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人工颈椎间盘置换与颈前路减压植骨融合术治疗脊髓型颈椎病近期疗效的回顾性研究 *

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摘要 目的：回顾性分析人工颈椎间盘置换（ADR）与颈前路减压植骨融合术（ACDF）治疗脊髓型颈椎病（CSM）的近期疗效。**方法：**回顾性选取 2016 年 7 月 ~2018 年 12 月期间我院收治的 CSM 患者 120 例，上述患者根据手术方式的不同分为 A 组（n=58，ACDF 治疗）和 B 组（n=62，ADR 治疗），比较两组患者疗效、围术期指标、生活质量简表（SF-12）评分、日本矫形外科协会（JOA）评分、颈椎活动度及并发症发生情况。**结果：**B 组术后 12 个月的优良率为 74.19%（46/62），高于 A 组的 53.45%（31/58）（*P*<0.05）。两组患者术后 6 个月、术后 12 个月躯体健康评分、精神健康评分均较术前升高，且 B 组高于 A 组（*P*<0.05）。B 组术后 1 个月、术后 3 个月、术后 6 个月、术后 12 个月 JOA 评分和颈椎活动度均高于 A 组（*P*<0.05）。B 组住院时间、术后颈托固定时间、术后恢复工作时间均短于 A 组（*P*<0.05）。两组术后并发症发生率比较差异无统计学意义（*P*>0.05）。**结论：**与 ACDF 治疗相比，ADR 治疗 CSM 的近期疗效显著，可有效改善患者脊椎功能及生活质量，且安全性较好，临床应用价值较高。

关键词：人工颈椎间盘置换术；颈前路减压植骨融合术；脊髓型颈椎病；近期；疗效

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A Retrospective Study on the Short-term Effect of Artificial Cervical Disc Replacement and Anterior Cervical Decompression and Fusion in the Treatment of Cervical Spondylotic Myelopathy*

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ABSTRACT Objective: To retrospectively analyze the short-term effect of artificial cervical disc replacement (ADR) and anterior cervical decompression and fusion (ACDF) in the treatment of cervical spondylotic myelopathy (CSM). **Methods:** A total of 120 patients with CSM in our hospital from July 2016 to December 2018 were retrospectively selected. The above patients were divided into group A (n=58, ACDF treatment) and group B (n=62, ADR treatment) according to different surgical methods. The curative effect, perioperative index, quality of life (SF-12) score, Japan Orthopaedic Association (JOA) score, cervical vertebra activity and complications happened of the two groups were compared. **Results:** The excellent and good rate of group B was 74.19% (46/62), which was higher than 53.45% (31/58) of group A (*P*<0.05). The scores of physical health and mental health of the patients of the two groups at 6 months and 12 months after operation were higher than those before operation, and those of group B were higher than those of group A (*P*<0.05). The JOA score and cervical vertebra activity of group B at 1 month, 3 months, 6 months and 12 months after operation were higher than that of group A (*P*<0.05). The hospitalization time, fixation time of cervical bracket after operation and recovery time to work after operation of group B were shorter than those of group A (*P*<0.05). There was no significant difference in the incidence of postoperative complications between the two groups (*P*>0.05). **Conclusion:** Compared with ACDF, ADR can improve the spinal function and quality of life of patients with CSM in the short term, which has better safety, and higher clinical application value.

Key words: Artificial cervical disc replacement; Anterior cervical decompression and fusion; Cervical spondylotic myelopathy; Short-term; Curative effect

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前言

脊髓型颈椎病（CSM）是由于颈椎或其相邻组织发生退行

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性改变,进而引起脊髓神经运动、反射、感觉及排便等一系列的功能障碍的疾病[1-3]。CSM 发病隐匿且起病缓慢,常规的保守治疗效果一般,手术是治疗 CSM 的有效方法[4-6]。既往临床通常采用颈前路减压植骨融合术(ACDF)治疗 CSM,可在一定程度上缓解患者临床症状[7,8]。但近年来的临床实践证实,ACDF 术后可产生较多并发症,如植骨块脱落、塌陷、椎间高度丢失、假关节丢失、邻近节段应力增加导致的退变等,一定程度上影响治疗效果[9,10]。人工颈椎间盘置换术(ADR)由 Goffin 等学者于 2002 年首次报道,在实现彻底减压的同时能维持置换节段的活动度和邻近椎间盘内的应力,为 CSM 的手术治疗提供了一种新的选择[11,12]。鉴于此,本研究通过对比 ADR、ACDF 治疗 CSM 后的近期治疗效果,以期为临床治疗 GSM 的术式选择提供参考,整理如下。

1 资料与方法

1.1 一般资料

回顾性选取 2016 年 7 月 ~2018 年 12 月期间我院收治的 CSM 患者 120 例,纳入标准:(1)经 X 线片、颈椎 MRI 及 CT 等影像学确诊为 CSM;(2)患者临床资料完整;(3)术前经 3 个月以上的正规保守治疗无效者;(4) 术后获得完整随访。排除标准:(1)合并心、肺、肝、肾功能疾病者;(2)既往有脊柱手术病史者;(3)合并脊柱结核、肿瘤者;(4)病变节段活动度明显丢失或椎间高度丢失>50%者;(5)合并凝血功能障碍者;(6)脊柱存在明显不稳者。上述患者根据手术方式的不同分为 A 组(n=58,ACDF 治疗)和 B 组(n=62,ADR 治疗),其中 A 组男 33 例,女 25 例,年龄 34~65 岁,平均(42.81± 5.64)岁;病程 3~12 月,平均(7.25± 0.94)月;单节段置换 34 例,双节段置换 24 例;体质量指数 21.3~26.5 kg/m^2,平均(23.18± 0.84)kg/m^2。B 组男 35 例,女 27 例,年龄 36~63 岁,平均(42.06± 4.97)岁;病程 4~10 月,平均(7.42± 0.94)月;单节段置换 36 例,双节段置换 26 例;体质量指数 20.9~26.8 kg/m^2,平均(23.36± 0.97)kg/m^2。两组一般资料对比无统计学差异(P>0.05)。

1.2 方法

A 组给予 ACDF 治疗,全麻,取仰卧位,固定头部,经颈前入路显露椎体前方,切开前纵韧带,将病变椎间盘及压迫组织切除后,于减压间隙处植入相应大小的自体髂骨,选取适宜长度的钛板行前方椎体间固定。B 组给予 ADR 治疗,术前参考颈椎 CT 片,制作相应的 Bryan 假体(美国 Sofamor 公司),全麻,取仰卧位,固定头部,经颈前入路显露椎体前方,C 臂机透视下确定病变椎间隙,处理椎体前方的骨赘及病变椎间盘,选择性切除后纵韧带显露硬脊膜减压。彻底清除椎体后缘的压迫组织和骨赘并彻底减压后,植入 Bryan 假体,位置满意后常规关闭切口。

1.3 观察指标

(1)记录两组住院时间、术后恢复工作时间、术后颈托固定时间。(2)两组术后采用门诊复查的形式随访 12 个月。评价两组患者术后 12 个月的疗效。按照 Odom 标准进行临床疗效评价[13],具体如下:差:症状无改善或恶化;可:术前症状部分改善,日常活动受到限制;良:较少不适症状,但未明显影响工作;优:术前症状和体征全部缓解,可进行日常活动。优良率 = 优率 + 良率。(3)于术前、术后 1 个月、术后 3 个月、术后 6 个月、术后 12 个月采用日本矫形外科协会(JOA)[14]评分评价患者脊椎功能,其中 JOA 总分 17 分,分数越高,脊椎功能越好。于术前、术后 1 个月、术后 3 个月、术后 6 个月、术后 12 个月行 X 线检测颈椎活动度。(4)于术前、术后 6 个月、术后 12 个月采用生活质量简表(SF-12)[15]评分评价患者生活质量,SF-12 包括躯体健康评分、精神健康评分,每个项目各 100 分,分数越高,生活质量越高。(5)记录两组并发症发生情况。

1.4 统计学方法

本研究数据的处理软件为 SPSS21.0,计量资料以($\bar{x}\pm s$)表示,采用 t 检验,计数资料以[n(%)]表示,采用 x^2 检验,检验水准设置为 α=0.05。

2 结果

2.1 两组疗效比较

B 组术后 12 个月的优良率为 74.19%(46/62),高于 A 组的 53.45%(31/58)(P<0.05);详见表 1。

表 1 两组疗效比较 例(%)

Table 1 Comparison of efficacy between two groups n(%)

Groups	Excellent	Good	Can	Bad	Excellent and good rate
Group A(n=58)	10(17.24)	21(36.21)	16(27.59)	11(18.97)	31(53.45)
Group B(n=62)	16(25.81)	30(48.39)	12(19.35)	4(6.45)	46(74.19)
x^2					4.977
P					0.025

2.2 两组生活质量比较

两组术前躯体健康评分、精神健康评分比较无差异(P>0.05);两组患者术后 6 个月、术后 12 个月躯体健康评分、精神健康评分均较术前升高,且 B 组高于 A 组(P<0.05);详见表 2。

2.3 两组 JOA 评分和颈椎活动度比较

两组术前 JOA 评分和颈椎活动度比较比较差异无统计学意义(P>0.05);两组术前、术后 1 个月、术后 3 个月、术后 6 个月、术后 12 个月 JOA 评分呈升高趋势,颈椎活动度呈先下降后升高趋势(P<0.05);B 组术后 1 个月、术后 3 个月、术后 6 个月、术后 12 个月 JOA 评分和颈椎活动度均高于 A 组(P<0.05);详见表 3。

表 2 两组生活质量比较($\bar{x}\pm s$,分)

Table 2 Comparison of quality of life between the two groups($\bar{x}\pm s$, score)

Groups	Score of physical health			Score of mental health		
	Before operation	6 months after operation	12 months after operation	Before operation	6 months after operation	12 months after operation
Group A(n=58)	46.38± 5.87	58.10± 7.34[a]	75.20± 6.83[ab]	45.63± 6.82	62.60± 6.55[a]	74.29± 6.24[ab]
Group B(n=62)	46.52± 6.02	63.22± 6.12[a]	89.18± 7.90[ab]	44.78± 7.51	74.67± 5.71[a]	88.30± 5.07[ab]
t	0.129	4.160	10.338	0.648	10.778	13.537
P	0.898	0.000	0.000	0.518	0.000	0.000

Notes: compared with before operation, [a]*P*<0.05; compared with 6 months after operation, [b]*P*<0.05.

表 3 两组 JOA 评分和颈椎活动度比较($\bar{x}\pm s$)

Table 3 Comparison of JOA score and cervical vertebra activity between the two groups($\bar{x}\pm s$)

Groups	Time point	JOA score(score)	Cervical vertebra activity (°)
Group A(n=58)	Before operation	5.36± 0.84	49.75± 5.70
	1 month after operation	6.77± 0.76[a]	25.42± 4.65[a]
	3 months after operation	7.28± 0.62[ab]	32.88± 5.22[ab]
	6 months after operation	9.73± 0.65[abc]	37.32± 6.15[abc]
	12 months after operation	11.87± 0.64[abcd]	41.71± 6.47[abcd]
Group B(n=62)	Before operation	5.61± 0.69	49.12± 6.31
	1 month after operation	8.82± 0.65[ae]	30.28± 6.51[ae]
	3 months after operation	11.86± 0.69[abe]	36.97± 5.45[abe]
	6 months after operation	13.48± 0.50[abce]	42.73± 6.20[abce]
	12 months after operation	16.05± 0.38[abcde]	48.20± 7.13[bcde]

Notes: compared with before operation, [a]*P*<0.05; compared with 1 month after operation, [b]*P*<0.05; compared with 3 months after operation, [c]*P*<0.05; compared with 6 months after operation, [d]*P*<0.05; compared with group A, [e]*P*<0.05.

2.4 两组围术期指标比较

B 组住院时间、术后颈托固定时间、术后恢复工作时间均短于A 组(*P*<0.05);详见表 4。

表 4 两组围术期指标比较($\bar{x}\pm s$,d)

Table 4 Comparison of perioperative indexes between the two groups($\bar{x}\pm s$, d)

Groups	Hospitalization time	Fixation time of cervical bracket after operation	Recovery time to work after operation
Group A(n=58)	11.88± 1.59	44.14± 2.30	49.07± 3.66
Group B(n=62)	6.34± 1.83	26.18± 1.54	28.41± 3.75
t	17.650	50.560	26.941
P	0.000	0.000	0.000

2.5 两组并发症发生率比较

A 组术后出现植骨块脱落 1 例、植骨块塌陷 2 例、椎间高度丢失 2 例,并发症发生率为 8.62%(5/58);B 组术后出现椎间高度丢失 1 例,并发症发生率为 1.61%(1/62);两组术后并发症发生率比较无差异(x^2=3.098,*P*=0.078)。

3 讨论

CSM 是中老年群体中常见的一种退行性病变，在各种类型的颈椎病中危害最为严重。该病的主要病变基础为椎间盘退变,并伴有脊髓和 (或) 支配脊髓的血管慢性、进行性受压致神经组织缺血受损[16-18]。针对症状明显且神经功能进行性下降的 CSM 患者通常需给予手术干预以改善脊髓血供，进而恢复脊髓功能 [19]。ACDF 主要通过颈前路途径直接解除脊髓前方压迫,并通过融合稳定颈椎,起到即刻稳定及消除后方结构再退变的作用,是目前治疗 CSM 的常用方案[20,21]。但随着时间的推移,融合手术使融合节段的生理活动范围丧失,导致局部生物力学改变,邻近节段的负荷增加,部分患者融合节段的相邻节段会发生退行性改变,甚至需要接受二次手术治疗,远期预后效果一般[22,23]。因此,如何保留 CSM 患者术后病变节段的运动功能,减轻融合节段的相邻节段应力,已成为目前临床 CSM 手术治疗的研究热点。ADR 是目前常用的非融合技术,通过置入人工颈椎间盘假体代替病变节段的结构和功能,发挥较好的对

邻近节段椎间盘的保护作用，近年来成为治疗 CSM 的重要手术方式[24]。但有关两种术式的疗效优劣尚需通过在后续研究中扩大样本量进一步分析以证实。

本次研究结果显示，B 组术后 12 个月的优良率、围术期指标改善优于 A 组，可见与 ACDF 治疗相比，ADR 治疗 CSM，可进一步提高患者预后。这主要是因为 ADR 可在切除突出的椎间盘组织的同时保留椎间高度和关节活动度，既保留了颈椎节段间的活动度，又可减轻邻近节段的应力负荷，进而促进患者恢复，改善患者预后[25,26]。此外，ADR 治疗者的 JOA 评分和颈椎活动度均优于 ACDF 治疗者，由于颈椎的稳定性重建需牺牲手术节段的运动功能，理论上会增加邻节段退变发生的速度。由于 ACDF 多采用人工骨植骨，一定程度上降低植骨融合率[27]。而 ADR 治疗过程中不刻意强调坚固的骨性愈合，在实现彻底减压的同时维持了手术节段的高度和活动度，相对来说更注重恢复脊柱的生理功能，从而有效维持颈椎活动度[28,29]。而两组患者术后不同时间点生活质量均有所改善，且 ADR 治疗者的改善效果更佳。这主要是因为 ADR 治疗的患者术后恢复更快，脊柱的生理功能恢复的更为完整，可促使患者早日回归正常生活，改善其生活质量[30]。另两组术后并发症发生率比较差异无统计学意义，可见 ADR 治疗安全性较好。值得注意的是，本次研究样本量偏少，未能观察 ADR 治疗是否能进一步减少并发症发生率，且由于人工假体不可避免会发生磨损，本次研究随访时间较短，有关假体磨损是否会影响 ADR 的远期预后尚待进一步研究。

综上所述，与 ACDF 治疗相比，ADR 治疗 CSM 的近期疗效显著，可有效改善患者脊椎功能及生活质量，且安全性较好，临床应用价值较高。

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