



SPLINTED vs NON-SPLINTED ATTACHMENTS FOR MANDIBULAR IMPLANT-SUPPORTED OVERDENTURES?

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INTRODUCTION

Implant-supported overdentures offer better retention and stability for edentulous patients than conventional dentures. There are two main attachment options: splinted and non-splinted. Splinted attachments use a rigid bar to connect the implants, while non-splinted attachments connect the overdenture directly to individual implants. The choice depends on patient needs, preferences, and other conditions. The aim of this study was to compare the clinical outcomes of mandibular implant-supported overdentures using splinted (bar) and non-splinted (locator) attachments. The null hypothesis was: there is no difference in complications between overdentures retained by splinted or nonsplinted attachments.

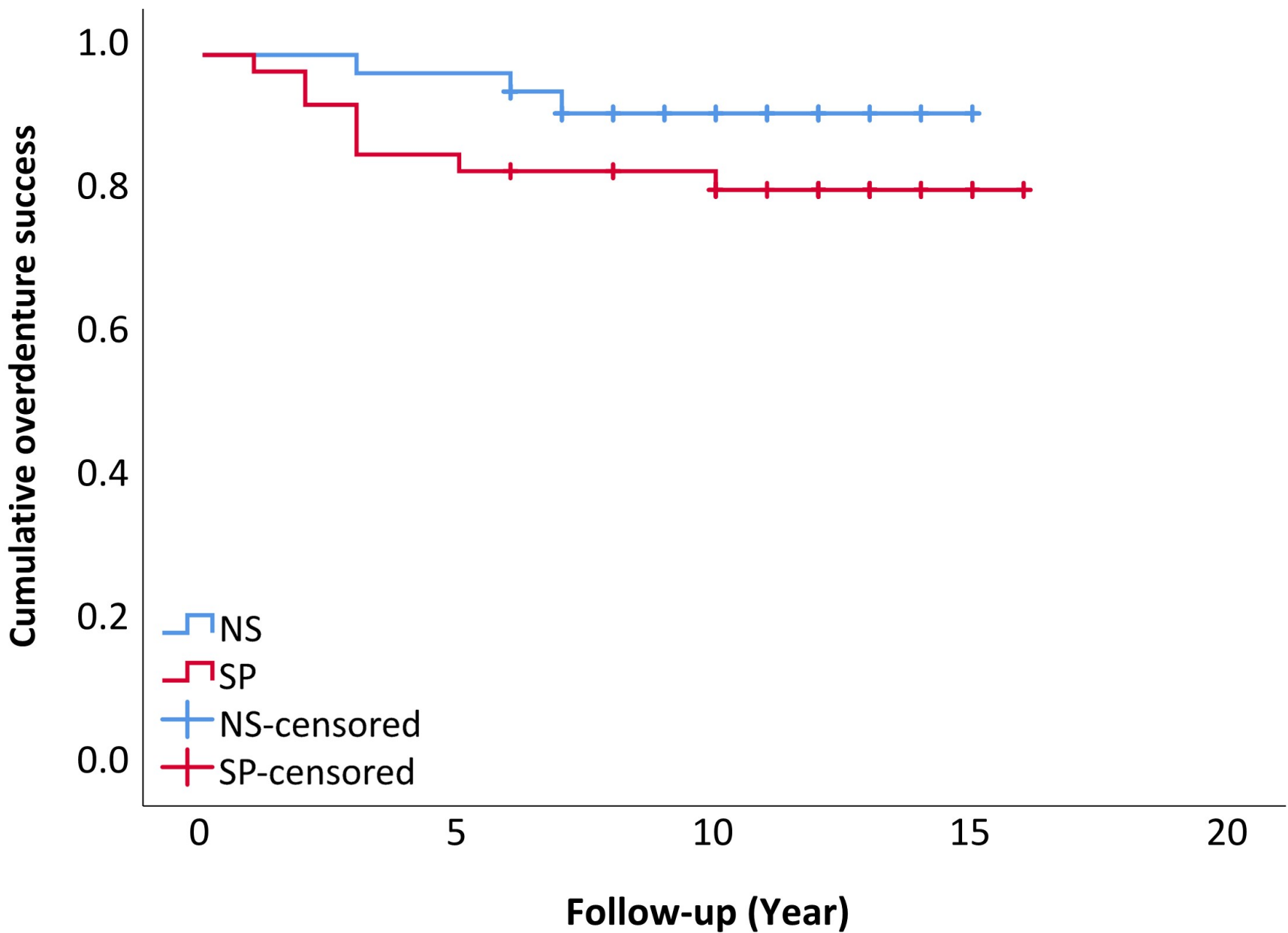
MATERIALS & METHODS

The data included 82 patients (43 splinted, SP; 39 non-splinted, NS) with completely edentulous mandible treated with implant-supported overdentures using splinted attachment (Hader bar & clip, Preci-Horix, Alphadent NV, Belgium) or non-splinted attachments (Locator, Zest Anchors, CA, USA) between 2006 and 2016. The prosthodontic complications, denture-related and attachment-related, were analyzed at the treated arch level, and surgical complications of implants were analyzed at the implant level. Kaplan-Meier curves and the multivariable Cox regressions model were used to analyze the success and survival of overdentures and supporting implants.

RESULTS

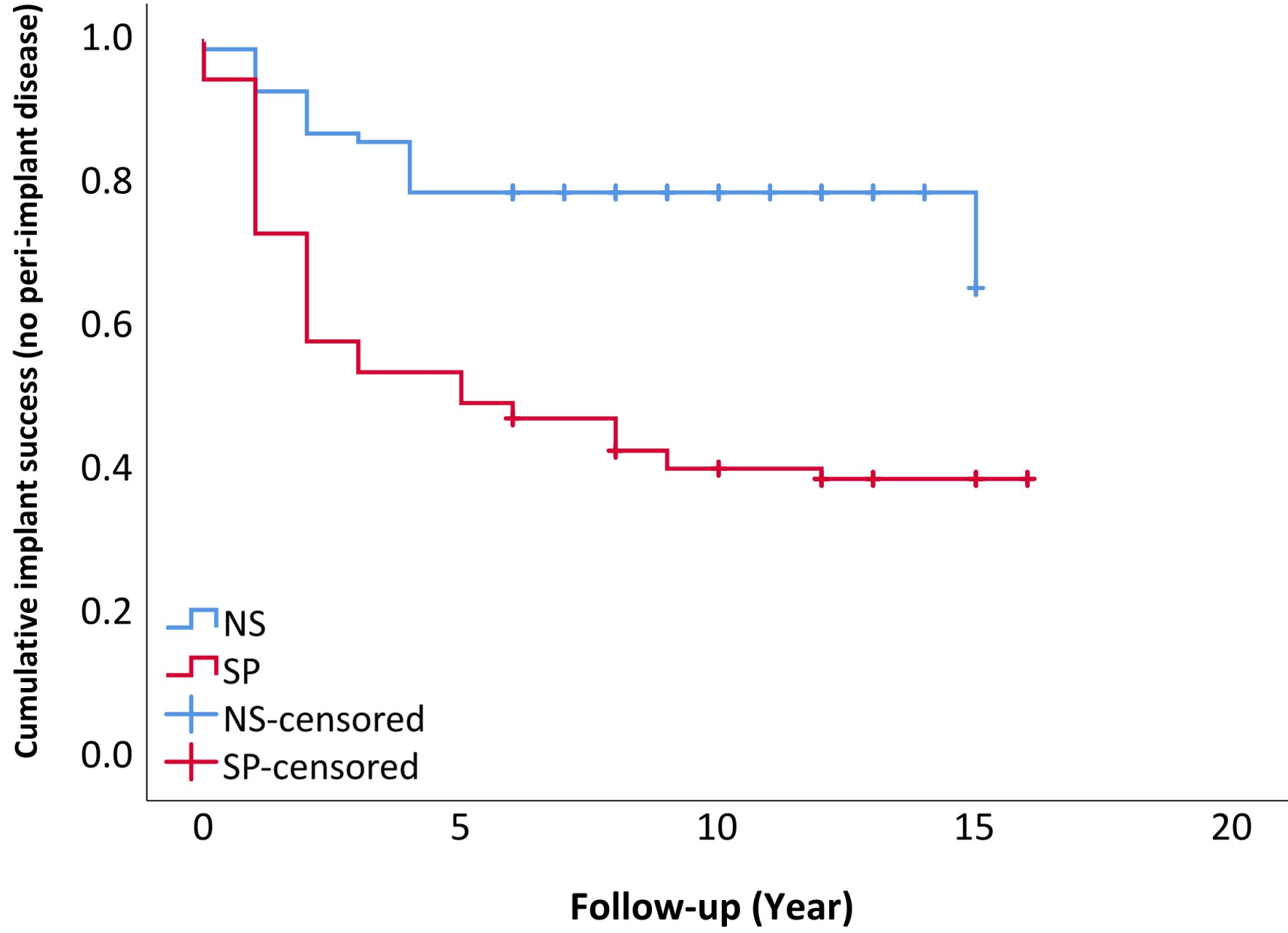
The most frequent prosthodontic complication was attachment-related, change of bar clip or locator male part which related with the retention loss (Table 1). The prosthodontic complication occurred in 67.4% of SP group and 66.7% of NS group with no significant differences between the groups (Fig. 1A). Peri-implant diseases showed significantly higher risk in the SP group, and all instances of osseointegration failure occurred in the SP group (Fig. 1B, Table 1). The cumulative implant survival rate was 100% for the NS group and 96.8% for the SP group, with no significant difference. In the SP group, a significant increase in the risk of peri-implant disease was observed with a decrease in horizontal distance between implants.

FIGURE 1 (A).
CUMULATIVE SUCCESS RATE OF OVERDENTURE
(PROSTHODONTIC COMPLICATION ANALYSIS)



	Estimated success rate at 10-Yr (SD)	Log-Rank test
NS	0.92 (0.05)	P = 0.160
SP	0.81 (0.06)	

FIGURE 1 (B).
CUMULATIVE SUCCESS RATE OF IMPLANT
(BIOLOGICCAL COMPLICATOIN ANALYSIS)



	Estimated implant success rate at 10-Yr (SD)	Log-Rank test
NS	0.79 (0.04)	P <0.001
SP	0.41 (0.05)	

TABLE 1. COMPARISON OF PATIENTS ACCOORDING TO ATTACHMENT SYSTEM

Prosthodontic complication (Treated arch level)		Overall	NS	SP	P-value	HR (95% CI)
Denture-related	Denture-related	11 (13.4%)	3 (7.7%)	8 (18.6%)	0.163	
	Artificial teeth repair	8 (9.8%)	2 (5.1%)	6 (14.0%)	0.078	
	Denture base repair	2 (2.4%)	1 (2.6%)	1 (2.3%)	0.987	
	Framework fracture (denture remake)	1 (1.2%)	0 (0.0%)	1 (2.3%)	0.865	
Attachment-related		50 (61.0%)	25 (64.1%)	25 (58.1%)	0.470	
1) Abutment screw loosening	1) Abutment screw loosening	3 (3.7%)	3 (7.7%)	0 (0.0%)	0.067	
	2) Change of bar clip or locator male part	38 (46.3%)	20 (51.3%)	18 (41.9%)	0.288	
	3) Remake of bar / Reconnection of locator housing	12 (14.6%)	5 (12.8%)	7 (16.3%)	0.784	
Surgical complication (Implant level)		Overall	NS	SP	P-value	HR (95% CI)
Peri-implant mucositis	Peri-implant mucositis	38 (46.3%)	10 (25.6%)	28 (65.1%)	0.002*	3.12 (1.51-6.43)
	Peri-implantitis	17 (20.7%)	3 (7.7%)	14 (32.6%)	0.025*	4.19 (1.20 - 14.61)
Osseointegration failure		2 (2.4%)	0 (0.0%)	2 (4.7%)	0.501	

*significant difference derived from Cox proportional hazard regression analysis (p <.05); NS, nonsplinted attachment (Locator, Zest Anchors, CA, USA); SP, splinted attachment (Hader bar & clip, Preci-Horix, Alphadent NV, Belgium)

CONCLUSION

The success of implants was associated with the attachment type: implants which support splinted attachments had higher risks of peri-implant disease than those of non-splinted attachments. The risk increased the closer the horizontal distance between implants. For the patients with high risk of peri-implant disease, overdentures retained by non-splinted attachments would be recommended, however, the attachment type should be carefully determined considering factors such as implant angulations.