

Anterior superior alveolar nerve injury

Posttraumatic midface pain secondary to injury of the [anterior superior alveolar nerve](#) (ASAN) is characterized as pain localized to the central and lateral incisors, canines, and maxilla. This nerve is susceptible to injury and subsequent formation of neuromas after midface trauma. Surgical intervention requires an accurate and precise understanding of the course of the ASAN ¹⁾.

All patients who underwent trans-sphenoidal surgery between January 1984 and December 1998 were reviewed to assess morbidity resulting from this operation.

There were 185 operations on 165 patients. The operative approach was sublabial in 80 cases and transnasal in 105. One surgeon (VB) performed the vast majority of operations.

Complications included nasal perforation (7.6%), transient diabetes insipidus (4.9%), permanent diabetes insipidus (3.8%), cerebrospinal fluid fistula (4.3%), donor site haematoma (2.2%) and residual tumour haemorrhage (1.6%) causing ophthalmoplegia (1.1%) and loss of vision (1.1%). Other complications included epistaxis (1.1%), meningitis (0.5%) and sinusitis (0.5%). Injury to the anterior superior alveolar nerve also occurred in the sublabial approach in 6.3% of patients. There were no perioperative deaths.

There is a small but significant risk of a number of complications that should be considered for informed consent of this procedure ²⁾.

Traumatic neuroma can occur even in the anterior superior alveolar nerve with a clinical presentation as a swelling in the upper lip. It must be differentiated from the other upper lip swellings and is important to accurately recognize this condition in order to any avoid misdiagnosis ³⁾.

Endoscopic medial maxillectomies (EMMs) are used to optimize exposure of the maxillary sinus and retromaxillary areas. Although in type D EMM (Sturmann-Canfield procedure) the anterior superior alveolar nerve (ASAN) is always at risk of injury, only 29% of patients complained of alveolar process and dental anesthesia. The purpose of an anatomical study is to assess the neural anastomotic network of the ASAN (ASAN-NAN) and describe different extensions of type D EMMs in a preclinical setting.

The ASAN and its medial anastomotic branches (MABs) and lateral anastomotic branches (LABs) were evaluated by cone-beam computerized tomography (CBCT). Five different extensions of type D (D1 to D5) EMMs were identified and nerves at risk of injury in each type were assessed by CBCT. Moreover, quantification of surgical corridors was performed on cadaver heads with a neuronavigation system.

Fifty-seven CBCT scans were analyzed. The ASAN would be spared in 16.3% of cases with a type D1 EMM, while it would be injured in the majority of type D2 to D5 resections. At least 1 nerve of the ASAN-NAN was spared in 96.6%, 93%, 74.6%, 0%, and 65.8% of type D1 to D5 EMMs, respectively. Two cadaver heads were dissected and the incremental volume and number of maxillary subsites exposed was assessed in type D1 to D5 EMMs.

ASAN function impairment is probably compensated by LABs and MABs. If this hypothesis will be validated in a prospective study on patients, preoperative CBCT evaluation could predict neurological morbidity after type D EMM, and allow tailoring the procedure to minimize impairment of the ASAN-NAN⁴⁾.

1)

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