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Traumatic neuroma following sagittal split osteotomy of the mandible

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Abstract

A 16-year-old male underwent bilateral sagittal split [osteotomy](#) of the [mandible](#) to correct a mandibular deficiency. Twenty-one years later, a routine [panoramic radiograph](#) revealed a radiolucent [lesion](#) on the left side

of the mandible. The lesion was biopsied. As the patient did not have [symptoms](#) and the lesion was connected to the [inferior alveolar nerve](#), the lesion was not totally excised in order to preserve [nerve function](#). The histological features were consistent with [traumatic neuroma](#), and no further [surgical procedure](#) was planned.

Introduction

A traumatic [neuroma](#), which is an overgrowth of [nerve fibres](#) following severance or damage to a nerve, represents an attempt at repair rather than a true neoplasm^{5, 7}. It can be classified as a true neuroma – a [tumour](#) composed mainly of [nerve tissue](#) – or a false neuroma – a tumour composed of mainly connective tissue derived from the nerve sheath⁸. The nerve [elements](#) can be injured by different factors, including pressure, [ischaemia](#), crushing, cuts, [lacerations](#), stretching or bleeding into the surrounding area⁸. Common [signs and symptoms](#) include [pain](#), tenderness and paresthesia^{2, 4, 5, 6, 8}. Pressure on a local area may aggravate the pain. Infiltration of [local anaesthesia](#) into the painful region provides relief^{2, 5, 6}.

The technique of sagittal split [osteotomy](#) of the [mandible](#), first published by Obwegeser in 1955, is one of the most common procedures used to correct mandibular developmental anomalies. [Complications](#) may occur; for example, skeletal and dental relapse, haemorrhage, disturbance of [inferior alveolar nerve](#) function and fragmentation of the ramus with [necrosis](#) and sequestrae formation^{1, 2, 3, 6, 7}. Here is reported a case of an asymptomatic [traumatic neuroma](#) that developed following bilateral sagittal split osteotomy to correct a mandibular deficiency.

Report of case

A 16-year-old male underwent bilateral sagittal split [osteotomy](#) of the [mandible](#) with an advancement of 8 mm. During [surgery](#) the [inferior alveolar nerve](#) was identified in the distal segment. The [third molar](#) was removed during surgery on the left side, but the right side was left *in situ* because it was still covered by [bone](#). Bleeding from a branch of the [facial artery](#) occurred on the left side, and was controlled with pressure and [Surgicel](#). The bone segments were stabilized with bilateral wires. In the [postoperative period](#) the patient complained of [numbness](#) on the left side in both the [lip](#) and [chin](#), but feeling had returned by approximately 6 months after surgery. The [postoperative oedema](#) was more pronounced on the left side, and lasted for 3 months.

Even though the patient remained asymptomatic, a radiolucent [lesion](#) was observed in the left mandibular ramus, on a routine [panoramic radiograph](#), taken 21 years after the [orthognathic surgery](#) ([Fig. 1](#)). An incisional [biopsy](#) was planned so that a histological analysis of the lesion could be performed. A submandibular approach was used to access the lesion, which had a dumbbell shape and was intimately connected to the inferior alveolar nerve. As the patient did not have [symptoms](#), it was decided not to remove the mass in toto, but only to remove two sections for [microscopic examination](#), in order that [nerve function](#) would be retained. A membrane was placed around the nerve. The histological features of the mass were consistent with a [diagnosis](#) of [traumatic neuroma](#) ([Fig. 2](#)). Three years after the biopsy, the lesion had not grown any larger, and the patient retained only a small area of paraesthesia between the lip and chin on the left side.



Fig. 1. Radiolucent [lesion](#) on the left ramus (arrows).

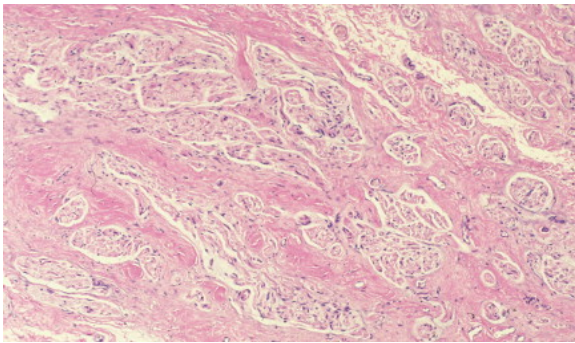


Fig. 2. [Microscopic analysis](#) of [lesion](#) (haematoxylin & [eosin](#), ×100).

Discussion

Although disturbance of [sensation](#) involving the [inferior alveolar nerve](#) is commonly reported after bilateral sagittal split [osteotomy](#) of the [mandible](#), there are only four reported cases in the [English language](#) literature of traumatic [neuroma](#) formation following such [surgery](#). Two of the cases were symptomatic^{2, 7} and the other two asymptomatic^{1, 6}. In all four of the previous cases, the mass was totally excised. Chau et al.² have suggested that surgical removal of the neuroma is worth a single attempt if the neuroma can be located and if infiltration of a local anaesthetic provides relief. [Nerve section](#) and [alcohol](#) blocks appear to be ineffective, or even harmful^{2, 6}.

In the case presented, the [traumatic neuroma](#) was asymptomatic and it was therefore decided not to excise the mass. Instead, the superficial [tissue](#) was excised from the mass for histopathologic [examination](#), but the nerve itself was left intact. Since the [lesion](#) had likely been present for over 23 years, there seemed little likelihood of increased [growth](#) and no concern about permanent damage by leaving it.

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