



## Case Report

## Facial twitches in patients after maxillofacial surgery: A case series



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## ABSTRACT

Oral and maxillofacial procedures can potentially injure one or more cranial nerves, leading to facial nerve palsy. Iatrogenic trauma resulting in facial twitching due to aberrant regeneration of nerve fibers is a potential consequence. However, facial twitches have a broad differential diagnosis and are seen in both benign and life-threatening neurological conditions. Few reports describe twitches like orofacial fasciculations, myokymia, or other movement disorders after maxillofacial surgery. This case series aims to raise awareness of this phenomenon by reviewing three patients with different types of facial twitches after oral and maxillofacial surgery. The literature concerning facial movement disorders and their possible etiology is discussed.

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## 1. Introduction

Facial muscle twitches are defined as unilateral spontaneous contractions of small muscle groups innervated by the seventh cranial nerve.

When a patient presents with a twitch, the differential diagnosis with hemifacial spasms and other 'hemifacial spasm mimickers' must be made.

Facial muscle twitches have been described in various neurological conditions, but few reports of facial movement disorders caused by maxillofacial iatrogenic trauma are being reported. Facial twitches are difficult for clinicians to differentiate due to subtle differences between the different clinical entities. We describe three cases with different facial movement disorders that were elicited by maxillofacial surgery. We review definitions, clinical features, differential diagnosis and treatment options in light of current literature (see [Table 1](#)).

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**Table 1**  
Definitions of facial twitches.

	Etiology	Clinical Features
Synkinesis	Aberrant reinnervation of the facial nerve	Unintended co-contractions of adjacent facial muscles
Blepharospasms	Basal ganglia dysfunction	Bilateral dystonic contractions of the orbicularis oculi muscles
Tics	Unknown, stress induced, after sleep deprivation, Tourette syndrome	Sudden, stereotypical movements, often accompanied by vocal tics in response to an involuntary sensation, can be suppressed
Myokymia	Deafferentation and hyperexcitability of the facial nerve nucleus	Involuntary spontaneous contractions of a few muscles or in muscle bundles
Fasciculations	Spontaneous discharges of the motor units (fascicles)	Irregular, flickering, twitching movements
Hemifacial spasm	Neurovascular conflict of the facial nerve	Unilateral, involuntary (clonic or tonic) movements

## 2. Case series

### 2.1. Case 1

A 64-year-old woman was referred to our department for resection of an adenoid cystic carcinoma of the right maxillary sinus (cT3N0). We performed a right maxillectomy with resection of the pterygoid and the orbital floor. The defect was reconstructed with a free fibula flap. Afterward, the patient received 66 Gy (2 Gy per fraction) of postoperative radiation therapy over two months. Six months after finishing the radiotherapy, there were two infectious episodes in the right periorbital region, necessitating surgical exploration of the orbital floor reconstruction. Shortly after exploration, twitches were initially noted in the right upper lip. There were no subjective complaints. Electromyography (EMG) of the facial muscles showed signs of reinnervation in the area of the mandibular and buccal branches of the right facial nerve and myokymic discharges in the area of the buccal branch. Six months later, the patient underwent revision of the right chronic infraorbital wound with a rotation flap due to recurrent infection. Myokymia of the right upper lip was still present six months after her initial presentation (patient video 1).

Supplementary video related to this article can be found at <http://dx.doi.org/10.1016/j.omsc.2017.07.001>.

### 2.2. Case 2

A 14-year-old girl with right-sided Parry Romberg Syndrome presented at our department for facial reconstruction, for which she underwent several reconstructive procedures over a period of two years. First, she had a midface correction that comprised an orbital reconstruction, a zygoma osteotomy, a lateral canthopexy, and a forehead contour correction via a coronal approach. Nine months later, she underwent an inverted L-osteotomy with a costal graft to correct lower facial asymmetry. A year after that, a final midface correction comprising a Le Fort I osteotomy combined with a facial contour correction with alloplastic bone was performed. Due to chronic fistulation and irritation, she underwent sequential removal of the osteosynthesis plates in the mandible and maxilla together with sequestrectomy. After the last sequestrectomy and maxillary plate removal, a hypoesthesia of the right hemiface was reported with right upper lip fasciculations. A surface EMG did not reveal abnormal muscle responses. Auscultation of the muscle surface showed irregular bursts of the motor units of the right facial nerve. These discrete fasciculations persisted after six months of follow-up (patient video 2).

### 2.3. Case 3

A 51-year-old woman consulted our department after persistent pain in her left temporomandibular region after a disc repositioning surgery one year before. The procedure was complicated by paresis of the frontal branch of the left facial nerve. On examination, there was weakness in the frontal branch of the left facial nerve and synkinesis of the left facial musculature, mimicking hemifacial spasms. The EMG showed symmetrical facial nerve function and no signs of denervation with a mild weakened contraction pattern that was consistent with previous facial nerve damage. The 'other Babinski sign,' which is paradoxical synkinesis of the frontalis muscle and the orbicularis oculi, can be seen in the video (patient video 3). This led to elevation of the eyebrow during eyelid closure, which is a typical feature that is often seen in idiopathic hemifacial spasm.

## 3. Discussion

There are few reports in the current literature that describe facial twitches after oro-maxillofacial procedures or trauma. Lee et al. reported one case with eyelid and cheek fasciculations that led to involuntary blinking after a facelift procedure with cog threads. After removal of the threads, the fasciculations persisted for six months [1]. Two additional studies described hemifacial spasms after facial nerve trauma in 7 patients [2,3]. First, Shimizu et al. described a case of involuntary hemifacial spasm after blunt injury to the mandible. Clonazepam was used to reduce the frequency of spasms, which decreased without

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