切口改良乙状窦后入路在显微血管减压术中的应用

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【摘要】目的 探讨切口改良乙状窦后入路在显微血管减压术(MVD)中的应用效果。方法 回顾性分析2018年1月至2020年6月采用MVD治疗的419例颅神经疾病的临床资料,其中2018年1月至2019年4月采用传统乙状窦后入路MVD治疗的227例作为对照组;2019年4月至2020年6月采用改良切口传统乙状窦后入路MVD治疗的192例作为改良组。术后随访至2022年6月。结果 对照组体位摆放时间(15.26±3.17)min,手术时间(103.98±8.63)min,总有效率为97.3%,术后总并发症发生率为3.5%;改良组体位摆放时间(5.40±2.04)min,手术时间(91.93±7.11)min,总有效率为97.9%,术后总并发症发生率为2.1%。两组总有效率无统计学差异($P>0.05$),但是改良组体位摆放时间和手术时间明显缩短($P<0.05$),术后并发症发生率明显降低($P<0.05$)。结论 切口改良乙状窦后入路MVD治疗颅神经疾病疗效良好,而且节约体位摆放时间,缩短手术时间,术中小脑牵拉轻微、枕动脉保护良好,术后并发症发生率低。

【关键词】颅神经疾病;显微血管减压术;乙状窦后入路;切口改良;疗效

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Application of the modified incision in microvascular decompression through retrosigmoid approach for patients with cranial nerve diseases

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【Abstract】 **Objective** To explore the application effectiveness of the modified incision of the retrosigmoid approach in microvascular decompression (MVD). **Methods** The clinical data of 419 patients with cranial nerve diseases treated with MVD from January 2018 to June 2020 were retrospectively analyzed. Among them, 227 patients treated with MVD through traditional retrosigmoid approach from January 2018 to April 2019 were served as the control group, and 192 patients treated with MVD through modified incision retrosigmoid approach from April 2019 to June 2020 were served as the modified group. Postoperative follow-up was conducted until June 2022. **Results** In the control group: the positioning time of was (15.26±3.17) min; the operation time was (103.98±8.63) min; the total effective rate was 97.3%; the total postoperative complication rate was 3.5%. In the modified group: the positioning time was (5.40±2.04) min; the operation time was (91.93±7.11) min; the total effective rate was 97.9%; the total postoperative complication rate was 2.1%. There was no significant difference in the total effective rate between the two groups ($P>0.05$), but the positioning time and operation time of the modified group were significantly shortened ($P<0.05$), and the postoperative complication rate of the modified group was significantly decreased ($P<0.05$). **Conclusion** The modified incision retrosigmoid approach in MVD for cranial nerve diseases has a good therapeutic effect. It saves the positioning time, shortens the operation time, and has mild cerebellar traction during the operation and good protection of the occipital artery, with a low incidence of postoperative complications.

【Key words】 Cranial nerve disorders; Microvascular decompression; Retrosigmoid approach; Modified incision; Efficacy

原发性三叉神经痛(primary trigeminal neuralgia, PTN)、特发性面肌痉挛(hemifacial spasm, HFS)和原发性舌咽神经痛(glossopharyngeal neuralgia, GPN)是神经外科常见的颅神经疾病,显微血管减压术(microvascular decompression, MVD)是国际公认的最有效的治疗手段[1]。Kalkanis等[2]回顾性分析美国1996~2000年开展的MVD,其中PTN有1 326例,HFS有237例,GPN有27例;手术死亡率为0.3%,神经系统并发症发生率为3.7%。这表明MVD后并发症不容忽视。为减少手术并发症,我们从2019年开始采用改良乙状窦后入路进行MVD,取得了良好的效果,现报道如下。

1 资料与方法

1.1 一般资料 回顾性分析2018年1月至2020年6月采用MVD治疗的419例颅神经疾病的临床资料,

其中 2018 年 1 月至 2019 年 4 月采用传统乙状窦后入路 MVD 治疗的 227 例（PTN 有 146 例，HFS 有 69 例，GPN 有 12 例）为对照组，2019 年 4 月至 2020 年 6 月采用切口改良乙状窦后入路 MVD 治疗的 192 例（PTN 有 119 例，HFS 有 58 例，GPN 有 15 例）为改良组。两组术前 3D-TOF MRA 检查均发现有责任血管与颅神经紧贴，头部 MRI 排除颅内继发性疾病。两组病例随访至 2022 年 6 月。

1.2 手术方法

1.2.1 对照组 取侧卧位，做耳后发际内 0.5 cm 与发际平行的竖切口，二腹肌沟顶点为切口中点，长约 5 cm。乙状窦后方形成直径约 2 cm 左右的骨窗，横"T"字形切开硬脑膜，依次打开小脑延髓池和桥小脑侧池，缓慢释放脑脊液，暴露后组颅神经、面听神经以及三叉神经，显微镜下减压[3]。

1.2.2 改良组 切口以二腹肌沟顶点为起点，平行于横窦，长 3~5 cm（图 1A）。手术时，取平卧位，头偏向健侧约 40°，手术台向健侧倾斜约 20°（图 1B），根据需要头偏角度及手术台倾斜角度适度调整，必要时可垫高患侧肩部以达到更好的暴露效果。切开头皮后、分离肌肉时，暴露枕动脉并加以保护。磨钻于二腹肌沟顶点偏下位置钻一直径约 0.5 cm 小孔，以乳突沟为界、二腹肌沟顶点为边界中心，形成乙状窦后方直径 2 cm 左右的椭圆形骨窗，长径平行乳突沟，磨钻向乳突沟方向适当扩大骨窗（尽量显露乙状窦边缘）。弧形切开硬脑膜，向乙状窦方向牵开并悬吊固定，打开小脑延髓池，缓慢放出脑脊液，显微镜下优先显露面听神经（图 1C），向后暴露后组颅神经，

向前下暴露三叉神经。术中可根据需要可适当调整手术床倾斜度以获得更良好的术野空间。减压后水密缝合硬脑膜（图 1D），还纳骨瓣以连接片固定，逐层缝合皮下组织、皮肤，选择皮内缝合（图 1E）。

2 结 果

对照组 227 例中，221 例痊愈或有效，6 例无效；体位摆放时间（15.26±3.17）min，手术时间（103.98±8.63）min；术后无手术死亡病例；术后出现小脑血肿 1 例（PTN），采取保守治疗恢复；暂时性面瘫 1 例（HFS），随访 3 个月内逐渐恢复；面部持续性麻木 1 例（PTN），脑脊液漏 2 例（1 例 PTN、1 例 HFS），颅内感染 1 例（PTN），持续性耳鸣 1 例（HFS），总并发症发生率 3.5%（8/221）。

改良组 192 例中，188 例痊愈或有效，4 例无效；体位摆放时间（5.40±2.04）min，手术时间（91.93±7.11）min，术后无手术死亡及颅内出血；术后出现暂时性面瘫 1 例（HFS），1 个月内逐渐恢复；面部麻木 1 例（PTN），耳聋 1 例（HFS），颅内感染 1 例（PTN），无脑脊液漏、声嘶；术后并发症总发生率为 2.1%。

两组总有效率无统计学差异（P>0.05），但是改良组体位摆放时间和手术时间明显缩短（P<0.05），术后并发症发生率明显降低（P<0.05）。

3 讨 论

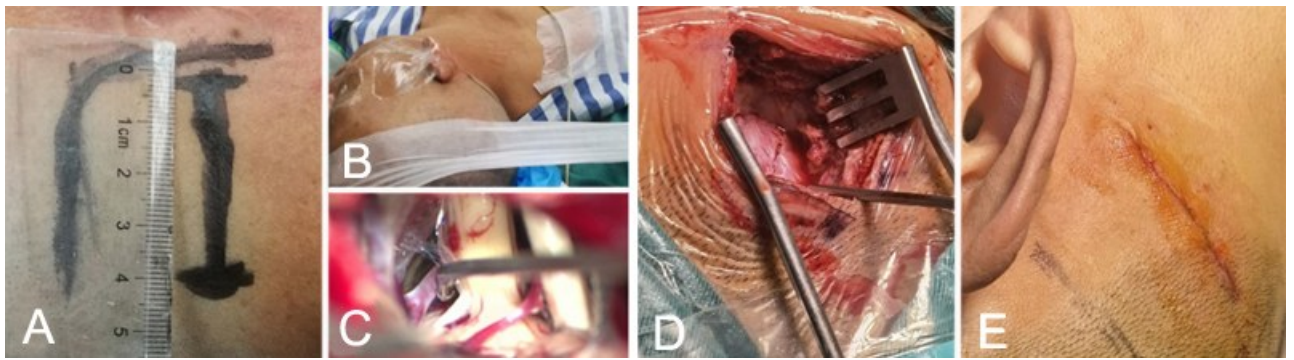3.1 MVD 和乙状窦后入路 MVD 的起源始于针对 PTN 外科治疗的临床研究。研究表明，责任血管压迫不同的颅神经根进出脑干区（rootentry exit zoon，

图 1 切口改良乙状窦后入路进行显微血管减压术

A. 手术切口经二腹肌沟顶点平行横窦，长 3~5 cm；B. 手术体位为平卧位，头偏向健侧 40°~50°，手术台视情况偏向健侧 10°~20°；C. 术中显微镜下显露血管、神经；D. 减压后水密缝合术区硬脑膜；E. 术毕皮内缝合切口

Figure 1 Microvascular decompression through retrosigmoid approach using a modified incision

A: The surgical incision is parallel to the transverse sinus through the apex of the digastric groove, with a length of 3~5 cm. B: The surgical position is the supine position, with the head tilted 40°~50° to the healthy side, and the operating table is tilted 10°~20° to the healthy side as the situation demands. C: The blood vessels and nerves are exposed under the microscope during the operation. D: The dura mater in the surgical area is watertightly sutured after decompression. E: The incision is sutured intradermally at the end of the operation.

REZ）可导致相应的临床表现，即神经血管压迫（neurovascular compression，NVC）综合征[4,5]。对于无手术禁忌的 PTN、GN、HFS，MVD 已成为首选外科治疗方法[6]。临床上，常规采用乙状窦后入路 MVD。乙状窦后入路是处理桥小脑角及脑干腹外侧病变的最常用途径[7]，通过轻微牵拉小脑，可以处理几乎所有桥小脑角及脑干腹外侧的病变。

3.2 传统乙状窦后入路的不足 随着手术技术的进步和临床的经验积累，虽然传统乙状窦后入路在 MVD 中有效率极高，但是术后并发症也不容忽视。传统乙状窦后入路有以下不足：①体位，侧卧位增加了术前体位摆放时间，而且侧卧位时患侧小脑处于高位，脑脊液释放后因重力因素向下塌陷干扰手术视野，手术过程中需持续牵拉小脑暴露术区，此操作可能会增加小脑挫伤出血风险；②切口设计与病人发际密切相关，发际线靠后时，手术切口远离乙状窦，术野不在切口下方，暴露硬膜时需向乳突方向磨除较多骨质以扩大术野[8]；③硬膜切开的方式采用倒"T"形剪开硬膜，导致术后水密缝合硬膜较困难，增加术后皮下积液及伤口感染风险[9,10]。

3.3 改良乙状窦后入路的手术要点和优势 改良乙状窦后入路采用平卧位横切口，切开肌肉时需注意枕动脉走行，尽量避免损伤枕动脉。术前将病人牢固固定，因为术中根据手术步骤的进展，需要随时调整手术台的倾斜角度以达到更好的术野显露，避免调整手术台时病人移位。本文改良乙状窦后入路有以下优点：①切口选择为面神经体表投影，和耳后发际线无相关性，二腹肌沟顶点为一相对固定的解剖标志，更符合临床解剖[11,12]；②横切口与枕动脉走行一致，即使枕动脉有变异的情况，向下仍然能很好地保护枕动脉，充分保留术区肌肉及皮肤的血供，减少术后切口感染风险；③半圆形剪开硬膜翻向乙状窦并悬吊，可使术野暴露更加充分，降低静脉窦损伤风险，术后硬膜可水密缝合，减少术后皮下积液风险；④采用仰卧位，使小脑处于低位，术中释放脑脊液后，能在不用脑压板的情况下，较好地显露颅神经，从而避免因持续牵拉小脑导致小脑出血或挫伤；⑤仰卧位下就能充分暴露术野，缩短了术前准备时间。

3.4 改良乙状窦后入路的不足 虽然切口改良后，在体位摆放、术后并发症等方面具有优势，但该术式仍有不足之处：①改良乙状窦后入路采用横切口，需离断术区枕部肌肉，对肌肉的损伤较大；②头部需向健侧偏斜，如颈部活动受限时，可能无法达到理想的位置，术野暴露会很困难；③肥厚的肩部会限制手的操作角度，特别是术区在左侧时会更加明显。

总之，手术入路的设计首先考虑如何获得良好手术视野，能精确显露和分离重要的神经、血管。本文改良切口乙状窦后入路术野显露良好、周围组织血管及神经牵拉小，术后脑脊液漏、切口感染、听力下降、面瘫等并发症发生率明显降低。不足之处在于横切口对肌肉的损伤较大，颈部活动受限及肩部肥厚会增加手术操作难度，术前需充分评估该术式是否能顺利完成。

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