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椎体加椎间植骨融合术在腰椎爆裂性骨折患者中的应用效果与安全性探究*

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摘要 目的:探讨椎体加椎间植骨融合术在治疗腰椎爆裂性骨折患者中的临床效果及安全性。**方法:**选取 2016 年 12 月~2017 年 10 月我院骨科收治的腰椎爆裂性骨折患者 90 例,按照手术方式将患者分成研究组和对照组,每组 45 例。研究组给予后路内固定术联合椎体加椎间植骨术治疗,对照组给予后路内固定术联合后外侧植骨术治疗。比较两组患者的手术时间、手术出血量以及术后 3 个月和 12 个月的椎体 Cobb 角、患者术后骨折愈合情况、内固定有效情况。**结果:**研究组手术时间、术中出血量、术后 3 个月和 12 个月椎体 Cobb 角明显短于或低于对照组,但骨折愈合率、内固定有效率显著高于对照组,组间差异均有统计学意义($P < 0.05$)。**结论:**椎体加椎间植骨融合术治疗腰椎爆裂性骨折的临床综合效果显著优于后路内固定术联合后外侧植骨术治疗,且安全性较好。

关键词:椎体加椎间植骨融合术;腰椎爆裂性骨折;应用效果;安全性

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Exploration of the Application Effect and Safety of Vertebral Body and Interbody Fusion for the Patients with Lumbar Burst Fracture*

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ABSTRACT Objective: To investigate the clinical efficacy and safety of vertebral body fusion with interbody fusion in the treatment of lumbar burst fractures. **Methods:** 90 patients with lumbar burst fractures treated in the department of orthopaedics from December 2016 and October 2017 were chosen. According to their surgical method, the patients were divided into the study group and the control group with 45 patients in each group. The study group was given posterior internal fixation with vertebral body and interbody fusion. The control group was given posterior internal fixation and posterolateral bone grafting. The operation time, the amount of blood loss, the Cobb angle of the vertebral body at 3 months and 12 months after operation, the fracture healing of the patient, and the effective condition of internal fixation were compared between two groups. **Results:** The operative time, the amount of intraoperative blood loss, the vertebral Cobb angle at 3 months and 12 months after surgery of study group were significantly lower than those of the control group ($P < 0.05$). The fracture healing rate and internal fixation efficiency were significantly better than those of the control group ($P < 0.05$). **Conclusions:** The clinical comprehensive effect of vertebral body and interbody fusion for the treatment of lumbar burst fractures is much better than posterior internal fixation and posterolateral bone grafting, and it is also a safety method.

Key words: Vertebral body plus interbody fusion; Lumbar burst fracture; Application effect; Safety

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前言

随着社会工业化进程的不断推进以及人口老龄化进程的不断加快,腰椎爆裂性骨折的临床发病率显著升高,已成为制约患者工作和生活能力的重要原因之一^[1,2],开展腰椎爆裂性骨折可靠的治疗方法具有重要的临床意义。该病患者普遍伴有脊髓与神经根损伤,绝大多数需要进行手术治疗。单纯椎弓根内固定治疗的方式效果显著,但难以维持脊柱持久稳定。植骨术

在治疗实践中表现了一定的临床优势,是增加内固定术稳定性的一种有效方法,但植骨方式部位尚具有一定争议^[2-5]。鉴于此,本研究主要探讨了椎体加椎间植骨融合术治疗腰椎爆裂性骨折患者的疗效及安全性,以期临床实践提供参考依据。

1 资料与方法

1.1 临床资料

本研究纳入 2016 年 12 月~2017 年 10 月保定市第一医院

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骨科收治的腰椎爆裂性骨折患者共计 90 例。其中, 男性患者 49 例, 女性患者 41 例, 年龄 26~55 岁, 平均年龄(46.55± 8.29) 岁, 因坠落受伤的患者 37 例, 因暴力受伤的患者 53 例。按照患

者手术方式分成研究组和对照组, 每组患者 45 例。两组基线比较无统计学差异, 具有可比性(表 1)。

表 1 两组患者基线资料比较

Table 1 Comparison of the general information between two groups

Groups	N	Age	Gender		Reason of injury	
			Male(n)	Female(n)	Fall off(n)	Violence(n)
Study Group	45	46.45± 8.28	24	21	19	26
Control Group	45	46.63± 8.30	25	20	18	27
χ^2	-	0.103	0.0448		0.0459	
P value	-	0.9182	0.8324		0.8304	

1.2 手术方法

1.2.1 研究组 本组患者给予后路内固定术联合椎体加椎间植骨术。治疗方法: 麻醉满意后, 取俯卧位, 以伤椎位置为基准做切口, 充分暴露伤椎以及局部相关组织, 于爆裂骨折相邻椎体钻入椎弓根螺钉, 采用撑开器促进伤椎复位, 并结合患者的个体受伤差异情况对畸形状态进行适当调整。对患者局部的椎管狭窄情况进行全面探查, 并采用一侧切开的方式进行修补和相关复位操作, 确保神经根压迫的有效解除。对植骨适当修剪后, 嵌入椎间隙以及部分估值缺损的空虚伤椎椎体, 充分接触卡压使植骨骨质夯实。完成椎体附件重建, 上连接棒并加压, 恢复生理弯曲, 留置引流, 关闭切口。

1.2.2 对照组 本组患者给予后路内固定术联合后外侧植骨术, 后路内固定术方法同治疗组, 并将手术视野扩大, 打磨椎板、横突及关节突, 将减压切除修剪成的骨颗粒植入之前打磨

的植骨床, 形成后外侧路融合。

1.3 观察指标

本研究的观察指标主要包括: 手术时间、手术出血量以及术后 3 个月和 12 个月的椎体 Cobb 角、术后骨折愈合及内固定的情况。

1.4 统计学方法

采用 SPSS.17.0 软件分析数据, 两组计数资料的比较采用 χ^2 检验, 两组计量资料的比较采用 t 检验, 以 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 两组手术指标的比较

研究组手术时间较对照组明显缩短、术中出血量显著减少, 组间比较均具有统计学差异($P < 0.05$), 见表 2。

表 2 两组患者手术指标的比较

Table 2 Comparison of the operation index between two groups

Groups	N	Operative time	The amount of blood loss
		(min)	(mL)
Study Group	45	102.38± 19.34	357.34± 31.29
Control Group	45	141.23± 20.34	412.34± 29.34
t value	-	9.2854	8.6015
P value	-	0.0000	0.0000

2.2 两组患者术后椎体 Cobb 角比较

手术后 3 个月和 12 个月, 研究组椎体 Cobb 角均明显低于

对照组, 组间比较均有统计学差异($P < 0.05$), 见表 3。

表 3 两组患者术后椎体 Cobb 角的比较

Table 3 Comparison of the vertebral Cobb angle after surgery between two groups

GroupS	N	Vertebral Cobb angle	
		At 3 months after surgery	At 12 months after surgery
Study Group	45	3.36± 2.12	3.77± 1.28
Control Group	45	5.74± 3.22	11.84± 6.14
t value	-	4.1413	8.6312
P value	-	0.0001	0.0000

2.3 两组患者术后骨折愈合情况、内固定有效情况比较

研究组患者的骨折愈合率、内固定有效率均高于对照组,

组间对比差异有统计学意义($P < 0.05$), 见表 4。

表 4 两组患者术后骨折愈合及内固定有效情况比较

Table 4 Comparison of the fracture healing condition and the effective condition of internal fixation between two groups

Groups	N	The fracture healing condition (n, %)	The effective condition of internal fixation(n, %)
Study Group	45	43,95.56	45,100.00
Control Group	45	30,66.67	35,77.78
t value	-	12.2562	11.2500
P value	-	0.0005	0.0008

3 讨论

临床上,脊柱骨折发生的主要原因是间接的外力,也有部分骨折患者是由直接外力所导致^[6]。胸腰椎爆裂性骨折是由于轴向负荷引起的椎间盘组织进入终板,导致椎体破裂^[7],治疗时注意及时解除脊髓神经压迫,还需要增强患者的脊柱稳定性,避免可能出现的继发性损伤^[8]。胸腰椎爆裂骨折患者的临床治疗以内固定术治疗方式为主,临床上常采用单纯椎弓根内固定治疗的方式,能够在较短时间内很大程度上实现解剖复位,同时也能够显著改善神经压迫的相关症状^[9]。但众多临床研究显示单纯椎弓根内固定治疗术后患者容易出现复位丢失、迟发性后凸畸形等相关并发症^[10],要维持脊柱持久稳定绝对不能仅凭内固定方式完成^[11,12]。因此,探究一种更为有效和安全的腰椎爆裂性骨折手术方式具有十分重要的意义。

随着医学技术的不断发展,在临床治疗腰椎爆裂性骨折的过程中,植骨融合术逐渐兴起。该法使内固定承重减轻,有效避免内固定物疲劳及断裂,从而获得较为持久的稳定性^[8,13-15]。采用传统后外侧植骨融合术治疗方式只能对于后柱进行一定程度的加强,而对于前、中柱的加强效果有限^[16]。从影像学表现上可以看到伤椎高度的恢复效果并不理想,骨小梁结构的修复状态也不完美,甚至可能出现椎体内腔隙^[17]。该手术对患者的后方结构产生严重损伤,降低了骨性的融合率^[18],并且对于无神经损伤的患者长期健康相关生活质量产生影响^[19]。但是采用椎体加椎间植骨融合术治疗方式能够有效的克服传统后外侧植骨融合术治疗方式的缺点,采用植入骨颗粒进行填充的方式,能够有效的填满伤椎复位后的空隙,在压应力刺激或血运滋养下提高骨细胞的增殖活跃程度,达到骨性愈合,并且增强了前、中柱的承载力和脊柱的稳定性,是最符合人体生物力学特点的骨性融合方式^[20]。较后外侧植骨融合,术中损伤小,节段性骨性融合好,临床综合效果十分显著^[21]。

本研究结果显示给予椎体加椎间植骨融合术的研究组患者手术时间、术中出血量、术后3个月和12个月椎体 Cobb 角均明显低于对照组,但骨折愈合率和内固定有效率均显著高于对照组,与国内外类似报道结果相符,是一种理想的植骨融合方式,值得临床推广^[16,20]。本研究对临床最常用的植骨融合方式进行比较,且患者来源较单一,下一步计划开展多中心临床试验、增加样本量,对比多种植骨融合方式,以期获得更全面的临床证据。

综上,椎体加椎间植骨融合术治疗腰椎爆裂性骨折的临床综合效果显著优于后路内固定术联合后外侧植骨术治疗,且安全性较好。

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(下转第 1348 页)

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(上接第 1327 页)

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