

doi: 10.13241/j.cnki.pmb.2017.09.032

PLIF 与 TLIF 手术治疗老年单节段腰椎退变性疾病的临床疗效对比

王剑敏 陈晓勇 黄凤琪 李小荣 邓建龙

(解放军第 174 医院骨科 福建 厦门 361000)

摘要 目的:探讨改良后路腰椎体间融合术(PLIF)与改良经椎间孔入路腰椎体间融合术(TLIF)手术治疗老年单节段腰椎退变性疾病的临床疗效。**方法:**收集 2009 年 1 月-2015 年 1 月期间我院收治的经确诊为老年单节段腰椎退变性疾病的 80 例患者,按照随机数字表法分为观察组和对照组,各 40 例;观察组患者采用 TLIF 手术,对照组患者采用 PLIF 手术;比较两组患者手术前后腰背部疼痛程度(VAS 评分)与活动功能(ODI 评分),临床指标及并发症发生率。**结果:**观察组患者手术时间、术中出血量及术后引流量均明显短于或少于对照组患者($P<0.05$);两组患者手术前腰背部 VAS 评分与 ODI 评分比较差异无统计学意义($P>0.05$),手术后 6 个月,两组患者腰背部 VAS 评分与 ODI 评分均明显低于手术前($P<0.05$),而组间比较差异无统计学差异($P>0.05$);观察组术后并发症总发生率为 5.00%(2/40),显著低于对照组的 22.50%(9/40),差异有统计学差异($P<0.05$)。**结论:**PLIF 与 TLIF 手术治疗老年单节段腰椎退变性疾病患者在改善腰背部疼痛程度与腰椎活动功能中的疗效相当,但 TLIF 手术有助于显著缩短手术时间,降低术中出血量与术后引流量,降低术后并发症发生风险,值得临床推广应用。

关键词:后路腰椎体间融合术;经椎间孔入路腰椎体间融合术;老年;单节段;腰椎退变

中图分类号:R681.5 **文献标识码:**A **文章编号:**1673-6273(2017)09-1719-03

Comparison of Clinical Efficacy of PLIF and TLIF Operation for Elderly Patients with Single Segmental Lumbar Degenerative Disease

WANG Jian-min, CHEN Xiao-yong, HUANG Feng-qi, LI Xiao-rong, DENG Jian-long

(Department of Orthopedics, The 174th Hospital of PLA, Xiamen, Fujian, 361000, China)

ABSTRACT Objective: To investigate the clinical efficacy of posterior lumbar interbody fusion (PLIF) and transforaminal lumbar interbody fusion (TLIF) operation for elderly patients with single segmental lumbar degenerative disease. **Methods:** 80 cases of elderly patients with lumbar degenerative disease were selected from January 2009-January 2015, in accordance with the random number table, were divided into group and control group, 40 cases in each group, the observation group were given TLIF operation, and control group were treated with PLIF; Compared with the two groups of patients before and after the operation of lumbar pain degree (VAS score) and activity function (ODI score), clinical index and incidence of complications. **Results:** The operation time, intraoperative blood loss and postoperative drainage volume in the observation group were significantly shorter than those in the control group ($P<0.05$) and two groups had no statistical significance in patients with frontal back VAS score and ODI score ($P>0.05$), 6 months after surgery, the two groups of patients with lumbar back VAS score and ODI score were significantly lower than before surgery ($P<0.05$), and there was no significant difference between the groups ($P>0.05$); The incidence of postoperative complications was 5.00%(2/40) in the observation group, which was significantly lower than that in the control group 22.50%(9/40), the difference was statistically significant ($P<0.05$). **Conclusion:** PLIF and TLIF in the treatment of elderly patients with single segment lumbar degenerative disease in improving the curative effect of lumbar back pain and activity function of lumbar vertebrae in quite, but TLIF helps to significantly shorten operation time, reduce intraoperative blood loss and postoperative drainage, reduce the postoperative complication risk. It is worthy of clinical application.

Key words: Posterior lumbar interbody fusion; Transforaminal lumbar interbody fusion; Elderly; Single segment; Lumbar degeneration

Chinese Library Classification(CLC): R681.5 **Document code:** A

Article ID: 1673-6273(2017)09-1719-03

前言

退变性关节疾病好发于负重较大的膝关节、髋关节,脊柱及手指关节等部位,是因为长时间劳损导致的结果,所以,要尽量避免过度及长期负重^[1]。老年单节段腰椎退变性疾病经过椎

作者简介:王剑敏(1975-),男,硕士,主治医师,从事创伤骨科方面的研究,E-mail:wangjianmin1975@sina.com

(收稿日期:2016-09-27 接受日期:2016-10-21)

间盘老、关节增生等退化,将会引起一系列症状及体征,严重影响老年人的腰椎机械活动、日常生活与活动^[2-3]。与此同时,由于医疗诊断技术的发展和知识水平的提高,对该类疾病的早期诊断能力也有了提升。随着腰椎融合术的发展,改良后路腰椎体间融合术(Posterior Lumbar Interbody Fusion, PLIF)与改良经椎间孔入路腰椎体间融合术(Transforaminal Lumbar Interbody Fusion, TLIF)手术广泛应用于老年单节段腰椎退变性疾病的治疗中^[4]。本研究通过比较 PLIF 与 TLIF 手术治疗老年单节段

腰椎退变性疾病临床疗效差异,以指导老年单节段腰椎退变性疾病临床治疗,现报道如下。

1 资料与方法

1.1 一般资料

收集 2009 年 1 月 -2015 年 1 月期间我院收治的经确诊为老年单节段腰椎退变性疾病的 80 例患者。纳入标准:(1)全部患者具有手术适应症;(2)所有患者知情同意,且经医学伦理协会批准。排除标准:(1)合并肝肾功能障碍、凝血功能障碍者;(2)不适合手术者。按照随机数字表法分为观察组和对照组,各 40 例;观察组中男性 15 例,女性 25 例,年龄 60~80 岁,平均(71.21± 5.21)岁,病程 1.3~12 年,平均(4.91± 1.24)年,疾病类型:腰椎滑脱症 8 例,腰椎管狭窄症 15 例,椎间盘突出症 11 例,退行性腰椎不稳症 6 例;对照组男 16 例,女 24 例,年龄 60~81 岁,平均(71.18± 5.17)岁,病程 1.3~11 年,平均(4.94± 1.18)年,疾病类型:腰椎滑脱症 7 例,腰椎管狭窄症 16 例,椎间盘突出症 13 例,退行性腰椎不稳症 4 例。两组基线资料对比差异无统计学意义($P>0.05$),具有可比性。

1.2 手术方法

所有患者均给予气管内插管下全身麻醉,腹部悬空俯卧位,给予钉棒内固定系统,使用天津正天公司生产的钛合金 Cage 椎间融合器。观察组患者采用 TLIF 手术,对照组患者采用 PLIF 手术。全部患者术后均采用脱水与激素类药物 3~5 d,留置双腔引流管 1~5 d,对术后引流量进行计算,当引流量低于 50 mL 时拔除引流管,复查腰椎正侧位 X 摄片。术后第 2 d 开始嘱咐患者床上四肢活动,2~5 d 后佩戴腰围实施下床训练。

1.2.1 TLIF 手术 观察组患者切除患侧部分椎板与责任间隙小关节内侧 1/2,充分显露并保护椎间孔、硬脊膜与神经根,于神经根外侧与硬膜囊开窗,切开纤维环,彻底摘除髓核,清理软骨板,充分显露椎间隙,植入并夯实自体骨粒,植入合适的填充自体骨粒的钛合金 Cage 椎间融合器,加压固定椎间隙。

1.2.2 PLIF 手术 对照组患者采用后正中切开并暴露病变椎间隙,参照交点法或人字嵴法植钉、安棒、固定,对黄韧带、椎板、棘突进行清除,牵开并保护硬脊膜与神经根,采用尖刀沿椎间隙横向切开纤维环与后纵韧带,清理软骨板,充分显露椎间隙后植入并夯实自体骨粒,植入合适的填充自体骨粒的钛合金 Cage 椎间融合器,加压固定椎间隙。

1.3 观察指标

对比两组患者的手术时间、术中出血量以及术后引流量的差异;比较两组患者手术前、手术后 6 个月腰背部疼痛程度(VAS 评分)^[9]与活动功能(ODI 评分)^[10]的差异;比较两组患者术后并发症(植骨未融合、内固定失败、神经损伤、硬膜损伤)发生率。

1.4 统计学方法

SPSS20.0 软件包进行录入分析,计量资料用($\bar{x} \pm s$)表示,行 t 检验,计数资料用%表示,行 χ^2 检验, $P<0.05$ 时有统计学意义。

2 结果

2.1 两组患者临床指标对比

观察组手术时间、术中出血量及术后引流量均显著低于或少于对照组,差异具有统计学意义($P<0.05$),详见表 1。

表 1 两组患者临床指标对比($\bar{x} \pm s$)

Table 1 Comparison of clinical index in two groups($\bar{x} \pm s$)

Groups	N	Operation time(min)	Operation bleeding volume (mL)	Postoperative drainage volume(mL)
Observation group	40	120.35± 21.41	161.34± 34.25	304.26± 62.14
Control group	40	153.64± 30.25	213.25± 46.98	384.64± 71.24
t		5.21	6.01	4.99
P		<0.05	<0.05	<0.05

2.2 两组患者手术前后腰背部 VAS 评分与 ODI 评分比较

术前两组患者腰背部 VAS 评分与 ODI 评分无显著差异($P>0.05$),手术后 6 个月,两组患者腰背部 VAS 评分与 ODI 评

分均显著低于手术前,差异具有统计学意义($P<0.05$),两组组间比较差异无统计学差异($P>0.05$),详见表 2。

表 2 两组患者手术前后腰背部 VAS 评分与 ODI 评分的比较($\bar{x} \pm s$, 分)

Table 2 Comparison of VAS score and ODI score of patients in the two groups before and after operation ($\bar{x} \pm s$, score)

Groups	N	VAS score		ODI score	
		Before operation	6 months after the operation	Before operation	6 months after the operation
Observation group	40	7.15± 2.44	1.32± 1.24*	50.36± 5.98	12.54± 3.24*
Control group	40	7.13± 2.39	1.41± 1.33*	50.37± 5.87	13.04± 4.01*
t		1.24	1.39	1.05	2.01
P		>0.05	>0.05	>0.05	>0.05

Note: compared with before operation, * $P<0.05$.

2.3 两组患者术后并发症发生率比较

观察组术后发生植骨未融合 1 例、内固定失败 1 例,并发症总发生率为 5.00%(2/40),对照组术后发生植骨未融合 1 例、内固定失败 2 例、神经损伤 3 例、硬膜损伤 3 例,并发症总发生率为 22.50%(9/40),两组术后并发症发生率对比,具有显著差异($\chi^2=4.121, P<0.05$)。

3 讨论

腰椎作为人体躯干活动的枢纽,一切身体活动都在增加着腰椎的负担,由于年龄的不断增长,长期超负荷的承载,腰椎便会加快老化的步伐,并且通过外力作用下,改变激发病理,从而引起腰腿疼痛及神经功能障碍。腰椎在退变的过程中常常会出现僵硬,腰椎退变性不稳定的主要表现是腰椎滑脱。近年来,随着脊柱外科手术的普及发展,腰椎融合手术对于治疗老年单节段腰椎退变性疾病的术后效果显著,但是运用何种手术方式因医生的掌握程度而存在争执。PLIF 与 TLIF 手术广泛应用于老年单节段腰椎退变性疾病的治疗中。TLIF 手术时手术切除部位位于椎间上位神经根的下方,神经根显露方法较为简单,且充分避免牵拉硬膜囊与神经根,对神经根管达到充分减压的目的,且不需显露椎管内硬膜,充分降低神经根损伤与硬膜损伤等风险^[9-11]。因此,TLIF 手术最大程度保持后侧复合体,保持内源性稳定功能。相关研究显示,PLIF 对老年单节段腰椎退变性疾病的腰背部疼痛程度与腰椎活动功能的改善效果较佳^[12-14]。本研究通过比较 PLIF 与 TLIF 手术治疗老年单节段腰椎退变性疾病的临床疗效差异,以指导老年单节段腰椎退变性疾病的手术方式的选择。

本研究结果显示,TLIF 手术患者手术时间明显短于 PLIF 手术患者,术中出血量与术后引流量均明显少于 PLIF 手术患者,提示了 TLIF 手术具有缩短手术时间,减少术中出血量与术后引流量等优势,这与 Ha KY 等学者的研究结果一致^[15,16]。手术后 6 个月,全部患者腰背部 VAS 评分与 ODI 评分均明显低于手术前,但两种手术方式患者的腰背部 VAS 评分与 ODI 评分比较差异无统计学意义($P>0.05$),提示两种手术方式在改善腰背部疼痛程度与腰椎功能中的疗效相当,这可能和 TLIF 是 PLIF 手术的一种精细化和最近对腰椎受累的脊柱疾病施行的流行的外科治疗手术有关^[17,18]。TLIF 手术患者术后并发症总发生率显著低于 PLIF 手术患者,差异具有统计学意义($P<0.05$)。研究揭示了两种手术方式在改善腰背部疼痛程度与腰背部中的效果相近,但 TLIF 手术在手术时间、术中出血量、术后引流量与术后并发症发生风险等具有明显的优势,与相关文献结果相一致^[19,20]。

综上所述,PLIF 与 TLIF 手术治疗老年单节段腰椎退变性疾病患者在改善腰背部疼痛程度与腰椎活动功能中的疗效相当,但 TLIF 手术能够显著缩短手术时间,降低术中出血量与术后引流量,降低术后并发症发生风险,值得临床推广应用。

参考文献(References)

- [1] Asil K, Yaldiz C. Retrospective Comparison of Radiological and Clinical Outcomes of PLIF and TLIF Techniques in Patients Who Underwent Lumbar Spinal Posterior Stabilization[J]. Medicine (Baltimore), 2016, 95(17): e3235
- [2] Yang EZ, Xu JG, Liu XK, et al. An RCT study comparing the clinical and radiological outcomes with the use of PLIF or TLIF after instrumented reduction in adult isthmic spondylolisthesis [J]. Eur Spine J, 2016, 25(5): 1587-1594
- [3] Jin-Tao Q, Yu T, Mei W, et al. Comparison of MIS vs. open PLIF/TLIF with regard to clinical improvement, fusion rate, and incidence of major complication:a meta-analysis[J]. Eur Spine J, 2015, 24(5): 1058-1065
- [4] Barbagallo GM, Albanese V, Raich AL, et al. Lumbar Lateral Interbody Fusion (LLIF): Comparative Effectiveness and Safety versus PLIF/TLIF and Predictive Factors Affecting LLIF Outcome [J]. Evid Based Spine Care J, 2014, 5(1): 28-37
- [5] Liao JC, Chiu PY, Chen WJ, et al. Surgical outcomes after instrumented lumbar surgery in patients of eighty years of age and older [J]. BMC Musculoskelet Disord, 2016, 17(1): 402
- [6] Iwai K, Koyama K, Okada T, et al. Asymmetrical and smaller size of trunk muscles in combat sports athletes with lumbar intervertebral disc degeneration[J]. Springerplus, 2016, 5(1): 1474
- [7] Cheung PW, Tam V, Leung VY, et al. The paradoxical relationship between ligamentum flavum hypertrophy and developmental lumbar spinal stenosis[J]. Scoliosis Spinal Disord, 2016, 11(1): 26
- [8] Cui YZ, Yang XH, Liu PF, et al. Preliminary study on diagnosis of lumbar disc degeneration with magnetic resonance T1p, T2 mapping and DWI quantitative detection technologies [J]. Eur Rev Med Pharmacol Sci, 2016, 20(16): 3344-3350
- [9] Yue ZJ, Liu RY, Lu Y, et al. Middle-period curative effect of posterior lumbar intervertebral fusion (PLIF) and interspinous dynamic fixation (Wallis) for treatment of L4/5 degenerative disease and its influence on adjacent segment degeneration [J]. Eur Rev Med Pharmacol Sci, 2015, 19(23): 4481-4487
- [10] Tang S. Comparison of posterior versus transforaminal lumbar interbody fusion using finite element analysis. Influence on adjacent segmental degeneration[J]. Saudi Med J, 2015, 36(8): 993-996
- [11] Lu K, Liliang PC, Wang HK, et al. Reduction in adjacent-segment degeneration after multilevel posterior lumbar interbody fusion with proximal DIAM implantation [J]. J Neurosurg Spine, 2015, 23(2): 190-196
- [12] Kim SM, Rhee W, Ha S, et al. Influence of alendronate and endplate degeneration to single level posterior lumbar spinal interbody fusion [J]. Korean J Spine, 2014, 11(4): 221-226
- [13] Yang M, Li C, Chen Z, et al. Short term outcome of posterior dynamic stabilization system in degenerative lumbar diseases [J]. Indian J Orthop, 2014, 48(6): 574-581
- [14] Okuda S, Oda T, Yamasaki R, et al. Repeated adjacent-segment degeneration after posterior lumbar interbody fusion [J]. J Neurosurg Spine, 2014, 20(5): 538-541
- [15] Ha KY, Son JM, Im JH, et al. Risk factors for adjacent segment degeneration after surgical correction of degenerative lumbar scoliosis [J]. Indian J Orthop, 2013, 47(4): 346-351
- [16] Moreau PE, Ferrero E, Riouallon G, et al. Radiologic adjacent segment degeneration 2 years after lumbar fusion for degenerative spondylolisthesis [J]. Orthop Traumatol Surg Res, 2016, 102(6): 759-763

- Medicine & Pharmacy, 2015, 32(04): 289-291+305
- [8] 薛刚, 王前进, 黄昌林, 等. 谐振对强迫体位下兔血清骨代谢标志物的影响[J]. 实用医药杂志, 2015, 32(01): 6-7
Xue Gang, Wang Qian-jin, Huang Chang-lin. Influence of syntony on the serum bone metabolism markers of rabbits at forced posture[J]. Practical Journal of Medicine & Pharmacy, 2015, 32(01): 6-7
- [9] 杜云飞, 黄昌林, 刘剑, 等. 不同干预措施对兔抗谐振后血清标志物的影响[J]. 现代生物医学进展, 2015, 15(02): 245-247+264
Du Yun-fei, Huang Chang-lin, Liu Jian, et al. The Effects of Various Interventions of Syntony on the Serum Markers of Rabbits in the Forced Posture [J]. Progress in modern biomedicine, 2015, 15(02): 245-247+264
- [10] 黄昌林, 张莉, 薛刚. 制定《军事训练伤诊断标准及防治原则》的说明[J]. 人民军医, 2002, 45(10): 559-560
Huang Chang-lin, Zhang Li, Xue Gang. The explanation of <The diagnostic standard and the rule of prevention of military training related injuries>[J]. People's military surgeon, 2002, 45(10): 559-560
- [11] 黄昌林, 张莉, 薛刚. 《军事训练伤诊断标准及防治原则》的编制应用研究及其意义[J]. 解放军医学杂志, 2004, 29(04): 286-288
Huang Chang-lin, Zhang Li, Xue Gang. The complication of < Diagnostic criteria, principles of prophylaxis and treatment of military training injuries > [J]. Medical journal of Chinese PLA, 2004, 29(04): 286-288
- [12] 刘剑, 黄昌林, 徐鹏, 等. 0 期诊断技术对新兵训练性下腰痛的应用价值研究[J]. 人民军医, 2015, 58(12): 1381-1382
Liu Jian, Huang Chang-lin, Xu Peng, et al. The value of zero stage diagnostic technique as an effective prevention method against low back pain[J]. People's military surgeon, 2015, 58(12): 1381-1382
- [13] 赵召辉, 刘秋明. 某部军事训练伤发生原因分析及对策[J]. 解放军预防医学杂志, 2012, 30(06): 455-456
Zhao Zhao-hui, Liu Qiu-ming. The analysis of the reasons and resolution for military training related injuries [J]. Journal of preventive medical clinical of PLA, 2012, 30(06): 455-456
- [14] 张建, 王玉挺, 刘小义. 医学干预对武警某部军事训练伤的影响[J]. 现代生物医学进展, 2011, 11(23): 4496-4498+4514
Zhang Jian, Wang Yu-ting, Liu Xiao-yi. Effect of Medical Intervention on Military Training Injuries of the Armed Police Forces [J]. Progress in Modern Biomedicine, 2011, 11(23): 4496-4498+4514
- [15] Childs J D, Wu S S, Teyhen D S, et al. Prevention of low back pain in the military cluster randomized trial: effects of brief psychosocial education on total and low back pain-related health care costs [J]. Spine J, 2014, 14(4): 571-583
- [16] 陈德胜, 金群华. 细胞因子和炎性介质与盘源性下腰痛[J]. 国外医学·骨科学分册, 2004, 25(06): 363-365
Chen De-sheng, Jin Qun-hua. Cytokines and inflammatory mediators and disc derived low back pain[J]. Foreign Medical Department of orthopedics, 2004, 25(06): 363-365
- [17] 沈影超, 沈忆新. 血清 6-keto-PGE₁ α 水平对监测盘源性腰痛的临床价值[J]. 颈腰痛杂志, 2008, 29(03): 202-205
Shen Ying-chao, Shen Yi-xin. Clinical significance of the level of serum 6- keto- PGE₁ α between discogenic low lack pain[J]. The Journal of Cervicodynia and Lumbodinia, 2008, 29(03): 202-205
- [18] 王帅, 黄昌林, 张智慧. 谐振效应致椎间盘源性下腰痛血清炎性因子变化的实验研究[J]. 实用医药杂志, 2015, 32(04): 292-295
Wang Shuai, Huang Chang-lin, Zhang Zhi-hui. Experimental study on serum inflammatory factor's changes in discogenic low back pain caused by resonance effect [J]. Practical Journal of Medicine & Pharmacy, 2015, 32(04): 292-295
- [19] 孙忠利, 高美华, 李萍萍. 不明原因复发性流产病人流产组织绒毛及血清中 ICAM-1、VCAM-1 和 TNF- α 表达 [J]. 青岛大学医学院学报, 2015, 51(06): 689-691
Sun Zhong-li, Gao Mei-hua, Li Ping-ping. The expressions of ICAM-1, VCAM-1 and TNF- α in villus and serum of patients with unknown-origin re-current spontaneous abortion [J]. Acta Academiae Medicinae Qingdao Universitatis, 2015, 51(06): 689-691
- [20] 陈应康, 田培燕. 抗痛风胶囊对 AGA 大鼠血清、关节软骨和关节液中 TNF- α 水平的影响分析 [J]. 中国免疫学杂志, 2015, 31(12): 1628-1632
Chen Ying-kang, Tian Pei-yan. Analysis of anti-gout capsule effect on AGA rats serum, articular cartilage and synovial fluid TNF- α level[J]. Chinese Journal of Immunology, 2015, 31(12): 1628-1632
- [21] 徐鹏, 黄昌林, 张佳, 等. 0 期诊断对驻豫某部新兵应力性骨折诊断评价[J]. 人民军医, 2015, 58(05): 492-494
Xu Peng, Huang Chang-lin, Zhang Jia, et al. The evaluation of zero stage diagnostic technique as a diagnosis method of stress fracture[J]. People's military surgeon, 2015, 58(05): 492-494

(上接第 1721 页)

- [17] Zeng ZY, Wu P, Yan WF, et al. Mixed Fixation and Interbody Fusion for Treatment Single-Segment Lower Lumbar Vertebral Disease: Midterm Follow-up Results[J]. Orthop Surg, 2015, 7(4): 324-332
- [18] Tsuji T, Watanabe K, Hosogane N, et al. Risk factors of radiological adjacent disc degeneration with lumbar interbody fusion for degenerative spondylolisthesis[J]. J Orthop Sci, 2016, 21(2): 133-137
- [19] Flouzat-Lachaniette CH, Ratte L, Poignard A, et al. Minimally invasive anterior lumbar interbody fusion for adult degenerative scoliosis with 1 or 2 dislocated levels [J]. J Neurosurg Spine, 2015, 23(6): 739-746
- [20] Tay KS, Bassi A, Yeo W, et al. Intraoperative reduction does not result in better outcomes in low-grade lumbar spondylolisthesis with neurogenic symptoms after minimally invasive transforaminal lumbar interbody fusion-a 5-year follow-up study [J]. Spine J, 2016, 16(2): 182-190