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The Use of a Removable Appliance to Relieve Symptoms of Burning Lower Lip in a Dentate Patient

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Abstract - *The treatment of burning mouth Syndrome, in all its forms, is a challenge to the management of some older patients. The multi-factorial aetiology of this problem requires careful diagnosis and treatment planning to address the major aetiological factors for a given individual. This case report describes the treatment given to an elderly dentate female patient, whose main symptom was intense burning of her lower lip. The patient was aware of tooth clenching and various splints had been provided in the past, with limited improvement in symptoms. A simple removable appliance to prevent trapping of the soft tissues of the lower lip was provided, which produced a rapid and sustained reduction in symptoms.* ***Clinical relevance:*** *Solutions to some common, yet distressing, problems may well be appropriate for use in the Primary Dental Care setting. This solution to the problem of burning lower lip, may be useful for other patients with similar symptoms. It may be adapted for different clinical situations and is relatively non-invasive and reversible.*

KEY WORDS: Burning lip; Dentate; Removable appliance

INTRODUCTION

The treatment of burning mouth has always posed a challenge to the dental surgeon. The aetiology is far from clear, and further research is clearly needed[1]. Burning mouth syndrome (BMS) is generally recognized as a condition of late middle and old age[2], with a number of treatments to alleviate these effects in use. The proposed aetiological factors can be grouped into physical and psychological, for ease of evaluation. However, the multifactorial nature of the problem may well blur these boundaries, and one may predispose to the other.

The main physical factors postulated have been:

- Hormonal
- Infective
- Deficiency
- Sensitivity

As the majority of patients with BMS are female, and the age distribution is peri and post menopausal, it has often been assumed that reduction in circulating female sex hormones is an aetiological factor. Several studies[3,4] have shown that although BMS is prevalent at the time of the menopause, hormone replacement therapy, either systemic or topical does little to alleviate symptoms.

Undiagnosed or poorly controlled diabetes has also been implicated in the development of BMS, however the increased incidence of Candidosis in these patients, may well point to a more infective origin[5,6]. Haematinic vitamin deficiency has been often reported as a factor in the development of BMS, although there is little evidence in the literature to support this belief[1,7,8]. Studies have shown sensitivity to drugs, mouthwashes and restorative materials may precipitate symptoms of burning mouth. Careful history taking usually indicates the likelihood of the presence of contact stomatitis and there is currently no indication for routinely patch testing individuals with BMS for sensitivity[9].

Although a great deal of work has been carried out on the psychological background to the development of BMS, the evidence available is conflicting.

Anxiety and depression[11,12] have been reported as aetiological factors in the development of BMS, and several studies indicate that patients with this syndrome have increased levels of anxiety[12]. The association between parafunction and stress/anxiety has been noted[12], and these authors have also found signs of parafunction to be present in 61% of BMS sufferers.

In patients for whom an identifiable oral abnormality can be found (often classified as having oral burning (OB)), treatment of the abnormality has been found to be effective in reducing or relieving the symptoms. The level of psychological distress shown by patients with OB and BMS has been found to be similar[13].

There is limited information on the age changes in the facial soft tissues and musculature, however a recent paper by Zimbler *et al.*[14] describes the muscle and epithelial changes associated with facial aging. Loss of collagen, reducing the tissue bulk, and loss of elasticity may be factors in determining changes in soft tissue relationships and function. The age distribution of BMS patients indicate that age changes in the peri-oral soft tissues may be factors worth further research.

Treatment options for burning mouth also appear to be lacking in scientific foundation[1,2,15]. Obviously for those which have a detectable systemic or local cause, the elimination of the causative factor is the main aim of any treatment provided. However a great number of patients with burning mouth syndrome may well have no detectable cause for their discomfort. Many treatments centre

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around pharmacological agents such as anxiolytics and antidepressants[1,8,15,13], and the use of counselling and habit breaking appliances[1,8] has been found to be effective in some cases.

This case demonstrates the use of a removable appliance to prevent lip trapping during parafunction in an elderly dentate patient. Burning symptoms in the lower lip, of long standing duration were alleviated with appliance use.

CASE REPORT

A seventy two year old female patient was referred from the Oral Medicine department of Leeds Dental Institute for an opinion as to whether retroclination of the upper anterior crowns would help reduce symptoms of burning in the lower lip. Haematological and microbiological investigations had shown no abnormality.

History

The patient had been widowed eighteen months previously and had become aware of tooth clenching since then. She also felt that her lower lip was "forcing her jaw backward", relative to her upper anterior teeth, creating unbearable pressure and burning on her lower lip. The burning of her lower lip had started at the same time as she became aware of the tooth clenching habit. Three previous appliances (*Figure 1*) had been supplied by various practitioners during the previous twelve months with varying degrees of success. She had no relevant medical history, not taking any medication, and reported her health status as good.

Her previous dental history was relatively uneventful. She had a modelrately restored dentition, with only one missing tooth, and had mild tooth wear, appropriate to her age. She was a regular attender, and had had her upper anterior teeth crowned on two occasions, the last time being some five years before presentation. The reason for replacement of the original crowns was given as poor aesthetics due to margin exposure.

Examination

The patient had a Class II incisal relationship, with an increased overjet and overbite. Her lower lip functioned behind the upper incisor teeth during swallowing and clenching, leaving marked indentations in the soft tissues (*Figures 2, 3* and *4*). She had an almost complete dentition, although moderately restored, and good periodontal health. There was no history of temopro-mandibular dysfunction, and no signs or symptoms were present on examination.

The initiation of the symptoms of burning lip in this case coincided with the start of parafunctional activity following a stressful life-changing event. Treatment of the parafunction with previous appliances had been successful to a degree, and it was felt that psychological investigation would not be appropriate until treatment of the patient's clenching habit had been initiated. The aetiology of BMS is open to debate, and as parafunction and lip trapping were obvious problems in this patient, it was decided that treatment directed at these anomalies was indicated.

Figure 1. *Previous appliances*

Figure 2. *Dentition in occlusion*

Figure 3. *Lip position with teeth in occlusion*

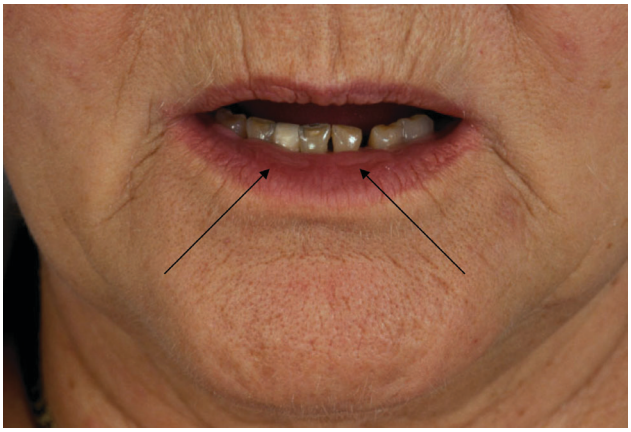

Figure 4. *Indentations in lower lip from upper central incisors*

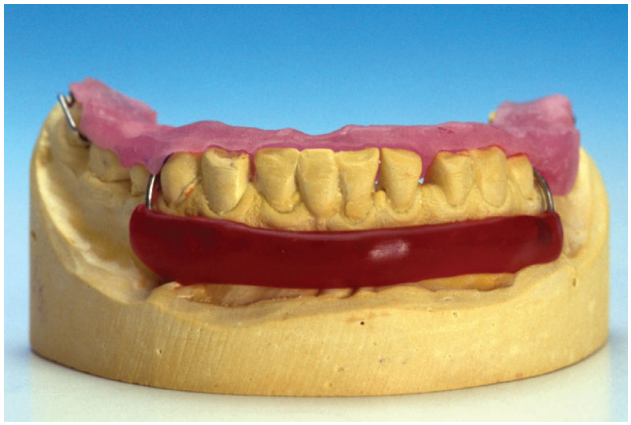

Figure 5. *Wax lip supports added and moulded (14)*

Figure 6. *Completed appliance*

Treatment

It was decided to try to design a removable appliance to prevent lip trapping during parafunction. The pre-treatment freeway space was 5mm. Initial study models were prepared and an acrylic baseplate with a wire labial extension was constructed (*Figure 5*). A moderate increase in occluasl vertical dimension of 3mm was prescribed, utilizing full occlusal coverage. Wax was then added incrementally to the labial wire extension until the lower lip was no longer able to function behind the upper anterior teeth during swallowing and clenching. Once this was established the final appliance was processed in clear acrylic to maintain aesthetics (*Figure 6*).

The appliance was fitted and the occlusion adjusted to produce a flat posterior occlusal table, and right and left canine guidance in lateral excursion. This allowed the condyles to position in their retruded contact position. Instruction in dental and appliance hygiene was given, and she was advised to soak the appliance in a hypochlorite solution twice weekly.

The patient gradually increased the periods of time she was able to wear the appliance over a period of three weeks, by which time the symptoms had totally resolved. She was reviewed over a period of several months, and only reported a return of her original symptoms when the appliance was left out. As can be seen from the intra and extra oral photographs taken after three months of appliance wear, a good aesthetic result has been achieved. (*Figures 7* and *8*)

Figure 7. *Completed appliance in situ*

Figure 8. *Patient at the end of treatment*

SUMMARY

This was an interesting and challenging case, the success of which hinged on accurate diagnosis, identification of aetiological factors and careful design and construction by both the clinician and the technician. The appliance was easy to construct and modify and proved to be very durable in use. Obviously an appliance that is in close proximity to gingival margins requires careful maintenance to prevent the development of plaque related periodontal problems. However the patients oral hygiene has remained good and no plaque retention problems have been detected. The patient's tolerance has been excel-

lent, providing complete resolution of symptoms when the appliance is being worn. The patient may need to continue appliance wear for as long as tooth clenching activity continues.

As with any intervention the placebo effect must be considered in assessing the effect of the treatment carried out. In this case we specifically addressed pressure form her lip, which the patient felt was a factor in her discomfort and, in terms of placebo effect, this could have increased the effect of this particular type of appliance over those tried previously.

What is interesting in this case is that parafunctional activity, together with lower lip muscular activity and trapping, combined to give the symptoms of burning lower lip. Tissue changes due to increased age[14] may have increased this patient's predisposition to burning lip, and had the anterior occlusion prevented lip trapping, the burning symptoms may not have arisen. As the symptoms appeared to be a result of parafunction following bereavement, it is hoped that the use of her appliance will only be necessary for a limited time as the patient had no previous history of parafunctional activity. It would be entirely inappropriate to make any irreversible changes to her dentition, in the absence of other symptoms, however long-term monitoring of the dentition and periodontium is, of course, essential to the maintenance of oral health.

This treatment has been very successful in the control of this lady's symptoms, and has given the patient an improved quality of life.

ADDRESS FOR CORRESPONDENCE

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