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单孔和四孔腹腔镜胆囊切除术的临床疗效对比分析*

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摘要 目的:探讨单孔和四孔腹腔镜胆囊切除术的疗效差异。**方法:**回顾性分析上海交通大学医学院附属仁济医院胆胰外科 2018 年 6 月至 2019 年 8 月期间施行单孔(单孔组)和四孔腹腔镜胆囊切除术(四孔组)的临床资料,包括手术时间、腹腔引流管留置率、手术方案转变率、手术出血量、术后并发症率(胆漏、出血、伤口感染)、住院时间、住院费用、术后 24 h 镇痛药物使用率和术后满意度等。**结果:**单孔组手术时间显著长于四孔组[(42.48±6.66)min Vs (32.18±7.08)min],单孔组腹腔引流管留置率显著低于四孔组(1.67% Vs 21.67%),差异均有统计学意义($P<0.05$);单孔组的住院时间短于四孔组[(2.22±0.65)天 Vs (2.71±0.57)天],单孔组住院费用高于四孔组[(2.19±0.17)万元 Vs (1.81±0.14)万元],单孔组术后 24 h 镇痛药物使用率低于四孔组(4.17% Vs 16.67%),术后满意度评分单孔组较四孔组更高[(4.68±0.64)分 Vs (4.47±0.68)分],差异均有统计学意义($P<0.05$);单孔组的手术出血量、手术方案转变率以及术后并发症与四孔组比较没有差异($P>0.05$)。**结论:**单孔腹腔镜胆囊切除术的术后疼痛轻,恢复快,手术安全性与传统四孔腹腔镜胆囊切除术相比无明显差异,同时单孔腹腔镜胆囊切除术满意度更高,值得临床推广。

关键词:腹腔镜胆囊切除术;单孔腹腔镜;四孔腹腔镜

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Comparative Analysis of Clinical Efficacy of Single-Port and Four-Port Laparoscopic Cholecystectomy*

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ABSTRACT Objective: To investigate the difference of efficacy between single-port and four-port laparoscopic cholecystectomy.

Methods: A retrospective analysis was performed on the clinical data of laparoscopic cholecystectomy (single-port group) and four-port laparoscopic cholecystectomy (four-port group) performed in the Department of Biliary and Pancreatic Surgery, Renji Hospital Affiliated to Medical College of Shanghai Jiaotong University from June 2018 to August 2019. Including operation time, abdominal drainage tube indwelling rate, surgical plan change rate, surgical blood loss, postoperative complication rate (biliary leakage, bleeding, wound infection), hospital stay, hospitalization cost, use rate of analgesic drugs 24 hours after operation and postoperative satisfaction, etc.

Results: The operation time of the single-port group was significantly longer than that of the four-port group [(42.48±6.66)min Vs (32.18±7.08)min], and the abdominal drainage tube indwelling rate in the single-port group was significantly lower than that of the four-port group (1.67% Vs 21.67%), with statistical significance ($P<0.05$). The hospital stay of the single-port group was shorter than that of the four-port group [(2.22±0.65) days Vs (2.71±0.57)days], the hospitalization cost of the single-port group was higher than that of the four-port group [(2.19±0.17)ten thousand yuan Vs (1.81±0.14) ten thousand yuan], and the use rate of analgesic drugs 24 hours after operation in the single-port group was lower than that of the four-port group (4.17% Vs 16.67%). The postoperative satisfaction score of the single-port group was higher than that of the four-port group [(4.68±0.64)scores Vs (4.47±0.68)scores], and the differences were statistically significant ($P<0.05$). There were no differences between the single-port group and the four-port group in the surgical blood loss, surgical plan change rate and postoperative complications ($P>0.05$). **Conclusion:** Single-port laparoscopic cholecystectomy has light postoperative pain, fast recovery, and no significant difference in surgical safety compared with traditional four-port laparoscopic cholecystectomy. At the same time, single-port laparoscopic cholecystectomy has high satisfaction, which is worthy of clinical promotion.

Key words: Laparoscopic cholecystectomy; Single-port laparoscopic cholecystectomy; Four-port laparoscopic cholecystectomy

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前言

临床医疗中在保证手术疗效和安全性的前提下,近30年来的微创化是外科手术的发展方向。1987年,Mouret实施了首例腹腔镜胆囊切除术^[1]。腹腔镜手术被外科医生和患者广泛接受,传统四孔法腹腔镜胆囊切除术是临床应用广泛的胆囊切除手术,具有手术区充分显露、手术视野清晰、施术者间配合良好等特点,易于手术操作,但因存在较多的手术操作孔,不利于患者美观^[2-4]。随着腔镜技术的迅猛发展与日益成熟,之后迅速出现了单孔腹腔镜技术。1997年,Navarra^[5]首次报道了单切口腹腔镜胆囊切除术30例,术后效果良好。目前我国经脐单孔腹腔镜外科技术成为现阶段发展最快的经自然孔道内镜外科技术,尤其是经脐单孔腹腔镜胆囊切除术^[6,7]。单孔腹腔镜胆囊切除术可经“脐部”这一人体固有通道,置入带多个操作孔道的穿刺管,并通过操作孔道将手术器械置入,进行有关手术操作,经脐孔取出标本。该手术利用脐部褶皱可以遮盖手术瘢痕,减少术后切口感染等并发症发生,有利于被广大患者接受^[8,9]。国外报道显示经脐单孔技术与传统腔镜技术两者疗效相似^[10,11],我院

胆胰外科目前已经有了有一定数量病例的积累,因此,本研究回顾总结了我院2018年6月至2019年8月的单孔和四孔腹腔镜胆囊切除术的临床资料,对其进行疗效进行对比分析。

1 资料和方法

1.1 研究对象

回顾性分析2018年6月至2019年8月在上海交通大学医学院附属仁济医院胆胰外科同期进行治疗的240例腹腔镜胆囊择期手术患者的临床资料。纳入标准:符合腹腔镜胆囊切除术的择期手术适应证:包括胆囊息肉(直径 ≥ 10 mm);胆囊结石有症状者,近一个月无急性发作史(术前一周内B超复查:胆囊壁厚 <3 mm且无肿大),伴发内科疾病控制良好。排除标准:①急性胆囊炎;②萎缩性胆囊炎;③既往有上腹部手术史;④合并胆管结石;⑤伴有较为严重的内科疾病。根据不同的手术方式分为单孔组(单孔腹腔镜胆囊切除术治疗)和四孔组(四孔腹腔镜胆囊切除术治疗),一般资料两组进行比较无差异(P 均 >0.05)。见表1。

表1 两组患者一般资料比较

Table 1 Comparison of general data between the two groups

Groups	n	Gender (male/female)	Age(years)	Gallbladder stones/polyps	Combined diseases		
					Hypertension	Diabetes	Hypertension and diabetes
Single-port group	120	54/66	51.18 $\pm$ 8.46	101/19	29	8	3
Four-port group	120	52/68	52.86 $\pm$ 7.45	104/16	32	9	5
χ^2/t		0.068	-1.633	0.301		0.290	
P		0.795	0.104	0.583		0.865	

1.2 手术准备及方法

术前完成检查,包括肝肾功能、血常规、空腹血糖、胸片、凝血功能和心电图等;确认无异常后术前12小时内禁食水,术前完成病史书写、麻醉和手术签字后手术。于术前半小时注射预防性抗生素,手术由同一组医师完成。单孔组:气静全麻成功后气管插管,单孔腹腔镜采用四通道单孔系统(英诺伟多通道单端口装置),通过沿脐孔上部行半圆弧形切口切开腹壁,置入单孔Trocar。气腹建立后,采用10毫米30°角腹腔镜镜头,术中牵引胆囊暴露Calot三角,手术中胆囊动脉和胆总管按照“critical view of safety”原则^[12]分离,夹闭胆囊管及胆囊动脉,并

予以切断,从胆囊床剥离胆囊,自脐切口取出。见图1。四孔组:传统腹腔镜使用四孔Trocar法,全麻,取脐上戳孔,将10 mm Trocar置入,头高足低左倾位。气腹后直视下先后作右锁骨中线肋缘下交点(5 mm)及剑突下(10 mm)两个戳孔,术中探查后根据需要加腋前线平脐交点(5 mm)戳孔,四孔法完成手术。手术步骤同单孔腹腔镜胆囊切除术。见图2。当术中发现胆囊炎症较重,渗出较多时,留置一根负压引流管在胆囊窝处,术后观察负压引流量及颜色,术后第一天拔除负压引流管。术后常规静脉给予止吐药、抗生素、镇痛药,术后次日清晨恢复半流质饮食后离院。



图1 单孔组手术图片

Fig. 1 Operation picture of single-port group



图2 四孔组手术图片

Fig.2 Operation picture of four -port group

1.3 手术的观察指标以及评估

(1)记录患者手术有效性指标包括手术时间、腹腔引流管留置率、手术方案转变率、出血量,术后恢复指标包括住院时间、住院费用、术后 24 h 镇痛药物使用率和术后并发症(胆漏、出血、伤口感染)发生率。(2)体验感评价:电话随访患者对手术结果是否满意,满意度的调查通过术后 3-6 个月电话回访来评估,请患者根据手术对身体的影响、手术瘢痕等选择评分,评分为 1-5 分,分别为非常不满意、不满意、满意、较为满意、非常满意五项。

1.4 统计学方法

采用 SPSS25.0 软件分析数据。以均数 $\pm$ 标准差表示计量资料,采用 t 检验;计数资料以率表示,采用卡方检验。检验水准为 $\alpha=0.05$ 。

2 结果

2.1 手术有效性指标比较

单孔组相对四孔组手术时间有延长,两组之间有显著差异($P<0.05$)。两组在手术中腹腔引流管留置率分别为 1.67%和 21.67%,两组之间有显著差异($P<0.05$),单孔组腹腔镜在手术中更少留置腹腔引流管。根据统计单孔组有 1 例转开腹手术,另有 2 例单孔胆囊切除术增加了 Trocar 转为多孔手术,四孔组有 2 例转开腹手术。单孔组和四孔组在手术方案转变率分别为 2.50%和 1.67%,两组之间无差异($P>0.05$)。单孔组和四孔组手术出血量分别为 15.42 ± 5.93 mL 和 16.79 ± 5.57 mL,两者之间无显著差异($P>0.05$)。见表 2。

表 2 两组手术有效性指标分析

Table 2 Analysis of operation effectiveness indexes of the two groups

Groups	n	Operation time(min)	Abdominal drainage tube indwelling rate	Surgical plan change rate	Surgical blood loss (mL)
Single-port group	120	42.48 $\pm$ 6.66	2(1.67%)	3(2.50%)	15.42 $\pm$ 5.93
Four-port group	120	32.18 $\pm$ 7.08	26(21.67%)	2(1.67%)	16.79 $\pm$ 5.57
χ^2/t		11.608	23.288	0.204	-1.845
P		0.000	0.000	0.651	0.066

2.2 术后恢复指标比较

单孔组和四孔组住院时间的比较有显著差异($P<0.05$),单孔组患者术后恢复更快,住院时间更短。单孔组的患者住院费用显著高于四孔组($P<0.05$),目前阶段我院的单孔腹腔镜技术

费用成本相对更高。单孔组和四孔组术后 24 h 镇痛药物使用率分别为 4.17%和 16.67%,单孔组术后镇痛药物使用率更低($P<0.05$)。见表 3。

表 3 两组术后恢复指标分析

Table 3 Analysis of postoperative recovery indexes of the two groups

Groups	n	Hospital stay(days)	Hospitalization cost(ten thousand yuan)	Use rate of analgesic drugs 24 hours after operation
Single-port group	120	2.22 $\pm$ 0.65	2.19 $\pm$ 0.17	5(4.17%)
Four-port group	120	2.71 $\pm$ 0.57	1.81 $\pm$ 0.14	20(16.67%)
χ^2/t		-6.209	18.902	10.047
P		0.000	0.000	0.000

2.3 术后患者体验感评价

本研究于术后 3-6 个月电话随访患者,单孔组完成随访 115 人,四孔组 114 人,术后满意度评分单孔组和四孔组分别为(4.68 $\pm$ 0.64)分和(4.47 $\pm$ 0.68)分,差异有统计学意义($t=2.463$, $P=0.014$)。

2.4 手术安全性比较

所有手术患者术中均无胆总管损伤,术后无腹腔出血再手术并发症,单孔组和四孔组分别有 4 例和 2 例伤口轻度感染,最终经换药后愈合良好。单孔组有 1 例患者术后发生轻度胆漏,术后 1~3 d 腹腔引流管每日引流出黄褐色胆汁样液体 120~300 mL,经保持腹腔管通畅引流,及时治疗痊愈。单孔组和四孔组术后并发症发生率分别为 4.17%(5/120)和 1.67%(2/120),两组术后并发症发生率比较无明显差异($\chi^2=1.324$,

$P=0.250$)。

3 讨论

自从 80 年代腹腔镜技术的发展,微创外科也迅猛发展,其在 21 世纪成为主流技术已被广大外科医生所认同。肚脐是人体皮肤天然的褶皱,可以隐藏手术疤痕,单孔经脐入路是腹腔镜手术的热点^[13-15]。根据国内外报道单孔腹腔镜与传统腹腔镜胆囊切除术相比,同样具备良好的可行性和安全性^[16,17]。

单孔腹腔镜的手术成功率是判断手术有效性的重要指标,Yamazaki^[18]等人对 102 篇文章的荟萃分析中指出,单孔腹腔镜转为剖腹开放手术或者增加附加 trocar 的比例为 7.2%。Arezzo^[19]等人对 600 名患者进行的多中心随机对照试验中,单孔腹腔镜的统计中报告了 5%的转化率和 6%的增加附加

trocar。本研究 120 例单孔手术只有 3 位手术方案转变,其中 1 例转开放手术,另 2 例增加附加 trocar,单孔组手术的转化率远低于国外的文献报道,可能与手术操作者的熟练程度相关,而且在单孔组和四孔组的手术方案转变率没有显著差异。腹腔引流管留置率常用于手术有效性评价,我院的 120 例单孔组患者只有 2 例留置腹腔引流管,根据我们的经验在解剖胆囊三角清晰,夹毕胆囊动脉,且胆囊窝处充分止血,术区渗出无明显情况下,可以考虑不放置负压引流管。单孔腹腔镜胆囊切除术在技术上客观存在一定的难度及学习曲线,单孔腔镜手术的技术难度存在器械置入部位集中、共轴效应、操作困难等问题^[20-22]。本研究单孔组患者相对四孔组手术时间有延长,也与多数研究一致^[23,24]。单孔组手术时间较长的原因,可能与使用特殊的单孔技术相关的操作技术有关,当然影响手术时间的另一个因素与医生的初始学习曲线有关。术中出血量是衡量手术安全性的重要指标,单孔组患者的术中出血量与四孔组无显著差别,其中接近 50%手术患者没有明显失血,而且两组患者均未出现术后出血需要再次手术的情况。

本研究中单孔组患者在住院时间方面更短,随着麻醉技术、手术技术及护理理念的发展,良好的医疗团队及技术为患者提供足够医疗保障。单孔组手术患者达到了真正的快速康复,但是单孔腹腔镜胆囊切除术仍被一部分学者认为在日常外科手术中的应用不够经济^[25,26]。本研究的单孔组患者住院费用的确高于四孔组患者,通过分析我们发现单孔技术在专业器械的成本上会超过传统胆囊切除术的成本,但住院费用往往容易受到患者基础伴发疾病以及个人医疗需求等多方面影响^[27-29]。单孔组患者术后 24 小时对镇痛药的使用需求上比四孔组患者比例明显更低。表明单孔组在术后疼痛感更轻,可能由于单孔腹腔镜手术只有手术切口 1 个,避免了术中表皮及腹壁神经的损伤,亦可能减少了二氧化碳对膈肌刺激^[30]。

单孔组只有 1 例患者发生轻微胆漏后腹痛,经相应治疗后恢复良好。单孔组和四孔组患者分别有 4 例和 2 例出现切口红肿后局部感染,经换药后延迟愈合。两组患者在手术并发症方面无明显差异,均未发生胆管损伤的严重手术意外,出现的轻度并发症均被归为 Clavien-Dindo I,而不是直接由于手术失败所致。目前单孔腹腔镜胆囊切除术并不适合每一个患者,应掌握手术适应证,合理的术前评估和选择合适的患者是保证手术安全的必要条件。

患者在微创手术后往往更注重疼痛、伤口疤痕等方面体验感。单孔组患者具有术后疼痛轻和美容满意度高等优势。本研究随访发现单孔组患者对手术的满意度评分高于四孔组患者,表明单孔腹腔镜胆囊切除术在提高满意度方面可能具有一定的优势,但因满意度评分为主观评价,可能影响准确性,仍需多中心大样本的研究以获得更为准确的数据。

综上所述,尽管单孔腹腔镜胆囊切除术的手术时间较长,住院费用更高,但与传统四孔腹腔镜胆囊切除术相比,单孔腹腔镜胆囊切除术已显示出良好的操作程序和术后恢复效果,患者术后疼痛轻,满意度高,安全性好,是传统腹腔镜治疗胆囊疾病的有效替代方法。

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