Preventing self-inflicted soft tissue trauma: a case report in an adult with severe neurological impairment

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Abstract
Self-inflicted injuries to the oral and peri-oral tissues in association with a number of conditions are more frequently reported in children. Cases are reported in adults with neurological conditions and in the post-anaesthetic state. This report describes the management of an adult with severe physical and neurological impairment. An appliance was successfully constructed to prevent self-inflicted involuntary trauma to the lower lip caused by clenching the lower lip between the anterior teeth.

Keywords: Self inflicted injuries, neurological conditions, oral trauma

Introduction
Self-inflicted injuries are reported more frequently in children than adults (Pattison, 1993). Clinical symptoms of self-inflicted trauma are described in: autism, Lesch-Nyhan syndrome (a rare inborn error of metabolism associated with a learning disability), Riley-Day syndrome (congenital indifference to pain), Gille de la Tourette syndrome (characterised by multiple tics and coprolalia) (Scully and Cawson, 1987) and progressive bulbar palsy (Rover and Morgano, 1988). However an increasing number of adults with severe neurological impairments are surviving with medical intervention and intensive nursing care and develop behaviour patterns leading to factitious oral and peri-oral trauma. The literature mainly reports cases of appliances to prevent self-injury constructed for conscious subjects (Cehreli and Olmez, 1996; Rover and Morgano, 1988).

Decerebrate patients with evidence of ruminatory reflex chewing have had soft tissues protected by the use of a tongue depressant to prevent perpetuation of the reflex chewing cycle and resultant self-injury (Jackson, 1978) however this technique is labour intensive. Obtaining intra-oral impressions may be impractical when attempts to open the mouth evoke a ‘bulldog reflex’ and peri-oral musculature is tense (Rover and Morgano, 1988). Obtaining access to the mouth is difficult in comatose or semi-comatose patients as they frequently exhibit these symptoms and there is a risk of aspiration of impression material. Successful management based on individual assessment sometimes relies on an imaginative approach with an understanding of the anxieties and skills of carers.

Report
A female aged 44 presenting with nystagmus and ataxia was diagnosed on CT scan as having a mixed density pituitary tumour. She underwent a trans-nasal trans-sphenoidal exploratory operation to remove the tumour. Histopathology confirmed a diagnosis of pituitary adenoma. Following post-operative radiotherapy, her neurological status deteriorated leading to spastic quadriplegia with some degree of fixed contracture of limbs, bilateral optic atrophy and anarhia. Nutrition was given parentally. She was subsequently diagnosed as having multiple sclerosis and ‘locked in syndrome’ was also suspected. Prognosis was considered to be very poor.

Some seven years post-operatively, the patient was referred by her general medical practitioner to the Department of Oral and Maxillo-facial Surgery for advice and treatment of chronic inflammation of the lower lip and chin caused by repeated clenching of the lower lip between upper and lower anterior teeth. The lesion did not respond to antibiotics and antifungal creams. Increasing the dose of Carbamazepine originally prescribed for agitation did not eliminate factitious behaviour. Extractions were suggested by the nursing staff as they were increasingly concerned about the constant trauma. As a treatment option this would have required a general anaesthetic and was not considered appropriate at the time. The patient was unable to give informed consent and the next of kin was not in agreement with this proposal.

On presentation, the patient, who was bedfast and in a nursing home, had a crusting lesion of the lower lip due to repeated trauma as described. The lesion was not infected and was assessed by the oral surgeon as being ‘a very difficult case to treat’. A lower impression was however obtained for the construction of an acrylic splint retained by cribs on LR4 (44) and LL5 (35). The labial area was...
plumped out to form a ‘bumper’ displacing the lower lip forward, out of traumatic occlusion. The patient was subsequently referred to the outreach Hospital Dental Service for review and continuing care.

At review, the appliance was not being used and the lesion was beginning to break down with intermittent bleeding. Nursing staff experienced considerable difficulty with insertion and removal however their main concern was the patient’s ability to displace the appliance with the tongue and the potential risk of asphyxia. Staff attempted to prevent further trauma by holding a padded wooden spatula between the teeth. This involved 24-hour direct surveillance. A high standard of oral hygiene had been maintained despite the difficulties of gaining access to the mouth.

A lower impression was obtained using a hydrophilic siloxane (Aquasil) material in a special tray constructed on a duplicate model. Setting time was reduced to minimise distress and risk of aspiration. Several impressions were taken over a number of visits to obtain a satisfactory working model. Obtaining an impression was the most difficult part of treatment due to clenching. Access was facilitated with protection of a rubber finger stool inserted between upper molars and lower ridge and the assistance of staff. The patient was distressed and agitated during and after the procedures, sometimes causing haemorrhage of the lower lip. It proved impossible to take an upper impression. Nursing staff assisted throughout, helping to calm and reassure the patient. Despite the patient’s obvious distress, the nursing staff were highly supportive.

An acrylic splint with a ‘bumper’ was constructed on a duplicate model to give maximum coverage in the lower arch (Figure 1). Undercuts were removed, Viscogel was applied to the fit surface and occlusion adjusted. The appliance was retentive and effective in displacing the lower lip to protect it from trauma. After demonstrating techniques for access and insertion, staff could correctly manage the appliance.

At review, staff expressed concern that the patient could still displace the appliance. It was modified to reduce lingual margins and Viscogel was replaced with a laboratory processed commercial soft lining. At fit, the appliance was retentive and the patient seemed unable to displace it (Figure 2). Nursing staff could insert and remove the appliance and the patient was reviewed by them at regular intervals. The appliance was worn for 24 hours, only being removed for regular cleaning. A second appliance was constructed in case of fracture. Nursing staff were satisfied with the effectiveness of the appliance and continued to maintain a high standard of oral hygiene. The design with an acrylic ‘bumper’ was effective in preventing further trauma as no further incidences of lip trauma were reported during the remaining four years of life.

Discussion

There are no easy solutions to the management of self-inflicted injury in conscious, semi comatose or comatose patients. However, an increasing number of adults with severe neurological impairments are surviving with medical intervention and intensive nursing care. Extractions may seem the most obvious treatment plan however this is not without risk to the patient and should only be considered as a last resort (Evans et al., 1993). Appliances described in the literature consist of tongue depressants (Jackson, 1978), splints retained with orthodontic wires (Cehreli and Olmez, 1996) and lip guards retained by extra-oral or orthodontic head gear (Rover and Morgano, 1988; Evans et al., 1993). Difficulties are described with obtaining impressions, poor retention and compliance (Evans et al., 1993). In one case, impressions were obtained under sedation and fixed splints were fitted under general anaesthesia (Evans et al., 1993). Behaviour modification techniques are described but these are not effective for semi-comatose and unconscious
The success of this appliance relied on the motivation and support of nursing staff in obtaining repeated impressions and the high standard of nursing care. It avoided the need for extractions under general anaesthesia and the legal and ethical issues of consent with family members opposed to extractions. There may be some justification in obtaining impressions for study models whenever possible for patients with severe neurological impairment or similar conditions likely to result in neurological deterioration or factitious trauma.

References

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