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椎间孔镜与开窗术对腰椎间盘突出患者远期治疗效果对比*

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摘要 目的:探究椎间孔镜与开窗术对腰椎间盘突出患者治疗远期效果对比。**方法:**选择 2016 年 3 月至 2018 年 3 月于我院接受治疗的腰椎间盘突出患者,按照其接受术式的不同将其分为孔镜组(108 例)和开窗组(40 例),对比两组手术出血量、术后卧床时间及切口长度,对比两组术前、术后 3 个月及术后 12 个月腰椎日本矫形外科学会(Japan Orthopaedic Association, JOA)评分、Odwestry 功能障碍指数(Odwestris ability index, ODI)评分、视觉模拟评分(Visual analog scales, VAS)及生活质量评分,最后对比两组术后 12 个月椎间隙高度降低数值。**结果:**(1)孔镜组术中出血量、术后卧床时间及切口长度均小于开窗组,手术时间长于开窗组($P<0.05$);(2)术前两者 JOA 及 ODI 评分对比无统计学意义($P>0.05$),术后 3 个月及术后 12 个月孔镜组 JOA 及 ODI 评分优于开窗组($P<0.05$);(3)术前两组 VAS 及 SF-36 量表(the 36-item short form health survey, SF-36)评分对比无统计学意义($P>0.05$),术后 3 个月及 12 个月两组 VAS 评分均有明显下降, SF-36 评分有明显上升($P<0.05$),且术后 3 个月及 12 个月孔镜组 SF-36 评分高于开窗组($P<0.05$), VAS 评分对比无统计学意义($P>0.05$);(4)术后 12 个月,孔镜组椎间隙高度降低率低于开窗组($P<0.05$)。**结论:**椎间孔镜在治疗腰椎间盘突出方面效果较好,相比于开窗术,孔镜术患者术中创伤小、术后恢复快、腰椎功能改善明显,且远期随访显示患者生活质量更高,值得进行临床推广。

关键词:椎间孔镜;开窗术;腰椎间盘突出;远期治疗效果

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The Comparison of Long-term Treatment of Lumbar Disc Herniation with Intervertebral Foramen and Fenestration*

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ABSTRACT Objective: To explore the long-term effect of foraminoscopy and fenestration in the treatment of patients with lumbar disc herniation. **Methods:** The patients with lumbar intervertebral disc herniation treated in our hospital from March 2016 to March 2018 were selected as the research objects. They were divided into two groups according to the different surgical methods: the foramen group (108 cases) and the fenestration group (40 cases). The amount of bleeding during operation, the time of bed rest and the length of incision after operation were compared between the two groups. JOA, Odwestry disability index (ODI), visual analogue scale (VAS) and quality of life scores of the lumbar spine 12 months after operation were compared. Finally, the intervertebral height of the two groups was decreased 12 months after operation. **Results:** (1) The amount of bleeding during operation, the time of bed rest and the length of incision after operation were less than those in the fenestration group, and the operation time was longer than that in the fenestration group ($P<0.05$). (2) There was no significant difference in JOA and ODI scores between the two groups before operation ($P>0.05$). There was no significant difference between the two groups at 3 months and 12 months after operation ($P>0.05$). The JOA and ODI scores of the patients were better than those of the fenestration group ($P<0.05$). (3) There was no significant difference in VAS and SF-36 scores between the two groups before operation ($P>0.05$). The SF-36 scores of the three and 12 months after operation were higher than those of the fenestration group ($P<0.05$). There was no significant difference in VAS scores between the two groups ($P>0.05$). (4) There was no significant difference in the scores of the 36-item short form health survey (SF-36) between the two groups ($P>0.05$). The VAS scores of the two groups were 3 months and 12 months after operation. There was a significant decrease in SF-36 scores ($P<0.05$), and the SF-36 scores in the ocular group were higher than those in the fenestration group at 3 and 12 months after surgery ($P<0.05$). Statistical significance ($P>0.05$). **Conclusion:** Intervertebral foramen endoscopy has a better effect in the treatment of lumbar disc herniation. Compared with fenestration, the operation has less trauma, faster recovery and better lumbar function. The long-term follow-up shows that the quality of life of patients is higher, which is worthy of clinical promotion.

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前言

腰椎间盘突出是目前骨科常见疾患之一,患者多以腰腿部疼痛、双下肢放射痛、间歇性跛行、马尾综合征等典型临床表现,部分患者甚至可出现肌肉瘫痪现象,对患者日常生活产生巨大影响^[1]。临床研究显示,腰椎间盘突出病因较为复杂,包括椎间盘退行性改变、损伤、遗传、腰骶先天异常等,但椎间盘的退行性改变为基本因素,随着个体年龄的增长,椎间盘逐渐出现缩水退变,髓核弹性降低,纤维环出现裂隙,反复弯腰、提拉重物等会导致椎间盘内压力升高,进而诱发椎间盘破裂,髓核及纤维环向后突出,压迫神经进而使患者出现相应症状^[2-4]。腰椎间盘突出的治疗方式主要为保守治疗与手术治疗,对初次发病患者可选择保守治疗,主要措施为卧床休息、腰背肌功能锻炼或服用药物等,但对保守治疗无效患者则需实施手术治疗^[5,6]。以往对腰椎间盘突出治疗的手术方式主要为开放性手术,其手术原则为摘除突出椎间盘并重建脊柱受力功能,取得了一定效果^[7],近些年随着微创手术的发展,经皮椎间孔镜下髓核摘除术缺了一定进展,大量研究指出该术在治疗椎间盘突出中效果与传统开放式手术相当^[8,9]。但也有研究发现椎间孔镜治疗腰椎间盘突出存在着潜在的下肢短暂感觉减退,其学习曲线陡峭,而且对于患者远期疗效的观察,国内报道少,因此,本研究主要是观察椎间孔镜的远期患者的生活质量^[10]。本文作者通过研究发现,椎间孔镜在治疗腰椎间盘突出方面效果较好,相比于开窗术,孔镜术患者术中创伤小、术后恢复快、腰椎功能改善明显,且远期随访显示患者生活质量更高,值得进行临床推广,现详述如下。

1 资料与方法

1.1 一般资料

选择2016年3月至2018年3月于我院接受治疗的腰椎间盘突出患者,按照其接受术式的不同将其分为孔镜组(108例)和开窗组(40例),孔镜组中男性60例,女性48例,年龄23-69岁,平均年龄(46.53±2.66)岁,发病时间3-90个月,平均发病时间(15.26±2.66)个月,病变节段L4-L5 58例,L5-S1 50例,开窗组中男性21例,女性19例,年龄26-68岁,平均年龄(45.98±2.89)岁,发病时间3-88个月,平均发病时间(15.92±2.71)个月,病变节段L4-L5 22例,L5-S1 18例,两组一般资料对比无统计学意义($P>0.05$),具有可比性。

纳入标准:(1)患者均经临床诊断确诊为腰椎间盘突出症;(2)均符合2014年1月中华医学会放射介入学会制订的《腰椎间盘突出症的介入和微创治疗操作规范的专家共识》^[11]中腰椎间盘突出症诊断标准;(3)年龄位于18-70岁之间;(4)经保守治疗无效甚至加重者;(5)病历资料齐全;(6)对本研究的治疗方法均知情同意;(7)获得本院伦理委员会同意。

排除标准:(1)合并恶性肿瘤者;(2)合并凝血功能障碍者;(3)合并腰椎节段性不稳定或退行性滑脱者;(4)合并精神疾

者;(5)既往椎间盘手术复发者。

剔除标准:(1)随访期间失联者;(2)主动要求退出研究者;(3)随访期间新发疾病并影响最终疗效判断者。

1.2 方法

两组均接受血尿便、肝肾功、心电图、彩超、X线、CT等检测,排除手术禁忌症,对合并内科疾病如糖尿病、高血压患者需控制病情后再实施手术;开窗组接受传统椎板开窗髓核切除术,对患者实施全身麻醉,取俯卧位,腹部悬空,C臂透视机确定病变位置后确定切开部位,切开后暴露关节突及椎板,使用椎板钳咬除3-4 mm上位椎板的下缘,暴露病变椎间隙至神经根和硬膜囊,而后清除突出的髓核及纤维环,注意保护神经根及硬膜囊,而后逐层缝合放置引流,术后常规消毒。孔镜组接受椎间孔镜髓核摘除术,术前根据影像学结果确定进针部位,对患者实施局部浸润麻醉,患者取俯卧位,腹部垫空,使用穿刺针注入造影剂进行椎间盘造影,使用C型臂X线机观察造影形态、椎间盘形态及纤维环破坏情况后,沿置入导丝作切口,插入工作套管,清理视野并使用不同大小的髓核钳夹取髓核进行神经根减压,探查发现硬膜囊出现自主搏动后取出工作套管,缝合切口并进行直腿抬高试验,术后常规抗菌治疗;两组患者术后均常规换药并根据恢复情况进行拆线。

1.3 观察指标及评测标准

1.3.1 一般手术情况 记录两组手术时间、术中出血量、术后卧床时间及切口长度等,并进行组间对比。

1.3.2 腰椎功能 分别使用腰椎日本矫形外科学会(Japan Orthopaedic Association, JOA)评分、Odwestry功能障碍指数(Odwestris ability index, ODI)量表对两组术前、术后3个月及术后12个月时的腰椎功能进行评估,JOA量表包括主观症状、客观症状、日常生活限制情况和排尿功能4大方面,满分为29分,得分越高代表腰椎功能越好;ODI量表能够对腰痛对受试者日常生活的影响进行评估,主要包括社会活动、日常生活自理能力、疼痛程度等10个方面,每个方面按照0-5分计分,得分越高代表腰腿痛对受试者生活影响越严重,即功能障碍越严重^[12,13]。

1.3.3 生活质量及疼痛度 使用VAS量表及SF-36量表对两组术前、术后3个月及术后12个月的疼痛度及生活质量进行评估。VAS量表是一条刻有0-10 cm刻度的量尺,患者进行自评,1-4 cm代表轻微疼痛,5-6 cm代表中度疼痛,7-9 cm代表严重疼痛,10 cm代表剧烈疼痛^[14];SF-36量表分为生理功能、活力、情感职能等8个维度,分为生理功能、心理功能及生活功能3大部分,得分越高代表生活质量越高^[15]。

1.3.4 术后远期椎间盘变化程度 术前、术后3个月及术后12个月分别对患者实施腰椎X线正侧位、双侧位摄片,及CT、MRI检查,确定其椎间隙高度降低情况。主要判断依据^[16]:(1)椎间盘腹侧高度:以椎体腹侧缘上下两点到上下两椎体平分线所夹的角平分线的距离之和;(2)椎间盘背侧高度:以椎体背侧缘上下两点到上下两椎体平分线所夹的角平分线的距离之和;

(3)椎间孔间最大高度:于侧位切片上测量椎孔间的最长径线的距离;(4)棘突顶距:手术阶段上一棘突上缘至下一棘突上缘的最大距离。椎间隙高度降低率为4者的平均降低率。

1.4 统计学方法

使用SPSS19.0,计数资料以率(%)表示,采用卡方检验,计量资料以($\bar{x} \pm s$)表示,采用t检验,以 $P < 0.05$ 差异有统计学

意义。

2 结果

2.1 一般手术情况

孔镜组术中出血量、术后卧床时间及切口长度均小于开窗组,手术时间大于开窗组($P < 0.05$),如表1。

表1 两组一般手术情况对比

Table 1 Comparison of general surgical conditions between two groups

Groups	n	Intraoperative bleeding volume(mL)	Postoperative bed rest time(d)	Incision length(mm)	Operative time(min)
Hole lens group	108	30.98±5.15*	1.16±0.51*	0.49±0.21*	119.86±10.21*
Windowing group	40	230.17±20.44	3.09±0.81	3.96±0.26	86.56±11.89

Note: Compare with the windowing group, * $P < 0.05$.

2.2 腰椎功能

术前两组JOA及ODI评分对比无统计学意义($P > 0.05$),术后3个月及术后12个月两组JOA评分明显提升,ODI评分

明显下降($P < 0.05$),同时孔镜组JOA评分高于开窗组,ODI评分低于开窗组($P < 0.05$),如表2。

表2 两组术前及术后腰椎功能对比

Table 2 Comparison of lumbar spine function between two groups before and after operation

Groups	n	JOA score			ODI score		
		Preoperative	3 months after operation	12 months after operation	Preoperative	3 months after operation	12 months after operation
Hole lens group	108	11.09±2.15	23.98±2.65 ^{##}	20.16±1.88 ^{##}	38.16±2.61	10.51±2.21 ^{##}	9.12±1.63 ^{##}
Windowing group	40	10.98±2.61	16.73±3.06 [#]	15.09±2.91 [#]	38.01±1.99	16.23±1.98 [#]	13.65±2.51 [#]

Note: Compare with the windowing group after operation, * $P < 0.05$; Compared with the same group before treatment, [#] $P < 0.05$.

2.3 生活质量及疼痛度

术前两组VAS及SF-36评分对比无统计学意义($P > 0.05$),术后3个月及12个月两组VAS评分均有明显下降,

SF-36评分有明显上升($P < 0.05$),且术后3个月及12个月孔镜组SF-36评分高于开窗组($P < 0.05$),但VAS评分对比无统计学意义($P > 0.05$),如表3。

表3 两组术前及术后生活质量及疼痛度对比

Table 3 Comparison of preoperative and postoperative quality of life and pain between the two groups

Groups	n	VAS score			SF-36 score		
		Preoperative	3 months after operation	12 months after operation	Preoperative	3 months after operation	12 months after operation
Hole lens group	108	7.51±1.26	1.68±0.81 [#]	1.55±0.65 [#]	61.28±6.22	91.51±3.65 ^{##}	90.89±6.32 ^{##}
Windowing group	40	7.36±1.61	1.59±0.94 [#]	1.59±0.61 [#]	60.98±6.56	81.59±6.32 [#]	83.29±5.16 [#]

Note: Compare with the windowing group after operation, * $P < 0.05$; Compared with the same group before treatment, [#] $P < 0.05$.

2.4 术后远期腰椎间盘变化程度

术后12个月时孔镜组椎间隙高度降低率为(2.51±0.61)%,开窗组椎间隙高度降低率为(7.59±1.02)%($P < 0.05$)。

3 讨论

腰椎间盘突出是一类退行性病变,在外力作用下纤维环出现破裂或髓核脱出,进而压迫和刺激神经根,导致个体出现腰腿疼痛、下肢神经感觉改变等症状的综合疾病^[17-20]。目前对椎间盘突出的治疗手段较多,接受保守治疗中约有10%-19%患者效果不明显需实施手术治疗,目前腰椎间盘突出手术治疗方法包括椎板切除、椎板开窗、介入治疗、椎间盘镜、椎间孔镜等^[21,22]。

椎板切除术优点为手术室也清晰、神经根减压彻底,但存在出血多、创伤大、腰椎后部结构不稳定等,术后患者发生腰痛、椎管狭窄和腰椎滑脱的风险较高^[23,24]。后路开窗摘除髓核是目前国内外常用的手术治疗方法,术中通过有限的剥除椎旁肌肉、咬除椎板骨质来游离硬膜囊,并经椎管切除突出的髓核,数据显示效果较为明显^[25,26]。但也有研究指出,该术式因需要对椎旁肌实施广泛的剥离,术后患者神经、血供会被破坏,导致其术后发生腰背疼痛几率较高,此外还有研究指出,开窗术对神经根和硬膜囊的牵拉易导致神经根损伤及硬膜囊受损,导致脑脊液漏或神经感染,增加术后患者椎间隙降低及椎管狭窄的可能性^[27,28]。而且对于椎间盘突出复发患者,开窗术导致的

瘢痕及神经粘连增加了二次手术的难度,不利于后续患者的治疗开展^[29,30]。

本研究结果显示,孔镜组患者术中出血量、术后卧床时间及切口长度均明显低于开窗组患者,说明椎间孔镜术避免的大切口显露,使手术切口变小,在镜下将出血点放大,清晰可见,并且无需破坏周围组织结构,使术中出血量减少,术后患者早期就可以下床锻炼,显著减少患者卧床时间和住院时间。孔镜组患者术后3个月时腰椎JOA评分及ODI评分均明显优于开窗组,说明椎间孔镜术在术中不破坏腰椎后方肌及骨性结构,不需要牵拉硬膜及神经根,最大程度的保护了腰椎的稳定性,从而提高了患者的椎体功能。孔镜组VAS评分低于开窗组,SF-36评分显著高于开窗组,说明椎间孔镜术在术中不会对神经造成了损伤,减少后期腰腿痛出现几率,提高患者的生活质量。孔镜组患者术后12个月椎间隙高度降低率更低,分析其原因为术中孔镜治疗对脊柱的破坏性更小导致的。但是,在椎间孔镜术中治疗后,患者也会出现复发,神经根过敏等情况,因此,在治疗过程中,医生一定要仔细辨别手术视野,充分减压,动作轻柔。在用透视时,对患者充分的进行保护。减少术后的复发。

总而言之,椎间孔镜在治疗腰椎间盘突出方面效果较好,相比于开窗术,孔镜术患者术中创伤小、术后恢复快、腰椎功能改善明显,且远期随访显示患者生活质量更高,值得进行临床推广。

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