

REVIEW ARTICLE

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The lesser occipital nerve: A review of an often forgotten entity in head and neck surgery

Yusra Mansour, Richard Arden, Aleksandra Vidovich

ABSTRACT

Introduction: The lesser occipital nerve arises from the ventral rami of C2 and C3 and relates closely to the spinal accessory nerve along the posterior border of the sternocleidomastoid muscle. Unlike spinal accessory nerve reports of injury, attention to lesser occipital nerve causes and mechanisms of injury are uncommon, yet often result in a concern to the patient.

Case Report: We present a case of a 36-year-old female with metastatic papillary thyroid carcinoma and subsequent lesser occipital nerve injury. Our objective is to review the relevant anatomical relationships, variations, and strategies to avoid injury to this often unrecognized and/or under-reported entity. Principal findings of this review demonstrate the lesser occipital nerve possesses a highly variable branching pattern, size, and sensory distribution rendering it susceptible to injury within the neck or occipital scalp.

Conclusion: The close anatomic relationship of the lesser occipital nerve and spinal accessory nerve along the posterior border of the sternocleidomastoid muscle presents a “dual threat” for injury during neck dissection. Landmark-based skin incisional design and dissection has relevance to head and neck, neurosurgical/neuro-otologic, and facial rejuvenation surgeons. The vertical distance along the sternocleidomastoid muscle from the mastoid tip provides the most useful reference point for

surgery within the neck, while the horizontal distance from mastoid tip to the external occipital protuberance provides valuable reference for occipital scalp incisions. A sub-sternocleidomastoid muscle approach, medial to lateral cervical rootlet dissection, selective judicious use of bipolar cautery, and avoidance of excessive retraction trauma, contribute to a safer surgical strategy around the lesser occipital nerve.

Keywords: Lesser occipital nerve, Neck dissection, Nerve injury, Spinal accessory nerve

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INTRODUCTION

Reports on the incidence of lesser occipital nerve (LON) injury following neck dissection, and preventative strategies mitigating against this, remain elusive in the literature. Much has been written regarding spinal accessory nerve (SAN) injury, related short-term and long-term quality of life impact, and the increased risk associated with levels II and V dissections [1–3]. Reported incidences of SAN injury are 3–8% following posterior triangle lymph node biopsy, roughly 33% for modified radical neck dissection, and 25% for selective neck dissection [4–6]. Irrespective of the type of neck dissection, electromyography (EMG) findings have demonstrated the SAN is always functionally impaired even when it is preserved macroscopically [7]. Considering the proximity of the LON to the SAN along the posterior border of the sternocleidomastoid muscle (SCM), injuries to the LON are likely under-reported

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and/or unrecognized. Variable loss of sensation to portions of the ear, peri-mastoid skin, and lateral neck, as well as the potential for occipital neuralgia and cervicogenic headache, can be a source of consternation and debility to a patient [8, 9]. The purpose of this article is to call attention to this uncommonly discussed entity in head and neck surgery, highlight the important anatomical relationships of the LON, offer a detailed example of unrecognized intraoperative injury, and suggest preventative strategies to minimize risk of LON injury.

Objectives

The objectives of this review include a thorough understanding of the anatomy of the LON and the intricacies that may lead to injury during complex head and neck dissection, the techniques that may lead to the location of preservation of the LON, and the discussion of techniques that may be used by a surgeon upon LON injury.

DISCUSSION

Anatomical Considerations

The LON is a sensory cutaneous branch of the cervical plexus derived from ventral rami of the 2nd and/or 3rd cervical nerves and is the most variable of the occipital nerves in branching pattern, size, and sensory distribution. Measuring 1.2 ± 1.6 mm, the LON typically curves laterally around the posterior edge of the SCM often crossing over the body of the SAN, and ascends along the muscular edge in opposite direction of the SAN [10] (Figure 1). At this point, the LON is always found caudal to the emergence of the SAN, and approximately 1 cm rostral to the greater auricular nerve (GAN) [11]. Rarely does it course through the “carefree” part of the posterior triangle [12]. Less commonly, the LON can form angulated turns, or even wrap around the SAN. Contributions of the cervical plexus usually join the SAN deep to the SCM and not within the posterior triangle [13]. Reporting on 4 cases of a previously undescribed anatomical variant, Mirande and Smith observed fusion of the SAN with the LON before it penetrated the SCM, highlighting a nerve compression point within the SCM as a potential source of occipital neuralgia [14].

In its ascent, the LON courses obliquely toward the ear and mastoid, between muscle fascia and the superficial musculoaponeurotic system (SMAS), ultimately entering the subcutaneous plane at a variable level. Terminally, the LON divides into medial branches subserving the upper and medial one-third of the auricular skin, and lateral branches between the intermastoid line and external occipital protuberance (EOP) innervating the proximal mastoid and occipital scalp (Figure 2B). A reciprocal relationship between the sensory distribution of the LON and greater occipital nerve (GON) has been observed; i.e., the smaller the LON territory, the greater the GON territory [15].

Attempts at associated relationships of the LON with the occipital artery have been unreliable. Lee et al. found no relationship among 45% of 20 cadaver sides, and an intersecting or intertwining relationship in 55% [16]. Despite the classically described terminal auricular and posterior branches of the LON, occasionally the auricular branch will arise from the GON, and the LON may arise directly from the SAN and communicate with the auricular branch of cranial nerve VII [17]. Connections with the LON and GAN are common. Other uncommonly reported variations include duplication, triplication transgression of the “carefree” zone of the posterior triangle, combined contributions from the SAN and C2 fibers' exclusive origin of the LON from the SAN directly, and neural interconnection between the auriculotemporal and LON [18–22].

Clinical Presentation

RM is a 36-year-old female in good health with reported left suprasternal mass of indeterminate duration. Thoracic magnetic resonance imaging (MRI) identified a $3.1 \times 1.7 \times 1.2$ cm T2 hyperintense, T1 hypointense mass partially involving anterior neck muscles. Ultrasound of the neck and thyroid did not identify a discrete thyroid nodule, but sonographically abnormal bilateral level IIB and left level IV lymph nodes were noted. Ultrasound-guided core biopsy demonstrated papillary thyroid carcinoma. The patient underwent bilateral lateral neck dissection (LND) that included levels 2A and 2B, central neck dissection, and total thyroidectomy performed through a superiorly based apron incision. Both monopolar and bipolar cautery were used. Cervical rootlets were preserved bilaterally and dissection proceeded from lateral to medial, and rostral to caudal.

Postoperatively, the patient reported immediate unilateral and constant numbness of the upper one-third of the left ear, and portions of the temporoparietal scalp (Figure 2). At week 1, sensory changes were characterized as intense paresthesias, dysesthesias, and allodynia. At 1 month post-operatively, the patient reported diminished anesthesia and paresthesia intensity without pain. By six weeks, the paresthesias had been replaced with a “milder form of incomplete numbness” with perceivable sharp and light touch, albeit diminished by contrast with the opposite side. At three months, 85% of the sensory deficit had recovered encompassing the same boundary of distribution. Of note, the patient was aware of variable numbness in the distribution of the transverse cervical nerve bilaterally, as expected after LND, but had intact SAN function.

Assessment and Diagnosis

In consideration of the anatomical course of the LON, the most predictable way of avoiding injury to it (or SAN) would be to avoid dissection in level IIB or V when not needed [23]. The LON would be at particularly increased risk at level VA in the unusual variant where it may travel

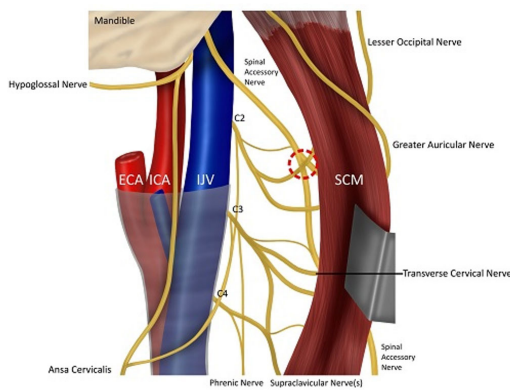


Figure 1: Anatomic relationships of cervical rootlet branches and spinal accessory nerve in this figure, the SCM is retracted revealing the intimate relationship of the spinal accessory nerve and the lesser occipital nerve, indicated by the red circle. *Abbreviations:* ECA: external carotid artery, ICA: internal carotid artery, IJV: internal jugular vein, SCM: sternocleidomastoid muscle.

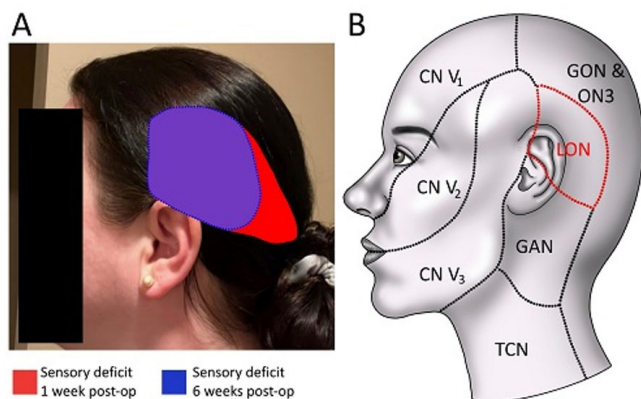


Figure 2: Sensory loss of patient at two intervals, and sensory dermatomes of face, scalp, and neck in (A) is an image of RM in which the patient indicated her territory of sensory loss at 1 (red) and 6 (blue) weeks, respectively. In (B) is a map of sensory territory supplied by branches of cranial nerve V, branches of the cutaneous cervical plexus, and the greater occipital nerve and third occipital nerves. *Abbreviations:* GAN: greater auricular nerve, GON: greater occipital nerve, LON: lesser occipital nerve, ON 3: third occipital nerve, TCN: transverse cervical nerve.

1–2 cm parallel and caudal to the SAN before turning upward to cross the “carefree zone” of the posterior triangle [12]. Level IIB has often been dissected in node positive necks (N1–3), but multiple studies suggest the incidence of occult metastasis in the clinical No neck does not justify the risk of SAN injury [24–26]. Stronger support for level IIB dissection exists when level IIA metastases have been demonstrated [27]. In our patient case, level IIB dissection was unavoidable consequent to sonographically demonstrable nodal metastasis in bilateral level IIB. Despite a similar surgical approach and technique, only the left LON became dysfunctional.

While indications for cervical nerve (CN) preservation are best for elective neck dissection (especially cNo), application in the therapeutic neck remains unresolved.

Presence of metastatic nodes proximate to the CNs in levels IIB, III, and IV has been considered a contraindication to preservation by some while others believe establishing a safe dissection plane over the CNs is still oncologically sound in node positive LND [28–31]. Strong support against CN preservation includes direct CN invasion, which is rare, or preoperative/intraoperative evidence of extracapsular spread of metastatic disease [32].

Multiple studies have attempted to determine anatomical points of reference and mean distances from the LON to characterize surgical “safe zones” [16, 33, 34]. In a detailed study of 14 cadaveric LONs, Khavanin et al. determined a mean distance of 45 mm from the mastoid prominence (range 36–51 mm) to the LON along the posterior SCM. Other studies have used the external auditory canal (EAC) as reference (mean distance = 55 mm), or the vertical line connecting the EACs (mean distance = 75 and 78 mm, respectively) [16, 35]. In a 12-cadaver study, Tubbs et al. identified the main LON trunk on average 7 cm (range 6–9 cm) lateral to the EOP with a mean of 3 cm medial to the mastoid tip [36]. The medial and lateral branching point of the LON was found roughly midway between a horizontal line through the EOP and intermastoid line. Of the studies published on this topic, it appears that using the mastoid prominence as reference, and vertical distance along the posterior SCM, offers the narrowest range of values (15 mm) and should be preferred. Additionally, surgeons operating in levels IIB and V would find this landmark more proximate and useful in their regional dissection. Considering the decussation of the LON and SAN at its point of emergence is often indistinguishable, care in approaching this critical zone may avoid an undesirable SAN injury and shoulder disability.

Treatment

The surgical approach taken, and the techniques applied during neck dissection, have the potential to improve CN functional outcomes. Honda et al. described a “sub-SCM” approach to prevent early postoperative cutaneous anesthesia by preserving the terminal branches of the CNs which are at risk with the standard subplatysmal approach [37]. Instead of a lateral to medial dissection, a medial to lateral dissection is performed after placing a skin incision along the medial anterior edge of the SCM. They reported favorable early preservation rates in four sensory dermatomes emanating from Erb’s Point for the “sub-SCM” compared to the subplatysmal group. In accordance with a medial to lateral CN dissection, others have noted it is easier to track the larger more medially positioned rootlets outward with less risk of distal injury [28, 29]. Use of cautery around the SAN and upper to mid-posterior border of the SCM should be limited to bipolar, rather than monopolar cautery, to limit thermal conductivity and tissue injury. Monopolar cautery creates a high-power density (function of current setting and application time) that converts electrical to thermal energy

which spreads beyond the electrode-tissue interface. By contrast, bipolar cautery limits high frequency leakage of current to the tissue between the forcep ends. Techniques employed for exposure should limit direct traction and stretch injury, and potential devascularization, to the SAN and indirectly to the LON which may be wrapping around it. Mobilization of lymphoadipose tissue in the lateral neck, typically by hemostat dissection, should be gentle, deliberate, and ideally parallel the course of the SAN and LON.

It has been observed that cutaneous anesthesia is common in the early postoperative period following neck dissection despite preservation of CN rootlets [37, 38]. This has been ascribable in some cases to damage to the peripheral sensory branches of the cervical plexus of the skin that may occur during skin incision, and was the basis for a sub-SCM approach espoused by Honda et al. [37]. Examples of incisional injury have also been reported following retrosigmoid craniotomy ear surgery, scalp mass excision, facial rejuvenation surgery, and microvascular decompression for hemifacial spasm, that can lead to sensory disturbances of the LON [38–44]. In consideration of the mid-SCM incisional design of the apron flap employed in our case report, it is more likely cautery effect with or without traction injury, rather than incisional skin injury with subplatysmal dissection, caused the LON dysfunction. Since the SAN was intact postoperatively, the zone of injury likely occurred along the posterior edge of level IIB. The timing and nature of recovery from the paresthesias, hyperalgesia, and allodynia would also seem to support this mechanism of injury and likely represents changes in signal processing in the nervous system [45].

Prognosis

Recovery of sensory function is dependent on different mechanisms than motor recovery, which may involve redistribution of sensory distribution after axonal injury, by which intact fibers may provide cutaneous sensation to a larger area than previously [46]. This may explain the smaller area of sensory loss at six weeks in our patient rather than axonal regrowth (insufficient time) or recovery from neuropraxic injury (expectation of broader regional capture). Unlike motor end organs that degenerate after 18–24 months, sensory recovery may continue for a longer period of time. Dilber et al. observed in 17 cases of laryngeal cancer employing a U-shaped skin incision and CN rootlet preservation, sensory loss was seen in 71% at two weeks and dropped to 41% at six months [38].

Treatment options for consideration could include sensory reeducation programs which are strikingly lacking in the head and neck. The majority of studies reporting on this relate to implementation after nerve repair in hand and upper extremity injuries, with either positive or negative/inconclusive results [47, 48]. In the one randomized, prospective, single-blinded clinical trial involving 115 patients having inferior alveolar nerve repair following bilateral sagittal split osteotomy, sensory

retraining had only a marginal impact on neurosensory disturbance favoring younger patients [49]. Encouraging studies are currently being conducted involving electrical stimulation to increase the regenerative capacity of peripheral nerves, as well as the role of magnesium ions in the tissue microenvironment to promote Schwann cell proliferation, synthesis, and nerve growth factor secretion [50, 51]. For now, it would seem the best recourse for management, as outlined in this paper, is to employ principles in surgery to avoid the injury at the outset. With the nerve left anatomically intact, recovery potential should be favorable and may take 6–12 months or longer to reach end point.

CONCLUSION

In summary, the LON is often overlooked in head and neck surgery, and injury to it is likely under-reported. The variable sensory disruption of the upper ear, peri-mastoid, and occipito-temporal scalp can be disconcerting to the patient and impact quality of life. Sound surgical principles such as understanding the anatomical course of the LON and its variations, avoiding skin injury near its exit points, gentle retraction, parallel dissection release of soft tissue, and judicious use of bipolar cautery along the posterior SCM border should minimize inadvertent LON trauma.

REFERENCES

1. Kuntz AL, Weymuller EA Jr. Impact of neck dissection on quality of life. *Laryngoscope* 1999;109(8):1334–8.
2. Terrell JE, Welsh DE, Bradford CR, Chepeha DB, Esclamado RM, Hogikyan ND, et al. Pain, quality of life, and spinal accessory nerve status after neck dissection. *Laryngoscope* 2000;110(4):620–6.
3. Shah S, Har-El G, Rosenfeld RM. Short-term and long-term quality of life after neck dissection. *Head Neck* 2001;23(11):954–61.
4. Morris LG, Ziff DJ, DeLacure MD. Malpractice litigation after surgical injury of the spinal accessory nerve: An evidence-based analysis. *Arch Otolaryngol Head Neck Surg* 2008;134(1):102–7.
5. Larsen MH, Lorenzen MM, Bakholdt V, Sørensen JA. The prevalence of nerve injuries following neck dissections – A systematic review and meta-analysis. *Dan Med J* 2020;67(8):A08190464.
6. Sobol S, Jensen C, Sawyer W 2nd, Costiloe P, Thong N. Objective comparison of physical dysfunction after neck dissection. *Am J Surg* 1985;150(4):503–9.
7. Erisen L, Basel B, Irdesel J, Zarifoglu M, Coskun H, Basut O, et al. Shoulder function after accessory nerve-sparing neck dissections. *Head Neck* 2004;26(11):967–71.
8. Ducic I, Felder JM 3rd, Endara M. Postoperative headache following acoustic neuroma resection: Occipital nerve injuries are associated with a treatable occipital neuralgia. *Headache* 2012;52(7):1136–45.
9. Lucas G, Laudanna A, Chopard R, Raffaelli E. Anatomy of the lesser occipital nerve in relation to cervicogenic headache. *Clin Anat* 1994;7:90–6.

10. Ducic I, Moriarty M, Al-Attar A. Anatomical variations of the occipital nerves: Implications for the treatment of chronic headaches. *Plast Reconstr Surg* 2009;123(3):859–63.
11. Amirlak B, Lu KB, Erickson CR, Sanniec K, Totonchi A, Peled ZM, et al. In-depth look at the anatomical relationship of the lesser occipital nerve, great auricular nerve, and spinal accessory nerve and their implication in safety of operations in the posterior triangle of the neck. *Plast Reconstr Surg* 2020;146(3):509–14.
12. Ravindra SS, Sirasanagandla SR, Nayak SB, Mohandas Rao KG, Patil J. An anatomical variation of the lesser occipital nerve in the “carefree part” of the posterior triangle. *J Clin Diagn Res* 2014;8(4):AD05–6.
13. Soo KC, Hamlyn PJ, Pegington J, Westbury G. Anatomy of the accessory nerve and its cervical contributions in the neck. *Head Neck Surg* 1986;9(2):111–5.
14. Mirande MH, Smith HF. The potential roles of cervical plexus abnormalities in occipital neuralgia: An anatomic variant explored. *Diagnostics (Basel)* 2022;12(1):139.
15. Pantaloni M, Sullivan P. Relevance of the lesser occipital nerve in facial rejuvenation surgery. *Plast Reconstr Surg* 2000;105(7):2594–9; discussion 2600–3.
16. Lee M, Brown M, Chepla K, Okada H, Gatherwright J, Totonchi A, et al. An anatomical study of the lesser occipital nerve and its potential compression points: Implications for surgical treatment of migraine headaches. *Plast Reconstr Surg* 2013;132(6):1551–6.
17. Tubbs RS, Shoja MM, Loukas M, Lancaster J, Mortazavi MM, Hattab EM, et al. Study of the cervical plexus innervation of the trapezius muscle. *J Neurosurg Spine* 2011;14(5):626–9.
18. Becser N, Bovim G, Sjaastad O. Extracranial nerves in the posterior part of the head. Anatomic variations and their possible clinical significance. *Spine (Phila Pa 1976)* 1998;23(13):1435–41.
19. Madhavi C, Holla SJ. Triplication of the lesser occipital nerve. *Clin Anat* 2004;17(8):667–71.
20. Tubbs RS, Ajayi OO, Fries FN, Spinner RJ, Oskouian RJ. Variations of the accessory nerve: Anatomical study including previously undocumented findings-expanding our misunderstanding of this nerve. *Br J Neurosurg* 2017;31(1):113–5.
21. Chabot AB, Iwanaga J, Dumont AS, Tubbs RS. A rare anatomical variation of the lesser occipital nerve. *Cureus* 2021;13(6):e15901.
22. Gebara MA, Iwanaga J, Dumont AS, Tubbs RS. Nervous interconnection between the lesser occipital and auriculotemporal nerves. *Cureus* 2022;14(6):e25643.
23. Dziegielewski PT, McNeely ML, Ashworth N, O’Connell DA, Barber B, Courneya KS, et al. 2b or Not 2b? Shoulder function after level 2b neck dissection: A double-blind randomized controlled clinical trial. *Cancer* 2020;126(7):1492–501.
24. Taylor RJ, Chepeha JC, Teknos TN, Bradford CR, Sharma PK, Terrell JE, et al. Development and validation of the neck dissection impairment index: A quality of life measure. *Arch Otolaryngol Head Neck Surg* 2002;128(1):44–9.
25. Celik B, Coskun H, Kumas FF, Irdesel J, Zarifoglu M, Erisen L, et al. Accessory nerve function after level 2b-preserving selective neck dissection. *Head Neck* 2009;31(11):1496–501.
26. Hoyt BJA, Smith R, Smith A, Trites J, Taylor SM. IIB or not IIB: Oncologic role of submuscular recess inclusion in selective neck dissections. *J Otolaryngol Head Neck Surg* 2008;37(5):689–93.
27. Dabholkar JP, Kapre NM. Level IIB neck dissection in oral cavity cancers – when should one address it? *Indian J Surg Oncol* 2016;7(3):303–6.
28. Honda K, Asato R, Tsuji J, Miyazaki M, Kada S, Tsujimura T, Kataoka M. Oncologic safety of cervical nerve preservation in neck dissection for head and neck cancer. *Head Neck* 2017;39(9):1751–5.
29. Qu N, Zhang TT, Wen SS, Xiang J, Shi RL, Sun GH. The application of selective neck dissection while preserving the cutaneous branches of cervical plexus in the surgical treatment of differentiated thyroid cancer-experiences from thousands of cases. *Ann Transl Med* 2019;7(7):151.
30. Roh JL, Yoon YH, Kim SY, Park CI. Cervical sensory preservation during neck dissection. *Oral Oncol* 2007;43(5):491–8.
31. Saffold SH, Wax MK, Nguyen A, Caro JE, Andersen PE, Everts EC, et al. Sensory changes associated with selective neck dissection. *Arch Otolaryngol Head Neck Surg* 2000;126(3):425–8.
32. Esclamado RM, Carroll WR. Extracapsular spread and the perineural extension of squamous cell cancer in the cervical plexus. *Arch Otolaryngol Head Neck Surg* 1992;118(11):1157–8.
33. Dash KS, Janis JE, Guyuron B. The lesser and third occipital nerves and migraine headaches. *Plast Reconstr Surg* 2005;115(6):1752–8; discussion 1759–60.
34. Peled ZM, Pietramaggiore G, Scherer S. Anatomic and compression topography of the lesser occipital nerve. *Plast Reconstr Surg Glob Open* 2016;4(3):e639.
35. Khavanin N, Carl HM, Yang R, Dorafshar AH. Surgical “Safe Zone”: Rapid anatomical identification of the lesser occipital nerve. *J Reconstr Microsurg* 2019;35(5):341–5.
36. Tubbs RS, Salter EG, Wellons JC, Blount JP, Oakes WJ. Landmarks for the identification of the cutaneous nerves of the occiput and nuchal regions. *Clin Anat* 2007;20(3):235–8.
37. Honda K, Asato R, Tsuji J, Miyazaki M, Kada S, Kataoka Y, et al. Sensory preservation in neck dissection: Outcomes of a sub-sternocleidomastoid approach. *Acta Otolaryngol* 2018;138(8):763–7.
38. Dilber M, Kasapoglu F, Erisen L, Basut O, Tezel I. The relationship between shoulder pain and damage to the cervical plexus following neck dissection. *Eur Arch Otorhinolaryngol* 2007;264(11):1333–8.
39. Tubbs RS, Fries FN, Kulwin C, Mortazavi MM, Loukas M, Cohen-Gadol AA. Modified skin incision for avoiding the lesser occipital nerve and occipital artery during retrosigmoid craniotomy: Potential applications for enhancing operative working distance and angles while minimizing the risk of postoperative neuralgias and intraoperative hemorrhage. *J Clin Neurosci* 2016;32:83–7.
40. Andrews JP, McDermott M, Jacques L. Lesser occipital nerve damage after retrosigmoid craniotomy repaired with processed nerve allograft. *Interdisciplinary Neurosurgery* 2020;19:100592.
41. Yang H, Zeng H, He R, Xiong H, Zheng Y. Modified post-auricular incision for preserving lesser occipital nerve and great auricular nerve in post-auricular

- incision in ear surgery. Otorhinolaryngol Head Neck Surg 2018;3(5):1–6
42. Yang JS, Choi HJ, Cho YJ, Kang SH. Sensory complications in patients after scalp mass excision and its anatomical considerations. J Korean Neurosurg Soc 2014;55(4):200–4.
 43. Lee JH, Oh TS, Park SW, Kim JH, Tansatit T. Temple and postauricular dissection in face and neck lift surgery. Arch Plast Surg 2017;44(4):261–5.
 44. Fujimaki T, Son JH, Takanashi S, Ishii T, Furuya K, Mochizuki T, et al. Preservation of the lesser occipital nerve during microvascular decompression for hemifacial spasm. Technical note. J Neurosurg 2007;107(6):1235–7.
 45. Sandkühler J. Models and mechanisms of hyperalgesia and allodynia. Physiol Rev 2009;89(2):707–58.
 46. Robinson LR. Traumatic injury to peripheral nerves. Muscle Nerve 2000;23(6):863–73.
 47. Rosén B, Björkman A, Lundborg G. Improved sensory relearning after nerve repair induced by selective temporary anaesthesia – A new concept in hand rehabilitation. J Hand Surg Br 2006;31(2):126–32.
 48. Miller LK, Chester R, Jerosch-Herold C. Effects of sensory reeducation programs on functional hand sensibility after median and ulnar repair: A systematic review. J Hand Ther 2012;25(3):297–306; quiz 307.
 49. Yang YL, Wen-Ching Ko E, Chen YR, Huang CS. Does sensory retraining improve subjective rating of sensory impairment after bilateral sagittal split osteotomy? Plast Reconstr Surg Glob Open 2018;6(5):e1769.
 50. Javeed S, Faraji AH, Dy C, Ray WZ, MacEwan MR. Application of electrical stimulation for peripheral nerve regeneration: Stimulation parameters and future horizons. Interdisciplinary Neurosurgery 2021;24:101117.
 51. Zhang J, Zhang B, Zhang J, Lin W, Zhang S. Magnesium promotes the regeneration of the peripheral nerve. Front Cell Dev Biol 2021;9:717854.

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Guarantor of Submission

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Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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