

## Original Research

### Evaluation of prosthetic complications associated with dental implants- A clinical study

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#### ABSTRACT:

**Background:** Conventional options in prosthodontics for substituting a missing single tooth include the removable partial denture, partial and full coverage bridgework, and resin-bonded bridgework. The present study was conducted to assess prosthetic complications of dental implants. **Materials & Methods:** This study was conducted on 86 patients who received dental implants in last 10 years of both genders. Complications arising from prosthetic portion of dental implants were recorded.

**Results:** Out of 86 patients, males were 46 and females were 40. Males comprised of 58 and females 42 dental implants. Prosthetic complications were abutment fractured in 2, loose abutment in 4, fracture of veneering porcelain in 5, prosthesis framework fracture in 1 and screw fracture in 3 patients. The difference was significant ( $P < 0.05$ ). **Conclusion:** Authors found that prosthetic complications were abutment fractured, loose abutment, fracture of veneering porcelain, prosthesis framework fracture and screw fracture.

**Key words:** Dental implant, screw fracture, veneering porcelain

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#### INTRODUCTION

Clinical prosthodontics during the past decade has significantly improved and developed according to the advancements in the science and patient's demands and needs.<sup>1</sup> Conventional options in prosthodontics for substituting a missing single tooth include the removable partial denture, partial and full coverage bridgework, and resin-bonded bridgework. Advancements in the field of odontology can be highlighted in terms of osseointegrated dental implants.<sup>2</sup>

In addition to aesthetic and phonetic improvements, prostheses are required for chewing ability; otherwise, nutrient intake is severely restricted and can result in many health complications. Implant-supported dentures

improve the biomechanical integration of the dentures by providing them with a better retention and also increase the biting force by partially relieving the gingivo-mucosal support of occlusal loads.<sup>3</sup>

Despite its high success rate, failure and complications are often associated with dental implant treatment due to a number of factors. American Association of Oral and Maxillofacial Surgeons show that 69% of adults ages 35 to 44 have lost at least one permanent tooth to an accident, gum disease, a failed root canal or tooth decay. Furthermore, by age 74, 26% of adults have lost all of their permanent teeth.<sup>4</sup> Although osseointegrated implants are routinely used for the rehabilitation of partially or totally edentulous patients, presenting high long-term survival rates; biological and technical

complications may result in implant failure and loss. Implant failures have been reported in frequencies varying from 1% up to 22%. Factors affecting implant failure are diverse and are related to patient systemic status, age and social habits, implant macro-/micro-design and surface chemical composition, implant position, bone quality, and surgical technique.<sup>5</sup> The present study was conducted to assess prosthetic complications of dental implants.

**MATERIALS & METHODS**

This study was conducted in the department of prosthodontics. It comprised of 86 patients who received dental implants in last 10 years of both genders. Ethical clearance from ethical committee was taken prior to the study. They were informed regarding the study and written consent was obtained.

Data such as name, age, gender etc. was recorded. Complications arising from prosthetic portion of dental implants were recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

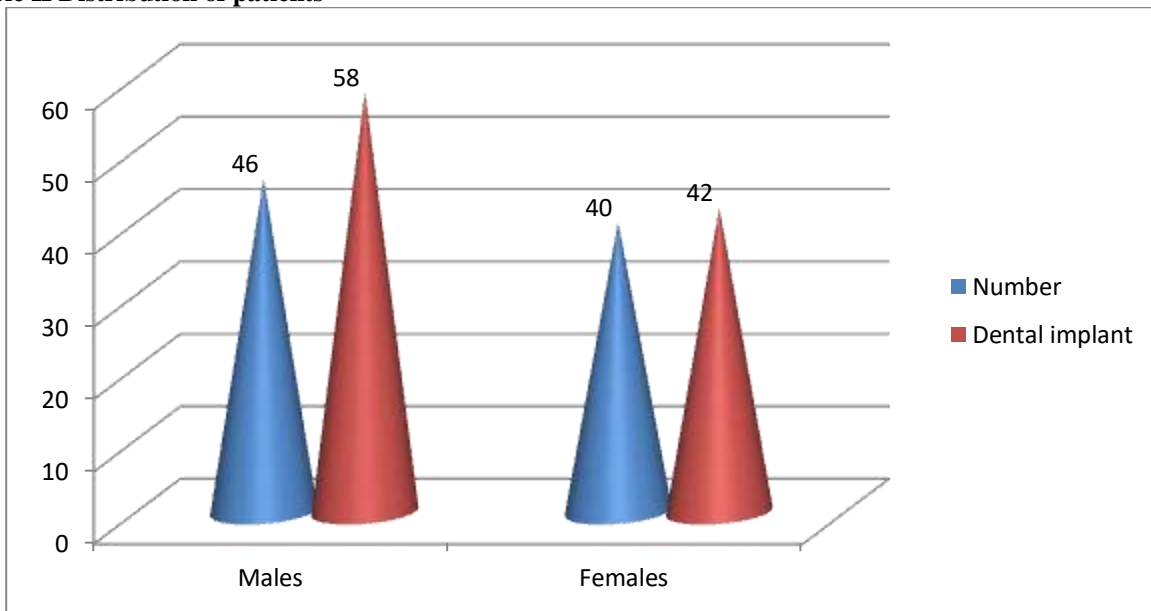
**RESULTS**

**Table I Distribution of patients**

Gender	Number	Dental implant
Males	46	58
Females	40	42

Table I shows that out of 86 patients, males were 46 and females were 40. Males comprised of 58 and females 42 dental implants.

**Table II Distribution of patients**

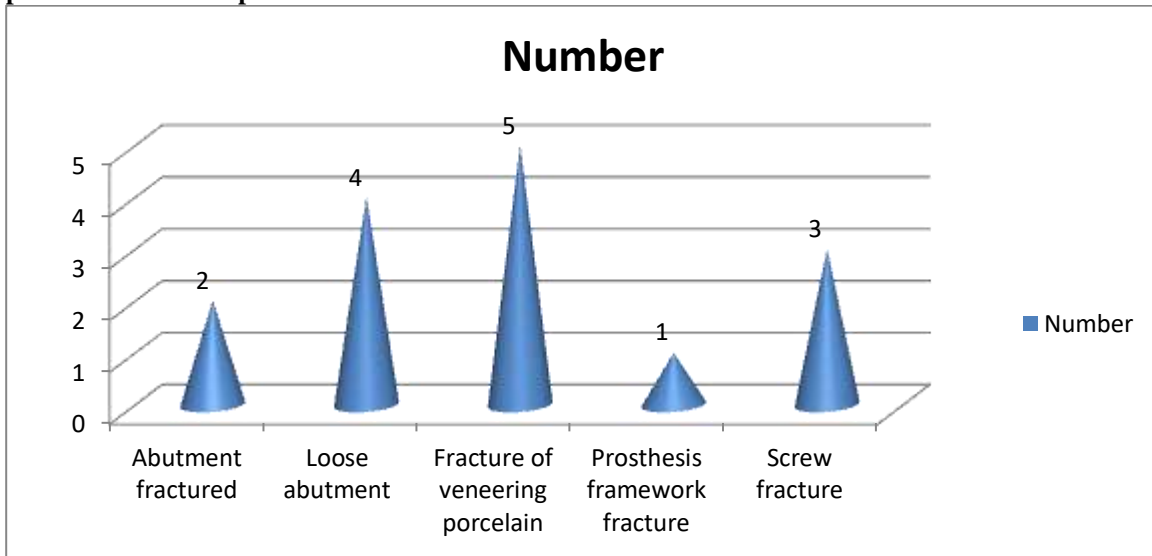


**Table II Prosthetic complications**

Prosthetic complications	Number	P value
Abutment fractured	2	0.01
Loose abutment	4	
Fracture of veneering porcelain	5	
Prosthesis framework fracture	1	
Screw fracture	3	

Table II, graph II shows that prosthetic complications were abutment fractured in 2, loose abutment in 4, fracture of veneering porcelain in 5, prosthesis framework fracture in 1 and screw fracture in 3 patients. The difference was significant (P< 0.05).

**Graph II Prosthetic complications**



**DISCUSSION**

Implantology belongs to the fast growing area in dental medicine due to its innovations and advancement with regards to medical and technical developments. Out of the various treatment modalities available for replacing missing/unrestorable teeth, treatment with tissue-integrated supported prosthesis have now become an integral and essential part, and today many patients have been successfully treated with benefit of tissue-integrated supported prosthesis.<sup>6</sup> In various clinical trials, the long-term prognosis and predictability of implant-supported prostheses is well documented.<sup>7</sup> However, researchers do not yet fully understand the etiology of implant complications. During the past 2 decades, one of the major interests in implant research has been the success and/or failure of implants from a biological point of view. More recently, implant research has focused on factors affecting prosthetic outcomes and patient satisfaction with treatment. Failures in implants can be divided into early failure and late failure according to failure time.<sup>8</sup> First, early failure is one that failed osseointegration within several weeks or several months. It was due to bone necrosis, surgical trauma, bacterial infection, inadequate initial stability and early occlusal loading. Late failure is failure that turns up after functional loading of several period of time. It takes place because of infection and excessive loading. There are many difficulties to figure out the cause of implant success and failure because it is affected by many various factors.<sup>9</sup> The present study was conducted to assess prosthetic complications of dental implants.

In present study, out of 86 patients, males were 46 and females were 40. Males comprised of 58 and females 42 dental implants. Ulku et al<sup>10</sup> included 40 patients who

received oral rehabilitation with an implant-supported prosthesis. A total of 162 implants were placed: 99 in the maxilla and 63 in the mandible. In total, 159 implants (98.14%) survived, 3 implants (1.86%) failed, and 100% of the prostheses were successful. There were 62 dental implants used as abutments for removable dentures and 97 for fixed dentures. The most frequent prosthetic complications after placement of an implant-supported prosthesis were loss of retention, mucositis, abutment screw loosening, and fracture. Patient satisfaction after prosthesis use was also evaluated, showing that satisfaction was systematically increased.

We found that prosthetic complications were abutment fractured in 2, loose abutment in 4, fracture of veneering porcelain in 5, prosthesis framework fracture in 1 and screw fracture in 3 patients. Goodacre et al<sup>11</sup> found abutment screw loosening (both screw and cement-retained crowns): 262 of 7,648 crowns (3%), implant fracture: 13 of 438 implants (3%), porcelain veneer fracture/chipping: 177 of 7,245 crowns (2%), loss of retention (decementation of cemented crowns): 161 of 7,683 crowns (2%), open proximal contacts: 94 of 4,846 crowns (2%), crown remakes: 38 of 5,471 crowns (0.7%).

Priyanka et al<sup>12</sup> in their study a total of 200 patients scheduled to undergo dental implants for missing mandibular first molar were included. Dental implants were placed in all these patients by skilled oral implantologist. Follow-up was done in all the patients' upto 2 years for assessing the incidence of occurrence of complications. Prosthetic complications were present in 3 percent of the total patients included in the present study. Among these complications, most commonly encountered were fracture of veneering porcelain

followed by abutment fracture, loosening of abutment, prosthetics framework fracture and screw fracture. The shortcoming of the study is small sample size.

## CONCLUSION

Authors found that prosthetic complications were abutment fractured, loose abutment, fracture of veneering porcelain, prosthesis framework fracture and screw fracture.

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