sup>. The esthetic results obtained are comparable to those in the literature, the higher PES can be explained by the younger age of the patients<sup>8,10</sup>, or even the use of zirconia abutments<sup>8</sup> instead of the standard titanium abutments used in the present study. This analysis shows that Axiom<sup>®</sup> BL REG implants provide good long term esthetic results in the replacement of single teeth.

	NUMBER OF IMPLANTS	FOLLOW-UP (years)	SINGLE UNIT	MEAN PATIENT AGE	MARGINAL BONE LOSS (mean, mm)
PRESENT STUDY	112	5	Х	53,4	<b>10.89</b> ± 2.30 (0,5mm group) <b>10.79</b> ± 2.41 (1.5mm group)
Arora et al. (2017) <sup>7</sup>	12	2	Х	age range of 20-78 years	<b>11.25</b> ± 1.36
Furhauser et al. (2016) <sup>8</sup>	77	5	Х	48.8	12.6
Hartlev et al. (2014) <sup>9</sup>	54	3	Х	43	9.9
Hof et al. (2011) <sup>10</sup>	60	4,2	Х	36.8	<b>11.5</b> ± 0.7

#### TABLE 2: PES RESULTS REPORTED IN THE LITTERATURE

## TAKE HOME MESSAGES

- Long term success can be expected with Axiom<sup>®</sup> BL REG implants
- Predictable esthetics achieved whatever subcrestal level
- These results will be confirmed by 8 and 10 years data

#### Bibliography

7- Arora, Himanshu, et al. «Immediate implant placement and restoration in the anterior maxilla: Tissue dimensional changes after 2-5 year follow up.» *Clinical implant dentistry and related research* 19.4 (2017): 694-702.
8- Fürhauser, Rudolf, et al. «Immediate restoration of immediate implants in the esthetic zone of the maxilla via the copy-abutment technique: 5-year follow-up of pink esthetic scores.» *Clinical implant dentistry and related research* 19.1 (2017): 28-37.
9- HARTLEV, Jens, KOHBERG, Peter, AHLMANN, Søren, et al. Patient satisfaction and esthetic outcome after immediate placement and provisionalization of single-tooth implants involving a definitive individual abutment. *Clinical oral implants research*, 2014, vol. 25, no 11, p. 1245-1250.

10- Hof, M., et al. «Esthetic evaluation of single-tooth implants in the anterior maxilla following autologous bone augmentation.» Clinical Oral Implants Research 24 (2013): 88-93.





#### PATIENT 1



Loading



5 years after loading

### PATIENT 2



Loading



5 years after loading

Fig 2 - Representative pictures from 2 patients (Center 3, Dr Rigotti), showing the esthetic success, 5 years after loading.

