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经 PTGD 术后行 LC 与二期腹腔镜胆囊切除在急性胆囊炎治疗的临床疗效对比分析

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[摘要] 目的: 比较经皮经肝胆囊穿刺置管引流术(percutaneous transhepatic gallbladder drainage, PTGD)后一期腹腔镜胆囊切除术(laparoscopic cholecystectomy, LC)与二期LC治疗急性胆囊炎的临床效果。方法: 回顾性采集2017年2月至2019年11月成都中医药大学附属医院收治的105例急性胆囊炎患者, 按PTGD术后LC治疗时间分为早期组($n=58$, PTGD术后1周内行LC)与延期组($n=47$, PTGD术后1~2个月内行LC), 比较两组手术一般情况(手术时间、术中出血量、中转开腹情况、术后肛门首次排气时间、住院时间), 测定两组LC手术前后肝功能[谷草转氨酶(AST)、谷丙转氨酶(ALT)、总胆红素(TBIL)、 γ -谷氨酰转氨酶(GGT)、碱性磷酸酶(ALP)]及炎症因子[超敏C反应蛋白(hs-CRP)、肿瘤坏死因子- α (TNF- α)、白介素-6(IL-6)、白介素-10(IL-10)、降钙素原(PCT)]水平的变化, 统计两组术后3个月内近期并发症发生情况。结果: 两组手术时间、术中出血量及中转开腹所占比例比较差异无统计学意义($P>0.05$), 早期组术后肛门首次排气时间及住院时间短于延期组($P<0.05$); LC术后24 h, 72 h, 两组AST、ALT、TBIL、GGT及ALP均降低, 早期组术后24 h, 72 h AST, ALT, TBIL, GGT, ALP均低于延期组($P<0.05$); LC术后两组hs-CRP, TNF- α , IL-6, IL-10, PCT均下降, 早期组以上各炎症因子水平低于延期组($P<0.05$); 两组近期手术并发症发生率比较差异无统计学意义($P>0.05$)。结论: PTGD术后早期行LC较延期行LC更利于控制胆囊炎症, 改善肝功能和胆囊炎症状, 促进患者术后恢复, 安全可行。

[关键词] 急性胆囊炎; 腹腔镜胆囊切除术; 经皮经肝胆囊穿刺置管引流; 早期手术; 延期手术

Comparative analysis of clinical effect between LC and two-stage LC in the treatment of acute cholecystitis after PTGD

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Abstract Objective: To compare the clinical value between one-stage laparoscopic cholecystectomy (LC) and two-

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stage LC in the treatment of acute cholecystitis after percutaneous transhepatic gallbladder drainage (PTGD). **Methods:** A total of 105 patients with acute cholecystitis who were admitted to the hospital between February 2017 and November 2019 were selected and divided into the early group (58 cases treated with LC within 1 week after PTGD extubation) and the delayed group (47 cases treated with LC within 1~2 months after PTGD extubation). The general conditions of operation (operation time, intraoperative blood loss, conversion to laparotomy, postoperative first anal exhaust time, hospital stay) were compared between the two groups. The changes in liver function [aspartate aminotransferase (AST), alanine aminotransferase (ALT), total bilirubin (TBIL), γ -glutamyl transferase (GGT), alkaline phosphatase (ALP)] and inflammatory factors [high-sensitivity C-reactive protein (hs-CRP), tumor necrosis factor- α (TNF- α), interleukin-6 (IL-6), interleukin-10 (IL-10), procalcitonin (PCT)] before and after LC were determined. The incidence of complications within 3 months after surgery was statistically analyzed. **Results:** There was no statistically significant difference in the operation time, intraoperative blood loss or the proportion of conversion to laparotomy between the two groups ($P>0.05$). The postoperative anal exhaust time and hospital stay of the early group were shorter than those of the delayed group ($P<0.05$). At 24 and 72 h after LC, the AST, ALT, TBIL, GGT and ALP were decreased, and the above indexes in the early group were lower than those in the delayed group ($P<0.05$). After LC, the hs-CRP, TNF- α , IL-6, IL-10 and PCT were decreased, and the levels of above inflammatory factors in the early group were lower than those in the delayed group ($P<0.05$). There was no statistically significant difference in the incidence of short-term complications between the two groups ($P>0.05$). **Conclusion:** Early LC after PTGD is more conducive to controlling gallbladder inflammation, improving liver function, relieving symptoms of cholecystitis, and promoting postoperative recovery. It is safe and feasible.

Keywords acute cholecystitis; laparoscopic cholecystectomy; percutaneous transhepatic gallbladder drainage; early surgery; delayed surgery

急性胆囊炎是胆囊梗阻及细菌感染所致的胆囊急性炎症, 以右上腹阵发性绞痛为特征, 伴腹肌强直与明显触痛感, 好发于中老年群体, 近年来, 随人口老龄化进程的加快, 急性胆囊炎发病率逐渐上升^[1]。目前外科手术为治疗急性胆囊炎的首选方法, 常用术式包括超声引导下经皮经肝胆囊穿刺置管引流术(percutaneous transhepatic gallbladder drainage, PTGD)、开腹胆囊切除术及腹腔镜胆囊切除术(laparoscope cholecystectomy, LC)等^[2]。其中PTGD可快速引流感染胆汁, 降低胆囊压力, 改善临床症状, 目前已成为急性胆囊炎过渡治疗的常用方式^[3]。但PTGD无法根治胆囊炎, 仍需配合胆囊切除^[4]。LC因具备疼痛轻、创伤小、恢复快等优势成为胆囊切除的首选, 较开腹胆囊切除住院时间短, 并发症少, 高龄患者耐受性好^[5]。近年来临床关于PTGD联合LC治疗急性胆囊炎的可行性报道较多, 但对PTGD术后LC联合治疗时机尚存在争议^[6-7]。部分认为PTGD后早期、延期行LC术疗效相当^[8]。也有观点对PTGD后早期行LC安全性存疑^[9]。为探讨急性胆囊炎患者PTGD术后LC最佳治疗时机, 本研究对近年来收治的105例急性胆囊炎患者的临床资料展开了回顾性分

析, 对PTGD术后早期及延期LC患者手术及术后恢复情况, 肝功能, 炎症水平及近期并发症等方面进行比较, 以总结LC最佳治疗时机, 为急性胆囊炎外科治疗提供参考。

1 对象与方法

1.1 对象

回顾性采集2017年2月至2019年11月成都中医药大学附属医院收治的105例急性胆囊炎患者的临床资料。入组标准: 满足急性胆囊炎诊断标准^[10], 经病理证实; 年龄50~79岁; 美国麻醉师协会分级I~III级; PTGD术后依据全身状况、胆囊炎症情况选择行早期或延期LC治疗; 临床及近期随访资料完善。排除标准: 合并肝内外胆管结石; 合并急性胆源性胰腺炎; 既往有上腹部手术史; 心肝肾肺器质性功能障碍; 严重心脑血管疾病; 恶性肿瘤; 临床及随访资料不全。按PTGD术后LC治疗时间分为早期组($n=58$, PTGD术后1周内行LC)与延期组($n=47$, PTGD术后1~2个月内行LC)。两组性别、年龄、入院体温、合并疾病、胆囊炎分级等临床资料比较差异无统计学意义($P>0.05$, 表1)。

1.2 方法

两组均由同一手术团队进行手术治疗。早期组PTGD 1周内行LC术。延期组PTGD 1~2个月内行LC术。手术方法: 1)PTGD。侧卧位或仰卧位, 超声定位体表穿刺点, 术区常规消毒铺巾, 用2%利多卡因局麻, B超引导下穿刺进针, 经肝于胆囊上中1/3区域刺入胆囊, 回抽见胆汁流出后置入导丝, 引入腹腔引流管(8F, 猪尾外引流管), 确保引流管在胆囊内长度达5 cm左右, 造影剂确定引流管位置, 固定后, 接引流袋并固定, 无菌敷料覆盖术区, 术后常规抗感染治疗, 维持引流管通畅, 满足引流拔管指征后拔管(指征: 置管时间14~20 d; 引流液为清澈黄色或黄绿色胆汁, 未见絮状物或脓液; 无发热、腹痛或右上腹压痛感, 墨菲氏征提示阴性; 影像学提示未见胆囊肿大, 无胆囊炎症)^[11]。2)LC。早期组PTGD术后1周内行LC, 延期组PTGD术后1~2个月内行LC。患者仰卧, 采用气管插管全麻, 3孔法穿刺进腹, 脐上缘打孔置入套管针送入腹腔镜, 右上腹打孔置入套管针作为辅助操作孔, 剑突下约1 cm处打孔作为主操作孔, 建立CO₂气腹通道, 维持腹内压12 mmHg (1 mmHg=0.133 kPa), 常规探查腹腔及胆囊粘连情况, 提起并分离胆囊, 解剖Calot三角区, 游离胆囊管, 钳夹近胆总管, 离断近胆囊端, 分离胆囊动脉, 近端结扎, 远端超声刀离断, 切开胆囊浆膜层, 行浆膜下分离, 完整游离胆囊, 放置腹腔引流管, 胆囊三角区解剖困难者行逆行胆囊切除^[12], 最后常规冲洗并缝合。

1.3 观察指标

1)手术情况。记录两组手术时间、术中出血量、术中中转开腹例数、患者术后肛门首次排气时间、住院时间等。2)肝功能测定。两组均于LC手术前后(即PTGD术后24 h、LC术后24 h、LC术后72 h)采集外周静脉血测定肝功能, 采用美国贝克曼库尔特公司LX20型全自动生化分析仪测定谷草转氨酶(aspartate aminotransferase, AST)、谷丙转氨酶(alanine aminotransferase, ALT)、总胆红素(total bilirubin, TBIL)、 γ -谷氨酰转移酶(glutamyltransferase, GGT)、碱性磷酸酶(alkaline phosphatase, ALP)水平。3)炎症因子比较。两组均于LC手术前后(即PTGD术后24 h、LC术后24 h、LC术后72 h)采集外周静脉血测定炎症因子改变, 应用乳胶增强免疫比浊

法测定超敏C反应蛋白(high-sensitivity C-reactive protein, hs-CRP), 采用酶联免疫吸附法测定肿瘤坏死因子- α (tumor necrosis factor- α , TNF- α)、白介素-6(interleukin-6, IL-6)、白介素-10(interleukin-10, IL-10)水平, 采用半定量固相免疫测定法测定降钙素原(procalcitonin, PCT)水平。4)近期并发症。两组术后均随访3个月, 统计近期手术相关并发症发生率。

1.4 统计学处理

数据均录入SPSS 21.0统计学软件进行分析与处理, 计量资料先作正态性、方差齐性检验, 符合数据符合正态及方差齐性要求后采用均数 \pm 标准差($\bar{x}\pm s$)表示, 重复测量数据采用重复测量方差分析, 组内LSD检验, 组间比较进行独立样本 t 检验, 计数资料采用例或(%)表示, χ^2 检验或Fisher确切概率分析, $P<0.05$ 为差异有统计学意义。

2 结果

2.1 两组手术情况对比

两组手术时间、术中出血量及中转开腹所占比例比较, 差异无统计学意义($P>0.05$), 早期组术后肛门首次排气时间及住院时间短于延期组($P<0.05$, 表2)。两组均因胆囊粘连严重引起胆囊动脉出血而中转开腹手术治疗。

2.2 两组LC手术前后肝功能变化比较

LC术前, 两组AST, ALT, TBIL, GGT及ALP等肝功能指标对比差异无统计学意义($P>0.05$), LC术后24 h, 72 h, 两组以上指标均降低, 早期组AST, ALT, TBIL, GGT, ALP均低于延期组($P<0.05$, 表3)。

2.3 两组LC手术前后炎症因子对比

LC术前, 两组hs-CRP, TNF- α , IL-6, IL-10, PCT等炎症因子水平对比差异无统计学意义($P>0.05$), LC术后24 h, 72 h两组以上各炎症因子水平均下降, 早期组各炎症因子水平低于延期组($P<0.05$, 表4)。

2.4 两组近期手术并发症发生率对比

两组近期手术并发症发生率比较差异无统计学意义($P>0.05$, 表5)。

表1 两组一般资料对比

Table 1 Comparison of general information between the two groups

临床特征	早期组(n=58)	延期组(n=47)	χ^2/t	P
性别/[例(%)]			0.007	0.979
男	31 (53.45)	25 (53.19)		
女	27 (46.55)	22 (46.81)		
年龄/岁	66.75 ± 9.63	67.11 ± 10.02	-0.187	0.852
入院体温/℃	36.98 ± 0.46	37.06 ± 0.41	-0.930	0.355
体重/kg	68.52 ± 10.79	69.71 ± 12.34	-0.527	0.599
合并疾病/[例(%)]				
胆囊结石	37 (63.79)	32 (68.09)	0.212	0.645
糖尿病	15 (25.86)	11 (23.40)	0.084	0.772
高血压	20 (34.48)	15 (31.91)	0.077	0.781
胆囊炎分级/[例(%)]			0.248	0.883
I级	7 (12.07)	5 (10.64)		
II级	33 (56.90)	29 (61.70)		
III级	18 (31.03)	13 (27.66)		

表2 两组手术情况对比($\bar{x} \pm s$)Table 2 Comparison of surgical conditions between the two groups ($\bar{x} \pm s$)

组别	n	手术时间/min	术中出血量/mL	中转开腹例数	术后肛门首次排气时间/h	住院时间/d
早期组	58	55.52 ± 15.76	25.26 ± 6.63	3	31.56 ± 6.52	18.96 ± 4.75
延期组	47	59.63 ± 13.89	28.96 ± 8.86	2	35.61 ± 7.86	27.85 ± 6.51
t/ χ^2		-1.400	-1.785	0.058	-2.886	-8.082
P		0.164	0.077	0.809	0.005	<0.001

表3 两组LC手术前后肝功能变化比较($\bar{x} \pm s$)Table 3 Comparison of liver function changes between two groups before and after LC operation ($\bar{x} \pm s$)

组别	n	AST/(U·L ⁻¹)		
		LC术前	术后24 h	术后72 h
早期组	58	53.63 ± 12.78	27.52 ± 5.97* [#]	24.51 ± 4.79* [#]
延期组	47	54.11 ± 13.66	30.01 ± 6.11*	26.46 ± 3.24*
$F_{\text{组间/时间/交互}}$			35.785/27.120/22.665	
$P_{\text{组间/时间/交互}}$			<0.001/<0.001/<0.001	

续表3

组别	ALT/(U·L ⁻¹)			TBIL/(μmol·L ⁻¹)		
	LC 术前	术后 24 h	术后 72 h	LC 术前	术后 24 h	术后 72 h
早期组	210.26 ± 40.79	82.96 ± 17.89* [#]	76.52 ± 10.65* [#]	86.99 ± 21.75	27.98 ± 8.55* [#]	25.41 ± 3.67* [#]
延期组	209.87 ± 42.77	110.77 ± 30.65*	87.52 ± 9.63*	85.63 ± 22.45	31.17 ± 4.15*	27.86 ± 2.85*
<i>F</i> _{组间/时间/交互}	71.970/58.522/38.667			77.292/54.337/42.904		
<i>P</i> _{组间/时间/交互}	<0.001/<0.001/<0.001			<0.001/<0.001/<0.001		

组别	GGT/(U·L ⁻¹)			ALP/(U·L ⁻¹)		
	LC 术前	术后 24 h	术后 72 h	LC 术前	术后 24 h	术后 72 h
早期组	19.63 ± 6.04	11.56 ± 3.26* [#]	9.87 ± 2.63* [#]	130.25 ± 36.52	35.52 ± 8.79* [#]	31.52 ± 6.75* [#]
延期组	19.78 ± 5.97	13.67 ± 4.01*	11.25 ± 3.17*	132.75 ± 35.98	43.67 ± 7.98*	35.75 ± 5.66*
<i>F</i> _{组间/时间/交互}	67.623/57.516/44.483			73.066/54.124/32.742		
<i>P</i> _{组间/时间/交互}	<0.001/<0.001/<0.001			<0.001/<0.001/<0.001		

与同组术前比较, **P*<0.05; 与延期组比较, **P*<0.05。

Compared with the same group before operation, **P*<0.05; Compared with the delayed group, **P*<0.05.

表4 两组LC手术前后炎症因子相关指标对比($\bar{x} \pm s$)

Table 4 Comparison of related indexes of inflammatory factors before and after LC operation in two groups ($\bar{x} \pm s$)

组别	<i>n</i>	hs-CRP/(ng·L ⁻¹)		
		LC术前	术后24 h	术后72 h
早期组	58	141.25 ± 20.79	89.25 ± 20.06* [#]	75.14 ± 15.63* [#]
延期组	47	140.98 ± 23.65	102.23 ± 21.57*	90.52 ± 6.57*
<i>F</i> _{组间/时间/交互}		85.505/66.549/50.882		
<i>P</i> _{组间/时间/交互}		<0.001/<0.001/<0.001		

组别	TNF-α/(μg·L ⁻¹)			IL-6/(ng·L ⁻¹)		
	LC 术前	术后 24 h	术后 72 h	LC 术前	术后 24 h	术后 72 h
早期组	88.96 ± 10.75	66.14 ± 6.79* [#]	59.78 ± 9.52* [#]	98.25 ± 15.79	57.02 ± 16.39* [#]	50.06 ± 10.56* [#]
延期组	89.71 ± 11.34	70.11 ± 7.66*	65.14 ± 6.77*	95.66 ± 16.83	63.52 ± 15.11*	59.63 ± 5.78*
<i>F</i> _{组间/时间/交互}	62.378/54.233/38.951			80.359/64.855/58.161		
<i>P</i> _{组间/时间/交互}	<0.001/<0.001/<0.001			<0.001/<0.001/<0.001		

组别	IL-10/(ng·L ⁻¹)			PCT/(ng·mL ⁻¹)		
	LC 术前	术后 24 h	术后 72 h	LC 术前	术后 24 h	术后 72 h
早期组	142.26 ± 26.79	62.69 ± 10.98* [#]	56.52 ± 6.78* [#]	2.56 ± 0.77	1.01 ± 0.23* [#]	0.86 ± 0.15* [#]
延期组	143.31 ± 30.01	66.79 ± 6.83*	60.05 ± 7.63*	2.61 ± 0.78	1.23 ± 0.34*	1.11 ± 0.23*
<i>F</i> _{组间/时间/交互}	70.133/54.636/41.832			55.612/42.448/30.652		
<i>P</i> _{组间/时间/交互}	<0.001/<0.001/<0.001			<0.001/<0.001/<0.001		

与同组术前比较, **P*<0.05; 与延期组比较, **P*<0.05。

Compared with the same group before operation, **P*<0.05; Compared with the delayed group, **P*<0.05.

表5 两组近期手术并发症发生率对比

Table 5 Comparison of the incidence of recent surgical complications between the two groups

组别	n	切口感染/[例(%)]	胆道损伤/[例(%)]	胆漏/[例(%)]	胆囊内出血/[例(%)]	总并发症/[例(%)]
早期组	58	2 (3.45)	0 (0.00)	1 (1.72)	2 (3.45)	5 (8.62)
延期组	47	1 (2.13)	2 (4.26)	0 (0.00)	1 (2.13)	4 (8.51)
χ^2		0.034	—	—	0.034	0.109
P		0.853	0.385 [*]	0.916 [*]	0.853	0.741

*为Fisher确切概率分析结果。

*Fisher exact probability.

3 讨论

急性胆囊炎属外科常见急腹症, 传统开腹胆囊切除术创伤大、并发症多、病死率高、手术风险高, 目前已逐渐被LC取代^[13-14]。但急性胆囊炎、尤其高龄、高危胆囊炎患者常伴肝门区、胆囊水肿、粘连或坏疽, 胆囊张力高, 解剖困难, 无法耐受LC气管插管麻醉及气腹通道建立, 且部分胆囊管结石嵌顿时间长、胆囊三角区水肿消退不理想者急诊LC风险大, 手术并发症发生率高^[15-16]。故一般建议对急性胆囊炎先行PTGD解除胆囊三角区水肿后再行LC治疗^[17]。但对PTGD术后LC手术时机存在较大争论。目前临床报道PTGD术后LC手术时间范围一般PTGD术后72 h到3个月之间^[7,18]。杜苏明等^[19]认为, PTGD术后延期开展LC手术难度降低, 可缩短手术时间, 减少术中出血。周文星等^[20]则持相反意见, 该观点认为PTGD后延期LC手术时间多于急诊LC。本研究早期组与延期组分别于PTGD术后1周内及术后1~2个月内进行LC, 结果发现, 两组手术时间、术中出血量及中转开腹所占比例相似, 与上述报道结果均存在一定的区别, 但支撑Jia等^[21]早期LC与择期LC手术情况相似的结论, 考虑本组病例均在PTGD术后1周内进行, 患者胆囊组织病理改变以水肿为主, 手术操作相对简单; 而延期手术患者部分胆囊呈萎缩性改变, 部分存在胆囊组织粘连, 胆囊三角解剖存在一定的困难, 影响手术操作的顺利性。同时本研究还发现, 早期组术后肛门首次排气时间及住院时间均短于延期组, 表明对无明显手术禁忌证急性胆囊炎患者PTGD术后早期行LC治疗有较高的可行性, 考虑本组所有患者术前均充分评估生理状况, 有充足的术前准备, 内科疾病基本得到控制, 肝功能尚可, 手术负担减轻, 对术后恢复有促进作用。而延期组患者LC手术时间再延长, 部

分老年、尤其高龄患者难以耐受PTGD, 对生活质量产生影响, 存在依从性不佳等问题。

也有观点认为, 虽通过PTGD引流可减轻肝脏负担, 但拔管后胆囊炎患者仍存在炎症^[22-23]。本研究发现, PTGD术后24小时所有急性胆囊炎患者肝功能仍存在不同程度受损, 同时机体炎症反应程度较高, 炎症相关标志物hs-CRP, TNF- α , IL-6, IL-10及PCT等均处于较高水平, 可能进一步造成肝细胞受损, 加重胆囊组织炎症反应, 导致继发水肿形成, 故建议在早期行LC切除胆囊, 减轻组织炎症水肿, 减轻肝脏负担。本研究发现, 早期组LC术后24 h, 72 h肝功能改善及炎症控制情况均优于延期组, 这与朱旭阳等^[24]的结论存在较高的一致性, 考虑可能与早期行LC可及时控制胆囊炎症反应, 抑制炎症因子募集, 避免继发水肿形成, 有助于减轻肝脏负荷, 抑制肝细胞功能受损, 快速缓解胆囊炎症状, 改善急性胆囊炎炎症反应, 促进肝功能恢复^[25]。而延期LC可能因病情反复造成胆道损伤、继发水肿形成, 不利于炎症控制, 导致术后恢复时间延长。此外, 统计并发症发现, 早期组、延期组手术并发症发生率相近, 提示PTGD术后早期行LC治疗安全性高, 不会增加手术风险。但需注意, 急性胆囊炎PTGD术后胆囊炎症状有所改善, 但在PTGD术后至延期LC期间, 有较高的胆道损伤、感染等的发生风险, 对肝功能恢复产生影响, 而拔管后尽早行LC可保护肝功能, 减轻肝脏负担及炎症反应^[26-27]。另外, 在进行LC过程中我们发现初期行PTGD虽可部分控制急性胆囊炎患者炎症反应, 但仍有部分患者存在胆囊三角区粘连、胆囊充血水肿、解剖不清等问题, 导致手术难度增加。因此我们建议术中在明确胆囊、胆总管走形的基础上勿过度游离及暴露肝外肝胆, 同时可通过适当延长胆囊管保留长度, 减少术中胆囊出血及胆管损伤; 对胆囊三角

区明显粘连, 解剖辨认困难, 壶腹部难以分离者建议行逆行胆囊切除^[28]。

对急性胆囊炎患者在PTGD术后早期行LC可促进患者术后恢复, 有助于抑制炎症反应, 减轻肝脏负荷, 更好地保护患者肝功能, 缓解胆囊炎症状, 其虽较延期手术难度略大, 但在充分术前准备、掌握熟练手术技巧的前提下, PTGD联合早期LC治疗急性胆囊炎安全可行。

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