

Clinical evaluation of the use Narrow Diameter Dental Implants

Jae-eun Kim, Ahran Bae, Sooin Moon, Yong-Dae Kwon

Department of Oral & Maxillofacial Surgery, Department of Dentistry, Graduate School, Kyung Hee University, Seoul, Korea Department of Prosthodontics, School of Dentistry, Kyung Hee University, Seoul, Korea Department of Oral & Maxillofacial Surgery, School of Dentistry, Kyung Hee University, Seoul, Korea

Introduction

Narrow diameter dental implants(NDIs) are used for restricted alveolar bone width, and as alternatives to bone augmentation. As the present, the demand for implants and the number of implant surgeries are increasing due to the increase of the elderly. Also, The demand for NDIs is increasing. As the clinical value of NDIs becomes more important, it is continuously being evaluated from various perspectives of the long-term prognosis of NDIs. The aim of this study was to evaluate the clinical use of NDIs and to identify the mechanical complications associated with the prognosis.

Patients & Methods

A total of 137 patients and 210 implants that treated with NDIs were analyzed from January 2013 to December 2017 at the department of Oral & Maxillofacial Surgery of Kyung Hee University dental hospital. Based on the electronic medical records (EMR) system, patient's demographic, types and characteristics of NDIs, and types of mechanical complications were obtained. Marginal bone loss was evaluated using panorama and apical photo. The survival rate and success rate were compared using the Kaplan-Meier survival curves.

Results

1. Patients information

Gender		Age			
Male	Female	M±SD	max	min	
48 (35.0%)	89 (65.0%)	52.66 ± 18.80	90	18	

Mhx.				
HTN	DM	Osteoporosis	Smoking	
35 (25.5%)	13 (9.5%)	16 (11.7%)	15 (10.9%)	

2. Implants information

Surface

4. Survival rates according to variable



SLA	SLActive	RBM	СА	Anterior	Posterior
50(23.8%)	104(49.5%)	34(16.2%)	22(10.5%)	123 (58.6%)	87 (41.4%)

Titanium type			Length	
Ti-Zr alloy	cpt. 4	8.0-9.5	10.0	11.00-13.0
113(53.8%)	97(46.2%)	23(11.0%)	161(76.7%)	26(12.4%)

3. Survival & Success rates





Position

5. Marginal Bone Loss around NDIs



6. Mechanical complications with NDIs

Complication	N(%)
Mechanical	
screw loosening	8(3.8)
porcelain fracture	5(2.3)
Biological	
recession	2(0.9)
swelling	4(1.9)
fistula	2(0.8)
BOP	1(0.4)
mobility	2(0.8)

Failure of implant

Peri-implantitis	2
Mobility	2
BOP + Severe pain	1
Loss of fixture	9

Conclusion

In this retrospective study, the use of NDIs showed high survival and success rates, and there was no problem with marginal bone loss. Mechanical complications of NDIs were screw loosening and porcelain fracture. However, no fracture of the implant fixture was observed. Rather than a defect in the implant itself, external factors such as smoking were influencing the failure of the implant. Based on the above results, it was found that NDIs can be used stably and sufficiently, but it is necessary to pay attention to external factors. Also, it is necessary to continuously evaluate the causes of direct failure and the use of NDIs in the posterior area.