Anterior superior alveolar nerve dysfunction after lateral nasal wall surgery: a prospective observation

André Machado[1,2], Miguel Castelo-Branco Sousa[2], Hans Rudolf Briner[3], Daniel Simmen[3]

[1] Department of Otolaryngology, ULSTMAD, Vila Real, Portugal

[2] Faculdade de Ciências da Saúde – Universidade da Beira Interior, Covilhã, Portugal

[3] ORL-Zentrum, Hirslanden Klinik, Zurich, Switzerland

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Dear Editor:

The anterior superior alveolar nerve (ASAN), a branch of the infraorbital nerve, provides sensory innervation to the anterior maxilla, lateral nasal wall, and maxillary dentition. Owing to its anatomical proximity to the anterior maxillary wall and piriform aperture, the ASAN is vulnerable during lateral nasal wall surgery. Although postoperative sensory disturbances such as gingival hypoesthesia or dental numbness are frequently reported, prospective data combining subjective symptoms with objective sensory testing across different surgical techniques remain limited [1-5].

We conducted a prospective observational cohort study to evaluate the incidence, severity, and recovery of ASAN-related sensory dysfunction following lateral nasal wall surgery. Forty consecutive adult patients undergoing surgery were included. The study was conducted as a predefined prospective cohort at a tertiary rhinology referral centre (ORL-Zentrum Hirslanden, Zurich). Patients were enrolled before surgery and evaluated at predetermined postoperative timepoints (1 week, 1 month, 3 months) according to a standardized protocol. Ethical approval was obtained from the institutional review boards (BASEC 2022-01080 and CE-UBI-Pj-2022-082-ID1570), and written informed consent was obtained from all participants in accordance with the Declaration of Helsinki. Procedures comprised prelacrimal window approach (PLWA), pyriform turbinoplasty (PT), combined PT + PLWA, and endoscopic modified medial maxillectomy (EMMM), reflecting routine clinical practice. Patients were evaluated at 1 week, 1 month, and 3 months postoperatively using a combined assessment protocol including visual analogue scale (VAS) scoring for sensory symptoms and pain, standardized sharp/blunt clinical testing, and Semmes–Weinstein monofilament testing within the ASAN territory.

Sensory disturbances were most pronounced at 1 week postoperatively and were significantly more frequent following extended procedures (PT + PLWA and EMMM) compared with more limited approaches. Both subjective VAS scores and objective sensory thresholds demonstrated a consistent pattern: early impairment with progressive improvement over time. By 3 months, sensory function had normalized in the majority of patients, with no persistent sensory deficits. In contrast, postoperative pain and endoscopic crusting did not differ significantly between surgical techniques at any time point, suggesting that ASAN dysfunction represents a specific functional consequence rather than a marker of generalized surgical morbidity. The temporal evolution of sensory findings is summarized in Figure 1 [6, 7].

The observed pattern of early sensory disturbance followed by near-complete recovery is consistent with a transient neural injury pattern such as neurapraxia, although other mechanisms of nerve injury and recovery cannot be excluded. This interpretation is anatomically plausible given the close relationship between the ASAN and the anterior maxillary wall, where traction, compression, thermal effects, or focal nerve injury may occur during extended resections. Importantly, the concordance between subjective symptom reporting and objective sensory testing reinforces the validity of these findings and provides functional confirmation of previously described anatomical and radiological risk zones for the ASAN [8, 9].

From a clinical perspective, these observations have direct implications for patient counselling and surgical decision-making. Extended anterior maxillary approaches are associated with a higher likelihood of early postoperative sensory disturbance, but these symptoms are predictable and largely reversible. Recognizing ASAN dysfunction as a quantifiable and transient phenomenon allows surgeons to provide more accurate preoperative information, potentially improving patient satisfaction while avoiding unnecessary reluctance to use extended approaches when they are anatomically or oncologically indicated [5].

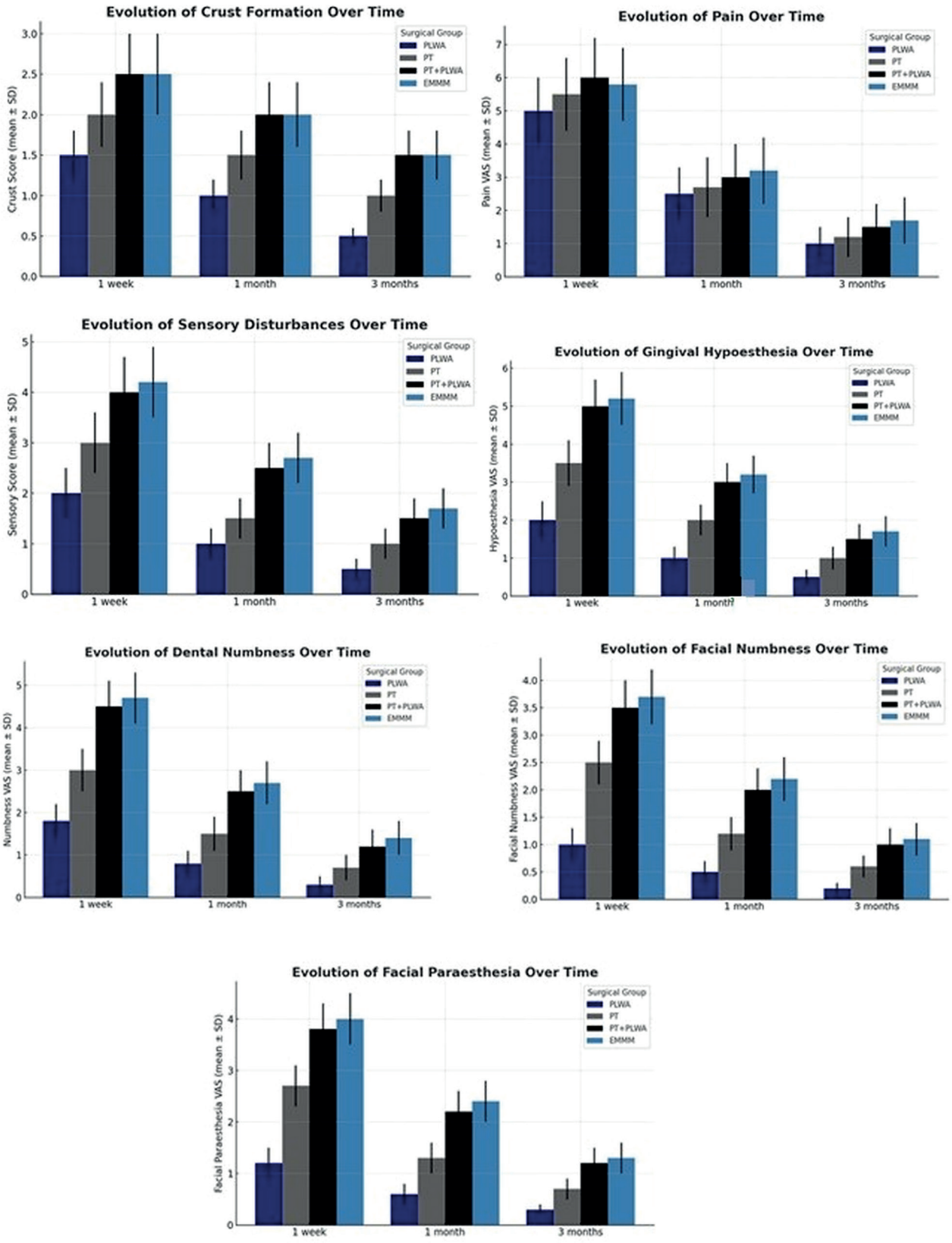

Figure 1. Evolution of ASAN-related sensory disturbance over time following lateral nasal wall surgery. Subjective sensory symptoms (VAS) and objective sensory testing are shown at 1 week, 1 month, and 3 months postoperatively.

Conclusion

This prospective observation demonstrates that ASAN dysfunction after lateral nasal wall surgery is common after extended procedures, objectively measurable, and typically reversible within three months. By reframing postoperative sensory disturbance from an ill-defined complication to a predictable functional outcome, this work supports informed consent, rational surgical planning, and standardized sensory assessment in contemporary lateral nasal wall surgery.

Authorship contribution

ASM: search, data collection, data analysis, drafting the article, and final approval. HRB: search, study selection, revising the article, and final approval. MCB: revising the article, and final approval. DS: search, study selection, data collection, revising the article, and final approval.

Conflict of interest

There is no conflict of interest by any of the authors.

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André de Sousa Machado
Department of Otolaryngology
ULSTMAD; FCS-UBI
Av. Infante D. Henrique
6200-506 Covilhã
Portugal

Tel: +35-1939069577
E-mail:
sousamachado.andre@gmail.com