·经验交流·

牵引治疗成人外伤性寰枢椎半脱位

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【摘要】 **目的**：观察改良后的牵引疗法在成人外伤性寰枢椎半脱位中的应用。**方法**：对 2018 年 3 月至 2019 年 6 月收治的 31 例寰枢椎半脱位患者进行回顾性分析，男 15 例，女 16 例；年龄 18~68 岁，平均 39 岁，其中 18~40 岁者 10 例，41~60 岁者 15 例，51~68 岁者 6 例。主要表现为颈部活动受限，疼痛，寰枢椎 CT 平扫示不同程度寰枢椎半脱位。运用三维多功能牵引床，牵引 2 min，放松 10 s，牵引角度以后伸位 5°~10°，重量 3~6 kg 开始，每两天增加重量 1 kg，至症状改善后，并以此重量维持治疗。牵引时间为 30 min，每天牵引 2 次，10 d 为 1 个疗程。寰枢椎间隙左右欠等宽 1~2 mm 者牵引 1 个疗程，3~4 mm 者牵引 2 个疗程，特别疑难严重者如寰枢椎间隙左右欠等宽 4 mm 常规疗程无好转者，疗程可以增至 3 个月。治愈：颈部无疼痛，颈部活动正常范围，CT 检查示寰枢椎间隙正常，齿突居中；治疗结束 1 个月后随访颈部活动正常者。好转：颈部疼痛明显好转，CT 检查示寰枢椎间隙左右欠等宽 1 mm 者。**结果**：31 例患者中，1 个疗程治愈者 17 例；2 个疗程治愈者 11 例，好转 2 例；3 个月治愈者 1 例。**结论**：改良后的牵引疗法对成人外伤性寰枢椎半脱位，特别是寰枢椎间隙左右欠等宽 3~4 mm 的半脱位，有明显的疗效，且此法安全、可靠，患者无不适，疗效较好。

【关键词】 成人；　外伤性寰枢椎半脱位；　牵引术
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Traction for the treatment of traumatic atlantoaxial subluxation in adults　*ZHANG Li-mei, XU Yan, and ZHU Jiu-yong. Kaihua County People's Hospital, Kaihua* 324300, *Zhejiang, China*

ABSTRACT　**Objective**: To observe the application of modified traction therapy in traumatic atlantoaxial subluxation in adults. **Methods**: The clinical data of 31 patients with atlantoaxial subluxation treated from March 2018 to June 2019 were retrospectively analyzed. There were 15 males and 16 females, aged from 18 to 68 years old with an average of 39 years old, including 10 cases of 18–40 years, 15 cases of 41–60 years, 6 cases of 51–68 years. The main manifestations of the patients were limited neck movement, pain, and atlantoaxial CT scan showed different degrees of atlantoaxial subluxation. Three-dimensional multifunctional traction bed was used for traction for 2 min, relaxation for 10 s. The traction angle starts from the rearward extension of 5°–10° and weight from 3–6 kg. The weight increased by 1 kg every two days until the symptoms were improved. Traction time was 30 min twice a day and 10 days for a course of treatment. One course of treatment was performed in patients with 1–2 mm left and right equal width of atlantoaxial space, and two courses of treatment were performed in patients with 3–4 mm left and right equal width of atlantoaxial space, and the course of treatment could be increased to 3 months in especially patients with serious problems, such as 4 mm left and right equal width of atlantoaxial space and no improvement after conventional treatment. The criteria to evaluate the clinical effect was cure: no pain in the neck, normal range of neck movement, CT showed normal atlantoaxial space and odontoid process was in the middle, patients with normal neck movement were followed up 1 month after the end of treatment; improvement: neck pain was significantly improved and CT showed that the left and right atlantoaxial space was less than 1 mm in equal width. **Results**: Among the 31 patients, 17 cases were cured by one course of treatment, 11 cases were cured by 2 courses of treatment, and 2 cases were improved. **Conclusion**: The modified traction therapy has obvious effect on adult traumatic atlantoaxial subluxation, especially the subluxation of 3–4 mm equal width in left and right atlantoaxial space, and this method is safe and reliable with good efficacy and the patients without discomfort.

KEYWORDS　Adult;　Traumatic atlantoaxial subluxation;　Traction

寰枢椎半脱位也称寰枢椎旋转性不稳定。临床表现主要是颈部活动受限、疼痛、脊髓压迫症状、耳鸣、眩晕等症状[1]。目前，治疗方法主要包括手术治疗和牵引治疗[2]。其中牵引治疗在以往的治疗手段中，以传统颈椎牵引带的应用较为广泛，但是操作便捷性较差，难以获得显著效果[3]。改良后的颈椎牵引对于牵引受力的均匀性可以做出充分保障，能够将牵引效果显著提升[4-5]。外伤性寰枢椎半脱位可以有间接暴力和直接暴力所致，间接暴力多是头部在旋

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转时的微小损伤所致，直接暴力是外力直接作用于颈部所致。外伤性寰枢椎半脱位的症状和体征：头旋转和低头功能受限，转动身体时，必须以双手托住下颌及头部，以保持头与躯干一致。检查：颈部有被迫性体位，C_1、C_2 椎关节处压痛，触及条状隆起，颈部转动受限。寰枢椎间隙左右欠等宽，齿突偏移 1~2 mm 者为轻度半脱位，3~4 mm 为重度半脱位。本文主要针对外伤性寰枢椎半脱位展开讨论。笔者采用改良成人外伤性寰枢椎半脱位牵引疗法治疗 31 例成人外伤性寰枢椎半脱位的患者，现报告如下。

1　临床资料

1.1　一般资料

选取 2018 年 3 月至 2019 年 6 月就诊的 31 例患者，重度寰枢椎半脱位者 16 例，其中寰枢椎间隙左右欠等宽至 4 mm 者 2 例，3 mm 者 14 例；轻度寰枢椎半脱位者 15 例，其中寰枢椎间隙左右欠等宽至 2 mm 者 13 例，1 mm 者 2 例。本组男 15 例，女 16 例，年龄 18~68 岁，平均 39 岁，其中 18~40 岁 10 例，41~60 岁 15 例，51~68 岁 6 例。病程 1~7 d 者 16 例，8~15 d 者 6 例，16 d~1 个月者 6 例，1~2 个月者 2 例，3 个月以上者 1 例。31 例患者均有外伤史。

1.2　病例选择

1.2.1　诊断标准　根据 2001 年骨伤科学诊断标准[6]，有明确外伤史；颈项疼痛、颈部活动明显受限或部分受限；寰枢椎 CT 平扫检查示：寰枢椎间隙左右欠等宽，齿突偏移 1~4 mm。

1.2.2　纳入标准　符合上述诊断标准；年龄 18~68 岁；近期未接受会影响本试验结果的治疗；对本研究知情同意。

1.2.3　排除标准　颈部炎症感染者，颈神经受损者，肿瘤患者，C_1、C_2 粉碎性骨折者；先天性寰枢椎半脱位者。

2　治疗方法

患者端坐椅上，三维多功能牵引床的枕颌牵引套套在患者的枕颌部位，设定在牵引 2 min，放松 10 s 的键上，然后按动三维多功能牵引床开关。牵引角度以后伸位为宜，后伸位（5°~10°）牵引可以防止寰椎向前滑动，加强寰枢关节的稳定性。牵引重量一般以超过头部重量疗效为佳，大致以正常成年人（总）体重的 10%开始，逐渐增量。首次牵引一般从 3~6 kg 开始，每两天增加重量 1 kg，至症状改善后，并以此重量维持直到症状缓解消失。牵引时间为 30 min，每天 2 次，每次牵引过程中，持续牵引 2 min 后放松 10 s，效果比较明显。轻度者 10 d 为 1 个疗程，较重者牵引 2 个疗程，如寰枢椎间隙左右欠等宽 4 mm 常规疗程无好转者，疗程可以增至 2~3 个月。治疗结束 1 周后，颈部疼痛减轻或消失者，CT 复查，进行疗效评定。

3　结果

3.1　疗效评价

根据《中医病症诊断疗效标准》[7]制定。治愈：颈部无疼痛，颈部活动范围正常，CT 检查示寰枢椎间隙正常，齿突居中；治疗结束 1 个月后随访颈部活动正常者。好转：颈部疼痛明显好转，CT 检查示寰枢椎间隙左右欠等宽 1 mm 者。无效：颈部疼痛无减轻，CT 检查示寰枢椎间隙左右欠等宽 2 mm 以上者。

3.2　治疗结果

本组 1 个疗程治愈者 17 例（图 1，2）。2 个疗程治愈者 11 例（图 3，4），好转者 2 例。寰枢椎间隙左右欠等宽 4 mm 者，3 个月治愈者 1 例（图 5，6）。31 例均获随访，时间 1~3 个月，平均 2 个月。

4　讨论

三维多功能牵引床的枕颌牵引是在一个 15°斜角的牵引力下牵引。根据力的分解和合力的计算，牵引力为 F1 除以 cos15°，到患者被牵引的力 F2，根据牛顿第三运动定律，作用力与反作用相等的原理[8]，牵引力为 F1 的力等于患者被牵引的力 F2，而患者自身的重量为 W，刚好沉稳坐在椅上。

寰枢关节有诸多韧带保护相当稳定，但同时也存在潜在旋转不稳的趋势[9]。牵引力首先作用在力的交接点枕寰关节上，继续向下传达至寰枢椎关节以及颈椎部位，使整个颈椎关节牵拉，以致颈部的肌

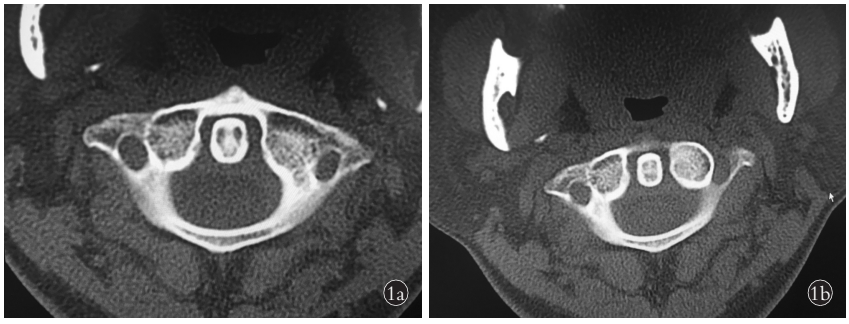

图 1　女性患者，47 岁，外伤致寰枢椎关节半脱位　**1a.** 治疗前 CT 示寰枢椎间隙不对称，右侧约 2 mm，左侧约 3 mm　**1b.** 经过 1 个疗程的牵引治疗后复查 CT 示寰枢椎间隙左右对称，疼痛缓解，活动自如

Fig.1　An 47-year-old female patient with atlantoaxial joint subluxation caused by trauma　**1a.** Pre-treatment CT showed atlantoaxial space was asymmetric, about 2 mm on the right side and about 3 mm on the left side　**1b.** After a course of traction treatment, CT showed that the atlantoaxial space was symmetrical, the pain was relieved and the movement was free

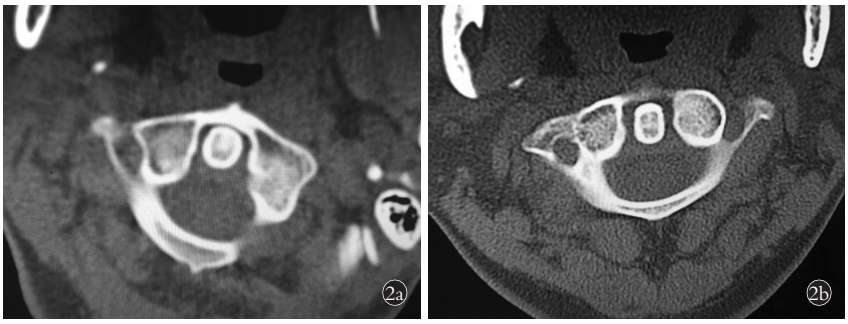

图 2　女性患者，41 岁，外伤致寰枢椎关节半脱位　**2a.** 治疗前 CT 示寰枢椎间隙不对称，右侧约 2 mm，左侧约 3 mm　**2b.** 经过 1 个疗程的牵引治疗后复查 CT 示寰枢椎间隙左右对称，疼痛缓解，活动自如

Fig.2　An 41-year-old female patient with atlantoaxial joint subluxation caused by trauma　**2a.** Pre-treatment, CT showed atlantoaxial space was asymmetric, about 2 mm on the right side and about 3 mm on the left side　**2b.** After a course of traction treatment, CT showed that the atlantoaxial space was symmetrical, the pain was relieved and the movement was free

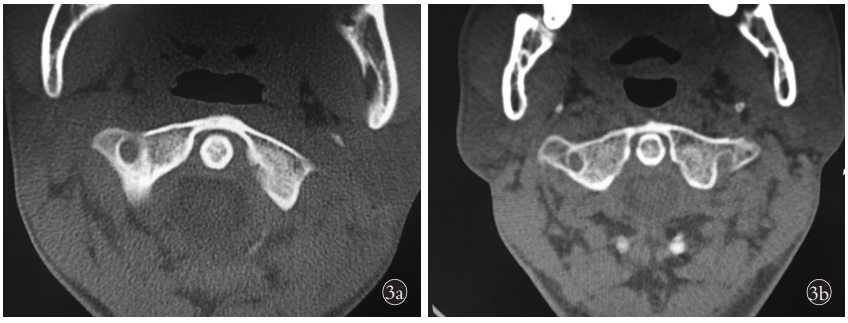

图 3　男性患者，18 岁，外伤致寰枢椎关节半脱位　**3a.** 治疗前 CT 示寰枢椎间隙不对称，右侧约 3 mm，左侧约 5 mm　**3b.** 经过 2 个疗程的牵引治疗后复查 CT 示寰枢椎间隙左右对称，疼痛缓解，活动自如

Fig.3　A 18-year-old male patient with atlantoaxial joint subluxation caused by trauma　**3a.** Pre-treatment CT showed atlantoaxial space was asymmetric, about 3 mm on the right side and about 5 mm on the left side　**3b.** After two courses of traction treatment, CT showed that the atlantoaxial space was symmetrical, the pain was relieved and the movement was free

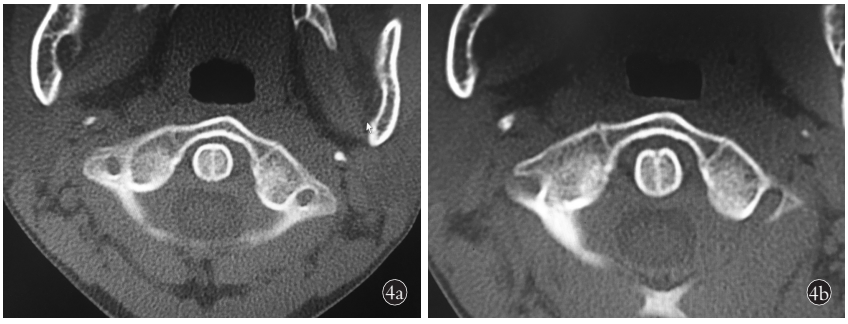

图 4　男性患者，26 岁，外伤致寰枢椎关节半脱位　**4a.** 治疗前 CT 示寰枢椎间隙不对称，右侧约 3 mm，左侧约 5 mm　**4b.** 经过 2 个疗程的牵引治疗后复查 CT 示寰枢椎间隙左右对称，疼痛缓解，活动自如

Fig.4　A 26-year-old male patient with atlantoaxial joint subluxation caused by trauma　**4a.** Pre-treatment CT showed atlantoaxial space was asymmetric, about 3 mm on the right side and about 5 mm on the left side　**4b.** After two courses of traction treatment, the CT showed that the atlantoaxial space was symmetrical, the pain was relieved and the movement was free

群由于牵引力的作用处于收缩状态，紧贴着寰枢椎关节后侧的棘间韧带、棘上韧带、黄韧带、后纵韧带、骶棘肌，两侧的横突间韧带，前侧的前纵韧带，寰枢关节的寰枢外侧关节、寰枢正中关节、齿突尖韧带、翼状韧带、寰枢横韧带、覆膜，处于紧张的收缩力作用，推动半脱位的寰枢椎关节逐渐移动，在每次 2 min 后 10 s 的放松中，颈部的肌群由于牵引力的放松，处于舒张松驰状态 10 s，然后颈部的肌群又由于牵引力的作用处于收缩状态，如此反复颈部肌群的舒缩活动，如同我们手工拔钉子一样，摇松复位，临床上多次不停的间歇性舒缩牵引，半脱位寰枢椎在一个疗程后被复位成功。

此三维多功能牵引床的枕颌牵引力，一般操作要求是 3 min 后放松 30 s，而改为 2 min 后放松 10 s，加大、加快了牵引的频率，是复位效果较好的关键。笔者发现：设定 2 min 的牵引后又放松 10 s，可以有效松解颈肩部肌肉，解除颈部肌肉痉挛，刺激颈肩部末梢神经，有效降低神经紧张，促进颈肩部微循环，加快新陈代谢，恢复椎基底动脉血管的顺应性，促进小脑和前庭的正常供血，促进炎症介质的排出，减少对颈反射感受器的刺激，解除异常颈反射，保证神经冲动能够传入小脑和前庭，最终达到缓解头晕的效果[10]。恰当的牵引放松后使颈部的血液运行通畅，心跳沉稳有力，所以患者牵引颈部舒适，复位后颈部疼痛消除明显。甚至严重疑难者比如寰枢椎间隙左右欠等宽 4 mm 者，经过改进后持续牵引竟能将寰枢椎间隙复位至正常范围。

此种改良的操作方法治疗成人外伤性寰枢椎半脱位，特别是寰枢椎间隙左右欠等宽 3~4 mm 的半脱位，有明显提速的疗效。此

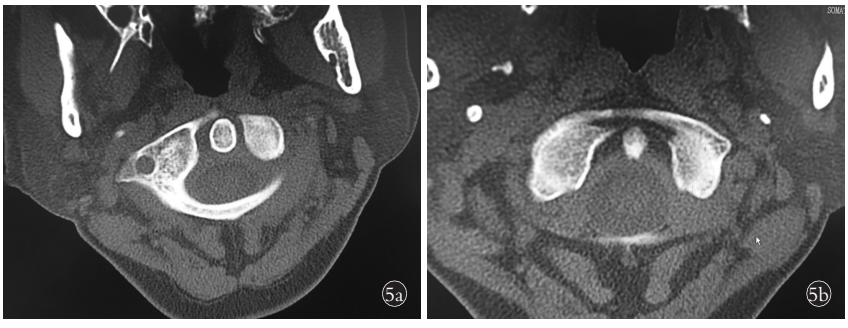

图 5　女性患者，53 岁，外伤致寰枢椎关节半脱位　**5a.** 治疗前 CT 示寰枢椎间隙不对称，右侧约 6 mm，左侧约 2 mm　**5b.** 经过 3 个月的牵引治疗后复查 CT 示寰枢椎间隙左右对称，疼痛缓解，活动自如

Fig.5　A 53-year-old female patient with atlantoaxial joint subluxation caused by trauma　**5a.** Pre-treatment CT showed atlantoaxial space was asymmetric, about 6 mm on the right side and about 2 mm on the left side　**5b.** After 3 months of traction treatment, CT showed that the atlantoaxial space was symmetrical, the pain was relieved and the movement was free

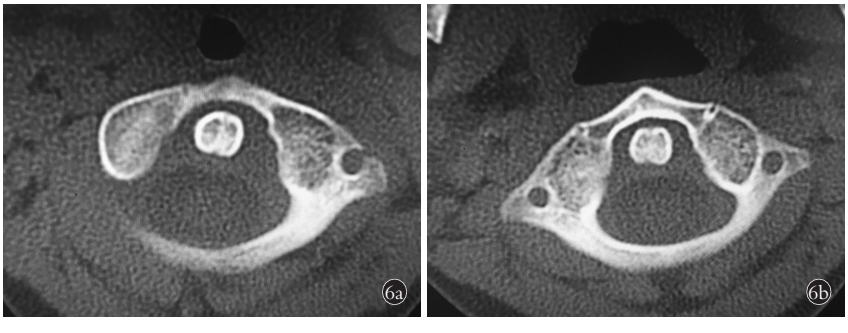

图 6　女性患者，25 岁，外伤致寰枢椎关节半脱位　**6a.** 治疗前 CT 示寰枢椎间隙不对称，右侧约 3 mm，左侧约 7 mm　**6b.** 经过 2 个月的牵引治疗后复查 CT 示寰枢椎间隙左右对称，疼痛缓解，活动自如

Fig.6　A 25-year-old female patient with atlantoaxial joint subluxation caused by trauma　**6a.** Pre-treatment CT showed atlantoaxial space was asymmetric, about 3 mm on the right side and about 7 mm on the left side　**6b.** After 2 months of traction treatment, CT showed that the atlantoaxial space was symmetrical, the pain was relieved and the movement was free

法安全、可靠，患者无不适，疗效较好，值得同道们进一步研究、探讨。

参考文献

[1] 周学龙. 寰枢关节半脱位的结构因素及其伴发症状概述[J]. 医学综述，2008，14(18)：2794–2795.
ZHOU XL. Snmmary of structural factors of atlanto-axial subluxation and its concomitant symptom[J]. Yi Xue Zong Shu, 2008, 14(18): 2794–2795. Chinese.

[2] 隋桐，陈雍君，赵慧毅，等. 寰枢关节不全脱位 50 例临床分析[J]. 中国中医骨伤科杂志，2012，20(3)：9–12.
SHUI T, CHEN YJ, ZHAO HY, et al. Clinical study and discussion about atlantoaxial subluxation[J]. Zhongguo Zhong Yi Gu Shang Ke Za Zhi, 2012, 20(3): 9–12. Chinese.

[3] 彭巍. 推拿手法配合牵引治疗对神经根型颈椎病的临床疗效[J]. 当代医学，2019，25(11)：126–127.
PENG W. Clinical effect of massage combined with traction on cervical spondylotic radiculopathy[J]. Dang Dai Yi Xue, 2019, 25(11): 126–127. Chinese.

[4] 谢玉超. 颈椎牵引与运动疗法联合穴位注射治疗神经根型颈椎病疗效观察[J]. 中国实用神经疾病杂志，2014，17(21)：189–190.
XIE YC. Observation on the curative effect of cervical vertebra traction and exercise therapy combined with point injection in the treatment of cervical radiculopathy[J]. Zhongguo Shi Yong Shen Jing Ji Bing Za Zhi, 2014, 17(21): 189–190. Chinese.

[5] 王然. 颈椎牵引联合中频治疗神经根型颈椎病患者临床疗效及预后[J]. 中国医疗器械信息，2019，25(08)：102–103.
WANG R. Clinical efficacy and prognosis of cervical vertebra traction combined with intermediate frequency in the treatment of cervical radiculopathy[J]. Zhongguo Yi Liao Qi Xie Xin Xi, 2019, 25(8): 102–103. Chinese.

[6] 施杞，王和鸣. 骨伤科学[M]. 北京：人民卫生出版社，2001：809.
SHI Q, WANG HM. Orthopaedics and Traumatology[M]. Beijing: People's Medical Publishing House, 2001: 809. Chinese.

[7] 陈佑邦. 中医病症诊断疗效标准[M]. 南京：南京大学出版社，1994：164.
CHEN YB. Chinese Medicine Disease Diagnosis Curative Effect Standard[M]. Nanjing: Nanjing University Press, 1994: 164. Chinese.

[8] 刘小认. 探索牛顿第三定律教学[J]. 漯河职业技术学院学报，2013，12(2)：162–163.
LIU XR. Explore the teaching of Newton's third law[J]. Luo He Zhi Ye Ji Shu Xue Yuan Xue Bao, 2013, 12(2): 162–163. Chinese.

[9] 郭世绂. 骨科临床解剖学[M]. 济南：山东科学技术出版社，2002：74–77.
GUO SB. Orthopedic Anatomy[M]. Shandong: Shandong Science & Technology Press, 2002: 74–77. Chinese.

[10] 曾顺军. 穴位注射治疗寰枢关节紊乱引起颈性眩晕 30 例疗效观察[J]. 云南中医中药杂志，2011，32(1)：43–44.
ZENG SJ. Treatment of 30 cases of cervical vertigo caused by atlantoaxial joint disorder by acupoint injection[J]. Yun Nan Zhong Yi Zhong Yao Za Zhi, 2011, 32(1): 43–44. Chinese.

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