Immediate loading Implants in esthetic zone

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Conventional loading:	***Prosthesis connected to the dental implant > 2 months subsequent to implant placement.***
Early loading:	***Prosthesis connected to the dental implant between 1 week and 2 months subsequent to implant placement***
Immediate loading:	

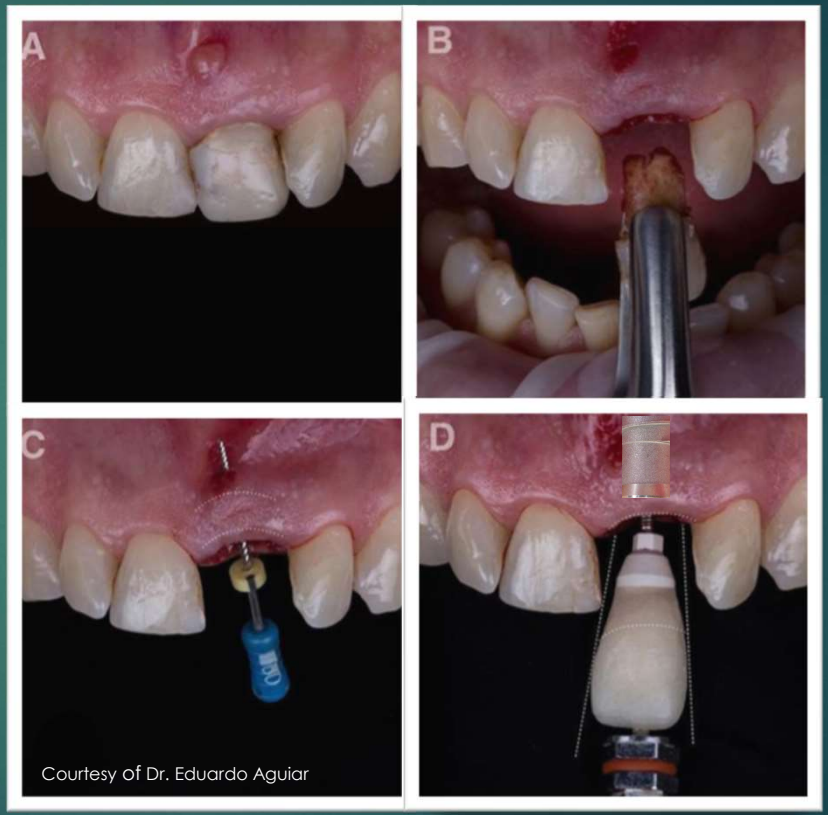
Esposito M, Grusovin MG, Willings M, Coulthard P, Worthington HV. Interventions for replacing missing teeth: Different times for loading dental implants. Cochrane Database Systemic Review 2007

Immediate loading: is a non submerged, one stage surgery where loading of implants with provisional restoration is done at the same appointment or shortly thereafter. IMMEDIATE LOADING IN IMPLANT DENTISTRY, Journal of Oral Implantology ,2004

Temporary Restoration Options

- ***Removable:***
  - Essix
  - RPD

- ***Fixed:***
  - Maryland,
  - ***Temporary crown***



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Case Evaluation / Selection

- *Review of medical Hx*
- *Dental Hx*

(previous dental treatments, parafunctional habits)

- *Intraoral examination*

(soft tissue, ridge, occlusion, clearance)

- *Image records*

(BW, PA, Panorex, CBCT)

- *Diagnostic models*

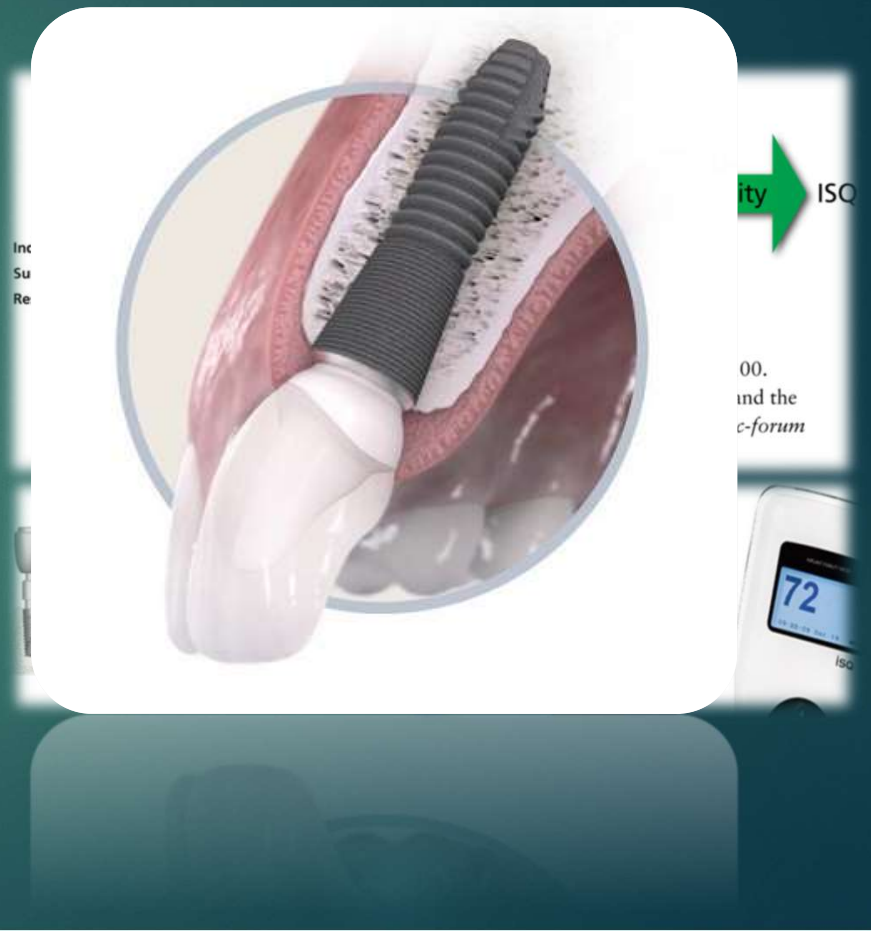
(mounted)

Key Factors for Immediate Loading

- *Implant characteristics*
- *Bone quality and quantity*

- ***INITIAL STABILITY***

This is the key factor in deciding whether or not to load immediately.



Loading Protocols for Single-Implant Crowns: A Systematic Review and Meta-Analysis

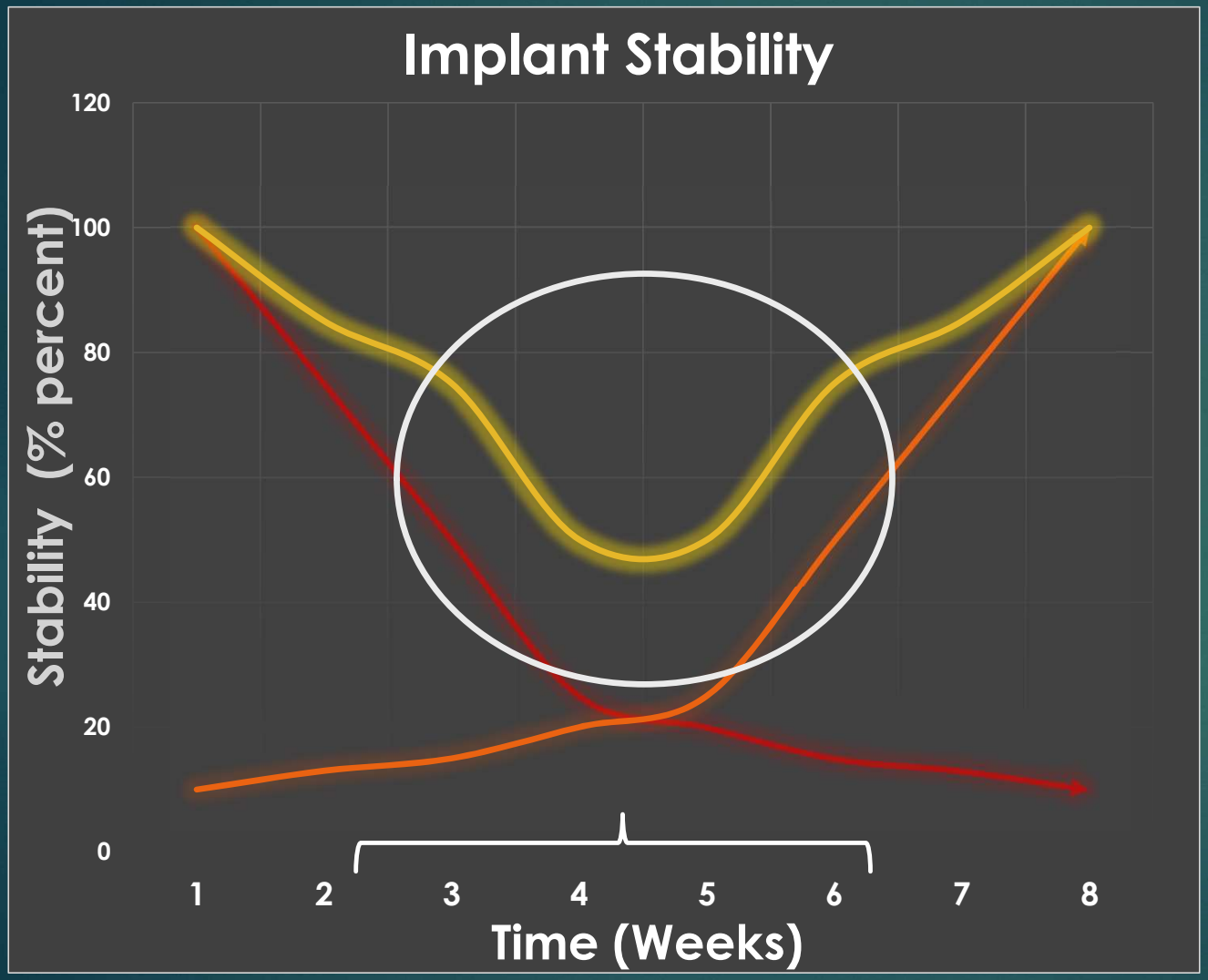
Goran I. Benic, Dr Med Dent[1]/Javier Mir-Mari, DDS[2]/Christoph H.F. Hämmerle, Prof Dr Med Dent[3]

Table 4 Implant Survival Results

Study	Year of publication	Loading protocol	No. of implants	No. of implant drop-outs	Mean follow-up (y)	At 1 y	
						No. of failures	Survival rate
Crespi et al[5]	2008	Immediate	20	0	2	0	100%
		Conventional	20	0	2	0	100%
De Rouck et al[10]	2009	Immediate	24	0	1	1	96%
		Conventional	25	0	1	2	92%
Degidi et al[4]	2009	Immediate	30	0	3	0	100%
		Conventional	30	0	3	0	100%
den Hartog et al[3]	2011	Immediate	31	0	1.5	1	97%
		Conventional	31	0	1.5	0	100%
Donati et al[22]	2008	Immediate	50	0	1	1	98%
		Conventional	57	2	1	0	100%
Güncü et al[23]	2008	Immediate	12	0	1	1	92%
		Conventional	12	0	1	0	100%
Hall et al[12]	2007	Immediate	14	1	1	1	92%
		Conventional	14	2	1	0	100%
Prosper et al[24]	2010	Immediate	60	0	5	2	97%
		Conventional	60	0	5	2	97%
Schincaglia et al[25]	2008	Immediate	15	0	1	1	93%
		Conventional	15	0	1	0	100%
Shibly et al[6]	2010	Immediate	30	1	2	1	97%
		Conventional	30	1	2	2	93%
Testori et al[26]	2007	Immediate	7	0	1	1	86%
		Early	10	0	1	0	100%

Immediate and conventional loaded implants are **equally successful** regarding implant survival and marginal bone loss.

This conclusion is primarily derived from studies evaluating implants inserted with a torque in the range of **20 to 45 Ncm** or a minimal ISQ in the range of 60 to 65.



Primary Stability
(old bone)

Secondary Stability
(new bone)

Total Stability

Stability Dip

S. Raghavendra, M. Wood, T.D. Taylor.

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Advantages and Disadvantages

- *There is only one surgical procedure for the patient*
- *Immediate aesthetics results*
- *Better soft tissue shaping*
- *Papilla preservation*
- *More durable than a removable provisional (essix)*
- *No premature implant exposure associated with wearing a RPD*
- *Risk of early implant loss due to excessive loads*
- *It requires coordination between the surgeon and the restorative dentist*
- *Time consuming*
- *Technique sensitive, it requires skills and training*
- *Some material may become trapped under the tissue*

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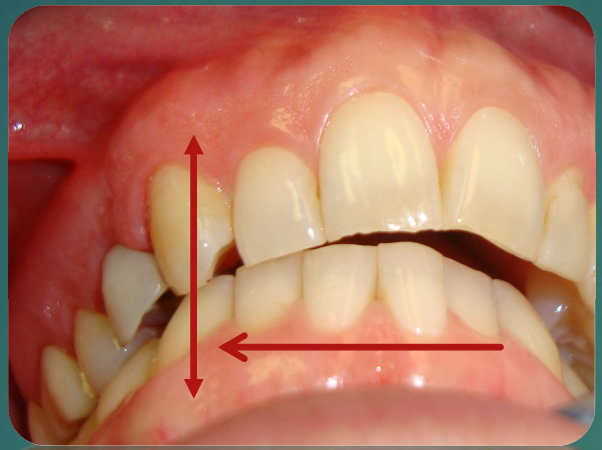
Immediate loading temporary crown



A fixed provisional is placed with no contact in centric occlusion or excursive movements.

We want to minimize any forces for the first eight weeks.

University of Miami Hospital

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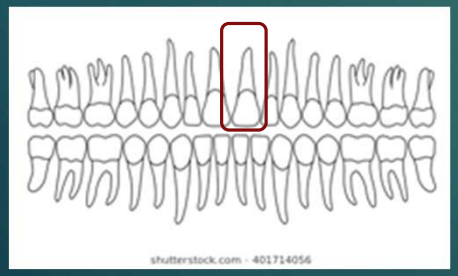
Case Presentation

Case Presentation

Case 1

Single tooth

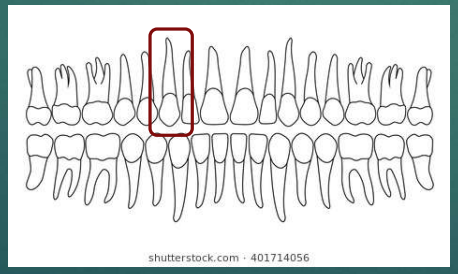
#9



Case 2

Single Tooth

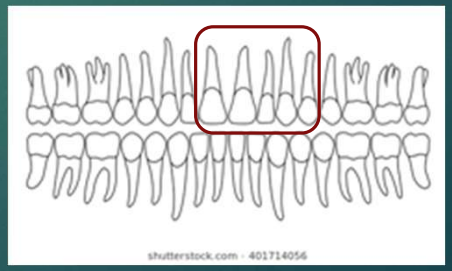
#6



Case 3

5 units Bridge

#8 to #12



Case 1 - Tooth #9

- Patient : Female
- Race : Hispanic
- Age: 34 Years old
- Allergies: not known allergies
- Past dental Hx:

Hx of trauma

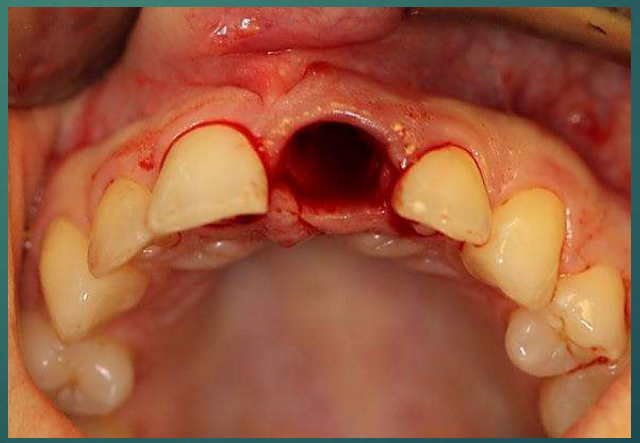
RCT was performed in 2014

Crown in 2015.

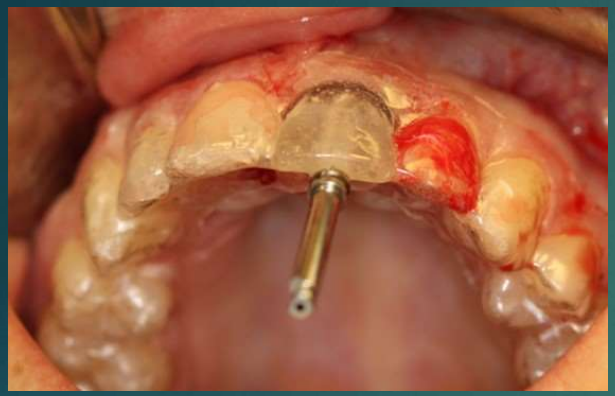
2018: Fistula associated with #9.

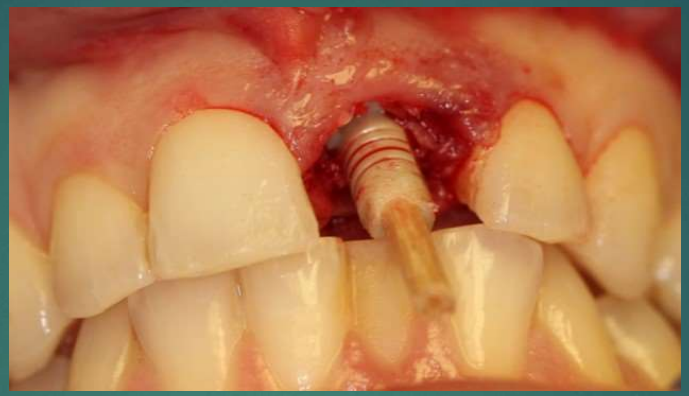
Dental Fracture

Extraction is indicated



Case 1 - Tooth #9





Immediate results

After 7 weeks:

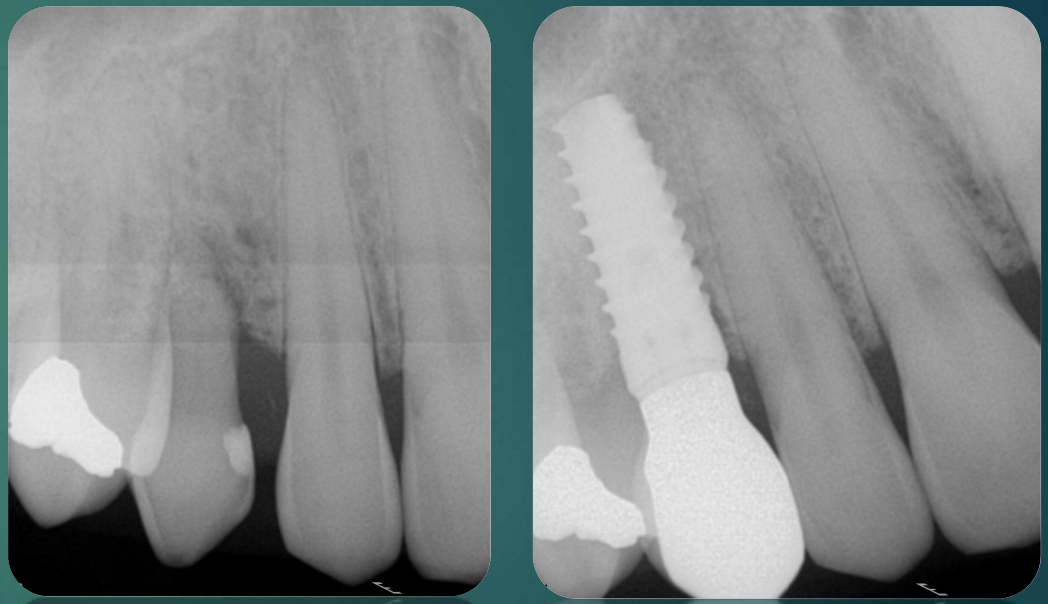
- Healthy soft tissue
- Shaping soft tissue
- Better esthetics results

Before

After

Case 2 - Tooth #6

- *Patient : Male*
- *Race : Afro American*
- *Age: 57 Years old*
- *Allergies: not known*
- *PMH: High blood pressure*
- *Medication: Amlodipine*
- *Past dental Hx: Generalized chronic periodontitis,* **Mobility grade III in deciduous tooth "C"**

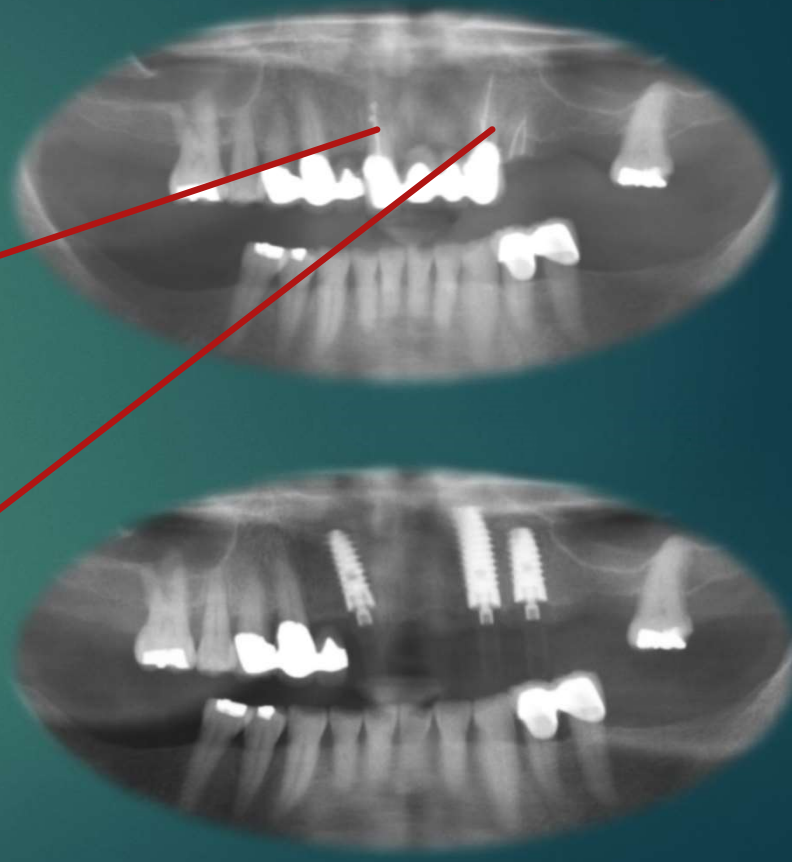


Case 2 - Tooth #6

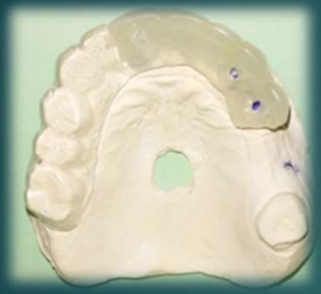
After
8 weeks

Case 3 - Bridge form #8-#12

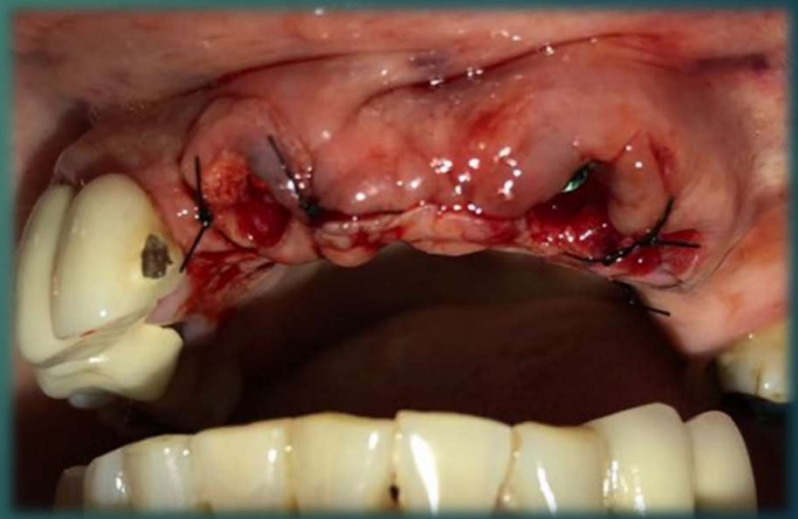
- *Patient : Female*
- *Race : Hispanic*
- *Age: 56 Years old*
- *Allergies: not known*
- *PMH: High blood pressure*
- *Medication: Amlodipine*
- *Dental Hx**: Defective PFM non restorable bridge from tooth #8 to #11, retained root #12***



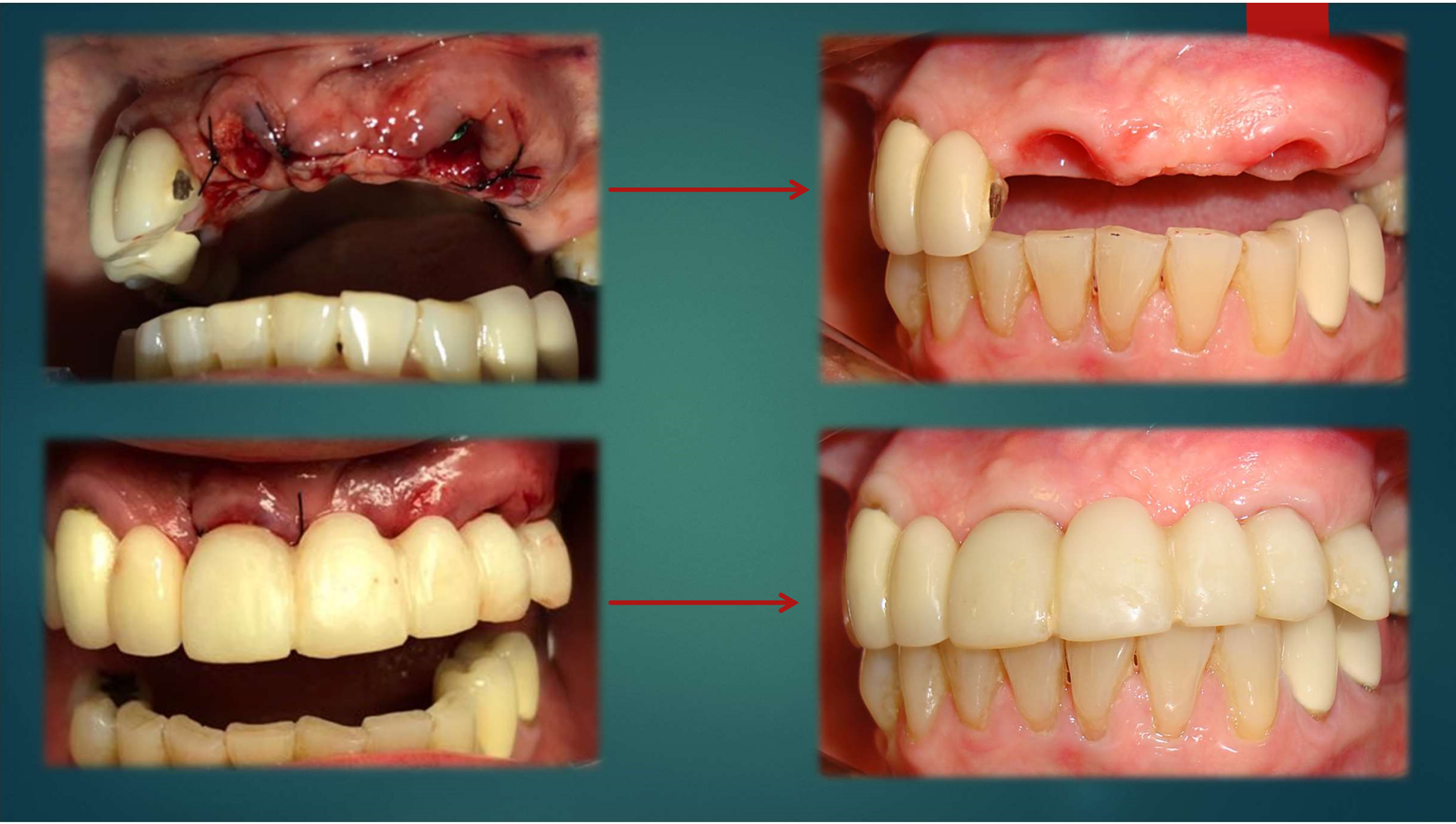
Case 3 - Bridge form #8-#12





After 7 weeks



Conclusion

- Immediate loading may be a viable treatment option for cases requiring earliest restoration
- Better aesthetic results will be achieved
- This approach is considered technique sensitive and requires trained dental team for its execution
- Success rates are similar to those of the conventional loading when protocols are followed
- Proper treatment plan and follow-up of surgical and prosthetic protocols are extremely important
- **Carefully patient / case selection, as well as surgical skill and prosthetic technique are the keys of success.**

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Thank you !

Immediate loading Implants in esthetic zone

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LITERATURE REVIEW

Survival Rate of Immediately vs Delayed Loaded Implants: Analysis of the Current Literature

Georgios Romanos, DDS, Dr med dent, PhD[1]*
Stuart Froum, DDS, MS[2]
Cyril Hery, DDS[2]
Sang-Choon Cho, DDS[2]
Dennis Tarnow, DDS[2]

TABLE 1
Implant survival rates in immediately loaded implants*

Study	Area	Loading Period	No. of Implants (Implant System)	ISR, %
Ledermann[32]	Mdb	Up to 7 y	476 (Ledermann screw)	91.2
Schnitman et al[33]	Mdb	Up to 10 y	28 (Branemark)	85.7
Tarnow et al[34]	Mx/Mdb	2.5 y	69 (Branemark, Bonefit, Astra)	97.1
Branemark et al[35]	Mdb	3 y	150 (Branemark)	98.0
Chiapasco et al[36]	Mdb	2 y	40 (Branemark)	97.5
Ericsson et al[6]	Mx/Mdb	5 y	14 (Branemark)	85.7
Buchs et al[37]	Mx/Mdb	2 y	142 (Altiva)	93.7
Chow et al[5]	Mdb	2 y	123 (Branemark)	98.3
Grunder et al[38]	Mx/Mdb	2 y	91 (3i)	92.3
Testori et al[18]	Mdb	4 y	92 (3i)	98.9
Rocci et al[11]	Mx	3 y	97 (Branemark)	90.7
Degidi and Piattelli[39]	Mx/Mdb	Up to 7 y	93 (XiVE)	94.0
Balshi et al[19]	Mx	2.8 y	522 (Branemark)	99.0
Glauser et al[21]	Mx/Mdb	4 y	102 (Branemark)	97.1
Van Steenberghe et al[20]	Mx	12 mo	43 (Branemark)	100.0
Romanos and Nentwig[15]	Posterior Mdb	2 y	36 (Ankylos)	100.0
Total		3.58 y	2.118	94.9

*Mx indicates maxilla; Mdb, mandible; ISR, implant survival rate.

TABLE 2
Implant survival rates in delayed loaded implants*

Delayed Loading	Area	Loading Period, y	No. of Implants	ISR
Adell et al[25]	Mx/Mdb	15	2.768	81% (Mx) 91% (Mdb)
Albrektsson et al[26]	Mx/Mdb	5–7	8.139	84.9% (Mx) 99.1% (Mdb)
Zarb and Schmitt[27]	Mx/Mdb	5	262	88.55%†
Jemt and Lekholm[28]	Mx/Mdb	5	259	97.2%†
Branemark et al[29]	Mx/Mdb	10	882	79.3% (Mx) 90.5% (Mdb)
Lindquist et al[30]	Mdb	15	273	98.9%
Lazzara et al[31]	Mx/Mdb	5	1.969	93.8% (Mx) 97% (Mdb)
Romeo et al[8]	Mx/Mdb	7	759	94.7% (Mx) 95.98% (Mdb)
Total		8.85	15.311	91.68%

*Mx indicates maxilla; Mdb, mandible; ISR, implant survival rate.
†Authors grouped maxilla and mandible together in results.

J Dent. 2014 Sep;42(9):1052-9. doi: 10.1016/j.jdent.2014.06.010. Epub 2014 Jul 1.

Immediate nonfunctional versus immediate functional loading and dental implant failure rates: a systematic review and meta-analysis.

Chrcanovic BR[1], Albrektsson T[2], Wennerberg A[3].

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Abstract

OBJECTIVES: The purpose of the present review was to test the null hypothesis of no difference in the implant failure rates, postoperative infection, and marginal bone loss for patients being rehabilitated using dental implants with immediate nonfunctional loading (INFL) compared to immediate functional loading (IFL), against the alternative hypothesis of a difference.

METHODS: An electronic search without time or language restrictions was undertaken in March 2014. Eligibility criteria included clinical human studies, either randomized or not. The estimates of relative effect were expressed in risk ratio (RR) and mean difference (MD) in millimeters.

RESULTS: 1059 studies were identified and 11 studies were included, of which 7 were of high risk of bias, whereas four studies were of low risk of bias. The results showed that the procedure used (nonfunctional vs. functional) did not significantly affect the implant failure rates (P=0.70), with a RR of 0.87 (95% CI 0.44-1.75). The wide CI demonstrates uncertainty about the effect size. The analysis of postoperative infection was not possible due to lack of data. No apparent significant effects of non-occlusal loading on the marginal bone loss (MD 0.01mm, 95% CI -0.04-0.06; P=0.74) were observed.

CONCLUSIONS: The results of this study suggest that the differences in occlusal loading between INFL and IFL might not affect the survival of these dental implants and that there is no apparent significant effect on the marginal bone loss.

CLINICAL SIGNIFICANCE: There has been a controversy concerning whether dental implants should be subjected to immediate functional or nonfunctional loading. As the philosophies of treatment may alter over time, a periodic review of the different concepts is necessary to refine techniques and eliminate unnecessary procedures. This would form a basis for optimum treatment.

KEYWORDS: Dental implants; Functional loading; Immediate loading; Implant failure rate; Marginal bone loss; Meta-analysis; Nonfunctional loading

PMID: 24995809 DOI: 10.1016/j.jdent.2014.06.010

[Indexed for MEDLINE]

J Prosthet Dent. 2018 Apr 24. pii: S0022-3913(16)30002-7. doi: 10.1016/j.prosdent.2017.12.006. [Epub ahead of print]

Immediate versus early loading of single dental implants: A systematic review and meta-analysis.

Pigozzo MN[1], Rebelo da Costa T[2], Sesma N[3], Laganá DC[3].

Author information

Abstract

STATEMENT OF PROBLEM: Patients prefer to be rehabilitated as soon as possible if the risk of implant failure is not increased. However, whether immediate loading of single implants is riskier than early loading is not clear.

PURPOSE: This systematic review and meta-analysis investigated whether the immediate loading protocol has more clinical disadvantages than the early loading protocol for single dental implants in terms of the marginal bone loss and survival rate of single implant crowns.

MATERIAL AND METHODS: Two reviewers conducted an advanced electronic database search, with no language or date restriction, in Medline/PubMed, Embase, and the Cochrane Library up to May 2016. Studies were chosen by title and abstract for screening in accordance with the following inclusion criteria: dental implants studies; cohort studies (prospective and retrospective) and randomized controlled trials; samples involving partially edentulous patients; immediate loading implants; early loading implants; and n≥10 participants.

RESULTS: Of the 5710 studies initially identified, 5 fulfilled the inclusion criteria. A meta-analysis yielding risk differences (RD) and mean differences (MD) with a 95% confidence interval (CI) was performed. The trials included showed no significant differences between early and immediate loading protocols in single implant crowns with regard to survival rate at 1 and 3 years (RD, -0.00; 95% CI, -0.04 to 0.04; P=.990 for 1 year and P=.980 for 3 years) or marginal bone loss at 1 year (MD, 0.09; 95% CI, -0.02 to 0.19; P=.110) and 3 years (MD, -0.23; 95% CI, -0.47 to 0.01; P=.060).

CONCLUSIONS: This systematic review showed no significant differences between early and immediate loading protocols in single implant crowns with regard to survival rate or marginal bone loss at 1 or 3 years.

PMID: 29703670 DOI: 10.1016/j.prosdent.2017.12.006

Delayed loading	*Limited Primary stability*	*Loading after bone formation*	*Loading 6- 12 months Bone of low density Bone grafting Limited PS*
Conventional loading	*Primary stability*	*Loading after osteogenesis and woven bone remodeling*	*Loading 3-6 months Submerged or non submerged*
Early loading	*Primary stability*	*Loading after onset of osteogenesis, prior to osseointegration*	*Loading after 48-72 hours , no later than 3 months*
Immediate loading	*Enhanced primary stability*	*No osseointegration*	

The immediate loading of dental implants. Compend Contin Educ Dent. 2007

Immediate loading: is a non submerged, one stage surgery where loading of implants with provisional restoration is done at the same appointment or shortly thereafter. IMMEDIATE LOADING IN IMPLANT DENTISTRY, Journal of Oral Implantology ,2004