Post-traumatic neuroma in the occipital region after hair restoration surgery: Case report with a review of literatures

Abstract

We experienced a 37-year-old woman who presented with post-traumatic neuroma at donor sites after hair restoration surgery. We therefore performed a biopsy of the donor site including the lesion. The lesion was measured as 5×8 mm in size, and it was present on the scar tissue. On histopathologic examinations, the patient was diagnosed with post-traumatic neuroma. At a 1-month follow-up, the patient achieved a complete resolution of the occipital pain. To our knowledge, this has not been described in the literature.

In conclusion, our case indicates that clinicians should consider the possibility of post-traumatic neuroma in patients undergoing hair restoration surgery.

Key words:

Introduction

Post-traumatic neuroma occurs as a result of surgery or trauma. It is such a very rare disease entity as to that causes chronic headache. Although traumatic neuroma is not a true neoplasm, it represents a hyperplastic, reparative response of the nerve to injuries during the tissue repair has been well described. Moreover, it is and usually presents as a palpable nodule mass. Furthermore, it also occurs secondarily to the disordered overproliferation of nerves and connective tissue, distributed in trying to renervate the area after traumatic nerve damage; a total or partial sectioning of an nerve during an accidental or surgical trauma. A traumatic neuroma is a thwarted attempt by a nerve, injured or severed by prior trauma or surgery, to regenerate, resulting in a tangle of neural fibers and connective tissue. On gross examination, it appears as firm, oval, whitish nodules; its size is larger than 2 cm in some rare cases. It is composed of a dense fibrous appearance with little vasculature. Despite a lack of the capsule, the outer layer of fibrous tissue is often inseparable from the surrounding scar. Histopathologically, an outer layer of connective tissue is continuous with the perineurium of the intact nerve trunk.

Traumatic neuromas appear as tender nodules in the lines of incision 1 to 10 years after neck dissection. Patients with traumatic neuromas may present with paraesthesia distributed in the injured area. Painful hypersensitivity to light tactile stimuli (dysesthesia), or a trigger point, may be a prominent feature. Tenderness on percussion, on pressure, and on distortion of surrounding tissues is commonly present. When a palpable nodule occurs in a patient who had prior carcinoma resection, tumor recurrence is of primary concern. Clinical correlation of a palpable nodule sensitive to touch, associated with a trigger point or with paresthesia, will aid in the diagnosis of traumatic neuroma. Traumatic neuromas usually present as palpable nodules, form the post-traumatic neuroma that is painful to the touch; this might which may be associated with paresthesia. Early in the 19th century, interest in traumatic neuromas was...
stimulated by findings in warwound veterans with amputated limbs in whom painful stumps and traumatic neuromas developed.\textsuperscript{6}

We experienced a 37-year-old woman who presented with post-traumatic neuroma at donor sites after hair restoration surgery. To our knowledge, this has not been described in the literature; there are no cases of post-traumatic neuroma occurring after hair restoration surgery. Here, we report our case with a review of literatures.

**Case description**

A 37-year-old woman visited us with a chief complaint of left occipital pain. On history taking, the patient presented with pain after undergoing follicular unit strip surgery (FUSS) seven years ago. On gross examination, the patient had a white-colored, hairless, small lesion in the left occipital region. On compressing the lesion, we palpated a slightly bulging mass and noticed that the patient complained of pricking pain that nearly reaches the vertex of the head. But the patient did not present with pain without irritation to the lesion.

The patient was suspected of having post-traumatic neuroma. We therefore determined to perform diagnostic tests for the purpose of establishing a diagnosis of it. But the patient wanted to take additional hair restoration surgeries. We therefore performed a biopsy of the donor site including the lesion. The lesion was measured as 5×8 mm in size, and it was present on the scar tissue. On histopathologic examinations, the patient was diagnosed with post-traumatic neuroma. At a 1-month follow-up, the patient achieved a complete resolution of the occipital pain.

**Discussion**

Post-traumatic neuromas show represent an increased exaggerated response to nerve injuries, thus resulting in reactive hyperplasia although it is not a true benign neoplasm; they are not neoplastic in origin.\textsuperscript{5} In more detail, it is described as a loss of the nerve tissue repair because of the scar tissue. Probably the most accurate description of traumatic neuroma has been offered by Huber and Lewis.\textsuperscript{7} A neuroma (traumatic) indicates an attempt, which is thwarted or blocked by scar tissue, on the part of the neuraxes of a divided nerve to seek the distal segment and thus complete nerve repair.

When blocked, the regenerating neuraxes form spirals and end disks and become irregularly dispersed throughout the connective tissue of the bulb. The regenerating neuraxes react on the connective elements of the bulb, which as a consequence, increase in number and maintain their embryonal characteristics longer than is normally the case.

Traumatic neuromas appear grossly as firm, oval, whitish nodules that are rarely larger than 2 cm.\textsuperscript{5} At sectioning, they have a dense fibrous appearance with little vascularity. A nerve may terminate at the upper pole of the mass.\textsuperscript{5} Although not encapsulated, the outer layer of fibrous tissue is often inseparable from the surrounding scar, and microscopically, an outer layer of connective tissue is continuous with the perineurium of the intact nerve trunk.\textsuperscript{8}

Traumatic neuromas appear as tender nodules in the lines of incision 1 to 10 years after neck dissection.\textsuperscript{9} Patients with traumatic neuromas may present with paraesthesia
distributed over the injured area. Painful hypersensitivity to light tactile stimuli (dysesthesia), or a trigger point, may be a prominent feature. Tenderness on percussion, on pressure, and on distortion of surrounding tissues is commonly present. When a palpable nodule occurs in a patient who had prior carcinoma resection, tumor recurrence is of primary concern. Clinical correlation of a palpable nodule sensitive to touch, associated with a trigger point or with paresthesia, will aid in the diagnosis of traumatic neuroma.

It is known that the post-traumatic neuroma may occur in all body areas. Traumatic neuromas are known to occur elsewhere in the body. That is, it may occur in, for example, if pressure from clothing causes discomfort, or unpleasant tingling. Tenderness on percussion, and on distortion of surrounding tissues is commonly present. When a palpable nodule occurs in a patient who had prior carcinoma resection, tumor recurrence is of primary concern. Clinical correlation of a palpable nodule sensitive to touch, associated with a trigger point or with paresthesia, will aid in the diagnosis of traumatic neuroma.

In conclusion, our case indicates that clinicians should consider the possibility of post-traumatic neuroma in patients undergoing hair restoration surgery.
References


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