

Dental implants in individuals with osteogenesis imperfecta: a 6-year follow-up study

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Introduction

In Norway, individuals with osteogenesis imperfecta (OI) display twice as many missing teeth as compared with the general population[†], and some of them have received dental implant treatment to replace the missing teeth. In order to determine the success rate of implant treatment in these individuals, we have previously examined and reported[‡] on a group of individuals with OI who already had dental implants (retrospective study), as well as those in need of such treatment (prospective study).

Methods

The primary prospective study included seven participants with OI (20 implants), of whom four participants (11 implants) agreed to participate in the present study (Table 1), three participants had passed away. The participants were initially examined after an average of 19 months (range 11-26 months) and followed up after an average of 93 months (range 91-109 months), subsequent to prosthetic loading (Table 2). The implants were clinically and radiographically examined (Table 2, 3 & 5) and the participants were requested to subjectively evaluate the implant treatment (Table 4). A visual analogue scale ranging from 0 as the worst to 10 as the best score was used.

Conclusion

The long-term follow-up study indicated that implant survival rate and implant recipient satisfaction towards implant treatment were fairly high in these participants.

Take home message

Dental implant treatment has a reasonably high success rate in individuals with OI.

References

[†]R. Sæves et al. Oral findings in adults with osteogenesis imperfecta. *Spec Care Dentist* 2009;29:102-8.

[‡]J. L. Jensen et al. Dental implants in patients with osteogenesis imperfecta: a retrospective and prospective study with review of the literature. *Oral Surg* 2011;4:105-114.

Objective

The objective of the present study was to carry out a six-year follow-up study of the primary prospective study. Our hypothesis was that implant treatment in these individuals has approximately the same long-term success rate as in healthy ones.

Results

In the primary study (Table 2 & 5), no implants were lost and only 1 mm bone loss^a was registered around 2 implants in one participant. One implant^b was removed after 76 months due to an implant neck fracture unrelated to disease. In the follow-up study, 4 mm bone loss^c was observed around 2 implants. Four implants showed only 1 mm bone loss^d, 2 of which had the same level of bone loss^e at the primary study. No bone loss^f was detected around the remaining 4 implants. Objective and subjective evaluation of implant treatment, respectively, showed overall satisfaction of 9.1/10 and 9.9/10 after the follow-up study (Table 3 & 4).

Table 1. Participant characteristics

ID	Age	Gender	Type of OI	Smoker
3	64	M	Ib*	Y
5	45	M	Ib	N
6	54	F	I	N
7	62	F	IV	Y

Ib*, OI type I with dentinogenesis imperfecta

Table 2. Implant characteristics, observation times and peri-implant bone loss

ID	Implant site	Brand	Implant diameter	Implant length	Previous study		Current study	
					Months after installation	Bone loss (mm)	Months after installation	Bone loss (mm)
3	24	AS	4	13	26	0	109	4 ^c
"	25	"	"	13	26	1 ^{a, e}	109	1 ^d
"	45	"	"	13	20	0	103	1 ^d
"	46	"	"	13	20	1 ^{a, e}	103	1 ^d
"	47	"	"	11	20	0	103	0 ^f
5	25	AS	3,5	13	22	0	106	0 ^f
"	31	3I	3,25	11,5	20	0	104	0 ^f
"	41	3I	3,25	13	20	0	104	1 ^d
6	15	AS	5	11	11	0	91	4 ^c
"	36 ^b	"	4,5	11				
7	36	S	4,1	8	11	0	94	0 ^f

3I = 3I tapered; AS = Astra Osseospeed; S = Straumann

^bThe implant was removed after 76 months due to an implant neck fracture unrelated to disease.

Table 3. Objective evaluation, visual analogue scale 0-10

ID	Implant site	Aesthetics	Speech	Function	Overall satisfaction
3	24	7	10	10	
	25	10	10	10	
	45	7	10	10	
	46	7	10	10	
5	47	10	10	10	
	25	5	10	9	
	31	5	10	10	
	41	5	10	10	
6	15	8	10	10	
	36 ^b	-	-	-	
7	36	9	10	10	
Total		7.3	10	9.9	9.1

^bThe implant was removed after 76 months due to an implant neck fracture unrelated to disease.

Table 4. Subjective evaluation, visual analogue scale 0-10

ID	Aesthetics	Speech	Function	Overall satisfaction
3	10	10	10	10
5	9	10	10	9.7
6	10	10	10	10
7	10	10	10	10
Total	9.8	10	10	9.9

Table 5. Clinical and radiographic examination of the implants

ID	3	5	6	7		
Implant site	24, 25	47, 46, 45	25	41, 31	15	36
Follow-up study						
Previous study						