

# Cervifix颈椎后路杆固定系统垂直水平悬吊改良单开门椎管成形术

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**【摘要】** 目的:评价 Cervifix固定垂直水平悬吊改良单开门椎管成形术的疗效。方法:35例颈椎病患者,男 23例,女 12例;年龄 47~68岁,平均 56.4岁;34例为脊髓型颈椎病,1例为颈椎术后翻修;椎管矢状径 4.6~9.3 mm;椎管矢状面狭窄率达 39%~84%,平均 49.3%;减压节段 C<sub>3</sub>-C<sub>5</sub> 9例, C<sub>3</sub>-C<sub>6</sub> 20例, C<sub>4</sub>-C<sub>7</sub> 6例。常规行后正中入路单开门椎管成形术,在所减压的节段侧块上 Cervifix固定,采用 Roy-Camille置入侧块螺钉。先用磨钻在所减压节段的棘突根部开预穿孔,开门后穿粗丝线于 Cervifix的纵连杆拉紧并打结,行水平方向固定。垂直方向在开门侧的椎板上打预穿孔,用“斜拉桥”原理悬吊于临近未减压的棘突上加固。使椎板保持在开门状态。术后颈围保护 3个月。结果:35例平均随访 15个月(7~18个月)。术前 JOA 评分平均 8.0分,术后平均 15.7分。术后 3个月复查 CT及 X线片未见螺钉松动和再关门现象。仅有 3例诉颈部有僵硬感,局部无疼痛。肌电图及体感诱发电位、感觉运动传导速度基本接近正常。6个月后僵硬感基本消失。结论:Cervifix固定垂直水平悬吊改良单开门椎管成形术操作简单、安全,维持开门效果好。术后患者颈部症状恢复快,效果满意,是治疗多节段颈椎病及椎管狭窄症的一种有效可行的方法。

**【关键词】** 颈椎病; 内固定器; 外科手术

**Application of modified open door lam inoplasty by Cervifix fixation and vertical horizontal sling** LAN Shu-hua<sup>\*</sup>, YE Fang, CHI Yong-long, LU Yu-jian, LÜ Guo-qiang, YING Jin-he, WU Quan-zhou<sup>\*</sup> Department of Orthopaedics, Center Hospital of Lishui, Lishui 323000, Zhejiang, China

**ABSTRACT Objective:** To evaluate the clinical outcome of modified open door lam inoplasty by Cervifix fixation and vertical horizontal sling **Methods:** Thirty-five patients of cervical syndrome included 23 male and 12 female; The average age was 56.4 years ranging from 47 to 68 years. Of all the patients, 34 were cervical spondylitic myelopathy and the other one was reoperation after cervical operation. The sagittal diameter of vertebral canal was from 4.6 to 9.3 mm, the stenosis ratio of sagittal plane from 39%~84% (mean 49.3%). The decompression segment were C<sub>3</sub> to C<sub>5</sub> in 9 cases, C<sub>3</sub> to C<sub>6</sub> in 20 cases, C<sub>4</sub> to C<sub>7</sub> in 6 cases. A routine posterior midline approach and Cervifix fixation were used in the open door lam inoplasty. Roy-Camille technique was used for the insertion of lateral mass screw on hinge side. While the “door” was opened, each lamina was suspended through the hole in the base of spinous process (prefabricated with bone drill) to the longitudinal pitman of “Cervifix” with thick silk thread to achieve the horizontal fixation. The other prefabricated hole on the lamina of the open door side was used to suspend the lamina to the adjacent spinous process which was not decompressed to remain the door in the opening position. Soft collar protection was applied for three months after the operation. **Results:** Thirty-five patients were followed up for from 7 to 18 months (mean 15 months). The average preoperative JOA score was 8.0 and postoperative JOA score was 15.7. No screw loosening and door re-closure was found in the CT and X-ray film three months after the operation. Only 3 cases had stiffness in the neck but no neck pain. The electromyogram, somatosensory evoked potential (SEP) and nerve conduction velocity were close to normal. The neck stiffness disappeared after six months after the operation. **Conclusion:** This modified open door lam inoplasty by Cervifix fixation and vertical horizontal sling has advantages of easy performing, safety, good maintaining of elevated lamina, less neck symptoms and early commencing of mobilization. It is a good method to cure spondylitic myelopathy.

**Key words** Cervical spondylosis; Internal fixators; Surgical procedures, operative

单开门椎管扩大椎板成形术广泛应用于治疗脊髓型颈椎病、发育性颈椎管狭窄、颈椎后纵韧带骨化颈椎翻修,近期和远期随访结果都已经证实该术式在解除脊髓的压迫、改善神经系统功能方面具有确切、持久的疗效<sup>[1]</sup>。开门后椎板的固定有多种方法,目前应用最多的术式是采用粗丝线通过棘突根部的预穿孔将开门后的椎板缝合悬吊于同节段的小关节囊和周围韧带上,术后围领制动 1~3 个月。这种“软性”门轴固定导致许多患者存在术后颈部长期疼痛,在门轴一侧表现尤为明显,开门后再关门现象,减压节段不稳。为了解决这些问题,2000年 3月-2005年 5月我们采用 Cervifix 固定,垂直水平悬吊保持开门状态,治疗颈椎病 35 例。现将临床应用体会和结果报告如下。

### 1 临床资料

本组 35 例,男 23 例,女 12 例;年龄 47~68 岁,平均 56.4 岁。34 例为脊髓型颈椎病,其中 8 例合并颈椎后纵韧带骨化,20 例合并发育性颈椎管狭窄,6 例为退行性颈椎管狭窄;1 例为颈椎术后翻修。本组病例术前均有不同程度上下肢感觉减退,部分患者下肢无力,容易跌倒。查体:均有不同程度病理征出现及感觉减退。CT 及 MR 测量椎管矢状径 4.6~9.3 mm,椎管矢状面狭窄率达 39%~84%,平均 49.3%。减压节段: C<sub>3</sub>-C<sub>5</sub> 9 例, C<sub>3</sub>-C<sub>6</sub> 20 例, C<sub>4</sub>-C<sub>7</sub> 6 例。

### 2 手术方法

均采用 Cervifix 固定,垂直水平悬吊改良单开门椎管成形术。患者在石膏床上取俯卧位,全麻下手术。用 0.1% 肾上腺素 0.5 ml 加入生理盐水中作局部止血。颈后正中入路切开皮肤、皮下及项韧带,剥离椎旁肌,沿骨膜下剥离到侧块的外侧,尽量保留 C<sub>2</sub> 棘突上的肌肉止点,剥离节段在所减压上下节段各增加 1 个椎板节段。在所减压的侧块上打侧块螺钉,用 Roy-Camille 技术的进针点为侧块的中点,方向是由后内侧指向前外侧,并向外侧与矢状面成 10 夹角,或用 Magerl 后路颈椎固定技术的进针点在侧块中点内上 2~3 cm 处,方向为向头侧与上关节突关节面平行,向外侧与矢状面成 25 夹角,打侧块螺钉前先用磨钻钻开进针点,侧块螺钉应刚好打穿侧块的对侧皮质,如螺钉过长会有刺激或损伤神经根的可能,上好 Cervifix 系统的纵连接。再用磨钻在所减压节段的棘突根部开预穿孔,开门后穿粗丝线于 Cervifix 的纵连杆拉紧并打结,行水平方向固定。垂直方

向在开门侧的椎板上打预穿孔,用“斜拉桥”原理悬吊于邻近未减压的棘突上加固,使椎板保持在开门状态。上下关节突用磨钻磨除部分软骨面,在门轴侧取肋骨植骨融合(图 1)。术后 48~72 h 拔引流尿管。3 d 后在颈围保护下下地功能锻炼,术后前 3 个月用软质的颈围领保护。术后 3、6、12、18 个月时门诊复查,包括神经功能评定(JOA 17 分法)、肌电图及体感诱发电位、颈部活动情况,并在 6 个月后摄颈椎正、侧位及过伸过屈位片。

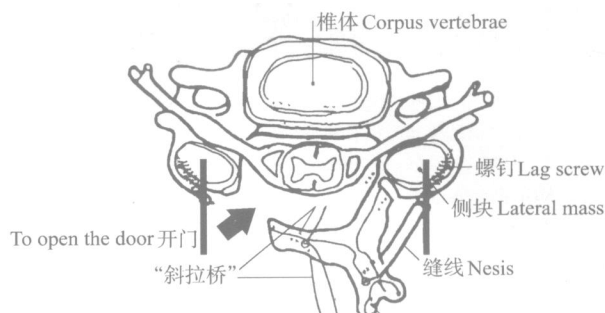


图 1 Cervifix 颈椎后路杆固定系统垂直水平悬吊改良单开门椎管成形术示意图

Fig. 1 Abridged general view of modified open door laminoplasty by cervifix fixation and vertical horizontal sling

### 3 结果

3.1 疗效评定标准<sup>[2]</sup> 按 JOA 评分方法计算出患者术后恢复情况,其公式为:术后改善率 = (术后评分 - 术前评分) ÷ (17 - 术前评分) × 100%。优: JOA 评分术后改善率 > 75%;良: JOA 评分术后改善率 50%~74%;可: JOA 评分术后改善率 25%~49%;差: JOA 评分术后改善率 < 25%。

3.2 结果 35 例均获随访,随访时间 7~18 个月,平均 15 个月。结果:优 28 例,良 4 例,差 3 例。JOA 评分术前平均 8.0 分,术后平均 15.7 分。术后 3 个月复查 CT 及 X 线片未见螺钉松动和再关门现象。3 例诉颈部有僵硬感,局部无疼痛。肌电图复查体感诱发电位、感觉运动传导速度基本接近正常。6 个月后僵硬感基本消失。未见螺钉松动和再关门现象。典型病例见图 2。

### 4 讨论

单开门椎管扩大成形术是一种较好的颈后路减压术式,手术适应证选择恰当,可取得良好的治疗效果;然而手术并发症时常出现。颈后路单开门常见并发症及预防<sup>[3]</sup>: 术后再关门:单开门术后再关门一旦发生手术效果明显下降。作者在所减压的节段侧块上 Cervifix 固定,采用 Roy-Camille 置入侧块螺

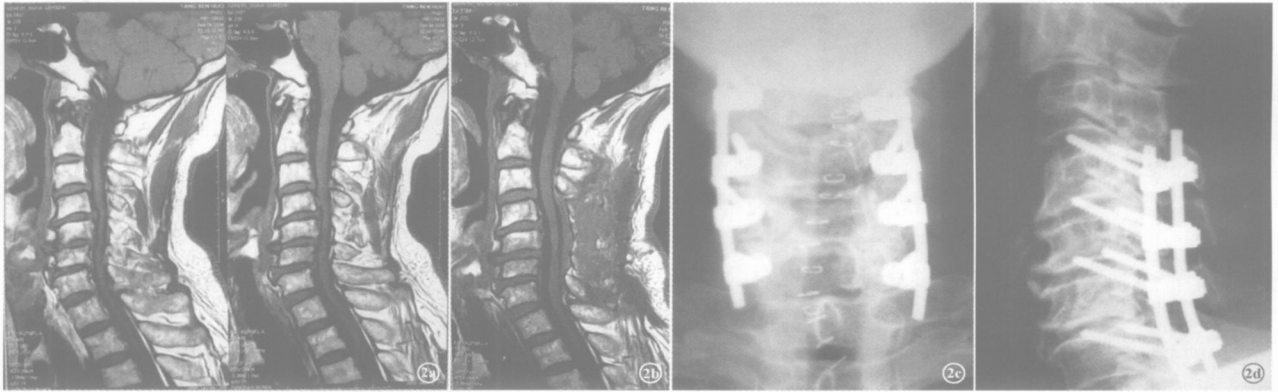


图 2 男, 76岁, 颈椎管狭窄症 a 术前 MR 示硬膜囊及脊髓受压; b 术后 MR 示硬膜囊膨隆, 脊髓无受压; c、d Cervifix 颈椎后路杆固定系统垂直水平悬吊单开门椎管成形术后 X 线正侧位片  
 Fig. 2 A 76-year-old man with cervical spinal canal stenosis a Preoperative MRI showed dura mater and spinal cord were compressed; b Postoperative MRI showed dura mater was normal and spinal cord was not compressed; c and d Postoperative X-ray film of modified open door lamino-plasty by Cervifix fixation and vertical horizontal sling

钉,先用磨钻在所减压节段的棘突根部开预穿孔,开门后穿粗丝线于 Cervifix 的纵连杆拉紧并打结,行水平方向固定,垂直方向在开门侧的椎板上打预穿孔,用“斜拉桥”原理悬吊于邻近未减压的棘突上加固,经过垂直方向悬吊,明显减轻了门轴处的剪力,从而形成“双保险”加固,使椎板保持在开门状态。轴性症状的出现<sup>[4]</sup>:术后颈部慢性疼痛,有沉重感,即“轴性症状”。颈神经后支受到刺激或损伤,颈椎活动时悬吊部位的小关节囊受到创伤而激发炎症反应是轴性症状产生的主要原因。固定在纵连杆上避免了颈神经后支受到刺激或损伤,避免了颈椎活动时悬吊部位的小关节囊刺激。减压节段不稳:退行性颈椎管狭窄、颈椎术后翻修、颈椎 3 个以上椎间盘突出及退变增生者,往往存在颈椎节段不稳,或单开门术后破坏了颈椎后部结构,引起颈椎节段不稳。用 Cervifix 固定,垂直水平悬吊改良单开门椎管成形术,经过内固定形成即刻稳定,上下关节突用磨钻磨除部分软骨面,在门轴侧取髂骨植骨融合形成永久稳定。C<sub>5</sub> 神经根麻痹:单开门后脊髓后移,神经根受到牵拉可致疼痛,严重者可引起神经根麻痹。由

于 C<sub>5</sub> 神经根通过椎间孔的距离最短且 C<sub>5</sub> 节段为颈椎生理前突的最高点,椎管扩大后此节段后移范围最大,最易引起 C<sub>5</sub> 神经根麻痹<sup>[5]</sup>。在术中开门侧应该远离侧块,门掀开宽约 10 mm,不能过宽。减压后引起瘢痕性椎管狭窄:术中彻底止血,用施沛特针 2 ml 注射在开门侧脊髓表面,术后引流充分,可减少开门侧周围瘢痕形成。作者用 Cervifix 固定,垂直水平悬吊改良单开门椎管成形术,明显减少术中及术后并发症。

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(收稿日期:2005 - 10 - 11 本文编辑:王宏)

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