

Survival and Risks of Immediate Placed Anterior Implants

G .L. de Lange, P. Randelzhofer, P. Sipos, M. de Bruin, C.J. Both

Academic Center Oral Implantology, Theems 154, 1186 KK Amstelveen, NL

Topic: Implant therapy outcomes, surgical aspects

Background and Aim

When an anterior tooth requires extraction, patients want as soon as possible a replacement. Immediate placement and/or immediate loading can be helpful. However, this can give rise for implant failure a.o. due to premature loading. The aim was to evaluate the clinical outcome of implants, placed immediately and/or loaded immediate for anterior tooth replacement.

Methods and Materials

The life tables (Kaplan Meijer) of 774 Camlog® implants were analyzed. They were placed in anterior positions (Fig 1), and distributed over 4 groups (Fig 2): Groups I and II had 141 immediately placed implants in fresh anterior alveolar extraction sites. These were compared with 633 implants, delayed placed, in normal healed (or partially healed) bony sites (Groups III and IV). Parameters as smoking habits, bone quality, whether or not immediate placed and/or loaded, were recorded during implant surgery. During annual recalls, parameters were collected as implant presence, implant mobility, quality of the peri-implant tissues (1=healthy, 2=bleeding on angular probing 3=inflammation, pockets till 7 mm, radiological bone loss between 3 and 5 mm). Implants removed before loading or implants showing deeper pockets (>7mm), more peri-implant bone loss, apical infections or mobility were considered as failures. The cumulative survival rate (CSR) was calculated using the criteria above.

Results

An average CSR of 96.7% was found over > 5yrs). Group I, 91 implants, placed immediately after extraction and immediate functionally loaded (immediate function), showed a CSR of 97.8%. Group II, 50 implants, also immediately placed, but delayed loaded, showed a CSR of 96.0%. Group III, 18 implants, placed in normal (fully healed) bony sites were direct loaded and had a 100% survival. Group IV, 615 implants, placed in questionable healed or partially healed bony sites, delayed loaded, had a CSR of 96.6%. Besides smoking, problematic bone situations, remaining endodontic material or root fragments (ankylotic teeth) were also associated with early failures and poor post-operative healing. About half of the failures occurred late (48%) and were associated with endodontic infections from neighboring teeth (1.1%) or inadequate removal of (subgingival) crown cement (0.5%). Immediate placement (Fig 3) or immediate loading (Fig 4) had no significant negative effect. Smoking habits (Fig 5) had a significant effect on premature implant failure, with a nearly 4 times more implant loss, irrespective of the type of loading or placement.

Fig 2

Extraction Sites 141 implants, immediately placed in fresh anterior alveolar extraction sites		Non-Extraction Sites 633 implants, delayed placed in normal healed bone (Group III) or in questionable healed bony sites (Group IV)	
Group I Direct Loading (n=91, 2 lost)	Group II Delayed Loading (n=50, 2 lost)	Group III Direct Loading (n=18, 0 lost)	Group IV Delayed Loading (n= 615, 19 lost)
immediate placement immediate restoration immediate loading	immediate placement delayed loading	immediate placement immediate restoration immediate loading	delayed placement delayed loading
97,8 % CSR	96,0 % CSR	100,0 % CSR	96,9 % CSR

Fig 1

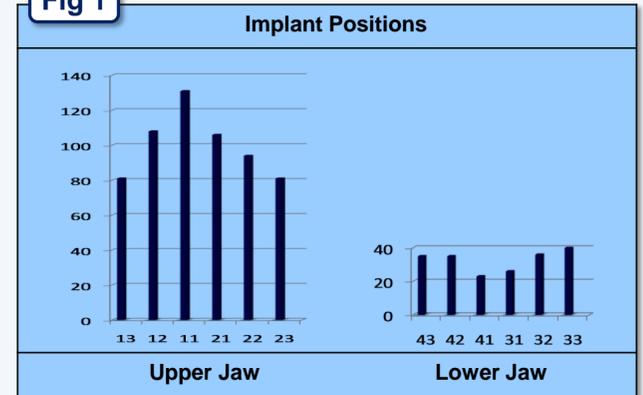


Fig 3

	# implants	# lost	% lost	ratio
Immediately Placed in Extraction Socket Groups I+II	141	4	2,8 %	0,0283
Non Extraction Socket Groups III+IV	638	21	3,2%	0,0329
Risk Factor of Immediate Placement versus Delayed Placement			0,86 (ns)	

Fig 4

	# implants	# lost	% lost	ratio
Immediate loaded Groups I+III	109	2	1,83 %	0,018348
Delayed loaded Groups II+IV	670	23	3,29%	0,034328
Risk Factor Immediate Loading versus Delayed Loading			0,53 (ns)	

Fig 5

	# implants	# lost	% lost	ratio
Smoking	143	12	8,39 %	0,0836
Non smoking	560	13	2,32%	0,023
Unknown	51	0		
Risk Factor Smoking versus Non-Smoking			3,61	

Conclusions

Immediate placement was not found to be a risk factor and also immediate loading was not, if the implant had sufficient initial stability (>30Ncm). Risk factors as smoking, endodontic materials, endodontic infections from neighboring teeth and cement excess were important risk factors.

Discussion and Recommendations

Placing anterior implants is a demanding procedure, associated with many clinical, aesthetic and emotional aspects. Immediate placing is effective. It is recommended to be reserved in smoking patients and placing them beside natural teeth having a questionable endodontium.

References

- Crespi R, et al. Immediate versus delayed loading of dental implants placed in fresh extraction sockets in the maxillary esthetic zone: a clinical comparative study. *Int J Oral Maxillofac Implants* 2008; 23:753-758.
- Degidi M, Piattelli A. Comparative analysis study of 702 dental implants subjected to immediate loading to traditional healing periods with a follow-up of to 24 months. *Int J Oral Maxillofac Implants* 2005; 20:99-107.
- Lange GL de, Randelzhofer P. Treatment concepts: Extraction Sockets Immediate Implant Placement, Indication Sheet IIP-2. *Geistlich Biomaterials*, 2008
- DeLuca S, Zarb G. The effect of smoking on osseointegrated dental implants. Part II: Peri-implant bone loss. *Int J Prosthodont* 2006; 19:560-566.
- Buser D, Halbritter S, Hart C, et al. Early implant placement with simultaneous guided bone regeneration following single-tooth extraction in the esthetic zone: 12-month results of a prospective study with 20 consecutive patients. *J. Periodontol* 2009; 80: 152-162.