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单孔胸腔镜肺癌根治术后使用单根胸腔引流管联合负压引流管的效果观察*

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摘要 目的:探讨单孔胸腔镜肺癌根治术后使用单根胸腔引流管联合负压引流管的效果。**方法:**选取2018年1月~2020年1月于我院行单孔胸腔镜肺癌根治术的肺癌患者100例为研究对象,采用随机数字表法分为两组,对照组患者放置一根30#多孔胸管,观察组在对照组的基础上放置一根负压引流管。比较两组患者的围术期相关指标、并发症的发生情况、手术VAS评分及CRP及PCT水平的变化情况。**结果:**两组患者总引流管留置时间和胸腔总引流量相比无统计学差异($P>0.05$)。观察组患者的30#多孔胸管留置时间、住院时间及再次胸腔穿刺率显著短于/低于对照组($P<0.05$),肺不张、漏气、积液或积气等总并发症发生率显著低于对照组($P<0.05$);术后3d和术后5d的VAS评分均显著低于对照组($P<0.05$),术后3d的CRP及PCT水平显著低于对照组($P>0.05$)。**结论:**单孔胸腔镜肺癌根治术后使用单根胸腔引流管联合负压引流管可显著减轻患者的疼痛,缩短30#多孔胸管留置时间及住院时间,降低再次胸腔穿刺率及并发症发生率,同时可缓解患者的炎症状态。

关键词:单孔胸腔镜;肺癌根治术;单根胸腔引流管;负压引流管;效果

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Effect of Single Thoracic Drainage Tube Combined with Negative Pressure Drainage Tube after Radical Resection*

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ABSTRACT Objective: To investigate the effect of single thoracic drainage tube combined with negative pressure drainage tube after radical resection of lung cancer by single-port thoracoscopic surgery. **Methods:** A total of 100 patients with lung cancer who underwent single-port thoracoscopic radical resection in our hospital from January 2018 to January 2020 were selected as the study objects. They were divided into two groups by random number table method. Patients in the control group were placed with a 30# porous chest tube, and patients in the observation group were placed with a negative pressure drainage tube on the basis of the control group. Perioperative indicators, the occurrence of complications, surgical VAS score and changes in CRP and PCT levels were compared between the two groups. **Results:** There was no statistically significant difference between the total drainage tube indwelling time and the total drainage volume in the thorax between the two groups ($P>0.05$). The 30# perforated chest tube indwelling time, length of stay and rate of repeated thoracic puncture in the observation group were significantly shorter/lower than those in the control group ($P<0.05$). The total complication rate of atelectasis, air leakage, effusion or gas accumulation was significantly lower than that in the control group ($P<0.05$). VAS scores were significantly lower than those of the control group on 3 d and 5 d postoperatively ($P<0.05$). The levels of CRP and PCT at 3 d after surgery were significantly lower than those in the control group ($P<0.05$). **Conclusion:** The use of single thoracic drainage tube combined with negative pressure drainage tube after the radical resection of lung cancer by single-port thoracoscopic surgery can significantly reduce the pain of patients, shorten the 30# perforated chest tube indwelling time and hospitalization time, reduce the rate of repeated thoracic puncture and the incidence of complications, and relieve the inflammatory state of patients.

Key words: Single port thoracoscope; Radical resection of lung cancer; Single thoracic drainage tube; Negative pressure drainage tube; Effect

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前言

肺癌是临床常见的恶性肿瘤之一,在各类癌症中死亡率排第一位^[1]。近年来,随着空气污染的加剧及人们生活方式的转

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变,肺癌的发生率呈现逐年递增的态势,且有年轻化的趋势,严重威胁患者的生命和健康^[2,3]。手术仍然是目前临床治疗肺癌最有效的方法,传统的开胸手术虽然操作简单、视野比较清晰,但手术创伤大、应激反应剧烈,且易增加肿瘤微转移的风险,对患者的康复产生不利影响^[4,5]。

近些年,随着微创技术的不断发展,胸腔镜以其切口小、创伤小、美观度好等优势成为治疗肺癌的常用术式^[6,7]。而单孔胸腔镜肺癌根治术创伤更小,不仅能够取得与三孔胸腔镜肺癌根治术相同的手术效果,还不会增加手术难度,且患者的创伤小,应激反应轻,利于患者术后康复^[8,9]。肺叶切除术后进行胸腔闭式引流已经成为临床共识,但术后引流管的留置时间直接影响患者的感染发生情况、疼痛及术后住院时间^[10,11]。传统的术后引流方法为放置1~2根胸引管,由于术后疼痛剧烈,不利于患者的早期活动和术后肺复张。单孔胸腔镜手术后仍然沿用传统方法留置引流管,不利于患者的快速康复及单孔胸腔镜手术的优势体现^[12-14]。因此,本研究主要探讨了单孔胸腔镜肺癌根治术后使用单根胸腔引流管联合负压引流管的效果,旨在为临床治疗提供参考,现报道如下。

1 资料与方法

1.1 一般资料

选取2018年1月~2020年1月于我院行单孔胸腔镜肺癌根治术的肺癌患者100例为研究对象。纳入标准:①经病理学检查确诊;②行单孔胸腔镜肺癌根治术;③术后无支气管胸膜瘘等并发症;④TNM分期为I~II期;⑤无远处转移。排除标准:①既往有胸部手术史者;②合并重要器官功能障碍者;③局部切除或肺段切除者;④合并其他恶性肿瘤者。采用随机数字表法将患者分为两组,对照组50例,男28例,女22例;年龄45~78岁,平均 65.33 ± 3.57 岁;体质量58~65 Kg,平均 61.25 ± 2.58 Kg;TNM分期:I期35例,II期15例;病理类型:鳞癌32例,腺癌18例;切除肺叶:左上叶12例,左下叶10例,右上叶13例,右中叶6例,右下叶9例。观察组50例,男26例,女24例;年龄46~77岁,平均 64.98 ± 3.44 岁;体质量58~66 Kg,平均 62.01 ± 2.65 Kg;TNM分期:I期37例,II期13例;病理类型:鳞癌35例,腺癌15例;切除肺叶:左上叶11例,左下叶11例,右上叶12例,右中叶6例,右下叶10例。两组患者一般资

料比较无统计学差异($P>0.05$),具有可比性。

1.2 手术方法

两组患者均行单孔胸腔镜肺癌根治术,患者取健侧卧位,健侧肺通气,气管插管全身麻醉,于腋前线第8肋间约2 cm处作切口做为观察口,置入Trocarr及胸腔镜探查胸腔情况,根据不同肺叶选择不同部位做4 cm切口做为操作孔,单孔下行肺叶切除和纵膈淋巴结清扫,首先分离胸腔粘连,切除肿块,随后分离肺叶动静脉及支气管,进行肺叶切除。淋巴结清扫包括纵膈、肺内及肺门,左肺清扫范围包括4~11组淋巴结,右肺包括2~4、7~11组淋巴结。清扫完成后用蒸馏水冲洗胸腔,确定无支气管残端漏气后进行止血,之后放置胸腔引流管。对照组患者放置一根30#多孔胸管至胸顶部,观察组在对照组的基础上于同一肋水平后方约10 cm处放置一根负压引流管至后肋膈角,负压引流管连接负压引流球。

1.3 观察指标

①围术期相关指标,包括总引流管留置时间、30#多孔胸管留置时间、胸腔总引流量、住院时间及再次胸腔穿刺情况。②并发症的发生情况,包括肺不张、漏气、积液或积气。③术后不同时间点的疼痛评分,采用视觉模拟评分法(VAS)评价两组患者的疼痛情况,0分表示无痛;1~3分为轻度疼痛;4~6分为中度疼痛;7~10分为重度疼痛,记录两组患者术后3 d和术后5 d的疼痛情况。④术前1 d及术后3 d的C反应蛋白(CRP)和降钙素原(PCT)水平,分别抽取两组患者的空腹静脉血3 mL,4℃下3000 r/min离心20 min,采用酶联免疫吸附法测定CRP水平,电化学发光法测定PCT水平。

1.4 统计学方法

采用SPSS19.0软件进行数据分析,计数资料以率(%)表示,组间比较行 χ^2 检验,计量资料以($\bar{x} \pm s$)表示,组间比较行t检验,以 $P<0.05$ 为有统计学差异。

2 结果

2.1 两组围术期相关指标的比较

两组患者总引流管留置时间和胸腔总引流量相比无统计学差异($P>0.05$),观察组患者的30#多孔胸管留置时间、住院时间及再次胸腔穿刺率显著短于/低于对照组($P<0.05$),见表1。

表1 比较两组患者围术期相关指标

Table 1 Comparison of the perioperative indexes between two groups

Groups	Cases	Total drainage tube indwelling time(d)	30# Perforated chest tube indwelling time(d)	Total thoracic drainage(mL)	Hospital stays(d)	Rate of repeated thoracic puncture
Control group	50	5.72 ± 1.03	5.72 ± 1.03	1002.25 ± 256.37	13.58 ± 2.13	6(12.00)
Observation group	50	5.52 ± 1.01	$2.89 \pm 0.72^*$	998.87 ± 250.16	$12.03 \pm 1.89^*$	0(0.00)*

Note: compared with control group, * $P<0.05$.

2.2 两组患者并发症发生情况的比较

观察组患者的肺不张、漏气、积液或积气等总并发症发生率显著低于对照组($P<0.05$),见表2。

2.3 两组患者术后VAS评分的比较

观察组患者术后3 d和术后5 d的VAS评分均显著低于

对照组($P<0.05$),见表3。

2.4 两组术前和术后血清CRP及PCT水平的比较

两组患者术前1 d血清CRP及PCT水平比较无统计学差异($P>0.05$),两组患者术后3 d的血清CRP及PCT水平均较术前显著升高,但观察组以上指标均显著低于对照组

($P > 0.05$), 见表 4。

表 2 两组患者的并发症发生情况的比较[例(%)]

Table 2 Comparison of the incidence of complications between two groups[n(%)]

Groups	Cases	Pulmonary atelectasis	Air leakage	An accumulation of fluid or gas	Total complication rate
Control group	50	2(4.00)	2(4.00)	4(8.00)	8(16.00)
Observation group	50	0(0.00)	0(0.00)	1(2.00)	1(2.00)*

Note: compared with control group, * $P < 0.05$.

表 3 两组患者术后的 VAS 评分比较($\bar{x} \pm s$)

Table 3 Comparison of the VAS scores between the two groups after treatment($\bar{x} \pm s$)

Groups	Cases	At 3 days postoperation	At 5 d Postoperation
Control group	50	5.75 $\pm$ 1.02	4.56 $\pm$ 0.87
Observation group	50	4.58 $\pm$ 0.98*	3.66 $\pm$ 0.74*

Note: compared with the control group, * $P < 0.05$.

表 4 两组患者术前和术后血清 CRP 及 PCT 水平的比较($\bar{x} \pm s$)

Table 4 Comparison of the serum CRP and PCT levels between the two groups before and after treatment($\bar{x} \pm s$)

Groups	Cases	CRP(mg/L)		PCT (ng/mL)	
		At 1 day preoperation	At 3 days postoperation	At 1 day preoperation	At 3 days postoperation
Control group	50	8.19 $\pm$ 2.03	17.58 $\pm$ 3.65*	0.03 $\pm$ 0.01	0.17 $\pm$ 0.03*
Observation group	50	8.20 $\pm$ 2.11	14.02 $\pm$ 2.14*#	0.03 $\pm$ 0.01	0.12 $\pm$ 0.03**

Note: compared with preoperative 1 d, * $P < 0.05$, compared with control group, # $P < 0.05$.

3 讨论

单孔胸腔镜肺癌根治术目前已广泛应用于临床,不仅用于早期肺癌根治,甚至应用在中央型等复杂肺癌中^[15,16]。单孔胸腔镜手术能够减轻患者的术后疼痛,对患者的创伤较小,但术后放置胸腔引流管成为患者术后疼痛的主要原因^[17,18]。近年来,国内外针对胸腔引流管的放置问题进行了相关的研究和探讨,但是对于引流管的粗细、放置单管还是双管仍然存在争议^[19,20]。大多数研究认为^[21,22]放置单根引流管术后疼痛较轻,可减少引流量,利于患者的术后恢复,但是单管由于管径较粗,置管时间较长,可增加患者的疼痛不适,影响早期活动和术后康复。

本研究结果显示观察组患者的 30# 多孔胸管留置时间、住院时间及再次胸腔穿刺率显著短于 / 低于对照组,说明单孔胸腔镜肺癌根治术后放置一根 30# 多孔胸管和一根负压引流管可显著缩短患者的 30# 多孔胸管留置时间、住院时间及再次胸腔穿刺率。这是由于负压引流管管径细、质地软,对周围组织的刺激小,在引流时对肺部胸膜处气体的吸引小,且可避免外部污染进入机体,操作简单,进而缩短了 30# 多孔胸管留置时间、住院时间及再次胸腔穿刺率^[23,24]。刘武新^[25]等学者对单孔胸腔镜肺癌根治术患者术后应用单根胸腔引流管和一根负压引流管,结果显示胸腔引流管的置管时间显著短于单用胸腔引流管,与本研究结果一致。但该研究未对患者的并发症发生情况及炎症因子水平进行观察比较。

术后放置胸腔闭式引流管会压迫肋间神经而加剧疼痛,有研究显示较粗的胸导管比细导管更容易压迫肋间神经^[26,27]。本

研究结果显示观察组患者术后 3 d 和术后 5 d 的 VAS 评分均显著低于对照组,说明联合应用一根负压引流管可显著降低患者的疼痛评分,这与患者 30# 多孔胸管留置时间短有关,30# 多孔胸管的拔除可显著降低肋间神经的压迫,从而减轻术后疼痛^[28]。Pawelczyk 等研究显示^[29],肺叶切除术后患者应用传统的单管引流和双管引流,其单管引流组患者的镇痛药物使用时间较双管引流组短,与本研究结果不同,可能是由于本研究中观察组的 30# 多孔胸管的留置时间较短有关。本研究结果显示观察组患者的肺不张、漏气、积液或积气等总并发症发生率显著低于对照组,术后 3 d 血清 CRP 及 PCT 水平均显著低于对照组,说明联合应用一根负压引流管可显著改善患者的炎症状态,减少不良反应的发生。这是由于采用负压引流球有助于胸膜腔内液体及气体的尽早排出,重建胸膜腔的负压环境,促进肺复张,从而降低并发症的发生率。由于联合应用一根负压引流管可尽早拔除 30# 多孔胸管,而负压引流管的质地对肋间神经的影响较小,从而降低了对机体的刺激,继而改善患者的炎症状态^[30]。王磊^[31]等研究显示,对胸腔镜食管癌根治术后分别应用胸腔引流管和联合应用一根负压引流管,结果显示在并发症和炎症因子方面两组间无明显差异。与本研究结果不同,可能与本研究采用的手术方式为单孔胸腔镜有关,也可能与本研究选取的病例数较少有关,具体原因尚需一步探讨。

综上所述,单孔胸腔镜肺癌根治术后使用单根胸腔引流管联合负压引流管可显著减轻患者的疼痛,缩短 30# 多孔胸管留置时间及住院时间,降低再次胸腔穿刺率及并发症发生率,同时可缓解患者的炎症状态。

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