

## Complications Of Immediate Loading Of Single Implants In The Anterior Maxilla After One Year: A Questionnaire Survey

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### ABSTRACT

**Aim:** To evaluate dental complications arising from singleloaded implant in anterior maxilla carried out by private dental practitioners in Riyadh, Kingdom of Saudi Arabia one year after insertion. **Methods:** A cross-sectional survey of private dental practitioners was conducted using a self-administered questionnaire in Riyadh, Kingdom of Saudi Arabia. The questionnaire instrument was developed based on complications arising from loading immediate implant in the anterior maxilla after one year. Data was analyzed using SPSS. **Results:** The majority (75%) of the complications were periodontal followed by prosthodontics (58%), biological (43%), and surgical (39%). The source of knowledge about dental implant with majority of the cases being specialty programs (78%). From the aesthetic point of view, 41.9% were reported to happen within the first three months and 71.4% of practitioners attributed that to changes in hard tissues. **Conclusion:** In the present study on the immediate loading of single implants in the anterior maxilla, periodontal complications were reported by the majority of practitioners. Further long-term studies on a larger sample are needed to confirm these results.

### INTRODUCTION

Immediate post-extractive implants are those implants placed immediately after tooth extraction in a fresh extraction socket. The main advantage of this procedure is to shorten the duration of the treatment. However, immediate post-extractive implants might be at a higher risk of complications and failures.<sup>1</sup> It is necessary to address issues pertaining to implant insertion with respect to position, angulation, or depth.<sup>2, 3</sup>

The major complications related to patient injury are not always directly related to immediate loading. Injury can result if a surgeon attempts to increase implant stability by placing longer or wider implants than would normally be warranted into the available

bone, thus fracturing the alveolar ridge and perforating cortical plates of the bone. Properly placed wide neck or tapered implants do not present an increased risk for crestal bone loss.<sup>4, 5</sup> However, it should be recognized that there is a possibility of alveolar damage which may be magnified if tapered or wide platform implants are forced into dense bone without adequate osteotomy.<sup>6</sup>

Esthetic management of dental implants placed with conventional loading protocols is generally challenging in situations where there are high demands or anatomic limitations. Site enhancement with hard and soft tissue augmentation is often recommended to enhance overall success.<sup>7, 8</sup> Implant loss is classified as a biological complication and can be distinguished into

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early and late losses. Biological complications also include reactions in the peri-implant hard and soft tissues. The detection of such complications requires adequate clinical and radiographic examination methods. Technical complications serve as a collective term for mechanical damage of the implant / implant components and suprastructures.<sup>9</sup>

Technical complications of implant components or prostheses frequently occur and the incidence of some technical complications is specific for certain implant systems. In a comprehensive review on clinical complications (biological and technical) among implants concluded that variations in study design and reporting procedures limited the available data and therefore precluded proper analysis of certain complications.<sup>10</sup>

It was reported that no clinically relevant differences regarding annual failure rates or radiographic bonelevel changes between conventionally and immediately loaded implants can be found for up to 5 years of follow-up.<sup>11</sup> A study concluded that despite the high survival rate observed more long-term studies are necessary to determine the success of implant treatment provided immediately after tooth extraction.<sup>12</sup>

In a pilot study, despite the small number of implants the results indicated a predictable way to treat single-tooth loss in the anterior maxilla for the appropriate indications.<sup>13</sup> Another study reported that immediate loading of single-tooth implants in the anterior maxilla can result in successful implant integration and stable peri-implant conditions up to one year.<sup>14</sup> The aim of the present study was to evaluate dental complications that may arise from single loaded implant in anterior maxilla carried out by private dental practitioners in Riyadh, Kingdom of Saudi Arabia (KSA) after one year of insertion.

## METHODS

This study involved a self-administered questionnaire survey of private dental practitioners in Riyadh, KSA. The questionnaire instrument was developed based on complications arising from loading immediate implant in anterior maxilla after one year. Riyadh Colleges of Dentistry and Pharmacy ethics committee approved the protocol for this study and the questionnaire instrument. A cross-sectional survey of private dental practitioners was conducted. Questionnaire was sent to private dental practitioners in Riyadh, KSA.

A completed questionnaire indicated the consent to participate in the study. Anonymity and confidentiality were assured. The data was entered onto computer for analysis using Statistical Package for Social Science (IBM-SPSS) Version 22 for Windows. Descriptive analysis was undertaken to present an overview of the findings from this sample. Differences between groups were examined using Fisher's exact and Chi-square test. A p value of  $\leq 0.05$  was considered as statistically significant.

## RESULTS

Of the total 100 participants, the majority were males (81%). Thirty four percent were Periodontist, followed by 31% Prosthodontist, 19% Surgeon, and 16% General Practitioners. Thirty seven percent had 5-10 years of clinical experience followed by 11-15 years (20%), less than 5 years (17%), 16-20 years (14%), and more than 20 years (12%)(Table 1). Figure 1 shows the frequency of immediate implant loaded in anterior maxilla by the practitioners from in one year (September 2015 to August 2016).

The majority of the complication treated is periodontal (75%), followed by prosthodontics (58%), biological (43%), and surgical (39%) (Table 3). Table 4 shows the source of knowledge about dental implant with

Variable		Percent(%)
Gender	Male	81
	Female	19
Specialty	Surgeon	19
	Prosthodontist	31
	Periodontist	34
	General practitioner	16
Years of clinical experience	Less than 5 years	17
	5-10 years	37
	11-15 years	20
	16-20 years	14
	More than 20 years	12

Table 1. Demographics

Variables		Percent (%)		Percent (%)
Have you treated surgical complications?	Yes	39	Preventable	34
			Not preventable	5
Have you treated prosthodontics complications?	Yes	58	Preventable	57
			Not preventable	1
Have you treated periodontal complications?	Yes	75	Preventable	72
			Not preventable	3
Have you treated biological complications?	Yes	43	Preventable	39
			Not preventable	4

Table 2. Percentage of complications treated

majority being specialty programs (78%). Figure 2 and table 5 shows the problems faced from aesthetic point of view with majority reported immediately within the first three months (41.9%) and in hard tissues (71.4%). Fisher’s exact test showed no statistically significant association between all complications (surgical, prosthodontics, periodontal, and biological) and problems from aesthetics point of view variables with gender ( $p>0.05$ ). On the other hand, Pearson Chi square test showed a statistically significant association between specialty and surgical, prosthodontics, and periodontal

	Responses		Percent of cases
	Frequency (n)	Percent (%)	
Specialty programs	78	66.7	78
Articles of dental implant	28	23.9	28
Your Colleagues	3	2.6	3
Your colleges study	8	6.8	8

Table 3. Source of knowledge about dental implants (Multiple responses)

	Percentage (%)
<b>If yes, the problem arise</b>	
Immediately within the first three months	41.9
After six months	21.0
After one year	37.1
<b>The problem was</b>	
In hard tissues	71.4
In soft tissues	28.6

Table 4. Problems rose from aesthetic point of view

complications variables ( $p<0.05$ ). However, association between specialty and biological complications and aesthetic point of view variables was statistically not significant ( $p>0.05$ ). Furthermore, there was statistically significant association between years of clinical experience and prosthodontics complications, periodontal complications, and aesthetic point of view variables ( $p<0.05$ ). Statistically significant association was also found between the number of immediate implants loaded and surgical complication, biological complications, and aesthetic point of view variables ( $p<0.05$ ) (Table 6).

	p value			
	Gender	Specialty	Years of clinical experience	Number of immediate implant loaded
Have you treated surgical complications?	0.116	0.000*	0.367	0.004*
Have you treated prosthodontics complications?	0.439	0.000*	0.007*	0.422
Have you treated periodontal complications?	1.000	0.007*	0.016	0.332
Have you treated biological complications?	0.614	0.461	0.175	0.007*
Problems from aesthetic point of view	0.433	0.461	0.010*	0.030*

\*  $p \leq 0.05$  (Statistically significant)

Table 5. Statistical significance between variables

**DISCUSSION**

Immediate loading of oral implants could potentially trounce problems. It is widely accepted that immediate loading is an advantageous procedure if the outcome in terms of implant survival and success is akin with that of conventional loading.<sup>15</sup> Results of the percent study showed that most complications interface dental practitioners were the periodontal complications with a rate of 72%. This is in agreement with a study where the results showed complications in the immediate implant with inflammation of the gingiva and found marginal bone level changes.<sup>16</sup> Our study revealed periodontal complications were the most common among dental practitioners and even with specialist Periodontist.

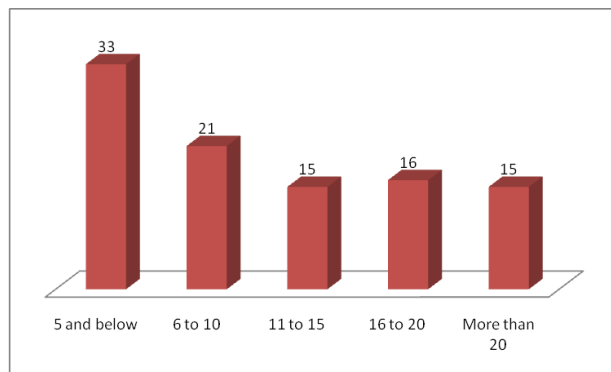


Figure 1. Frequency of immediate implant loaded in anterior maxilla

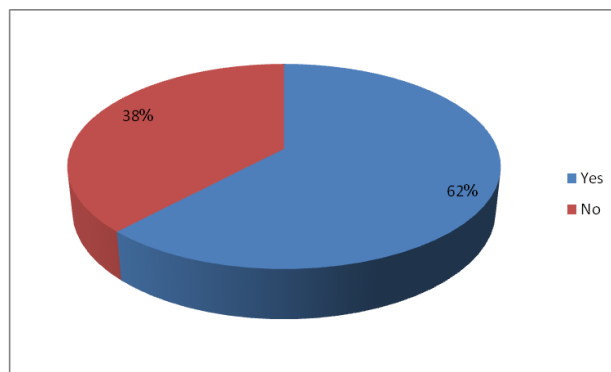


Figure 2. Problem faced from aesthetic point of view

The results also showed that fewer complications may interface the dental practitioners are biological complications (43%). This is similar to a study which reported little marginal peri-implant bone resorption together with low incidence of biological and technical complications. No significant differences in outcome measures were reported in clinical trials comparing immediate, early, or conventional implant strategies.<sup>17</sup> Furthermore, the results showed that 62% of dental practitioners have faced aesthetic complications during the first year. Immediate post extractive implants might be at a higher risk of complications and failures. On the other hand, conventional implant show better results and less complication than immediate loading implant.<sup>1,18</sup>

## CONCLUSIONS

The present study on the immediate loading of single implants in the anterior maxilla concluded that complications (periodontal, prosthodontics, biological, and surgical) occur during one year after loading immediate implant. However, most of these complications could be preventable. Further long-term studies on a larger sample are needed to confirm these results.

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