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Short dental implants in patients with oral lichen planus: a long-term follow-up

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Abstract

Oral lichen planus is associated with the Koebner phenomenon, and trauma may exacerbate oral lesions. Short dental implants, as alternatives to bony augmentation, would reduce the number of interventions and their morbidity. However, we know of no studies that have analysed the long-term outcomes of short implants in patients with oral lichen planus. We have therefore designed a retrospective study of such patients treated with short implants (≤ 8.5 mm long), with survival of implants as the main outcome. The secondary outcomes were marginal bone loss and the development of complications. We calculated the implants' survival and compared the outcomes statistically between erosive and reticular oral lichen planus. Sixty-six short implants were placed in 23 patients with a mean (SD) age of 58 (7) years. The mean (SD) peri-implant bone loss was 0.96 (0.89) mm mesially and 0.99 (1.1) mm distally. Sixty-five of the 66 implants survived with a mean (SD) follow-up of 68 (32) months, and there were no significant differences between erosive and reticular disease. Stable long-term outcomes can be expected for short implants placed in patients with oral lichen planus, and graftless rehabilitation of missing teeth could be possible in these patients if short implants were used.

Keywords: dental implants; short dental implants; lichen planus; long-term survival; fixed implant prosthesis

Introduction

Oral lichen planus is one of the most common chronic inflammatory autoimmune diseases.[1] Most of the patients are middle-aged adults, predominantly women,[2] and the prevalence is between 0.1% and 2.2%. There are two essential forms of the oral lesions: reticular and erosive, although other forms (such as plaque-like) have been described.[2]

The disease is associated with the Koebner phenomenon, and trauma may exacerbate oral lesions,[3,4] so it is important to minimise the trauma during insertion of implants. In an effort to do this, we have used short dental implants to provide an alternative to bony augmentation that reduces the number of interventions and the morbidity.[5,6]

Short dental implants have been described as a predictable treatment in patients who do not have oral lichen planus,[6] and they have resulted in survival of implants and prostheses similar to those of standard implants.[5,7] However, we know of no reports that have assessed the long-term outcomes of short (≤ 8.5 mm) implants in patients with oral lichen planus.

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The aim of the study was to assess the use of short dental implants in such patients. The specific aims were to calculate the rate of survival of the implants, to measure the peri-implant bone loss, and to record the development of complications.

Materials and methods

The manuscript was prepared according to the STROBE guidelines. Patients' casenotes from a single centre were retrospectively analysed and cases selected if they were 18 years old or over, there were histological and clinical diagnoses of oral lichen planus, and if they had been given short dental implants ($\leq$ 8.5 mm).

The survival of the implants was the main outcome. The secondary outcomes were peri-implant bone loss, and complications.

An exemption from ethics committee approval of the study protocol was granted by the author's hospital as it was a retrospective study and the dental implants evaluated had the CE (European conformity) mark. The study followed the principles of the Declaration of Helsinki for investigations in human subjects.

Assessment of outcome

The principle variable was the survival of the implants as defined by their presence at the time of evaluation. The secondary variables were marginal bone loss and development of complications. Peri-implant bone loss was assessed on the last radiograph (calibrated by the implant's length). The reference for measurement of bone loss was the amount of peri-implant bone at the time that the prosthesis was placed. Patients' notes were reviewed to assess the development of complications.

Surgical technique

All operations were done outside the flare-up periods of oral lichen planus and a prophylactic regimen of oral corticosteroids was given to avoid flare-ups after the procedure. Deflazacort 30 mg was given starting two days preoperatively, then 15 mg postoperatively for three days and 7.5 mg for another three days.

An experienced surgeon (EA) with more than 20 years' experience placed all the dental implants (BTI Biotechnology Institute; Vitoria, Spain) using biological bone drilling (125 rpm without irrigation).[8–10]

During the prosthetic phase, transepithelial abutments (Multi-Im, BTI Biotechnology Institute; Vitoria, Spain) were placed first, and we used the open-tray technique with polyether impression material (Impregum Penta; 3M ESPE). The patients were seen after one week, then one, three, and six months postoperatively, and then annually.

Table 1
Characteristics of oral lichen planus.

Variable	No. of patients
Type:	
Erosive	8
Reticular	15
Need for treatment:	
Yes	8
No	15
Stability:	
Yes	17
No	6

Table 2
Length and diameter of the short implants.

Diameter (mm)	Length (mm)				Total
	5.5	6.5	7.5	8.5	
3.75	0	0	3	7	10
4.0–4.5	0	0	6	16	22
5.0–5.5	3	11	11	7	32
6.0–6.25	0	0	2	0	2
Total	3	11	22	30	66

Statistical analysis

Frequencies were calculated for qualitative variables and mean, range, and SD for quantitative variables. The Shapiro-Wilk test was used to check that the distribution of the data was normal. The Mann-Whitney *U* test was used to assess the significance of differences between the quantitative variables of marginal bone loss and follow-up time, and the Kaplan-Meier method to calculate survival of the implants. The significance of the influence of the type of oral lichen planus on the survival of the implant was compared with Cox's regression analysis. Analyses were made with the help of SPSS (version 15, SPSS Inc., Chicago, IL, USA), and probabilities of less than 0.05 were accepted as significant.

Results

Twenty-three patients (mean (SD) age 58 (7) years; 3 men and 20 women) with 66 short dental implants were included in the study. The characteristics of the oral lichen planus are shown in Table 1. All the patients who needed corticosteroids had the erosive type. At the time that the data were collected, the disease was stable (without flare-up) in all but six patients with erosive disease.

Fig. 1 shows the position of the short implants. Sixty-three implants were placed in the posterior sectors. The implant dimensions (diameter and length) are detailed in Table 2. Fifty-eight implants retained fixed partial prostheses and eight fixed complete prostheses. Thirty-nine implants supported a screw-retained prosthesis and 27 a cemented prosthesis.

The mean (SD) duration of follow-up after insertion was 68 (32) months (range 24–124 months) and after load-

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