Long-term survival rate of dental implants in individuals with osteogenesis imperfecta: a 6-year follow-up study

M. Myint[1], S. A. Støvne[1], R. Sæves[1], T. Bjørnland[2] & J. L. Jensen[2]

[1]National Resource Centre for Oral Health in Rare Disorders, Lovisenberg Diaconal Hospital, Oslo, Norway

[2]Department of Oral Surgery and Oral Medicine, Faculty of Dentistry, University of Oslo, Oslo, Norway

Background

Except from a few case reports, no long-term study on the success rate of dental implants in a group of individuals with osteogenesis imperfecta (OI) has been reported.

Aim

To perform a long-term follow-up of a previous prospective study in a group of individuals with OI after a mean observation time of 1.5 years.

Methods

The previous study included seven participants (20 implants), of whom four participants (11 implants) agreed to take part in the present study (Table 1). Three former participants had died. The participants were followed up for an average of 93 months subsequent to prosthetic loading. The implants were clinically and radiographically examined. Objective and subjective evaluations were recorded using a visual analogue scale ranging from 0 as the worst to 10 as the best score. A mean of these evaluations is presented as an indicator of overall satisfaction.

Results

In the previous prospective study (Table 2 & Figure 1), no implants were lost and only 1 mm bone loss[a] was registered around two implants in one participant. One implant[b] was removed after 76 months due to an implant neck fracture unrelated to disease. In the present study (Table 2 & Figure 1), two implants showed 4 mm peri-implant bone loss[c] and four other implants showed only 1 mm peri-implant bone loss[d], two of which had the same level of bone loss[e] at the primary study. No bone loss[f] was observed around the remaining four 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

		Previous study		Current study	
ID	Implant site	Months after installation	Bone loss (mm)	Months after installation	Bone loss (mm)
3	24	26	0	109	4[c]
"	25	26	1[a, e]	109	1[d]
"	45	20	0	103	1[d]
"	46	20	1[a, e]	103	1[d]
"	47	20	0	103	0[f]
5	25	22	0	106	0[f]
"	31	20	0	104	0[f]
"	41	20	0	104	1[d]
6	15	11	0	91	4[c]
"	36[b]				
7	36	11	0	94	0[f]

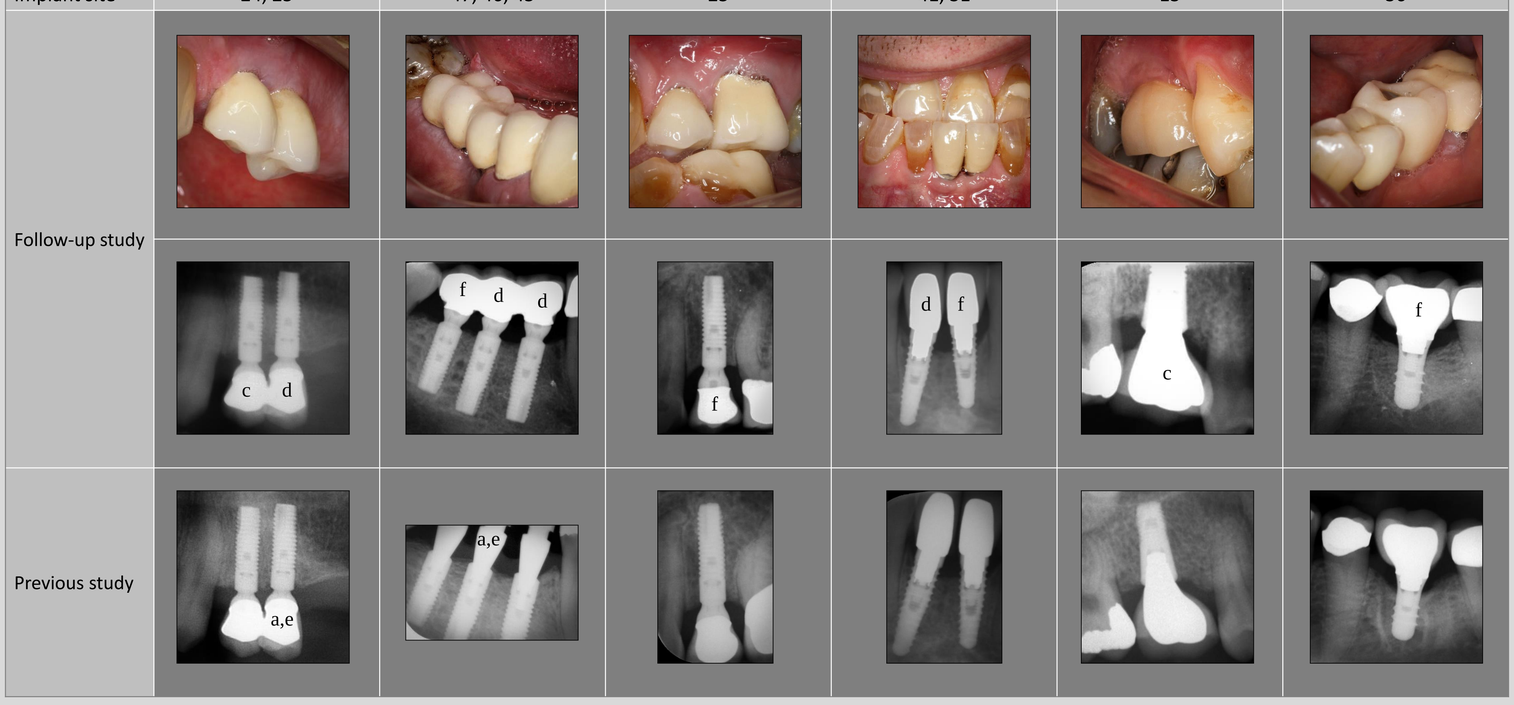
Table 3. Objective evaluation, visual analogue scale 0-10

ID	Implant site	Aesthetics	Speech	Mastication	Overall satisfaction
3	24	7	10	10	
	25	10	10	10	
	45	7	10	10	
	46	7	10	10	
	47	10	10	10	
5	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

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

ID	Aesthetics	Speech	Mastication	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

Figure 1. Clinical and radiographic examination of the implants



Conclusion

The findings showed an implant survival rate of 91% (100 %, excluding the implant-neck fracture) and high recipient satisfaction towards implant treatment in these 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.