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· 论著 ·

中耳胆脂瘤伴高位颈静脉球 1 例并文献复习

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摘要:目的 探讨中耳胆脂瘤伴高位颈静脉球的临床表现、诊断依据以及治疗策略。**方法** 回顾分析 1 例中耳胆脂瘤伴高位颈静脉球患者的临床资料并复习相关文献进行总结。**结果** 术前耳内镜及 CT 预判高位颈静脉球达中鼓室,手术采用耳内镜水下操作模式,彻底清除胆脂瘤、掀起松弛部和紧张部后上方内陷袋,去除被部分破坏吸收的锤骨和砧骨残体,镫骨上结构消失,底板活动正常。掀起外耳道皮瓣分离鼓环的同时避免损伤颈静脉球,2.5 mm 全听骨链赝复物重建听骨链,耳屏软骨筋膜瓣修复。**结论** 中耳手术术前除了评估乳突及鼓窦、听骨链、面神经之外,还应充分评估颈静脉球情况,以免术中大出血等严重并发症。耳内镜水下技术对合并有高位颈静脉球的中耳胆脂瘤有独特优势。

关键词:高位颈静脉球;中耳胆脂瘤;耳内镜水下操作技术
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Case report and literature review of cholesteatoma accompanied with a dehiscent high jugular bulb

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Abstract: Objective This report delves into the clinical manifestation, diagnosis, and treatment of cholesteatoma accompanied by a dehiscent high jugular bulb. We conducted a retrospective study on a patient with this condition and supplemented our findings with a literature review. **Methods** Our patient exhibited signs of a dehiscent high jugular bulb reaching the mesotympanum, as observed through otoscopy and CT scans. To address the cholesteatoma, we utilized underwater otoscopy, successfully removing the cholesteatoma, rectifying the retraction pocket involving pars flaccida and the posterosuperior aspect of pars tensa, and extracting the partially eroded malleus and incus. The arches of stapes were absent, but the footplate functioned well. During tympanoplasty with ossiculoplasty, we carefully navigated around the protruding jugular bulb while raising the tympanomeatal flap. A 2.5 mm total ossicular replacement prosthesis and preserved tragal cartilage perichondrium were used. **Results** In addition to pre-operative assessments of the mastoid, antrum, and ossicular chain, evaluating the jugular bulb is crucial to prevent severe complications like profuse hemorrhage. The underwater otoscopy technique demonstrated unique advantages in managing acquired cholesteatoma with a dehiscent high jugular bulb. **Conclusion** This case highlights the importance of thorough evaluation, including the jugular bulb, in cholesteatoma cases. The underwater otoscopy technique proved effective in our management approach.

Key words: High jugular bulb; Cholesteatoma; Underwater otoscopy technique

颈静脉球位于后颅窝颈静脉孔后外侧,在乙状窦水平段的末端,接受乙状窦和岩下窦回流,并延伸为颈内静脉。颈静脉球位于下鼓室底壁,位置很低,而且与中耳存在骨板分隔,通常对中耳手术并无明显影响。但是颈静脉球存在高位并占据下鼓室甚至中鼓室的可能,且高位颈静脉球通常顶部骨板菲薄或不存在,会导致中耳手术中出现大出血、空气栓塞等严重并发症[1]。颈静脉球解剖关系复杂,容易误诊误治,手术损伤会造成严重出血,难度及危险性较大,处理不当会危及生命,即使及时填塞压迫止血,仍有并发症致死报道[2]。高位颈静脉球临床表现多样,缺乏特异性,不仔细阅读 CT 常易漏诊,在与

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中耳胆脂瘤等共存时，术前准备不足会影响手术操作和手术进程。为提高对高位颈静脉球的临床认识和诊疗水平，现回顾性分析南京大学医学院附属鼓楼医院收治的 1 例中耳胆脂瘤伴高位颈静脉球患者的临床资料，并查询和复习相关文章，报道如下。

1 临床资料

患者女，41 岁。双耳听力下降 3 年，加重 1 个月。2020 年曾因双耳鼓室积液在外院行穿刺抽液及药物口服喷鼻治疗，但 3 年来听力逐渐下降，2023 年 1 月新型冠状肺炎病毒感染后，双耳听力进一步下降。2023 年 2 月患者来我院门诊检查发现双侧中耳胆脂瘤，鼓膜后方蓝色肿物。病程中有双耳耳鸣，为低音调嗡鸣声，偶耳痛，无明显耳闷感，无耳道流脓，无面瘫，无眩晕，无鼻塞流涕。拟“中耳胆脂瘤（双）”收住入院，拟手术治疗。患者无高血压病史，无遗传病史。

入院后查耳内镜示左侧鼓膜松弛部内陷，右侧鼓膜松弛部及紧张部后上方内陷伴少量胆脂瘤样上皮，中下鼓室有新生物，左鼓膜松弛部内陷（见图 1A）。鼻内镜示双侧鼻咽部未见明显新生物及分泌物（见图 1B）。查纯音听阈示双耳听力下降，右耳 500～2 000 Hz 气导平均听阈 61.7 dB，气骨导差平均 35 dB，左耳 500～2 000 Hz 气导平均听阈 33.3 dB，气骨导差平均 11.7 dB（见图 1C）。Weber 试验偏右。鼓室图示双耳 B 型，声导抗双耳未引出（见图 1D）。咽鼓管负压试验示经多次吞咽后，鼓室压力未能接近 0 daPa，考虑存在咽鼓管阻塞及肌性开放功能不良（见图 1E）。术前颞骨 CT 显示双侧上鼓室盾板破坏、鼓窦入口扩大，上鼓室、鼓窦、部分乳突腔内软组织影，右耳砧骨长脚破坏、镫骨足弓未见，双耳半规管骨质无缺损，右侧高位颈静脉球占据整个下鼓室及部分中鼓室，上端外侧超过鼓环下缘并与鼓膜相粘连，上端中段达耳蜗底转并遮盖圆窗龛，上端内侧超过咽鼓管上缘到达鼓膜张肌半管下缘，为外侧高位型颈静脉球（见图 1F）。

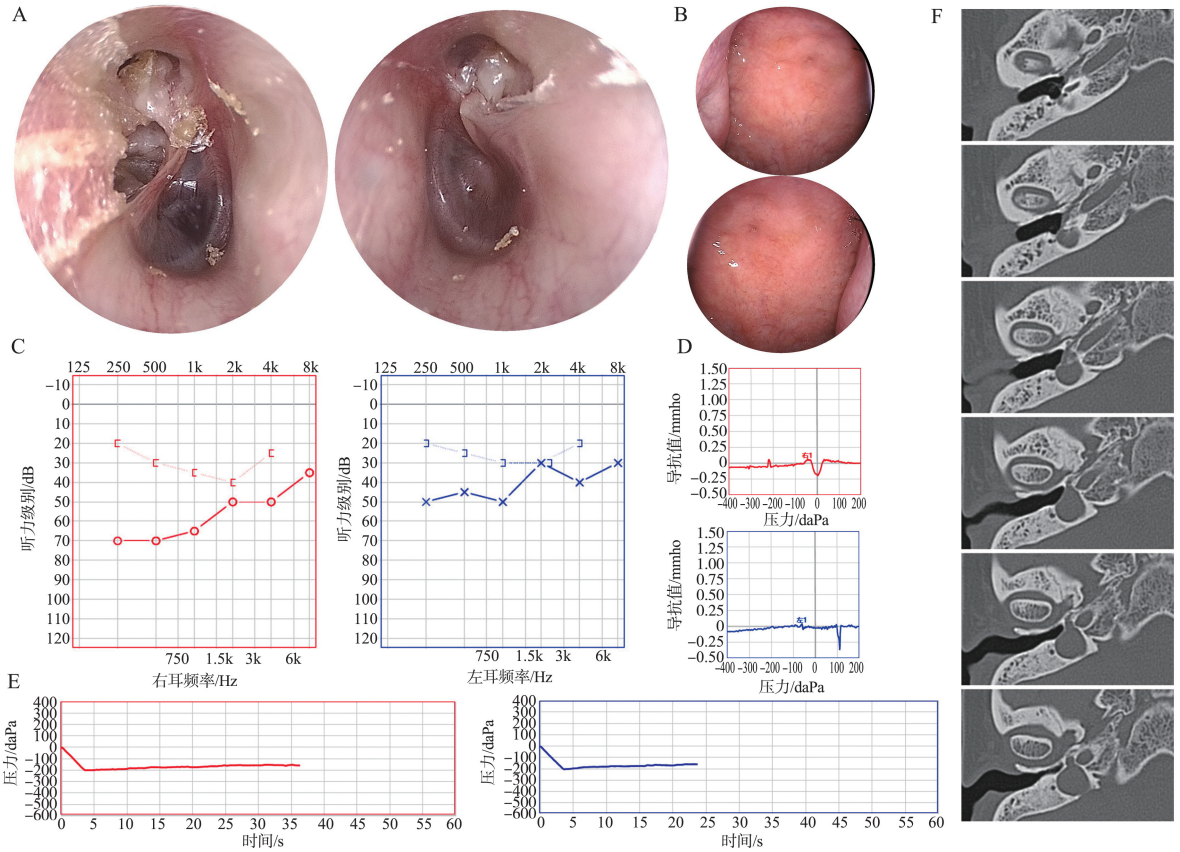

图 1 术前资料

A：耳内镜示胆脂瘤，右鼓室新生物；B：鼻内镜示双侧鼻咽部正常；C：纯音听阈示双耳听力下降；D：鼓室图示双耳 B 型；E：咽鼓管负压试验示咽鼓管阻塞及开放功能不良；F：术前颞骨 CT 示上鼓室、鼓窦、部分乳突腔内软组织影，听小骨破坏，右侧高位颈静脉球（白色箭头）

Figure 1 Pre-operative clinical examinations

A: Otoscopy revealed bilateral cholesteatoma with a bluish mass medial to an intact right tympanic membrane; B: Rhinoscopy assessment was unremarkable; C: Pure-tone audiometry indicated bilateral hearing loss; D: Bilateral type B tympanograms were observed. E: Eustachian tube function test showed bilateral malfunction; F: Temporal bone CT confirmed soft tissue in the attic, antrum, and mastoid, with a right high jugular bulb

与患者沟通后,先行全麻右耳手术(左耳暂时保守治疗),术前备血,止血材料 Surgicel(oxycellulose fragments)备用。患者平卧位,向左侧转头约 20 度。选用 0 度 Xion 耳内镜(直径 2.5 mm,长度 110 mm)连接 Storz 高清内镜系统,输液皮条连接蠕动水泵持续冲洗。采用全程耳内镜水下操作模式,可以清晰地抵近观察(见图 2A)。肾上腺素止血水注射在外耳道骨部和软骨部交界处,作 270 度纵行环形联合切口,45 度环切刀向内推进掀起外耳道皮瓣达鼓环处。在外耳道后壁鼓环中部稍下方进入鼓室,暴露鼓索神经,侧切刀分离后上部鼓环,再分离前上部鼓环。清除松弛部-紧张部后上方的内陷囊袋中的少量胆脂瘤上皮,然后用麦氏钳逐步分离内陷的囊袋(见图 2B)。可见囊袋包绕残余锤骨和砧骨,镫骨前后足弓消失,镫骨底板活动尚可。面神经表面也有内陷囊袋覆盖,予以仔细分离。开放上鼓室,去除残余砧骨、锤骨,开放鼓窦以及部分乳突(见图 2C)。完整掀起内陷囊袋并去除。然后钝性分离外耳道后壁的下部鼓环,使与鼓膜粘连的颈静脉球逐步脱离鼓膜(见图 2D)。颈静脉球占据咽鼓管鼓室口(见图 2E),颈静脉球壁菲薄,向下活动度良好,能暴露咽鼓管鼓室口(见图 2F),咽鼓管鼓室口通畅。软骨重建上鼓室、鼓窦、乳突。放置耳屏软骨筋膜瓣向内压迫颈静脉球,耳屏软骨膜瓣重建鼓膜,并植入 Grace 2.5 mm 全听骨链赝复物人工听骨(见图 2G)。术中颈静脉球无破裂出血。复位外耳道皮瓣确认位置良好(见图 2H),小块纳吸棉填塞,外耳道外侧及外耳道口耳屏切口处放置碘仿纱条压迫。

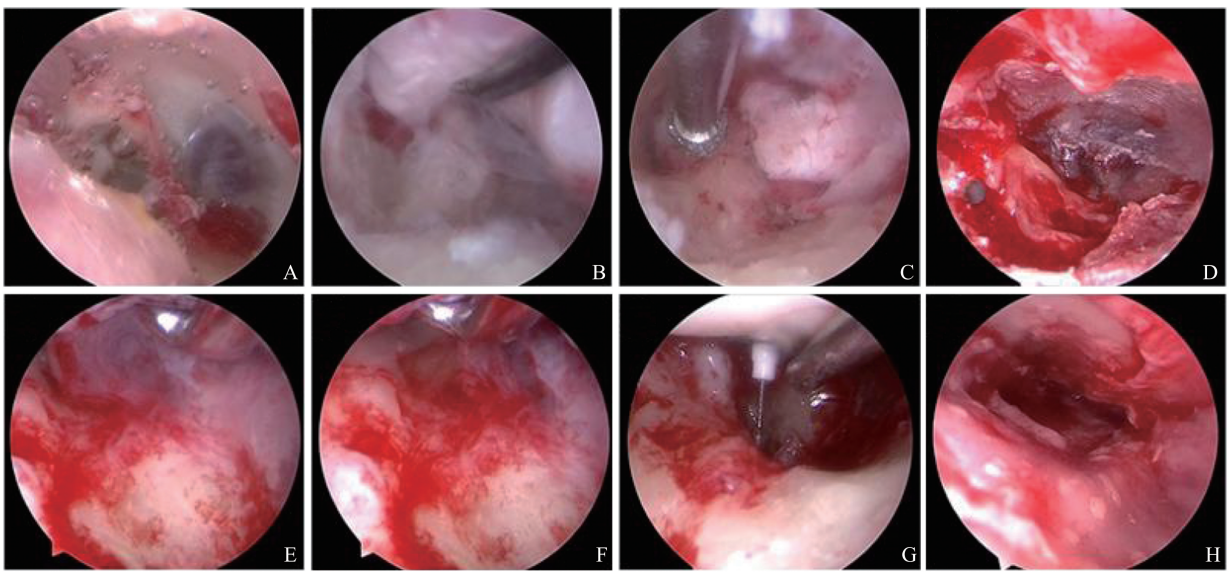

图 2　手术处理

A:耳内镜水下模式可获得清晰视野;B:清理内陷囊袋及胆脂瘤;C:开放上鼓室、鼓窦、部分乳突腔;D:可见高位颈静脉球与鼓膜紧张部粘连;E:高位颈静脉球占据咽鼓管鼓室口;F:颈静脉球与咽鼓管口无粘连,将其下移;G:镫骨底板活动可,放置 TORP 及耳屏软骨膜瓣;H:复位鼓膜及外耳道皮瓣

Figure 2　Navigating surgical challenges

A: Utilizing an underwater otoscopy technique for a clear operative field; B: Successful eradication of the cholesteatoma and elevation of the retraction pocket; C: Opening of the attic, antrum, and part of the mastoid; D: Identification of a high jugular bulb against the tympanic membrane; E: Eustachian tube orifice blockage by the high jugular bulb; F: Compression of the high jugular bulb downwards; G: Reconstruction using a TORP; H: Maintenance of the flap in its original position

术后第 1 天患者无迟发性耳道出血,Weber 试验偏右侧,无面瘫,无眩晕。术后 1 周取出碘仿纱条,术后 3 周清理外耳道纳吸棉,患者自觉右耳听力提高。术后 2 个月复查耳内镜示耳道皮瓣完整,软骨筋膜瓣生长良好,鼓膜完整(见图 3A)。听力复查示右耳 500~2 000 Hz 气导平均听阈 48.3 dB,气骨导差平均 28.3 dB(见图 3B)。复查颞骨 CT 示 TORP 在位(见图 3C、3D)。

2　讨　论

2.1　颈静脉球解剖变异

颈静脉球在婴幼儿时期(<2 岁)并不存在,成年人比儿童常见的原因可能是高位的颈静脉球会持续缓慢增大。其形成与发育过程中从卧位到直立位

有关,而其大小、位置、形状,以及上部是否有完整骨质,可能与乳突气化有关。成年人右侧高位颈静脉球多见[3-5]。颈静脉球前方为颈内动脉、耳蜗导水管、岩下窦、咽升动脉的脑膜支、后组颅神经、脑膜后动脉,后方为枕骨、乙状窦、面神经,上方为外耳道、中耳、后半规管、前庭、内听道。根据解剖,可将高位颈静脉球分为外侧型(鼓室方向,侵犯听骨链、外耳道)和内侧型(内听道方向,侵犯耳蜗导水管、前庭导水管、内听道、后半规管、面神经、前庭)。对于外侧型,Overton、Wadin、Atilla 分别研究了 257、245、700 个颞骨的影像解剖,他们对高位颈静脉球的解剖位置定义为到达鼓环(鼓沟)下部、圆窗龛下缘、耳蜗底转下端。以鼓环(鼓沟)下部为界,高位颈静脉球发生率为 6%,以圆窗龛下缘为界,高位颈静脉球发生率为 24%,以耳蜗底转下端为界,高位颈静脉球发生率为 20.3%[6-8]。对于内侧型,Vachata 研究了 200 个颞骨的影像解剖,以内听道下缘为界,高位颈静脉球发生率为 16.5%[9]。对于外侧型,Basava-Prasad 分级定义为:Ⅰ级:鼓环;Ⅱ级:圆窗龛下缘;Ⅲ级:完全阻塞圆窗龛;Ⅳ级:圆窗龛上缘与镫骨之间;Ⅴ级:镫骨足弓[10]。Woo 等[11]报道可以采用鼓环下部、耳蜗底转、外半规管作逐级定位标志。Manjila 分型不区分外侧型和内侧型,统一定义为:Ⅰ型:无颈静脉球;Ⅱ型:后半规管下缘以下(Ⅱa 型:与中耳有完整骨性分隔;Ⅱb 型:与中耳无完整骨性分隔);Ⅲ型:在后半规管下缘至内听道下缘之间(Ⅲa 型:与中耳有完整骨性分隔;Ⅲb 型:与中耳无完整骨性分隔);Ⅳ型:在内听道下缘以上(Ⅳa 型:与内听道有完整骨性分隔;Ⅳb 型:与内听道无完整骨性分隔);Ⅴ型:与中耳及内听道无完整骨性分隔[12]。

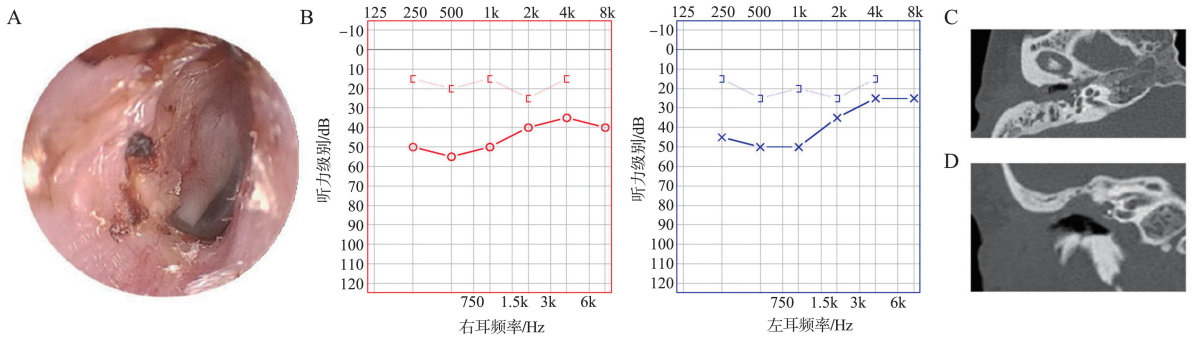

图 3 术后随访
A:软骨筋膜瓣生长良好,鼓膜完整;B:听力复查示右耳听力改善;C~D:水平位和冠状位颞骨 CT 示 TORP 在位

Figure 3 Post-operative follow-up
A: Cartilage perichondrium in optimal condition with an intact tympanic membrane; B: Improved hearing evident in postoperative pure-tone audiometry; C-D: Horizontal and coronal CT planes showcasing the TORP in its designated position during follow-up

2.2 高位颈静脉球的临床表现

高位颈静脉球的症状取决于其类型和分级,如果占据部分鼓室,影响鼓膜、听骨链、圆窗,有时会引起耳鸣、耳胀、听力下降、眩晕、面瘫。合并中耳病变例如中耳炎、中耳胆脂瘤时,可出现流脓、耳痛。外侧型高位颈静脉球可导致传导性聋,原因是颈静脉球与鼓膜粘连、遮挡圆窗龛、影响听骨链运动。内侧型高位颈静脉球则可导致感音神经性聋,原因是前庭导水管、内听道受压出现内淋巴积液[13]。体格检查时,外侧型高位颈静脉球可透过鼓膜可见后下鼓室蓝色肿物。鼓室内蓝色肿物需要与胆固醇肉芽肿、鼓室体瘤、异位颈内动脉、黏膜囊肿、横纹肌肉瘤、血管瘤等鉴别[14]。慢性中耳炎鼓膜浑厚标志不清,术前内镜也有可能观察不到。

2.3 中耳病变合并高位颈静脉球的治疗策略

高位颈静脉球大多数情况下不需要手术处理,不是中耳手术的绝对禁忌证,在合并中耳病变行手术时,有可能会破裂造成大出血等不良后果,因此术前应仔细观察耳内镜及颞骨 CT,术中应避免器械刺入或撕裂。通常的手术策略是用筋膜/软骨膜/软骨覆盖加固,或用骨蜡封闭,将高位的颈静脉球向下移位,也可以将鼓膜下部外移,让出空间,或行面神经下/迷路下径路手术降位[15-16]。处理高位颈静脉球还可采用(无/有支架辅助)栓塞[17-18]。对于突发性的破裂出血,首先采用头低位,低于心脏水平,以防空气栓塞[2]。如果在处理中耳病变之前,颈静脉球已经破裂出血,可用 Surgicel 填塞中耳腔[19],不可过分粗暴填塞以免损伤听骨链导致全聋或损伤面神经造成面瘫。Surgicel 填塞仍有出血时,可填塞抗菌药物纱条压迫 1 周,再视情况逐步取出。特殊情况下需要结扎颈内静脉时,应评估手术收益,结扎会导致神经血管损伤,血管内栓塞会导致血栓、梗死、

颅内压升高[21]。上世纪 90 年代后期,耳内镜中耳手术逐步流行起来但未成熟,直到 2014 年 Yamauchi[22]提出耳内镜水下手术模式。水下模式很少需要吸引器,提升了操作空间。Takata 等[23]报道了 1 例中耳胆脂瘤合并高位颈静脉球,从耳后显微镜改为耳内镜水下手术的病例,术后患者听力无改善。本病例采用全程水下耳内镜操作模式以及从上到下、从后向前的手术方案,首先处理了中耳、鼓窦、乳突病变,保护了镫骨及面神经,然后处理高位颈静脉球,并且术中无颈静脉球破裂出血、空气栓塞等并发症,术后患者听力在 2 个月时较前稍改善,但气导听阈提高不特别理想,考虑中耳腔内填塞的纳吸棉和速即纱尚未完全分解吸收或局部形成干痂,听骨链振动受限,或圆窗部位被填塞物阻碍所致。

3 小 结

综上所述,临床上对于中耳病变应充分完善术前检查和评估,特别是耳内镜、听力、颞骨 CT,对于合并可疑高位颈静脉球的情况,术前还需要做好充分准备,包括术中止血材料的准备、备血,必要时行数字减影血管造影栓塞。针对外侧型和内侧型高位颈静脉球,还需要采取不同的手术策略,确定个体化手术方案。治疗后加强定期随访。

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