

# 单、双侧去骨瓣减压对单侧重型颅脑损伤术中脑膨出的疗效差异

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**摘要** 目的 探讨在单侧或以单侧为主的重型颅脑损伤病例中,何种手术方式更适宜处理手术中出现的急性脑膨出。方法 对我科自 2008 年 5 月至 2010 年 12 月收治的以单侧为主的重型颅脑损伤且术中出现急性脑膨出的 52 例临床资料进行回顾性分析,研究单、双侧去骨瓣减压术对患者颅内压(ICP)及伤后 6 个月时的 GOS 评分的影响。结果 单侧去骨瓣减压患者 29 例,分为恢复良好组(GOS 4-5 分, n=6),不良组(GOS 2-3 分, n=9)和死亡组(GOS 1 分, n=14);双侧去骨瓣减压患者 23 例亦分为恢复良好组(n=6),不良组(n=12)和死亡组(n=5);两种减压术的死亡率差异显著(P<0.05)。单侧和双侧去骨瓣减压术均明显降低 ICP(P<0.05),但双侧减压的存活组其术后 ICP( $17.2 \pm 4.2$  mmHg)显著低于单侧减压的存活组( $25.0 \pm 5.4$  mmHg)(P<0.05)。结论 对以单侧为主的重型颅脑损伤,同次行双侧去骨瓣减压术较单侧减压更能有效降低术中急性脑膨出所致高颅压,降低死亡率。

**关键词** 重型颅脑损伤;脑膨出;去骨瓣减压术;单侧;双侧

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## Different Effect between Unilateral and Bilateral Decompressive Craniectomy on Acute Encephalocel During Surgery in Patients with Unilateral Severe Brain Injury

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**ABSTRACT Objective:** To investigate a suitable way of solving acute encephalocel during surgery in patients with severe brain injury located (mainly) unilaterally. **Methods:** The clinical record of 52 patients who suffered from severe brain injury located (mainly) unilaterally and underwent acute encephalocel during surgery in our department from May 2008 to December 2010 were analyzed retrospectively. The influence of unilateral and bilateral decompressive craniectomy on intracranial pressure (ICP) and Glasgow Outcome Scale (GOS) at the 6th month post-trauma were analyzed. **Results:** 29 patients undergoing unilateral decompressive craniectomy were divided into favorable outcome group(GOS 4~5, n=6), unfavorable group(GOS 2~3, n=9) and Death(GOS 1, n=14); 23 patients undergoing bilateral decompressive craniectomy were divided into favorable group (n=6), unfavorable group (n=12) and Death (n=5). The mortality of unilateral and bilateral decompressive craniectomy were obviously different(P<0.05). Both of them reduced ICP significantly(P<0.05). The ICP of survivors undergoing bilateral decompressive craniectomy ( $17.2 \pm 4.2$  mmHg) was obviously lower than that of survivors undergoing unilateral craniectomy ( $25.0 \pm 5.4$  mmHg) P<0.05). **Conclusions:** Bilateral decompressive craniectomy can decrease high level of ICP and mortality more obviously compared with unilateral craniectomy, with regard to acute encephalocel during surgery in patients with severe brain injury located (mainly) unilaterally.

**Key words:** Severe brain injury; Encephalocel; Decompressive craniectomy; Unilateral; Bilateral

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### 前言

重型颅脑损伤仅出现于单侧或以单侧为主的病例,一般考虑行单侧开颅血肿清除术,颅内压(ICP)较高时需去除骨瓣。倘若术中出现急性脑膨出,需决定是否必要立即行对侧开颅减压,因此单、双侧去骨瓣减压术的疗效差异有待探讨。本文回顾性分析了我科自 2008 年 5 月至 2010 年 12 月收住院的 52 例单侧或以单侧为主的重型颅脑损伤且术中出现急性脑膨出的

资料,现总结如下。

### 1 资料与方法

#### 1.1 临床资料

本组共 52 例,男 36 例(69.2%),女 16 例(30.8%);年龄 16~68 岁,平均  $41.7 \pm 16.3$  岁。其中车祸 41 例(78.8%),砸伤和打击伤 7 例(13.5%),坠落伤 4 例(7.7%)。均为伤后 10h 内入院,GCS 均 $\leq 8$ 分,不伴有其他脏器严重损伤。

术前头颅 CT 扫描,提示 44 例为单侧脑挫裂伤、硬膜下血肿、脑内血肿、脑水肿或弥漫性脑肿胀,伴或不伴同侧硬膜外血肿、颅骨骨折,颅内对侧无明显伤灶;其余 8 例除以上单侧表现

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外,伴对侧极少量硬膜下血肿、脑叶小血肿或线性骨折等。所有病例中线移位 $>0.5\text{cm}$ ,脑基底池受压,幕下未见出血灶。术前单侧瞳孔散大 29 例,双侧瞳孔散大 10 例,无瞳孔散大 13 例。

### 1.2 术前综合治疗

根据重型颅脑损伤救治指南,给予患者通畅气道,保证血压、血氧饱和度,抬高头部 $15^{\circ}\sim 30^{\circ}$ ,止血,补液,降温,镇静等。并于局麻下以脑实质内法(Codman)植入颅内压监测传感器,连续监测 ICP。患者家属在被告知手术风险后均于手术同意书上签字。

### 1.3 手术治疗

所有病例均在伤后 18h 内进行了开颅手术。于损伤严重侧行颅内血肿清除+去骨瓣减压术。手术要点:根据挫裂伤、血肿位置确定骨瓣位置,骨瓣设计应偏大,骨窗形成后先行硬脑膜悬吊再剪开,剪开速度勿过快。出现急性脑膨出时,在及时排除麻醉、补液、同侧迟发性血肿等因素后,所有患者均立即关颅,其中 23 例随后直接行对侧标准额-颞-顶大骨瓣减压术,探查有无迟发性血肿,待清除后关颅,若无血肿,敞开硬膜关颅。手术后动态复查头颅 CT,以查明脑膨出原因,判断是否需二次手术。

### 1.4 观察指标

查阅术前和术后的 ICP 监测资料。随访 6 个月到 3 年,按伤后 6 个月时的 GOS 将患者预后分为恢复良好(GOS 4-5 分)、不良(GOS 2-3 分)和死亡(GOS 1 分)。

### 1.5 统计学分析

采用统计软件 SPSS12.0 for windows 进行分析。计量资料以均数 $\pm$ 标准差表示,两组间的 ICP 值比较采用秩和检验。计数资料的比较采用 $\chi^2$ 检验。 $P<0.05$ 视为差异具有显著性。

## 2 结果

### 2.1 预后

单侧去骨瓣减压患者 29 例,6 例(20.7%)属良好(GOS 4-5 分),9 例(31.0%)为不良(GOS 2-3 分),14 例死亡(GOS 1 分),死亡率为 48.3%。双侧去骨瓣减压患者 23 例,6 例(26.1%)属良好,12 例(52.2%)为不良,5 例死亡,死亡率为 21.7%。双侧减压组死亡率显著低于单侧减压组( $P<0.05$ )。

### 2.2 手术前后 ICP 变化

本研究中 52 例均在术前进行了 ICP 监测,单侧和双侧去骨瓣减压术均明显降低 ICP( $P<0.05$ )。存活的病例中,双侧减压组的 ICP 下降比单侧减压组更加显著( $P<0.05$ ,见表 1)。

表 1 单、双侧减压组手术前后 ICP(mmHg)的变化

Table 1 The preoperative and postoperative ICP(mmHg) changes of unilateral and bilateral decompressive groups

Group	n	Survivors group		Death group	
		Preoperative	Postoperative	Preoperative	Postoperative
Unilateral decompressive	29	37.7 $\pm$ 6.3	25.0 $\pm$ 5.4	40.1 $\pm$ 5.7	32.2 $\pm$ 4.3
Bilateral decompressive	23	38.6 $\pm$ 7.0	17.2 $\pm$ 4.2	39.5 $\pm$ 4.4	29.2 $\pm$ 3.3
Value P		$>0.05$	$<0.05$	$>0.05$	$>0.05$

### 2.3 术后并发症

单侧去骨瓣减压组:脑脊液漏 2 例(6.9%),外伤性癫痫 3 例(10.3%),脑积水 2 例(6.9%),迟发性血肿 3 例(10.3%),均予以再次手术。双侧去骨瓣减压组:切口愈合不良 1 例(4.3%),外伤性癫痫 2 例(8.7%),脑积水 3 例(13.0%),颅内感染 2 例(8.7%),术中中对侧开颅探查见原有血肿增大者 2 例,术后未见迟发性血肿。

## 3 讨论

颅脑损伤是一种常见外伤,其发病率占外伤的第二位,仅次于四肢损伤,而死亡率却占首位<sup>[1-2]</sup>。重型颅脑损伤对人体的危害性更大,其伤情重,致残率、死亡率均很高。因此,对重型颅脑损伤采用合适的治疗方法是非常关键的。一直以来,尽管急救医学、影像技术、药物和外科治疗对于重型颅脑损伤的救治有了很大进步,但是治疗结果难以令人满意,死亡率仍然居高不下<sup>[3-4]</sup>。治疗原则的调整可能会改善患者的预后。

具有双侧明显伤灶的重型颅脑损伤,如果仅对一侧伤灶行血肿清除术,将造成该侧颅内压迅速降低,脑组织复位,减轻或消除压力填塞效应,这样可能会使对侧已损伤的血管出血量增

加,血肿增大,继而脑组织移位,这是形成急性脑膨出的一重要原因<sup>[5]</sup>。这时若直接行对侧开颅,可立即探查并清除增大的血肿,提高救治成功率。但对于单侧或以单侧为主的重型颅脑损伤病例,若血肿清除术中出现急性脑膨出,就需要决定是否必要立即行对侧开颅减压。若在行头颅 CT 扫描后再决定是否对侧开颅,则会耽误救治病人的最佳时机<sup>[6]</sup>。因此,这类患者对单、双侧开颅的选择将直接关系到患者的预后<sup>[7-8]</sup>。

急性脑膨出的另一种原因是弥漫性脑肿胀、脑水肿。本研究出现的脑膨出大部分属于此类,其发生机制如下:外伤导致脑血管急性扩张,脑过度灌注;外力特别是剪应力损害了中枢性支配血管紧张性调节的脑深部结构,导致脑血管自动调节功能丧失,脑组织受占位效应压迫引起的缺氧使脑内二氧化碳蓄积过多,形成酸中毒,导致脑血管扩张,脑组织肿胀<sup>[9]</sup>。此外,手术中在清除了颅内血肿后,脑组织的血管外压力陡然下降,引起脑血流迅速增加,脑组织体积迅速增大,造成急性脑膨出。文献指出外伤后急性弥漫性脑肿胀手术指征应尽量放宽,此举能挽救大部分患者生命,改善预后,提高生存质量<sup>[10-11]</sup>。颅脑损伤急性期最主要的死亡原因是各种因素导致的难以控制的高颅压。对于重型颅脑损伤病人,早期双侧去骨瓣减压比保守治

疗后再行手术的方案更能有效控制颅内压,改善预后<sup>[12-15]</sup>。本研究针对单侧或以单侧为主的重型颅脑损伤术中出现的急性脑膨出,回顾性分析单、双侧去骨瓣减压对预后的影响,结果表明同次手术行双侧去骨瓣减压比单侧减压组能显著降低死亡率。存活的病例中,双侧减压组的 ICP 下降比单侧减压组更加明显。

双侧开颅充分减压,有利于探查术前无明显伤灶侧是否存在迟发的血肿,能及时缓解术中脑膨出所致急性高颅压、脑水肿,有利于脑疝回复。并能减少因受伤侧骨窗偏小而出现的并发症,如脑组织嵌顿、坏死,神经功能损伤以及癫痫发作等<sup>[16-17]</sup>。

于受伤主侧行常规开颅去骨瓣减压,骨瓣位置、大小都不固定,在急性脑膨出的情况下,减压程度有限。所以对侧开颅宜选用标准大骨瓣,一是以免遗漏血肿,二是给处在高颅压的脑组织提供最大限度的缓冲空间,为平稳度过术后高颅压期创造条件<sup>[18]</sup>。但出现以下情况不宜行双侧开颅:1、一侧强行关颅后,患者生命体征不稳,血压已下降;2、患者家属拒绝对侧开颅。

本研究的对象主要是单侧重型颅脑损伤术中因弥漫性脑肿胀出现的急性脑膨出,由于是单中心的回顾性资料分析,样本量小,说服力有限。重型颅脑损伤的伤情复杂,损伤程度不同<sup>[19-20]</sup>,对于何种病例出现的脑膨出更适合行双侧去骨瓣减压术,尚需多中心前瞻性的研究来进一步探讨。

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