doi: 10.13241/j.cnki.pmb.2019.23.031

经伤椎椎弓根螺钉固定治疗脊柱骨折的疗效及对患者疼痛、Cobb 角的影响 *

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摘要 目的：探讨经伤椎椎弓根螺钉固定治疗脊柱骨折的疗效及对患者疼痛 、Cobb 角的影响。**方法：**选择 2013 年 2 月至 2018 年 2 月我院接诊的脊柱骨折患者 80 例作为研究对象，以随机数表法分为观察组（n=41）和对照组（n=39）。对照组采用跨伤椎固定治疗，观察组采用经伤椎椎弓根螺钉固定治疗。比较两组患者临床手术指标、日本骨科协会评估治疗（JOA）评分、视觉模拟评分（VAS）、椎体压缩率、Cobb 角水平及伤椎椎体高度。**结果：**观察组患者手术时间、术中出血量及住院时间均显著低于对照组（$P<0.05$）；治疗后，两组患者 JOA 评分、VAS 评分均明显改善（$P<0.05$），且观察组患者 VAS 评分显著低于对照组（$P<0.05$）；治疗后，两组患者椎体压缩率、Cobb 角水平均明显改善（$P<0.05$），且观察组患者椎体压缩率、Cobb 角水平显著低于对照组（$P<0.05$）；两组患者治疗前椎体前、后缘高度无明显差异；治疗后，两组患者椎体前、后缘高度均明显改善（$P<0.05$），且观察组患者椎体前、后缘高度显著高于对照组（$P<0.05$）。**结论：**脊柱骨折患者采用经伤椎椎弓根螺钉固定治疗栓效果显著，可改善患者疼痛 、Cobb 角水平，值得临床推广。

关键词：经伤椎椎弓根螺钉固定；脊柱骨折；疼痛；Cobb 角

中图分类号：R683 **文献标识码：**A **文章编号：**1673-6273(2019)23-4532-04

Curative Efficacy of Fixation by Pedicle Screw of the Injured Vertebrae in Treatment of Spinal Fracturesand Its Effectson Pain and Cobb Angle in Patients*

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ABSTRACT Objective: To study Curative efficacy of Fixation by pedicle screw of the injured vertebrae in treatment of Spinal fracturesand its effectson pain and Cobb Angle in patients. **Methods:** 80 patients with spinal fractures admitted to our hospital from February 2013 to February 2018 were selected as the research objects, were divided into observation group (n=41) and control group (n=39) by random number table method. The control group was treated with transvertebral fixation, and the observation group was treated with transvertebral pedicle screw fixation. Clinical indexes, JOA score, VAS score, vertebral compression rate, Cobb Angle level and vertebral height were compared between the two groups. **Results:** The operation time, intraoperative blood loss and hospital stay in the observation group were significantly lower than those in the control group ($P<0.05$). After treatment, JOA score and VAS score in both groups were significantly improved ($P<0.05$), and the VAS score in the observation group was significantly lower than that in the control group ($P<0.05$). After treatment, the vertebral compression rate and Cobb Angle level in both groups were significantly improved ($P<0.05$), and the vertebral compression rate and Cobb Angle level in the observation group were significantly lower than those in the control group ($P<0.05$). There was no significant difference in the height of anterior and posterior vertebral body between the two groups. After treatment, the height of the anterior and posterior vertebral margins in both groups was significantly improved ($P<0.05$), and the height of the anterior and posterior vertebral margins in the observation group was significantly higher than that in the control group ($P<0.05$). **Conclusion:** Transpedicular pedicle screw fixation is effective in the treatment of spinal fractures, and can improve the level of pain and Cobb Angle in patients, which is worthy of clinical promotion.

Key words: Pedicle screw fixation of the injured vertebrae; Spinal fractures; The pain; Cobb Angle

Chinese Library Classification(CLC): R683 Document code: A

Article ID: 1673-6273(2019)23-4532-04

* 基金项目：北京市自然科学基金项目（71201002）

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（收稿日期：2019-05-30 接受日期：2019-06-26）

前言

脊柱骨折是骨科常见创伤,多发于男性青壮年,大多由外力能量损伤所致,且以胸腰椎骨折最为常见,临床表现为外伤后脊柱的畸形、疼痛等症状,常可并发脊髓损伤,病情严重者甚至可导致截瘫,危及患者的生命[1,2]。故治疗该病在于保持组织结构的完整性,恢复脊柱功能。跨伤椎固定疗法是临床上治疗脊柱骨折的传统手术,但是其对突入椎管骨块及伤椎高度复位效果不佳,且术后可出现肌无力、背部僵硬等并发症,影响患者生活质量,因此,传统手术已逐渐不被接受,临床应寻找更有效的手术方式取代传统手术[3-5]。有研究显示,经伤椎椎弓根螺钉固定在脊柱骨折中有较好的疗效,可防止脊髓进一步损伤[6,7]。经伤椎椎弓根螺钉固定是一种新型治疗脊柱骨折的手术,该手术无需切开肌肉韧带等软组织,避免发生迟发性脊柱不稳,且手术切口小、出血少,术后恢复快,对患者术后的功能锻炼提供有利条件,因此,逐渐被临床运用[8,9]。本研究旨在探讨经伤椎椎弓根螺钉固定治疗脊柱骨折的疗效,并观察其对患者疼痛、Cobb 角的影响。

1 资料与方法

1.1 一般资料

选择 2013 年 2 月 -2018 年 2 月在我院进行治疗的 80 例脊柱骨折患者进行研究。采用简单随机分组法分为观察组和对照组,观察组 41 例,其中男 26 例,女 15 例;年龄 30~56 岁,平均(49.15± 7.52)岁;其中交通事故伤 19 例,高空坠落伤 15 例,钝器打击伤 7 例。对照组男 23 例,女 16 例;年龄 31~57 岁,平均(49.47± 8.13)岁;其中交通事故伤 17 例,高空坠落伤 16 例,钝器打击伤 6 例。两组患者均知情同意并签署知情同意书,且性别、年龄等一般资料比较差异不显著,具有可比性。

纳入标准:(1)单一椎体骨折,并通过 CT 等检查确诊;(2)为 15 d 内新鲜骨折;(3)无严重内科疾病;(4)手术耐受者。排除标准(1)严重骨质疏松者;(2)合并出血性疾病者;(3)合并全身各系统感染、自身免疫性疾病等。

1.2 方法

两组患者均在全麻下进行手术,对照组患者分别将 4 枚钢钉放置在伤椎上下,撑开伤椎两侧并进行固定。观察组患者在伤椎椎弓根钻孔,在骨折椎体内置入两颗通用椎弓根螺钉,安装椎弓根螺钉尾帽,放置连杆。然而,只有损伤椎体的上椎体用椎弓根螺钉尾帽紧固,用来支撑骨折椎体和上椎体,然后再紧固骨折椎体上的螺钉尾帽。

1.3 观察指标

记录两组患者手术临床各指标;疼痛评分均采用视觉模拟评分法[10]进行;JOA 评分越高,脊柱功能越好;记录治疗前后 Cobb 角 / 椎体前、后缘高度。

1.4 统计学分析

以 SPSS18.0 软件包处理,计量资料用均数± 标准差($\bar{x}\pm s$)表示,组间比较使用独立样本 t 检验,$P<0.05$ 表示差异具有统计学意义。

2 结果

2.1 两组手术指标比较

两组手术时间、术中出血量及住院时间比较差异显著($P<0.05$),见表 1。

表 1 两组患者手术指标比较($\bar{x}\pm s$)

Table 1 Comparison of surgical indexes between the two groups($\bar{x}\pm s$)

Groups	n	The operation time (min)	Intraoperative blood loss (mL)	The length of time (d)
Observation group	41	112.71± 13.52	110.65± 16.14	9.81± 1.34
The control group	39	151.09± 19.63	180.67± 25.54	16.59± 2.15
T value		10.228	14.734	17.017
P value		0.000	0.000	0.000

2.2 两组 JOA 评分、疼痛评分比较

治疗后,两组 JOA 评分、VAS 评分较治疗前均明显改善($P<0.05$),且观察组较对照组改善更为明显($P<0.05$),见表2。

表 2 两组 JOA 评分、疼痛评分比较($\bar{x}\pm s$,分)

Table 2 Comparison of JOA score and pain score before and after treatment between the two groups($\bar{x}\pm s$,points)

Groups	n	JOA		VAS	
		Before the treatment	After treatment	Before the treatment	After treatment
Observation group	41	17.74± 1.85	22.14± 1.63	8.54± 2.41	1.42± 0.51
The control group	39	18.13± 1.92	22.47± 2.12	8.59± 2.39	2.55± 0.61
T value		0.925	0.783	0.093	9.006
P value		0.358	0.436	0.926	0.000

2.3 两组患者椎体压缩率、Cobb 角水平比较

治疗后,两组椎体压缩率、Cobb 角均明显降低($P<0.05$),且观察组低于照组($P<0.05$),见表 3。

表 3 两组椎体压缩率、Cobb 角水平比较($\bar{x}\pm s$)

Table 3 Comparison of vertebral compression rate and Cobb Angle between the two groups before and after treatment($\bar{x}\pm s$)

Groups	n	Vertebral body compressibility(%)		Cobb Angle(°)	
		Before the treatment	After treatment	Before the treatment	After treatment
Observation group	41	21.13± 2.68	5.21± 0.64	18.51± 3.42	4.61± 1.41
The control group	39	21.76± 2.56	6.83± 1.75	18.65± 3.39	8.35± 2.71
T value		1.074	5.551	0.184	7.798
P value		0.286	0.000	0.855	0.000

2.4 两组椎体前、后缘高度比较

治疗后，两组椎体前、后缘高度均明显改善($P<0.05$)，且观察组患者椎体前、后缘高度显著高于对照组($P<0.05$)，见表4。

表 4 两组椎体前、后缘高度比较($\bar{x}\pm s$，mm)

Table 4 Comparison of vertebral body height before and after treatment between the two groups($\bar{x}\pm s$，mm)

Groups	n	Height of the anterior vertebral body		Posterior margin vertebral body height	
		Before the treatment	After treatment	Before the treatment	After treatment
Observation group	41	49.15± 0.81	85.49± 8.07	86.42± 5.21	93.41± 6.15
The control group	39	48.98± 0.85	78.51± 8.23	85.96± 6.59	88.14± 6.52
T value		0.916	3.830	0.347	3.720
P value		0.362	0.000	0.729	0.000

3 讨论

脊柱是机体重要支柱，是由椎骨、椎间盘及韧带组成，能够保持机体平衡，承载重量等[11,12]。脊柱骨折是骨科常见疾病，通常是由于直接暴力引起的，由于脊柱内椎管中有脊髓，损伤后可导致残疾或瘫痪，严重影响患者的正常生活降低生活质量[13-15]。手术治疗是临床上治疗脊柱骨折的常用方法，可对伤处准确复位减压，减少对脊髓的创伤，改善患者相关功能[16-18]。

临床上治疗脊柱骨折的常用方法是跨伤椎固定疗法，该方法可有效缓解椎管骨折对神经造成的压迫症状，但这种方法椎体高度和矫正程度的损失明显，容易影响胸椎的稳定性，骨折部位容易移位，使患者进行二次手术，增加患者的痛苦[19-21]。近年来，较多研究显示，经伤椎椎弓根螺钉固定治疗该病效果较佳，手术创伤小，有效促进脊柱弯曲等[22-24]。经伤椎椎弓根螺钉固定主要是通过悬挂进而作用于相邻的椎体，加强脊柱的抗轴向旋转强度，可增加一个固定平面，增加内固定系统强度，且有利于分散固定系统的拔出力和减少相邻位椎问盘压力负荷，避免椎弓根钉骨与金属界面的活动，降低后凸畸形风险，减轻"悬挂效应[25-27]。

本研究结果显示，使用经伤椎椎弓根螺钉固定治疗的患者手术时间、术中出血量及住院时间均低于跨伤椎固定治疗的患者，且两组椎体前、后缘高度差异显著，Rajanish R[28]等研究也证实了经伤椎椎弓根螺钉固定的治疗效果明显优于跨伤椎固定治疗。提示，经伤椎椎弓根螺钉固定治疗脊柱骨折效果明显，可有效改善患者术中各指标，患者腰椎稳定性更突出。分析是因为经伤椎椎弓根螺钉固定能够分散内固定系统的拔出力，降低椎弓根钉骨的活动，同时增加固定点，增加内固定系统强度，同时能够协助骨折椎体的复位，使伤椎更好的达到解剖复位，最终改善患者的椎体前、后缘高度。Adams A J[29]等研究表明，经伤椎椎弓根螺钉固定治疗脊柱骨折效果良好，可有效改善患者术后脊柱矫正度，明显恢复患者椎体高度。本研究结果还显示，经伤椎椎弓根螺钉固定治疗的患者 VAS 评分、椎体压缩率、Cobb 角水平显著低于使用跨伤椎固定疗法的患者，提示，经伤椎椎弓根螺钉固定可有效改善患者疼痛症状，有利于患者伤椎前缘高度和椎体后凸 Cobb 角恢复，与 Bagga R S[30]等研究结果相似。分析是因为经伤椎椎弓根螺钉固定能够提高伤椎两侧螺钉向心性与顶压伤椎螺钉明显向前，促进脊柱生理曲度和椎前缘高度恢复，且受到的弯矩要明显小于跨伤椎固定，降低胸腰椎骨折后凸应力，更好维持脊柱矫正度。

综上所述，脊柱骨折患者采用经伤椎椎弓根螺钉固定治疗栓效果显著，可改善患者疼痛 、Cobb 角水平，值得临床推广。

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