论著·临床研究 doi:10.3969/j.issn.1671-8348.2015.02.027

影响腹腔镜胆囊切除术胆管损伤的相关危险因素研究

龙胜林,杨 华,顾 超,唐海静,舒易超
(贵阳医学院附属黔东南州人民医院肝胆外科,贵州凯里 556000)

摘 要:目的 探讨腹腔镜胆囊切除术并发胆管损伤的相关危险因素,以减少胆管损伤的发生率,改善患者预后。**方法** 察看 2003 年 12 月至 2013 年 12 月在该院行腹腔镜胆囊切除手术的 1 244 例患者的病历及病程记录。对患者性别、年龄、行 LC 术时间、病理、胆囊壁厚度、术前肝功水平、是否存在胆囊三角解剖异常情况和医师经验等因素与 LC 并发胆管损伤的相关性进行 Logistic 回归分析。**结果** LC 手术时间早、急性胆囊炎患者、合并胆囊积液的胆结石患者、胆囊壁厚度大于 4 mm、胆囊三角解剖存在变异情况和医师经验不足是 LC 手术并发胆管损伤的高危险因素($P<0.05$)。**结论** 针对 LC 并发胆管损伤的高危因素,术中采用合理手段降低胆管损伤的发生率,术后积极交流学习增加医师 LC 术的技巧与经验。

关键词:胆囊切除术,腹腔镜;胆管疾病;创伤和损伤;危险因素
中图分类号:R256.4 **文献标识码**:A **文章编号**:1671-8348(2015)02-0224-02

Research on correlated risk factors of bile duct injury induced by laparoscopic cholecystectomy

Long Shenglin, Yang Hua, Gu Chao, Tang Haijing, Shu Yichao
(*Department of Hepatobiliary Surgery, the Affiliated Qiandongnan People's Hospital of Guiyang Medical College, Kaili, Guizhou* 556000, *China*)

Abstract: Objective To explore the correlated risk factors of bile duct injury induced by laparoscopic cholecystectomy, and to reduce the rate of bile duct injury companied with LC and improved patients condition after LC. **Methods** One thousand two hundred and forty four patients who had been done the laparoscopic cholecystectomy in our hospital were searched from December 2003 to December 2013 for their case notes. The relationship between rate of bile duct injury induced by laparoscopic cholecystectomy and gender, age, time of LC surgery, pathology, gallbladder wall thickness, liver function levels, the existence of the gallbladder triangle anatomical anomalies and physician experience were analyzed by logistic regression method. **Results** Logistic regression analysis showed that patients did LC surgery at early time, with acute cholecystitis, with gallstones combined effusion, with gallbladder wall thicker than 4 mm and with gallbladder triangle anatomical anomalies were likely to have bile duct injury induced by LC ($P<0.05$). And doctor's experience on LC is another important factor as well ($P<0.05$). **Conclusion** According to the correlated risk factors of bile duct injury caused by laparoscopic cholecystectomy, methods should be employed to reduce the bile duct injury. And sharing experience between doctors and learning new techniques could be helpful, too.

Key words: cholecystectomy, laparoscopic; bile duct diseases; wounds and injuries; risk factors

腹腔镜胆囊切除术(laparoscopic cholecystectomy,LC)从 1987 年开始发展至今,已经成为肝胆外科治疗胆囊疾病的常规手术[1]。与早期的开腹胆囊切除术相比较,LC 具有操作简单、术程时间短、术后恢复快、创伤小、术后并发症少和医疗费用低等优势[2-5]。胆管损伤是 LC 的常见且高发的并发症[6],会增加患者术后感染,造成胆漏、胆管狭窄等严重并发症,影响 LC 手术患者的预后[7]。因此,分析并降低 LC 并发胆管损伤发生率,对改善患者预后及降低医疗纠纷具有十分重要的意义,也为 LC 在肝胆外科的扩大应用和手术覆盖率提供条件。

1 资料与方法

1.1 一般资料 选择 2003 年 12 月至 2013 年 12 月本院肝胆外科收治的行腹腔镜胆囊切除手术患者 1 244 例,其中男 479 例,女 765 例,年龄 15~76 岁,平均年龄(46.3±12.7)岁,≤45 岁患者 551 例,>45 岁患者 693 例。患者行 LC 手术日期:2003 年 12 月至 2006 年 12 月 264 例,2007 年 1 月至 2010 年 12 月 455 例,2011 年 1 月至 2013 年 12 月 525 例;胆囊息肉伴胆囊炎患者 72 例,胆结石伴胆囊炎患者 1 172 例。所有患者术前均经过彩色 B 超影像检查及生化检查确定符合 LC 手术适应证;术后出现的 16 例胆管损伤均经过《国际疾病分类》判定为胆管损伤。

1.2 方法 分析 2003 年 12 月至 2013 年 12 月行 LC 手术患者病历及病程记录,进行术后随访,核对患者信息。从患者性别、年龄、行 LC 术时间、病理、胆囊壁厚度、术前肝功水平、是否存在胆囊三角解剖变异情况和医师经验方面分析腹腔镜胆囊切除术并发胆管损伤的高危险因素。

1.3 统计学处理 临床统计数据采用 SPSS18.0 软件进行分析,计数资料采用率表示,各因素与腹腔镜胆囊切除术胆管损伤的相关性采用 Logistic 回归分析,以 $P<0.05$ 为差异具有统计学意义。

2 结 果

2.1 发生胆管损伤患者的信息 通过统计发现,在 1 244 例腹腔镜胆囊切除手术中发生胆管损伤患者 16 例,LC 胆管损伤并发率 1.31%,详细资料见表 1。

2.2 LC 例数与胆管损伤 如图 1 所示,2003 年 12 月至 2013 年 12 月进行 LC 手术的患者在逐渐增加,而手术并发胆管损伤情况有降低趋势,这与医师经验的累加,先进仪器的引进以及院内技术交流等因素有关。

2.3 腹腔镜胆囊切除术胆管损伤各因素的 Logistic 回归分析

作者简介:龙胜林(1967-),副主任医师,本科,主要从事肝胆临床方向研究。

从性别、年龄、LC 手术时间和患者病理等 8 个方面因素对腹腔镜胆囊切除术胆管损伤高危险因素进行 Logistic 回归分析。结果如表 2 所示，LC 手术时间早、急性胆囊炎患者、合并胆囊积液的胆结石患者、胆囊壁厚度大于 4 mm、胆囊三角解剖存在变异情况和医师经验不足是 LC 手术并发胆管损伤的高危险因素（$P<0.05$）。

表 1　LC 并发胆管损伤患者信息

因素	患者例数（n）	发生胆管损伤例数（n）	并发率（%）	P
性别				0.206
男	479	4	0.84	
女	765	12	1.57	
年龄				0.219
≤45	551	7	1.27	
>45	693	9	1.30	
LC 手术时间				0.012
2003.12～2006.12	264	4	1.52	
2007.1～2010.12	455	6	1.32	
2011.1～2013.12	525	6	1.14	
胆囊息肉伴胆囊炎	72	1	1.39	0.007
胆囊结石				0.001
合并积液	215	3	1.40	
单纯性	957	12	1.25	
胆囊壁厚度				0.010
≤4 mm	783	8	1.02	
>4 mm	461	8	1.74	
术前肝功能水平				0.911
正常	997	13	1.30	
异常	247	3	1.21	
胆囊三角解剖				0.004
正常	978	5	0.51	
变异	266	11	4.14	
医师经验				0.021
300 例以上	909	10	1.10	
不足 300 例	335	6	1.79	

表 2　LC 胆管损伤各因素的 Logistic 回归分析

影响因素	回归系数	SE	$Wald$	df	P	OR
性别	1.86	1.47	1.60	1	0.206	0.58
年龄	2.37	1.93	1.51	1	0.219	0.14
LC 手术时间早	3.66	0.73	25.00	1	0.012	1.671
急性胆囊炎	2.38	1.77	1.81	1	0.007	2.019
合并胆囊积液的胆囊结石	1.96	1.50	1.70	1	0.001	2.526
胆囊壁厚大于 4 mm	2.36	1.07	4.89	1	0.010	1.411
胆囊三角解剖存在变异	−1.89	0.78	5.81	1	0.004	3.082
医师经验不足	2.85	0.59	23.57	1	0.021	2.816

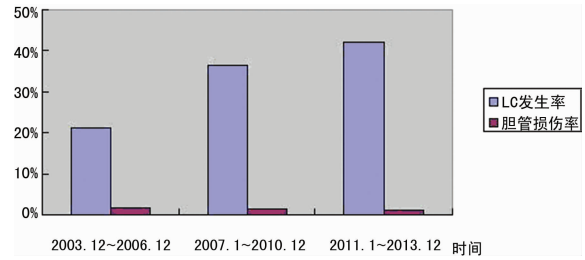

图 1　LC 发生率与胆管损伤率

3　讨　论

胆管损伤是 LC 常见且高发的并发症，发生率远高于开腹胆囊切除术[8]。LC 并发胆管损伤的相关因素很多，如患者胆囊的病理学改变、胆囊三角区解剖学变异、患者胆囊壁厚度及手术医生的经验不足都会影响胆管损伤的发生率。大量研究发现，急诊手术是 LC 并发胆管损伤的一个高危因素，急性胆囊炎会造成胆囊三角粘连，进而胆囊三角区发生解剖学变异，一方面干扰医生的辨识，另一方面会造成术中大量出血，增加胆管损伤的发生率[9]。本研究也得到相同的结论，合并胆囊积液的胆结石患者并发胆管损伤的概率明显高于单纯型胆结石患者。胆囊壁的厚度与胆囊炎症的程度相关，胆囊的病理学改变会伴随着胆囊壁增厚，对患者进行统计分析发现，胆囊壁厚度大于 4 mm 的患者在 LC 术中容易并发胆管损伤。LC 手术是一种借助于腹腔镜电视二维成像手段进行的胆囊切除手术，容易发生视觉错误，尤其当胆囊三角区发生病理学变异时，会增加误把胆总管认作为胆囊管而误切的可能，造成胆管损伤[10-11]。胆囊管过短、胆囊管变异、胆囊管汇入肝总管的位置变异等是常见的胆管变异，增加了患者在腹腔镜胆囊切除术中并发胆管损伤的可能[12]。LC 并发胆管损伤的另一高危因素就是手术医生的经验，研究发现在医生的前 25 例 LC 手术中并发胆管损伤的概率最高[13-14]。主要是由于手术医生对腹腔镜下的解剖关系认识不深，应对解剖变异经验不足，缺乏实际操作的技巧。

针对 LC 并发胆管损伤的高危因素，应采取积极有效的措施降低胆管损伤的发生率[15]。术前的胆道造影等影像学方法对 LC 手术具有重要的指导意义，可以充分了解胆囊三角区是否发生解剖变异，辅助辨认胆囊管、肝总管和胆总管的位置。对严重的急性胆囊炎患者、伴随严重的粘连患者、术中出血的患者及解剖变异严重的患者应立即中转开腹胆囊切除[16]。尽量减少不必要的电凝电切，对胆管进行钝性分离。完善 LC 并发胆管损伤的应对治疗方案，术后积极讨论研究特殊病例，增加科室内医生的临床经验。

综上所述，有效降低 LC 并发胆管损伤的发生对改善患者预后，提高患者的生存质量具有重要的临床意义。

参考文献：

[1] Yannos S, Athanasios P, Christos C, et al. History of biliary surgery[J]. World J Surg, 2013, 37(5): 1006-1012.

[2] Feng WM, Bao Y, Tang CW, et al. Optimal selection of methods for mini-invasive treatment of extrahepatic bile duct stones[J]. Hepatogastroenterology, 2014, 61(130): 299-303.

[3] Johansson M, Thune A, Nelvin L, et al. Randomized clinical trial of open versus laparoscopic cholecystectomy in the treatment of acute cholecystitis[J]. （下转第 228 页）

serving pancreaticoduodenectomy after coronary artery bypass grafting using right gastroepiploic artery[J]. Ann Thorac Surg,2014,97(4):1447-1449.

[8] Adachi E,Harimoto N,Yamashita Y,et al. Pancreatic leakage test in pancreaticoduodenectomy:relation to degree of pancreatic fibrosis,pancreatic amylase level and pancreatic fistula [J]. Fukuoka Igaku Zasshi,2013,104(12):490-498.

[9] Sato N,Yabuki K,Kohi S,et al. Stapled gastro/duodenojejunostomy shortens reconstruction time during pylorus-preserving pancreaticoduodenectomy[J]. World J Gastroenterol,2013,19(48):9399-9404.

[10] Traverso LW,Longmire WP Jr. Preservation of the pylorus in pancreaticoduodenectomy[J]. Surg Gynecol Obstet,1978,146(6):959-962.

[11] Kawai M,Tani M,Hirono S,et al. Pylorus-resecting pancreaticoduodenectomy offers long-term outcomes similar to those of pylorus-preserving pancreatico-duodenectomy:results of a prospective study[J]. World J Surg,2013,97(4):1447-1479.

[12] Yang C,Wu HS,Chen XL,et al. Pylorus-preserving versus pylorus-resecting pancreaticoduodenectomy for periampullary and pancreatic carcinoma:a meta-analysis[J]. PLoS One,2014,9(3):e90316.

[13] Tamandl D,Sahora K,Prucker J,et al. Impact of the reconstruction method on delayed gastric emptying after pylorus-preserving pancreaticoduodenectomy:a prospective randomized study[J]. World J Surg,2014,38(2):465-745.

[14] Bachmann K,Tomkoetter L,Kutup A,et al. Is the Whipple procedure harmful for long-term outcome in treatment of chronic pancreatitis? 15-years follow-up comparing the outcome after pylorus-preserving pancreatoduodenectomy and Frey procedure in chronic pancreatitis[J]. Ann Surg,2013,258(5):815-820.

[15] Imamura N,Chijiiwa K,Ohuchida J,et al. Prospective randomized clinical trial of a change in gastric emptying and nutritional status after a pylorus-preserving pancreaticoduodenectomy:comparison between an antecolic and a vertical retrocolic duodenojejunostomy[J]. HPB (Oxford),2014,16(4):384-394.

[16] Hanaoka M,Hashimoto M,Sasaki K,et al. Retroperitoneal cavernous hemangioma resected by a pylorus preserving pancreaticoduodenectomy[J]. World J Gastroenterol,2013,19(28):4624-4629.

[17] Hasegawa Y,Sasaki A,Nitta H,et al. Two-stage surgery in a morbidly obese patient:laparoscopic pylorus-preserving pancreaticoduodenectomy after laparoscopic sleeve gastrectomy[J]. Surg Obes Relat Dis,2013,9(6):e101-104.

[18] Nanashima A,Abo T,Sumida Y,et al. Comparison of results between pylorus-preserving pancreaticoduodenectomy and subtotal stomach-preserving pancreaticoduodenectomy:report at a single cancer institute[J]. Hepatogastroenterology,2013,60(125):1182-1188.

(收稿日期:2014-08-28 修回日期:2014-10-20)

(上接第 225 页)

Br J Surg,2005,92(1):44-49.

[4] Simopoulos C,Botaitis S,Polychronidis A,et al. Risk factors for conversion of laparoscopic cholecystectomy to open cholecystectomy[J]. Surg Endosc,2005,19(7):905-909.

[5] Livingston EH,Rege RV. A nation wide study of conversion from laparoscopic to open cholecystectomy[J]. Am J Surg,2004,188(3):205-211.

[6] Tantia O,Jain M,Khanna S,et al. Iatrogenic biliary injury:13 305 cholecystectomies experienced by a single surgical team over more than 13 years[J]. Surg Endosc,2008,22(11):1077-1086.

[7] 徐小东,李徐生. 腹腔镜胆道损伤的风险因素和处理方法[J]. 中国微创外科杂志,2009,9(7):663-665.

[8] Laux AT,Testa G,Goldstein RM,et al. The management of a complex bile duct injury after laparoscopic cholecystectomy[J]. Am Surg,2014,80(6):175-178.

[9] Krahenbtihl L,Sclabas G,Wente MN,et al. Incidence,risk factors,and prevention of biliary tract injuries during laparoscopic cholecys-tectomy in Switzerland[J]. World J Surg,2001,25(10):1325-1330.

[10] Kholdebarin R,Boetto J,Harnish JL,et al. Risk factors for bile duct injury during laparoscopic cholecystectomy:a case-control study[J]. Surg Innov,2008,15(2):114-119.

[11] Way LW,Stewart L,Gantert W,et al. Causes and prevention of laparoscopic bile duct injuries:analysis of 259 cases from a human factor and cognitive psychology perspective[J]. Ann Surg,2003,237(4):460-469.

[12] 裘法祖,王健本,张祜曾. 腹部外科临床解剖学[M]. 济南:山东科学技术出版社,2001:183-184.

[13] Vazquez RM. Common sense and common bile duct injury:common bile duct injury revisited[J]. Surg Endosc,2008,22(8):1743-1745.

[14] Schwaitzberg SD,Scott DJ,Jones DB,et al. Threefold increased bile duct injury rate is associated with less surgeon experience in an insurance claims database:more rigorous training in biliary surgery may be needed[J]. Surg Endosc,2014,28(11):3068-3073.

[15] 王强,游海波,张涛,等. 腹腔镜胆囊切除术胆管损伤的防治体会[J]. 重庆医学,2008,37(17):1982-1983.

[16] Kama NA,Kologlu M,Doganay M,et al. A risk score for conversion from laparoscopic to open cholecystectomy[J]. Am J Surg,2001,181(6):520-525.

(收稿日期:2014-08-27 修回日期:2014-10-22)