Encountering a high jugular bulb during ear surgery

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ABSTRACT

Encounters with jugular bulb abnormalities during ear surgery are a rare but recognised problem. A high riding jugular bulb is present in 10%–15% of patients and its variable position within the temporal bone can lead to problems as brisk venous haemorrhage can result if the bulb is inadvertently opened. The case of a 52-year-old woman with a central tympanic membrane perforation who underwent elective endaural myringoplasty and experienced brisk bleeding on raising the tympanomeatal flap is presented.

KEYWORDS

Myringoplasty – Jugular vein – Hemostasis

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Encounters with jugular bulb abnormalities during ear surgery are a rare but recognised problem. A high riding jugular bulb can be present in 10%–15% of individuals and can be dehiscent in 0.5%–1.7%.¹ Its variable position within the temporal bone can cause problems for the surgeon, who will face brisk venous haemorrhage if the bulb is inadvertently opened. These abnormalities are often asymptomatic, though can cause pulsatile tinnitus, conductive hearing loss and vertigo, depending on position.² An awareness of this and an understanding the anatomical location of the bulb is essential.

Case presentation

We present the case of a 52-year-old woman with a history of recurrent right-sided otorrhoea and a central tympanic membrane perforation. She underwent elective endaural myringoplasty.

Brisk venous bleeding was encountered at the point of the annulus upon raising the tympanomeatal flap (Figs 1 and 2). The haemorrhage arose from a dehiscent high riding jugular bulb lying immediately medial and inferior to the annulus, with overlying adhesions (Video). Haemorrhage control was achieved through suction, applying human gelatine-thrombin matrix sealant (FloSeal; Baxter International, Deerfield, IL, USA) and replacing the tympanomeatal flap (Fig 3). A temporalis fascia graft was sited after haemorrhage settled.

At 6-month post-surgical review, there was a small residual perforation but the patient was now asymptomatic.

Discussion

A high riding jugular bulb can complicate ear surgery, and awareness of this is as relevant for myringotomy and grommet insertion as it is for more complex middle ear surgery. When discovered intraoperatively, care should be taken to avoid haemorrhage and, in the event of this, prompt haemostasis is required. In this case, we achieved this by simply applying the sealant and replacing the tympanomeatal flap.

Figure 1 Elevation of the tympanomeatal flap

Figure 2 Profuse venous haemorrhage from the jugular bulb

Video Intraoperative video showing profuse venous haemorrhage from the jugular bulb after elevating the tympanomeatal flap

Figure 3 Raised tympanomeatal flap with suction applied to brisk bleeding

Should this fail, fascia or cartilage graft and a Surgicel haemostat pack (Ethicon, Somerville, NJ, USA) can be applied. Transcatheter endovascular embolization, for example with a detachable coil, has also been used.⁵ This carries the risk of venous thrombosis and infarcts. Internal jugular vein ligation and obliteration of the sigmoid sinus would be a last resort. This invasive approach is effective but carries risks of neurovascular injury within the neck and raised intracranial pressure.⁴

If suspected preoperatively, investigation with computed tomography angiography/venography may provide information regarding anatomical location to aid surgical planning and reduce the risk of complications.⁵

Conclusions

Encounters with the jugular bulb during ear surgery are uncommon but can result in brisk haemorrhage. However, a high riding jugular bulb is often asymptomatic or 'silent'. If it is suspected, preoperative CT angiography and venography is advised.

References

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