

Immediately loaded mandibular 2-implant overdentures retained by magnetic attachments: Marginal bone loss and survival rate

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BACKGROUND

Mandibular 2-implant overdentures (2-IOD) as first choice standard of care for edentulous patients.¹Monitoring marginal bone loss around implants is regarded by numerous authors (Albrektsson et al. 1986; Roos et al. 1997; Zarb & Albrektsson1998) as the most important criterion in determining the success of implants.²The magnetic attachment is device useful to clinical, then the introduction of implant-retained overdenture prostheses has led to a paradigm shift in the management of complete edentulism. Therefore, the survival rate of the immediate loading of 2-IOD using magnet attachment-retained mandibular overdentures was 86% has been recorded.³

OBJECTIVE

The aim of this 1-year study was to evaluate and compare marginal bone loss and survival rate on immediate and conventional loading of two implants mandibular overdenture with magnetic attachments.

METHODS

1. The design of this clinical study was a randomized controlled clinical trial.
2. 20 mandibular edentulous patients were allocated 2 groups either the same day (immediate loading group) or after 3 months of healing (conventional loading group). (Fig.1)
3. Each patient received 2 implants (Speedy Groovy , Nobel Biocare) with magnetic attachments (Magfit IP ,Aichi Japan). (Fig.2, Fig.3)
4. Marginal bone loss was recorded at the time of implant surgery, 3, 6 and 12 months after implant placement using standardized radiographs. (Fig.4, Fig.5, Fig.6)
5. Marginal bone loss of 2 groups were compared by Student t test, and the log-rank test was used for survival rates.

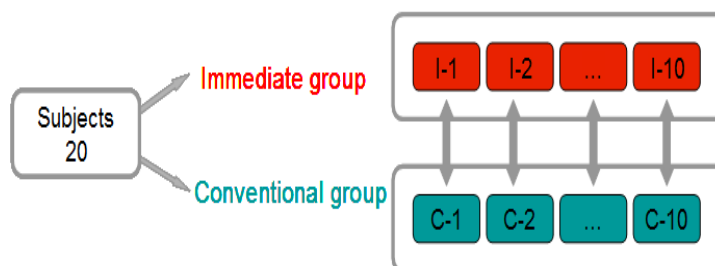


Fig. 1 Allocation to immediate group or conventional group

Each patient received 2-IOD with magnetic attachments used flapless surgery.



Fig.2 Put a magnet on the implants Mandibular



Fig.3 Pick up the magnets

In addition, peri-implant vertical and horizontal marginal bone loss were assessed in both groups at time of implant surgery, 3, 6 and 12 months after implant placement using intra-oral long cone paralleling technique. Clinical and radiographic evaluations were performed at distal and mesial peri-implant sites. T-test was performed between immediate and conventional group at T3, T6, T12.



Fig.4 Intra-oral long cone paralleling technique.

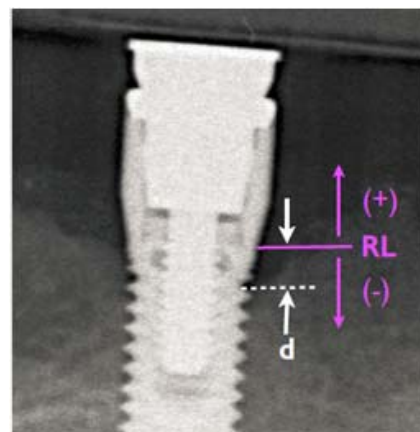


Fig.5 RL: Implant-abutment junction
d: Marginal bone loss

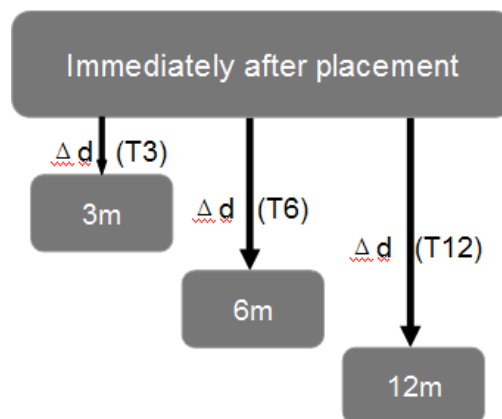


Fig.6 Recorded at the time of implant surgery, 3, 6 and 12 months after implant

RESULTS AND DISCUSSION

Marginal bone loss: The average radiographic bone level change after 12 months of function was -1.02 ± 0.87 mm and -1.76 ± 1.16 mm for the conventional loading and the immediate loading implants. The immediate group is more apically than the conventional group. (Fig.7)

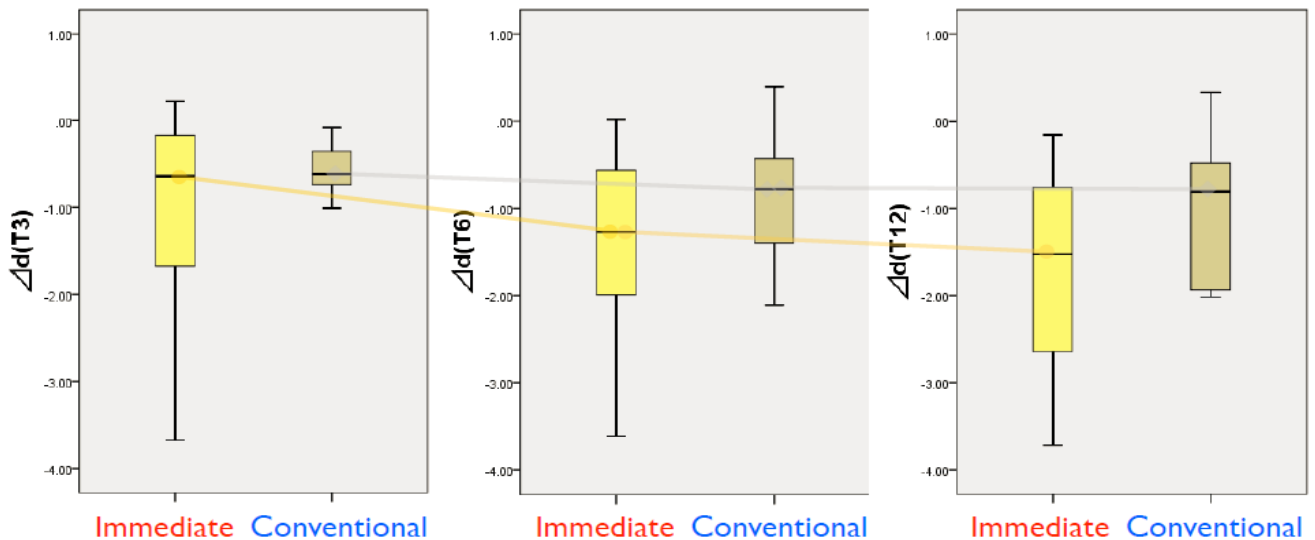


Fig.7 Marginal bone loss

Marginal bone loss in the immediate loading group was higher when compared with conventionally loaded implants after 1 year. While, there was no significant difference on the radiographic bone level change between 2 groups. (Fig.7)

Survival rate of the immediate loading of 2 implants using magnet attachment-retained mandibular overdentures were 100% (20/20 implants), conventional loading were 89% (20/18 implants). (Fig.9) One patient in the conventional loading group lost both implants within 1 month after implant placement. (Fig.8)



Fig.8 Lost implant

In conventional loading group one patient lost 2 implants after 1 month of implant surgery. The reason for this might be harmful stress because of position between implants and denture, or difficulty to brush around healing abutment.

After 12 months follow up, survival rates was tested by log-rank test recorded that there was no significant difference on implant survival rate between 2 groups. (Fig.9)

		Immediate group	Conventional group
Implant length (mm)	10	0	1
	11.5	2	3
	13	2	5*
	15	14	7
	18	2	2
Insertion Torque(Ncm)	45>	20	18*
survival rats in 1 year		100% (20/20)	88.9% (18/20)

*2 implants was lost

Fig.9 Survival rates

CONCLUSION

Marginal bone loss was the highest for the immediate loading group, while no statistically significant difference between 2 groups. Survival rates of the immediate loading of 2 implants using magnet attachment-retained mandibular overdentures were 100%, conventional loading were 89%. In addition, do not differ significantly between 2 groups on survival rates.

REFERENCE

1. Feine JS, Carlsson GE, Awad MA, Chegade A, Duncan WJ, Gizani S, Head T, Heydecke G, Lund JP, MacEntee M, Mericske-Stern R, Mojon P, Morais JA, Naert I, Payne AG, Penrod J, Stoker GT, Tawse-Smith A, Taylor TD, Thomason JM, Thomson WM, Wismeijer D. The McGill consensus statement on overdentures. Mandibular two-implant overdentures as first choice standard of care for edentulous patients. Gerodontology. 2002
2. Elsyad MA, Al-Mahdy YF, Fouad MM. Marginal bone loss adjacent to conventional and immediate loaded two implants supporting a ball-retained mandibular overdenture: a 3-year randomized clinical trial. Clin Oral Implants Res. 2012
3. Pae A, Kim JW, Kwon KR. Immediate loading of two implants supporting a magnet attachment-retained overdenture: one-year clinical study. Implant Dent. 2010