Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

A case of intranasal coil extrusion after embolization for postoperative haemorrhage of skull base chondroma

Yuehui Zhao
Nantong University
Rui Jiang
Nantong University
Xide Xu
fyxxd@ntu.edu.cn
Nantong University

Case Report

Keywords: skull base chondroma, endoscopic transnasal surgery, internal carotid artery embolization, coil dislodgement, skull base repair, case report

Posted Date: November 10th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11282943/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Skull base chondroma is a rare benign tumour. Endoscopic transnasal surgery is the first-line minimally invasive treatment. Intraoperative internal carotid artery injury is a severe complication; emergency embolization can be lifesaving but carries a risk of delayed coil migration or extrusion. We report a 36-year-old Han ethnicity female patient who underwent endoscopic transnasal resection for skull base chondroma. Postoperative nasal haemorrhage required emergency internal carotid artery embolization, which resulted in left eye blindness. Six years later, the embolization coil extruded repeatedly from the nasal cavity. The patient was cured by endoscopic removal of the foreign body, skull base repair, and nasal adhesiolysis. The aetiology and management of this rare complication are discussed with a literature review.

Case Report

A 36-year-old Han ethnicity female patient was admitted with a history of ‘ six years after surgery for skull base chondroma, seven days after nasal foreign body extrusion’. Six years ago, the patient underwent surgery in our hospital due to left eye movement restriction, which was found to occupy the sellar area. After surgery, the patient's symptoms improved. On 4 days after surgery, the patient suddenly had nasal bleeding. Emergency cerebral angiography showed internal carotid artery rupture in the operation area. After interventional coil embolization, nasal bleeding was controlled satisfactorily, and the left eye was accompanied by blindness after surgery. Pathological results suggested chondrosarcoma. One year ago, the patient experienced embolic coil extrusion through the nasal cavity without obvious inducement, without dizziness and headache, without clear water-like fluid in the nasal cavity, but she did not pay attention to self-extraction. Seven days ago, the patient experienced similar symptoms again. Then she went to the Affiliated Hospital of Nantong University for treatment. The patient was in good health and denied any history of infectious diseases such as hepatitis and tuberculosis. There was no history of chronic diseases such as hypertension and diabetes. There was no history of trauma, blood transfusion, food and drug allergy. Physical examination: The patient was alert. Bilateral eyelids showed no ptosis, eye movements were normal without nystagmus, proptosis or enophthalmos. The pupils were equal and round (left:right = 2.5:2.5 mm). The direct light reflex of the left eye was absent, while the indirect light reflex was preserved. Both direct and indirect light reflexes of the right eye were intact. The visual field of the right eye was unremarkable, and no diplopia or strabismus was noted. Multiple metal-coil-like foreign bodies were observed in the left nasal cavity without obvious pulsation, accompanied by surrounding mucosal erosion, extensive congestion and oedema covered by purulent secretions. No clear cerebrospinal-fluid-like discharge was seen in the dry nasal cavity, and the right nasal cavity showed no remarkable abnormalities. Supporting investigations: CTA (non-contrast + contrast-enhanced + imaging) of the head and neck, including reconstruction, revealed: The density of the surgical area is uneven, considering that the postoperative change may be large, and the possibility of tumour recurrence is not considered for the time being. The bone structure in the left sellar area has shifted outward. A prominent high-density shadow can be seen in the left sellar area, considering the possibility of coil prolapse.

Clinical Course

After relevant examinations were completed on admission and contraindications for surgery were not detected, nasal foreign body removal + skull base repair was performed under neuroendoscope. After removing a large amount of purulent secretions from nasal cavity during operation, exploration showed erosion of mucosa at the root of left middle turbinate, multiple embolization coils protruding out of mucosa, removal of erosive mucosa, close to turbinate bone, removal of exposed coil, repair of exposed bone surface with fascia of right thigh, sealing and fixation with fibrin glue, nasal cavity packing with iodoform gauze strip for support, safe return to ward after operation, no obvious exudation of blood in the nasal cavity. Two weeks later, iodoform gauze was removed under endoscope. Fascia was observed to be well applied during operation, and no complications such as haemorrhage and cerebrospinal fluid leakage occurred. The patient was discharged from hospital.

Discussion

Skull base chondroma grows slowly and deeply, often involving areas such as side of saddle, orbital apex and petrous apex regions, closely adjacent to internal carotid artery, optic nerve and other structures, and often presents as nerve paralysis. This patient is an adult female. The first onset of the disease is mainly manifested by limited eye movement of the left eye, suggesting that the tumour forms compression on adjacent nerve structures, which is also a typical onset mode of skull base chondroma [1]. The clinical operation is difficult, the tumour can grow aggressively, surround and erode the blood vessel wall, lead to the thinning of the blood vessel wall, the destruction of the muscle layer and elastic layer structure, and increase the fragility of the blood vessel. The common serious complication is internal carotid artery rupture and haemorrhage during operation.

Transnasal neuroendoscopic surgery is a commonly used minimally invasive surgery for skull base chondroma. It can fully expose and excise the tumour while preserving nerve function as much as possible. However, the operation space is limited, and the operation area is adjacent to key structures such as internal carotid artery. At the same time, the tumour often erodes and wraps the blood vessels, resulting in the destruction of the original normal anatomical structure of the blood vessel wall. The risk of vascular injury during the operation is very high. In severe cases, it can cause intraoperative or postoperative nasal bleeding. Even if hemostasis is successfully achieved through emergency interventional embolization, the patient is likely to have severe neurological deficit. In this case, the patient experienced massive nasal haemorrhage on the 4th day after surgery, considering that the internal carotid artery wall may have been damaged due to intraoperative operation, and the lesion enlarged due to hemodynamic changes after surgery, resulting in massive haemorrhage; Although the haemorrhage was effectively controlled by emergency interventional embolization, the embolism led to ischemia of ophthalmic artery or its blood supply branches, and finally left sequela of blindness in the left eye, which also confirmed that internal carotid artery injury was still one of the most dangerous complications in skull base tumour surgery[2–4].

More specifically, this case had repeated coil extrusion through the nasal cavity 6 years after embolization, which was a rare long-term complication. The causes could be attributed to: firstly, the skull base bone and dura defect existed after transnasal embolization, and the long-term chronic infection and inflammation in the operation area led to granulation and scar tissue erosion and necrosis covering the skull base defect, which provided an anatomical path for coil migration; The second is that the initial prolapse was not treated properly in time, and the local damage could not be repaired, which eventually led to repeated prolapse in the long term [5]. The third is that the cerebrospinal fluid pulsation and the vascular pulsation of the internal carotid artery stump formed a continuous driving effect, accelerating the outward displacement of the coil. Once such complications were delayed, they often led to serious complications such as re-massive haemorrhage and secondary intracranial infection [5].

In terms of treatment, we used endoscope to cut off the exposed coil, thoroughly remove infection and erosive mucosal tissue, repair the exposed bone surface with autologous fascia, cooperate with biological glue sealing and iodoform gauze to support anti-infection, and achieve effective reconstruction of skull base structure during operation. The patient recovered well after operation, confirming that endoscopic treatment is a safe and effective way to deal with this kind of long-term embolic material expulsion [6–8].

Preoperative CTA and other imaging examinations can clearly show the relationship between coil expulsion in the surgical area and blood vessels, and determine whether coil involvement in vascular stump is of great value in evaluating intraoperative vascular injury and providing basis for selection of surgical method [9].

In conclusion, this case suggests that, although interventional embolization can save lives after internal carotid artery injury caused by transnasal endoscopic surgery for skull base chondroma, there are rare complications such as migration and expulsion of embolized materials in the long term.

Conclusion

- For patients with skull base chondroma complicated with internal carotid artery injury after transnasal endoscopic surgery and undergoing interventional embolization treatment, there is a potential risk of migration and expulsion of the embolic material after surgery, and clinical long-term standardized follow-up after surgery needs to be strengthened. For the cases of coil extrusion through the nasal cavity, the anatomical relationship between coil and blood vessel can be clarified by CTA before operation. The surgical method of cutting off the coil extrusion combined with skull base defect repair and reconstruction under neuroendoscope has the advantages of less trauma and definite curative effect. It can effectively remove foreign bodies in the nasal cavity, repair skull base defect strictly, reduce the incidence of complications such as long-term intracranial infection and cerebrospinal fluid leakage, and improve the clinical prognosis of patients.

Declarations

Ethics and consent to participate: Written informed consent to participate in this retrospective single-case study was obtained from the patient. No new experimental interventions were performed. All clinical data have been fully de-identified for patient privacy protection.
Consent to publish: Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.
Availability of data and materials: All data generated or analysed during this study are included in this published article.
Competing interests: The authors declare that they have no competing interests.
Funding: Not applicable.Authors' contributions: Yuehui Zhao: Data collection, manuscript drafting, figure preparation. Rui Jiang: Surgical operation, figure preparation. Xide Xu: Surgical operation and clinical management.All authors read and approved the final manuscript.
Acknowledgements: Not applicable.

References

1. Ma XJ, Guo TX, Wu Z. Advances in the diagnosis and treatment of intracranial chondrosarcoma[□□□□□□□□□□][J]. Chinese Journal of Neurosurgery, 2018, 34(9): 963-965.
2. Yang XT, Yan B, Wei W, et al. Clinical analysis of endoscopic transnasal resection of skull base chondrosarcoma[□□□□□□□□□□□□□□□□□□□□][J]. Journal of Clinical Otorhinolaryngology-Head and Neck Surgery, 2024, 38(12): 1127-1133.
3. Zhang ZP, Yang JP, Zhao Y, et al. Three cases of internal carotid artery injury during endoscopic sinus surgery[□□□□□□□□□□□□□□□□][J]. Journal of Clinical Otorhinolaryngology-Head and Neck Surgery, 2017, 31(11): 885-887.
4. Li HY, Shi Z, Zhang Q, et al. Treatment strategies for internal carotid artery rupture syndrome following radiotherapy for nasopharyngeal carcinoma[□□□□□□□□□□□□□□□□□□□□□□□□][J]. Journal of Clinical Otorhinolaryngology-Head and Neck Surgery, 2024, 38(6): 467-471.
5. Mahajan VB, Doddamani RS, Gurjar HK, Meena RK, Singh PK, Chandra PS. Intranasal coil protrusion after internal carotid artery embolisation following endoscopic transnasal transsphenoidal surgery: A case report and literature review [J]. Surg Neurol Int, 2025, 16:407.
6. Dedmon M, Meier J, Chambers K, et al. Delayed endovascular coil extrusion following internal carotid artery embolisation[J]. J Neurol Surg Rep, 2014, 75(2):e255-e258.
7. Singh A, Sikka K, Jain N, et al. Delayed endovascular coil extrusion presenting as a foreign body in the throat: A case report[J]. Neurointervention, 2018, 13(1):66-69.
8. Sirakov S, Panayotova A, Sirakov A, et al. Delayed intranasal coil extrusion following embolisation of an internal carotid artery pseudoaneurysm [J]. Interv Neuroradiol, 2019, 25(2):139–143.
9. Jiang MD, Liu Y, Tao XF, et al. Diagnostic value of high-resolution CT, conventional and functional MRI in low-grade chondrosarcomas of the skull base[□□□□CT□□□□□□MRI□□□□□□□□□□□□□□□□][J]. Journal of Molecular Imaging, 2021, 44(2): 213-218.

Figures

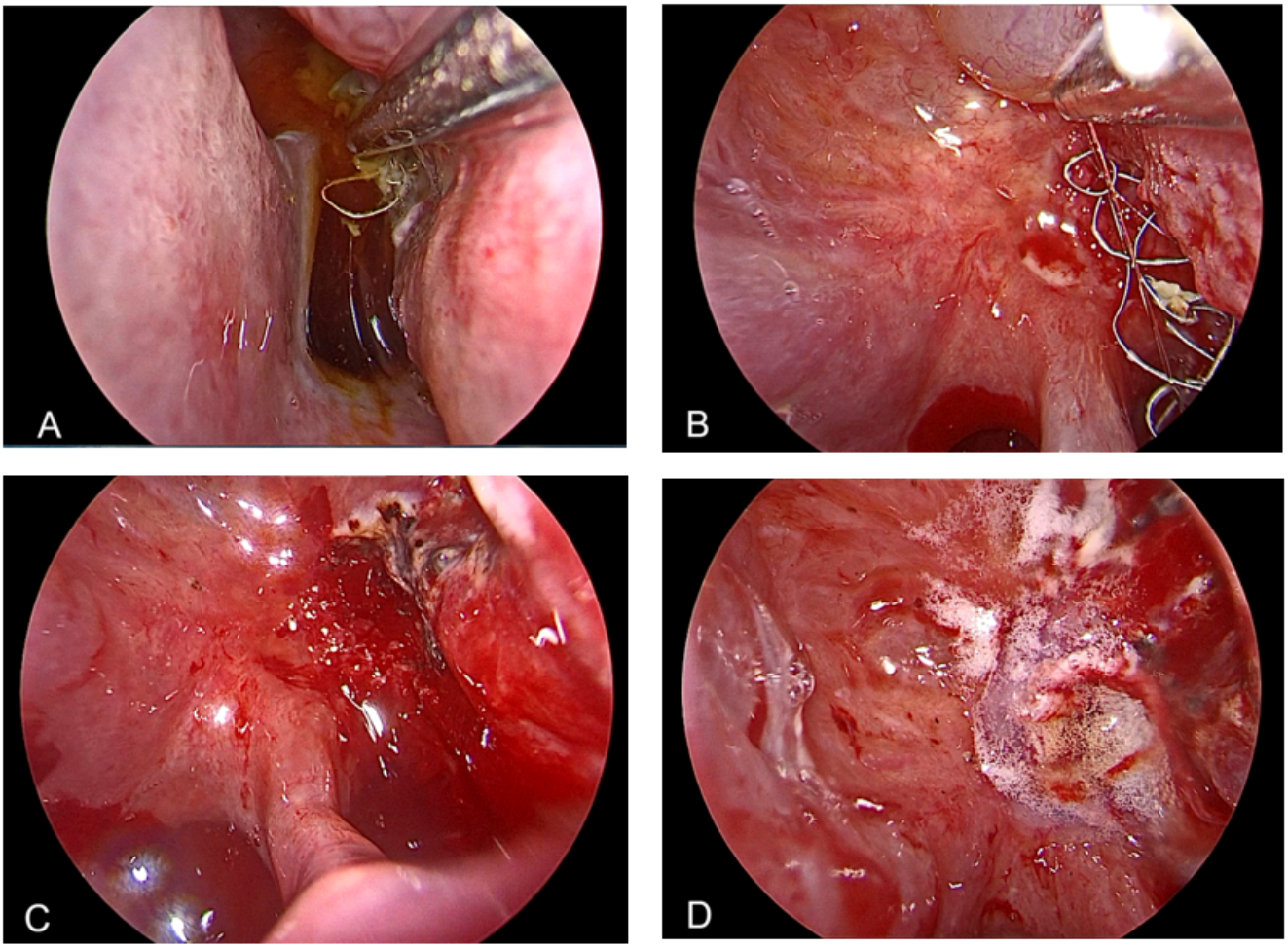


Figure 1

A. Under general anesthesia, a neuroendoscope was advanced into the nasal cavity, where an extruded coil was identified.

B. After debridement of the eroded mucosa, the coil was seen to be exposed at the base of the turbinate.

C. The exposed coil was excised flush with the bony attachment of the turbinate; the defect showed no evidence of cerebrospinal fluid leakage.

D. A fascia lata graft, harvested from the thigh, was used to repair the defect, secured with fibrin glue, and the graft was noted to be well-approximated.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- CAREchecklistEnglish2013.docx