

Prosthodontic Maintenance Requirements of Implant-Retained Overdentures Using the Locator Attachment System

Joe Vere, BDS, MFDS RCS, MMedSci^a/Derek Hall, BDS^b/Raj Patel, BDS, LDS RCS, MSc, FDS RCPS^c/
Phillip Wragg, BDS, FDS RCS, DRD RCS^c

The aim of this study was to investigate the prosthodontic maintenance requirements of patients rehabilitated with maxillary and mandibular implant-retained overdentures using the Locator Attachment System by retrospectively reviewing case records. Fifty patients made 112 unplanned return visits over a 3-year period. The most common reasons for returning were denture adjustments ($n = 45$), inadequate retention ($n = 39$), and loosening of the implant abutments ($n = 14$). Implant-retained overdentures using the Locator Attachment System have comparable prosthodontic maintenance requirements to other attachment systems. Problems associated with these prostheses are usually simple to resolve chairside. *Int J Prosthodont* 2012;25:392–394.

Implant overdentures may be retained by a variety of attachments, including bars, balls, and magnets.¹ Regardless of attachment type, these prostheses appear to have significant prosthodontic maintenance requirements,^{1–3} which can be time-consuming and expensive for the patient, clinician, and technician. The Locator Attachment System (Zest Anchors) has been available since 2000⁴; however, only two studies have considered the maintenance requirements of this system, and both were limited to mandibular overdentures.^{4,5} This study reports the prosthodontic maintenance requirements of maxillary and mandibular implant-retained overdentures using the Locator Attachment System over a 3-year period.

Materials and Methods

All patients rehabilitated with implant-retained overdentures at the Charles Clifford Dental Hospital, Sheffield, United Kingdom, between January 1, 2008, and December 31, 2009, were identified from a clinical database. To be included in this study, patients

needed to be edentulous in the arch being restored, have received Brånemark or NobelReplace implants (Nobel Biocare) with delayed loading, have received freestanding Locator abutments, and have undergone a minimum 1-year follow-up.

Information was collected retrospectively from the case records. All complications occurring between delivery of the definitive overdenture and January 31, 2011, were recorded.

Results

Fifty-four consecutive patients meeting the inclusion criteria were identified. The records of 4 deceased patients were unavailable. The remaining 50 patients (19 men, 31 women; mean age: 67 years; age range: 38 to 92 years) received 52 implant-retained overdentures (13 maxillary, 39 mandibular [2 patients received maxillary and mandibular overdentures]). Mandibular overdentures were usually retained by two implants (80%, $n = 31$), while maxillary overdentures were usually retained by four implants (76%, $n = 10$) (Fig 1).

Twenty-five overdentures (48%) were provided by prosthodontists, 24 overdentures (46%) were provided by general dental practitioners, and 3 overdentures (6%) were provided by prosthodontic residents. Fifty-one overdentures (98%) were constructed from acrylic resin; 1 maxillary overdenture (2%) was constructed with a cobalt-chromium framework. Locator housings were added to the denture base by the clinician in 26 cases (50%). On January 31, 2011, the implant-retained overdentures had been in service for a mean period of 22.6 months (range: 12 to 35 months) (Fig 2).

^aSpecialist Registrar in Restorative Dentistry, Charles Clifford Dental Hospital, Sheffield, United Kingdom.

^bDF3 in Restorative Dentistry, Charles Clifford Dental Hospital, Sheffield, United Kingdom.

^cConsultant in Restorative Dentistry, Charles Clifford Dental Hospital, Sheffield, United Kingdom.

Correspondence to: Mr J. Vere, Specialist Registrar in Restorative Dentistry, Charles Clifford Dental Hospital, 76 Wellesley Road, Sheffield, South Yorkshire, United Kingdom S10 2SZ. Fax: 01142 717855. Email: jvvere@yahoo.co.uk

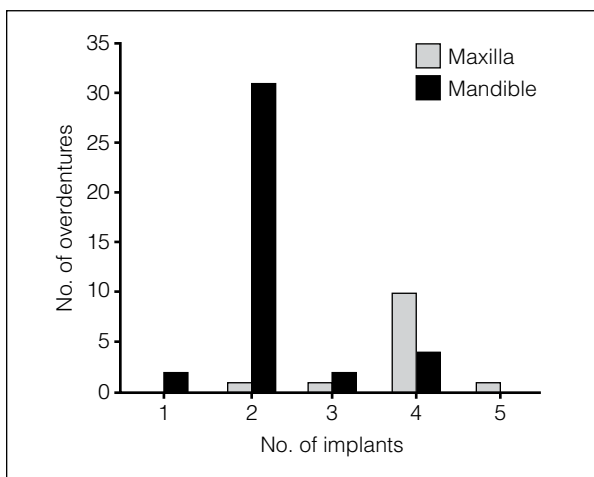


Fig 1 Number of implants used to retain each overdenture.

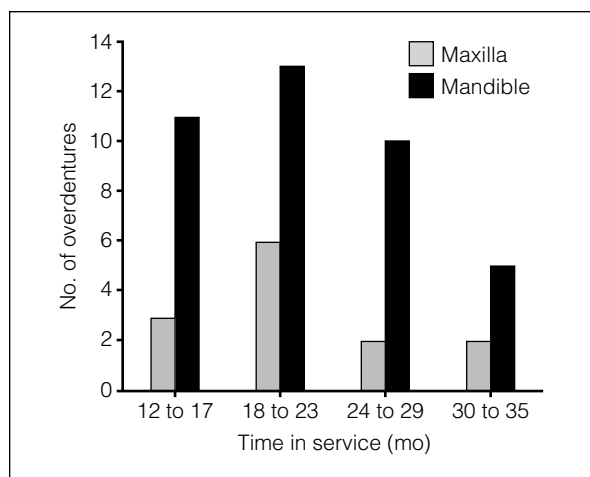


Fig 2 Duration of time overdentures had been in service.

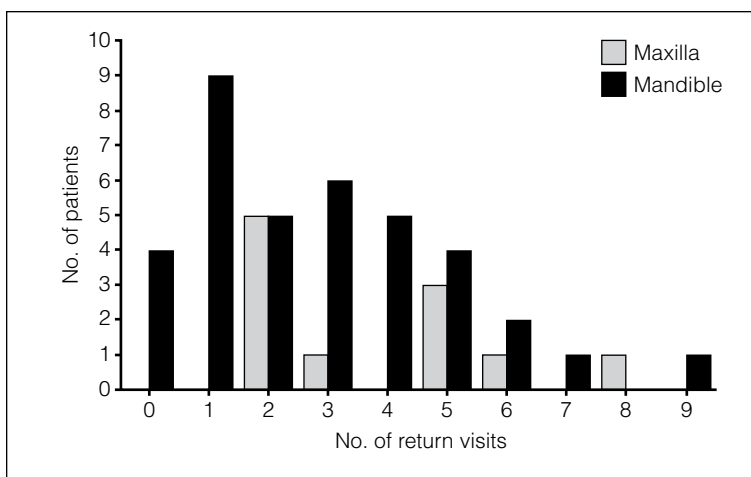


Fig 3 Number of return visits made by each patient (n = 48). The two patients with maxillary and mandibular overdentures have been excluded; they made two and four visits, respectively.

Table 1 Complications Associated with the Locator Attachment System

Complication	Maxilla	Mandible	Total
Unretentive inserts	11	20	31
Unretentive housings	3	5	8
Loose/lost abutment	3	11	14
Fractured Locator abutment	0	1	1
Fractured denture/tooth	2	3	5
Peri-implant inflammation/pain	3	4	7
Implant failure	1	0	1

Following overdenture insertion, the 50 patients made a total of 153 return visits (range: 0 to 9) (Fig 3). These 153 visits consisted of 41 planned review appointments and 112 unplanned appointments (45 denture adjustments and 67 complications associated with the Locator attachments). The most commonly reported complications associated with the Locator Attachment System were unretentive inserts (46%, n = 31), loose/lost abutments (21%, n = 14), and unretentive housings (12%, n = 8) (Table 1). Seventy-six percent of prosthodontic complications occurred during the first year of service.

Discussion

Patients made a substantial number of unplanned return visits following delivery of their implant overdentures. The most common reasons for these unplanned visits were denture adjustments, inadequate retention, and loosening of the implant abutments. Loosening of Locator abutments was unexpected. However, during data collection, it was noted that these abutments were often undertorqued. Maxillary overdentures appear to be associated with a greater number of complications than mandibular overdentures. However,

this finding should be interpreted cautiously in view of the limited number of maxillary overdentures in this study. Overall, the prosthodontic maintenance requirements appear comparable with other attachment systems.¹⁻³ Any unplanned visits are inconvenient for patients and impact service delivery. However, when the Locator Attachment System is used, problems can often be resolved quickly and inexpensively chairside.

Conclusions

Implant-retained overdentures using the Locator Attachment System have substantial maintenance requirements. Prosthodontic complications associated with these prostheses are usually simple to resolve.

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Literature Abstract

Detection of oral squamous cell carcinoma and cervical lymph node metastasis using activatable near-infrared fluorescence agents

In head and neck cancer, it is important to be able to assess that the tumor is completely removed and has tumor-free margins during surgery. Currently, surgeons have to rely on the visual appearance and palpation of the tumor and cervical lymph nodes to determine if the tumor has been completely removed. This method is not reliable, as involved surgical margins have been described in 16% of clinically radically resected oral and oropharyngeal squamous cell carcinoma specimens. Therefore, new intraoperative visualization techniques are required to assess tumor margins in real time. The aim of this study was to determine if it was feasible to utilize optical imaging using near-infrared fluorescence (NIRF) agents to detect oral cancer and cervical lymph node metastasis in vivo. Luciferase-expressing OSC-19-Luc cells were injected into the tongues of female nude mice. Physiologic saline solution was injected into the tongues of the control mice. Tumor growth was followed by bioluminescence imaging. After 3 weeks, the animals were randomly allocated to intravenously receive ProSense 680 or MMPsense 680 (NIRF agents). Fluorescence imaging of the mice was performed, and the tumor-to-background ratio (TBR) was determined histologically. Results showed that the fluorescence signals in the tongue tumors and cervical lymph node metastases were significantly higher than that in the controls. The mean TBR of ProSense 680 in the tongue and lymph nodes was 15.8 and 11.8, respectively. The mean TBR of MMPsense 680 in the tongue and lymph nodes was 18.6 and 10.5, respectively. This study demonstrated the feasibility of using optical imaging to detect two activatable NIRF agents, ProSense 680 and MMPsense 680, to detect tongue tumors and cervical lymph node metastases. This indicates the potential for using NIRF agents for real-time image-guided surgery to ensure the complete removal of oral tumors.

Keereweer S, Mieog JS, Mol IM, et al. *Arch Otolaryngol Head Neck Surg* 2011;137:609-615. **References:** 18. **Reprints:** Stijn Keereweer, MD, Department of Otorhinolaryngology – Head and Neck Surgery, Erasmus Medical Center, PO Box 2040, 3000 CA Rotterdam, The Netherlands. Email: s.keereweer@erasmusmc.nl—Clarisse Ng, Singapore

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