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单孔与两孔胸腔镜下肺大疱切除手术治疗气胸的效果对比 *

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摘要 目的:对比单孔与两孔胸腔镜下肺大疱切除手术治疗气胸的效果。**方法:**选取 2015 年 9 月 ~2018 年 10 月我院收治的自发性气胸患者 81 例,采用随机数字表法将患者分为两组,观察组行单孔胸腔镜下肺大疱切除术,对照组行两孔胸腔镜下肺大疱切除术。比较两组患者的手术相关指标、术后疼痛评分、手术前后血清肿瘤坏死因子 -α(Tumor necrosis factor-α, TNF-α)、白细胞介素 1β(Interleukin-1β,IL-1β)和 C 反应蛋白(C-reactive protein,CRP)水平的变化及并发症的发生情况。**结果:**两组患者的手术时间比较无统计学差异(*P>0.05*),观察组患者的术中出血量、术后引流量、引流管留置时间和切口长度均显著少于或短于对照组(*P<0.05*);观察组患者术后 3d 和术后 3 个月的视觉模拟评分(Visual analogue scale,VAS)显著低于对照组(*P<0.05*),两组术后 1 年 VAS 评分比较无统计学差异(*P>0.05*)。术后 7d,两组患者的血清 TNF-α、IL-1β 和 CRP 水平均较术前显著降低,且观察组显著低于对照组(*P<0.05*)。两组患者并发症的发生率比较无统计学差异(*P>0.05*)。**结论:**与两孔胸腔镜下肺大疱切除术相比,单孔胸腔镜下肺大疱切除术用于气胸患者的创伤更小,更有利于患者术后恢复,且安全性更高。

关键词:单孔;两孔;胸腔镜肺大疱切除术;气胸;效果
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Comparison of the Effect of Single-hole and Two-hole Thoracoscopic Bullae Resection in the Treatment of Pneumothorax*

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ABSTRACT Objective: To compare the effect of single-hole and two-hole thoracoscopic bullae resection on the pneumothorax. **Methods:** 81 cases of spontaneous pneumothorax patients admitted to our hospital from September 2015 to October 2018 were selected and divided into two groups by the random number table method. The observation group was given single-hole thoracoscopic bullectomy, and the control group was treated by two-hole thoracoscopic bullectomy. The surgical indicators, postoperative pain scores, changes of the serum TNF-α, IL-1β, and CRP levels before and after surgery, and incidence of complications were compared between the two groups. **Results:** There was no statistical difference in the operative time between the two groups (*P>0.05*). The intraoperative blood loss, postoperative drainage volume, drainage tube indwelling time and incision length of observation group were significantly less or shorter than those of the control group (*P<0.05*). The VAS scores of patients in the observation group were significantly lower than those in the control group at 3 days after surgery and at 3 months after surgery (*P<0.05*), and there was no statistical difference between the two groups at 1 year after surgery (*P>0.05*). At 7 days after surgery, the serum levels of TNF-α, IL-1β, and CRP of both groups were significantly lower than those before surgery, which were significantly lower in the observation group than those of the control group(*P<0.05*). There was no statistical difference in the incidence of complications between the two groups (*P>0.05*). **Conclusion:** Compared with two-hole thoracoscopic bullous lung resection, single-hole thoracoscopic bullous lung resection had less invasive for the pneumothorax patients, it was more conducive to postoperative recovery with higher safety.

Key words: Single-hole; Two-hole; Thoracoscopic bullae resection; Pneumothorax; Effect
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前言

自发性气胸是心胸外科常见的疾病之一,好发于体型瘦长的青年男性,可反复发作[1-3]。研究显示自发性气胸的发病率呈

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现逐年上升的态势，男性发病率为 7.4~18/10000 人 / 年，女性为 1.2~6/10000 人 / 年，男性是女性的 5 倍[4,5]。自发性气胸的临床症状不典型，起病急，多数患者在静息状态下起病，少数患者发生于剧烈运动或者胸腔内压急剧上升后，表现为急性胸闷、气短、胸背部疼痛和气急、呼吸不畅等症状，如不能进行及时有效的处理，可导致气胸反复发作，甚至危及生命，严重影响患者的健康和生活质量[6-8]。

传统治疗自发性气胸的开胸手术由于创伤较大已基本淘汰，随着近年来微创外科理念和技术、手术器械和设备等医疗技术的不断发展，胸腔镜手术已逐步应用于临床，成为治疗自发性气胸的首选方法[9,10]。传统的三孔法胸腔镜肺大疱切除术由于需要在背部做辅助孔，与两孔法相比创伤较大，而单孔法是在两孔法基础上的又一创新，将观察孔与操作孔合并，创伤更小，已逐步应用于临床[11-13]。本研究主要分析和比较了单孔与两孔胸腔镜下肺大疱切除手术治疗气胸的效果，结果报道如下。

1 资料与方法

1.1 一般资料

选取 2015 年 9 月 ~2018 年 10 月我院收治的自发性气胸患者 81 例，均符合《外科学》中自发性气胸的相关诊断标准。纳入标准：① 经 X 线、CT 检测确诊；② 单侧气胸；③ 年龄 18~28 岁；④ 签署知情同意书。排除标准：① 排除合并其他肺部疾病者；② 有胸部手术史者；③ 有胸腔黏连增厚者；④ 合并重大创伤者。采用随机数字表法将患者分为两组，对照组 40 例，男 32 例，女 8 例；年龄 18~26 岁，平均 22.58± 2.14 岁；肺大疱分型：Ⅰ型 30 例，Ⅱ型 10 例；气胸部位：左侧 22 例，右侧 18 例；肺压缩程度：＜30%者 6 例，30%~60%者 23 例，＞60%者 11 例。观察组 41 例，男 31 例，女 10 例；年龄 19~28 岁，平均 23.27± 2.56 岁；肺大疱分型：Ⅰ型 29 例，Ⅱ型 12 例；气胸部位：左侧 21 例，右侧 20 例；肺压缩程度：＜30%者 8 例，30%~60%者 22 例，＞60%者 11 例。两组一般资料比较差异均无统计学意义（*P>0.05*），具有可比性。

1.2 治疗方法

观察组采用单孔胸腔镜下肺大疱切除术，患者采用气管插管全身麻醉，取健侧卧位，于第 4 肋间腋前线和腋中线的中点做 3 cm 左右切口，逐层切开进入胸腔，置入胸腔镜及相关器械，自下而上探查胸腔情况，术前 CT 未见肺大疱者重点探查肺上叶尖段和下叶后段，明确肺大疱位置，必要时进行膨肺试验明确漏气部位。对于单枚或簇团状肺大疱，用无齿卵圆钳夹持肺大疱，经基底切除。对于巨大型肺大疱，切开后明确基底部支气管的位置，沿疱壁切除病灶。如有较小的肺大疱采用钛夹夹闭，丝线结扎和电凝等处理。对于术中未发现肺大疱及漏气者，常规行肺尖部切除和胸膜固定。对于肺组织切除较多者，常规松解肺韧带。彻底止血后用生理盐水冲洗胸腔，膨肺检查无漏气后置入引流管，缝合胸壁各层组织。对照组采用两孔胸腔镜下肺大疱切除术，麻醉方法同观察组，于第 4 肋腋线处做 2 cm 左右切口作为操作孔，患侧第 6 或 7 肋间中线做约 1.5 cm 切口为观察孔，置入胸腔镜，具体手术方法同观察组。

1.3 观察指标

① 手术相关指标。② 术后 3d、术后 3 个月和术后 1 年的疼痛评分。采用视觉模拟评分法(VAS)对患者的疼痛程度进行评价。③ 术前和术后 7d 采集两组患者的空腹静脉血 3 mL，静置 20 min 后于 3000 转 /min 下离心 10 min 取上清液，采用双抗体酶联免疫吸附法检测 TNF-α、IL-1β 和 CRP 水平，试剂盒均购自深圳科润达生物有限公司。④ 并发症的发生情况。

1.4 统计学方法

采用 SPSS16.0 软件进行数据分析，计数资料以率 (%)表示，组间比较行卡方检验，计量资料以($\bar{x}\pm s$)表示，组间比较行 t 检验，以 *P<0.05* 为差异有统计学意义。

2 结果

2.1 两组手术相关指标的比较

两组手术时间比较差异无统计学意义（*P>0.05*），观察组术中出血量、术后引流量、引流管留置时间和切口长度均显著少于或短于对照组（*P<0.05*），见表 1。

表 1 两组患者手术相关指标比较($\bar{x}\pm s$)

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

Groups	n	Time of operation(min)	Intraoperative blood loss(mL)	Postoperative drainage volum(mL)	Rainage tube retention time(d)	Length of incision(cm)
Control group	40	58.25± 12.47	25.12± 6.34	221.54± 38.47	4.58± 1.03	4.49± 1.02
Observation group	41	57.31± 11.84	16.58± 4.12	185.34± 31.24	2.75± 0.71	2.58± 0.54
t	-	0.348	7.169	4.654	9.288	10.495
P	-	0.729	＜0.001	＜0.001	＜0.001	＜0.001

2.2 两组术后不同时间疼痛评分的比较

观察组患者术后 3d 和术后 3 个月的 VAS 评分显著低于对照组（*P<0.05*），两组术后 1 年 VAS 评分比较无统计学差异（*P>0.05*），见表 2。

2.3 两组术前和术后血清 TNF-α、IL-1β 和 CRP 水平的比较

术前，两组患者的血清 TNF-α、IL-1β 和 CRP 水平比较无统计学差异（*P>0.05*）；术后 7d，两组患者的血清 TNF-α、IL-1β 和 CRP 水平均较术前显著降低，且观察组以上指标均明显低于对照组（*P<0.05*），见表 3。

2.4 两组并发症发生率的比较

治疗期间，两组并发症发生率比较无统计学差异（*P>0.05*），见表 4。

3 讨论

表 2 两组患者术后不同时间疼痛评分的比较($\bar{x}\pm s$,分)

Table 2 Comparison of the VAS score at different time after surgery between two groups($\bar{x}\pm s$, score)

Groups	n	3 days after operation	At 3 months after operation	At 1 year after operation
Control group	40	4.91± 1.02	2.45± 0.61	1.02± 0.21
Observation group	41	2.63± 0.75	1.21± 0.25	0.89± 0.15
t	-	11.439	11.917	3.199
P	-	＜0.001	＜0.001	0.002

表 3 两组术前和术后血清 TNF-α、IL-1β 和 CRP 水平的比较($\bar{x}\pm s$)

Table 3 Comparison of the serum TNF-α, IL-1β and CRP levels between two groups before and after operation($\bar{x}\pm s$)

Groups	n	TNF-α(ng/L)		IL-1β(ng/L)		CRP(mg/L)	
		Before operation	7d after operation	Before operation	7d after operation	Before operation	7d after operation
Control group	40	98.32± 25.11	80.14± 20.33*	15.64± 4.23	12.34± 3.51*	20.11± 5.37	12.02± 3.22*
Observation group	41	101.25± 26.75	49.61± 15.34*	17.33± 5.01	7.01± 1.87*	19.54± 5.01	7.56± 2.13*
t	-	-0.508	-7.642	-1.638	-8.499	0.494	-7.334
P	-	0.613	＜0.001	0.105	＜0.001	0.623	＜0.001

注：与术前相比，*$P<0.05$。

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

表 4 两组患者的并发症发生率比较[例(%)]

Table 4 Comparison of the incidence of complications between two groups[n(%)]

Groups	n	Pulmonary air leakage	Pulmonary infection	Incision infection	Pulmonary atelectasis	Total rate
Control group	40	2(5.00)	3(7.50%)	1(2.50)	0(0.00)	6(15.00)
Observation group	41	1(2.44)	1(2.44)	0(0.00)	0(0.00)	2(4.88)
x^2	-			2.330		
P	-			0.155		

自发性气胸患者肺大疱形成和破裂的机制目前尚不清楚，有研究认为主要与末梢支气管炎症、消瘦体型、低体重指数、吸烟和肺间缺血有关，也有研究认为与先天遗传和结缔组织发育异常有关[14-16]。该病以胸腔镜手术治疗为主，与传统开腹手术相比能够在很大程度上缓解患者的术后疼痛和不适。三孔法胸腔镜肺大疱切除术术中需做 3 个切口，即观察孔、主操作孔和辅助操作孔，可充分暴露手术视野，操作相对容易，但切口较多，可能会出现神经损伤，术后疼痛明显[17-19]。两孔法减少了辅助操作孔，使得神经损伤的发生率降低，但是仍然存在术后疼痛的问题。因此，单孔法应用而生[20,21]。

炎症是术后患者常见的生理反应，TNF-α 可引起炎性因子的大量释放，是炎症的启动因子，可造成组织损伤[22,23]。IL-1β 可触发机体的炎性反应，参与机体的免疫调节[24,25]。CRP 是一种由 IL-6 诱导肝细胞合成的急性时相反应蛋白，在创伤后急剧升高，与机体的手术损伤程度呈正相关，可反应机体的炎症反应严重程度 [26,27]。本研究结果显示观察组患者术后的血清 TNF-α、IL-1β 和 CRP 水平均显著低于对照组，说明单孔法造成的炎性反应更低，对患者的创伤更小。此外，单孔法的手术效果优于两孔法，这与单孔法减少了一个操作孔有关。操作孔所通过的区域肌肉组织较为丰富，术后潜在的渗出比较多，可增加术后引流量，所以单孔法的术后引流量显著减少，引流管留置时间缩短[28]。单孔法操作孔减少，同时减少了对患者的创伤，使术中的出血量降低。由于胸腔镜手术本身的不足需要在术中反复进出，增加了对肋间肌肉和神经的损伤，导致术后疼痛，单孔法的切口仅有 1 个肋间，减少了肌肉和神经损伤，进而减轻患者的术后疼痛[29]。在并发症方面，单孔法在保证手术效果的同时不增加患者的并发症的发生率，且由于单孔法对患者的创伤小，留置管留置时间短，利于患者恢复，并降低了感染发生的风险。

虽然单孔法与两孔法相比具有较大的优势，但对于手术者的操作技巧熟练程度要求更高，单孔法将操作孔和观察孔合并，手术视野的暴露受到一定的限制。手术器械置入部位集中，相互干扰也会影响手术视野。另外，手术镜头的光源和器械平行影响手术医师对距离和深度的判断，增加了手术难度，需要引起临床医生的重视[30]。

综上所述，与两孔胸腔镜下肺大疱切除术相比，单孔胸腔镜下肺大疱切除术用于气胸患者的创伤更小，更有利于患者术后恢复，且安全性更高。

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