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· 专题研究 ·

## 腹腔镜经胆囊管微切开一期缝合治疗胆囊管肝总管汇合部 结石：附 8 例报告

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### 摘 要

**目的:** 探讨腹腔镜经胆囊管微切开一期缝合治疗胆囊管肝总管汇合部结石的有效性和安全性。

**方法:** 回顾性分析 2015 年 12 月—2017 年 12 月内蒙古医科大学附属医院肝胆外科收治的 8 例胆囊管肝总管汇合部结石患者资料, 所有患者均行腹腔镜胆囊切除 + 经胆囊管微切开一期缝合手术, 部分患者加用胆道镜辅助操作。观察患者的手术时间、术中出血量、术后胃肠道功能恢复时间、腹腔引流管拔除时间、术后住院时间以及并发症发生率。术后随访 3~24 个月。

**结果:** 8 例患者均成功实施腹腔镜操作, 无中转开腹。手术时间 ( $125.5 \pm 24.2$ ) min、术后胃肠道功能恢复时间 ( $28.9 \pm 8.2$ ) h、腹腔引流管拔管时间 ( $3.0 \pm 1.3$ ) d、术后住院时间 ( $5.3 \pm 1.5$ ) d。患者术中无明显出血, 术后胆汁漏 1 例、保守治愈。随访无结石残留及胆道狭窄。

**结论:** 腹腔镜经胆囊管微切开一期缝合治疗胆囊管肝总管汇合部结石是安全有效的, 能够避免结石残留或者胆道探查 T 型管引流, 但仍需进一步大样本的研究确证。

### 关键词

胆结石 / 外科学; 腹腔镜; 胆囊管; 肝管, 总  
中图分类号: R657.4

## Laparoscopic transcystic duct micro-incision and primary closure for stone at the junction of the cystic duct and common hepatic duct: a report of 8 cases

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### Abstract

**Objective:** To investigate the efficacy and safety of laparoscopic transcystic duct micro-incision and primary closure for stone at the junction of the cystic duct and common hepatic duct.

**Methods:** The clinical data of 8 patients with stone at the junction of the cystic duct and common hepatic

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duct treated in the Department of Hepatobiliary and Pancreatic Surgery of the First Affiliated Hospital of Inner Mongolia Medical University from December 2015 to December 2017 were reviewed. All patients underwent laparoscopic cholecystectomy and micro-incision via cystic duct with primary closure, and some of them were assisted by choledochoscopic operation. The operative time, intraoperative blood loss, time to postoperative gastrointestinal functional recovery, time to drainage tube removal, length of postoperative hospital stay and incidence of complications were analyzed. The patients were followed up for 3 to 24 months after surgery.

**Results:** Laparoscopic operations were successfully performed in all the 8 patients, without any open conversion. The operative time was (125.5±24.2) min, time to postoperative gastrointestinal functional recovery was (28.9±8.2) h, time to drainage tube removal was (3.0±1.3) d, and length of postoperative hospital stay was (5.3±1.5) d. No significant intraoperative bleeding was noted, and postoperative biliary fistula occurred in one case, which was cured by conservative treatment. No biliary stricture or residual stone was found during follow-up.

**Conclusion:** Laparoscopic transcystic duct micro-incision and primary closure is safe and effective in treatment of stone at the junction of the cystic duct and common hepatic duct, which can also effectively avoid stone residual as well as bile duct exploration and T tube drainage. However, it still needs be verified by studies with large sample size.

### Key words

Cholelithiasis/surg; Laparoscopes; Cystic Duct; Hepatic Duct, Common

CLC number: R657.4

随着微创理念的进步、微创技术的提升，腹腔镜胆囊切除术（laparoscopic cholecystectomy, LC）已经成为治疗胆囊良性疾病的首选<sup>[1]</sup>。胆囊结石是胆囊良性疾病中最为常见的病种，结石可位于胆囊、胆囊管的任何部位，当患者结石嵌顿在胆囊颈部、胆囊管，尤其是胆囊管与肝总管汇合部（简称汇合部）时，临床症状重、并发症多、处理棘手<sup>[2-3]</sup>。对于汇合部结石患者，尽管所占比例不大，临床应引起足够重视，笔者所在的手术治疗组为此类患者实施腹腔镜胆囊切除+经胆囊管微切开一期缝合手术，取得满意效果，现总结如下，供外科同仁借鉴。

## 1 资料与方法

### 1.1 研究对象

回顾性分析2015年12月—2017年12月在内蒙古医科大学附属医院肝胆外科单一治疗组诊治患者资料，所有患者术前均知情同意并签署知情同意书，实施技术通过医院伦理委员会审批。所有患者经彩色多普勒、多排螺旋CT或磁共振胰胆管成像等检查证实为胆囊管与肝管汇合部结石（图1），伴或不伴胆总管继发结石。排除标准：（1）心、肺、肝、肾功能异常，全身情况差，不能耐受手术者；（2）合并急性胆源性胰腺炎，病情尚未稳定者；（3）合并急性梗阻化脓性胆管炎者；（4）合并胆

总管泥沙样结石者；（5）胆总管直径≤3 mm者；（6）不能排除肝外胆道系统占位性病变者。

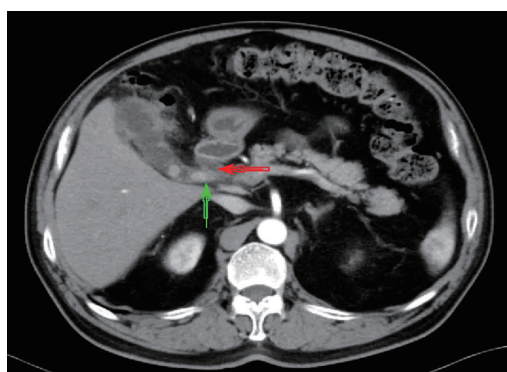


图1 胆囊结石位于胆囊管与肝管汇合部（绿色箭头示结石、红色箭头示肝管）

Figure 1 Gallstone at the junction of the cystic duct and common hepatic duct (green arrow showing the stone, and red arrow showing the hepatic duct)

### 1.2 手术方法

**1.2.1 LC+经胆囊管微切开** 所有患者均采用气管插管全麻完成手术，取头高脚低左侧卧位15~30°，脐上缘穿刺入腹，建立CO<sub>2</sub>气腹，“四孔法”行“LC+胆总管微切开”。胆囊三角解剖关系尚清者，解剖胆囊三角，显露胆囊管、肝总管、胆总管和胆囊动脉，胆囊管肝管汇合部钳夹进一步证实结石是否存在。胆囊管距离汇合部0.5 cm处剪刀或电刀切开，如结石无法显露或者脱出，沿

胆总管方向继续切开胆囊管直至剪开部分胆总管,微切开胆总管长度1~2 mm,完整取出结石(图2)。胆囊三角解剖关系不清者,逆行胆囊切除或胆囊劈开至胆囊颈部,胆囊动脉汇入胆囊处可吸收夹夹闭或者缝扎,残余胆囊黏膜烧灼。顺着胆囊管采用剪刀或者电刀劈开至汇合部、胆总管,取出结石。根据术前影像学检查及术中所见,决定是否行胆道镜探查。

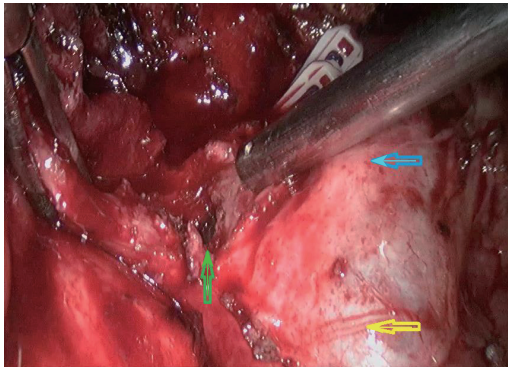


图2 显露胆囊管肝总管汇合部结石(绿色箭头示结石、蓝色箭头示肝总管、黄色箭头示胆总管)

Figure 2 Exposure of the stone at the junction of the cystic duct and common hepatic duct (green arrow showing the stone, blue arrow showing the common hepatic duct and yellow arrow showing the common bile duct)

1.2.2 胆道探查 符合胆道探查指征者,术中经胆总管微切开部分置入胆道镜,观察十二指肠情况,取净结石。胆囊三角解剖关系清晰者,离断胆囊管,胆总管微切开4-0或者5-0可吸收线(Vicry, Ethicon, NJ)一期缝合(图3),结扎胆囊动脉,顺行胆囊切除;胆囊逆行切除者,胆总管微切开一期缝合。检查无胆汁漏后,Winslow孔常规留置F24硅胶引流管1根,自右上腹戳卡孔引出固定。

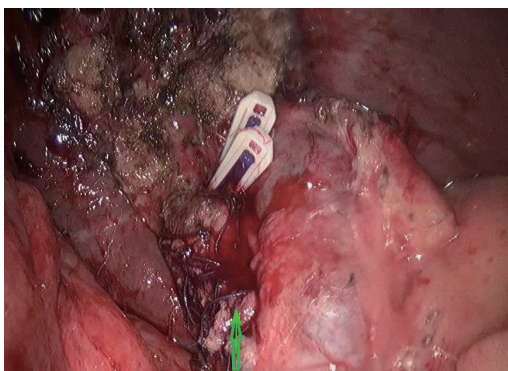


图3 胆总管一期缝合(绿色箭头示缝合处)

Figure 3 Primary closure of the common bile duct (green arrow showing the suture)

### 1.3 观察指标

记录所有患者手术时间、术中出血量、术后胃肠道功能恢复时间、腹腔引流管拔除时间、术后住院天数以及并发症(胆总管残余结石、胆汁漏和胆道感染)发生率。

### 1.4 随访

随访方式采用电话和门诊的方式进行随访。术后随访3~24个月。随访时间截至2017年12月30号。

## 2 结果

### 2.1 一般资料

共纳入8例患者,其中男3例,女5例,年龄23~75岁,中位年龄61岁。患者临床上以腹痛、腹胀及消化道症状为主,无梗阻性黄疸,3例患者合并有低热,8例患者右上腹压痛阳性。2例患者术前合并有胆总管继发结石,结石数目1~2枚;1例患者疑术中操作,结石进入胆总管。所有患者术前均行腹部B超、腹部MRI+MRCP检查,B超发现胆囊管结石5例,MRI+MRCP发现并确认胆囊管肝总管汇合部结石8例;4例患者行腹部增强CT检查,发现并确认胆囊管肝总管汇合部结石3例。

### 2.2 术中及术后情况

8例患者均成功实施腹腔镜胆囊切除+经胆囊管微切开一期缝合手术,7例为胆囊逆行切除;1例为胆囊顺行切除,无中转开腹和死亡。手术时间( $125.5 \pm 24.2$ )min、术后胃肠道功能恢复时间( $28.9 \pm 8.2$ )h、腹腔引流管拔管时间( $3.0 \pm 1.3$ )d、术后住院时间( $5.3 \pm 1.5$ )d。

### 2.3 术后并发症情况

本组患者术中、术后无出血。1例患者出现胆汁漏,术后两天消失。全部患者术后均顺利康复出院,随访3~24个月,患者肝功正常、无残余结石及胆道狭窄。

## 3 讨论

胆囊管与肝总管汇合部结石是胆囊结石的一种特殊类型,正如前言中所描述的那样,有自己独特的表现,临床处理较为棘手,处理难点在于:(1)结石嵌顿于汇合部,胆囊往往炎症重、局部粘连明显、解剖关系不清,医源性胆道损伤概

率增加<sup>[4]</sup>；(2) 汇合部位置异常，结石容易残留，需二次手术<sup>[5-6]</sup>；(3) 为取净结石，往往需异位或原位胆总管切开，长期留置T型管<sup>[7]</sup>。胆囊结石伴胆囊炎并急性发作者，病情进展迅速，就诊时考虑坏疽，或者穿孔时（图4），应考虑到合并有汇合部结石可能，术前应积极完善检查，如有条件推荐胆道MRI+MRCP,确诊病变同时，亦能够辨认胆道解剖关系，腹部CT及B超检查对汇合部结石的判断存在局限性<sup>[8]</sup>。本研究影像学检查结果支持上述结论，胆道MRI+MRCP敏感性近乎100%。通过术前影像学评估，能够指导术中精准操作，避免盲目操作<sup>[9-10]</sup>。

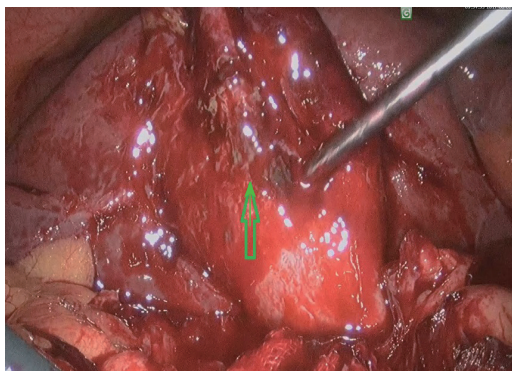


图4 胆囊坏疽、穿孔（绿色箭头示坏疽处）

Figure 4 Gangrene and perforation of the gallbladder (green arrow showing the gangrene)

手术是治疗汇合部结石的有效方法，手术可以采用开腹和以腹腔镜为代表的微创，具体采用何方式依据技术实力而定，当然，采用腹腔镜等微创技术操作，应放宽中转开腹指征，保证手术安全<sup>[4, 11]</sup>。通过治疗其他胆道良性疾病，已然发现微创手术与传统开刀手术相比，具有更多的优势，患者术后身体恢复更快、导致精神、心里创伤更小<sup>[12-14]</sup>。本研究因病例数较少，未做对比研究，这是不足之处。

腹腔镜下腹腔探查，胆囊三角关系清晰与否，决定操作顺序，对于解剖关系不清晰者，可采用胆囊逆行切除或者胆囊部分切除，显露胆囊颈部，循胆囊管依次暴露汇合部、胆总管<sup>[15]</sup>。胆囊管后方或近后方汇入者，暴露汇合部时，避免前方肝总管、胆总管横断<sup>[16]</sup>。本研究7例患者采用逆行切除胆囊方式完成手术操作。局部病情较重时，也可先行经皮经肝胆囊穿刺造瘘术，二期行

微创手术<sup>[16-18]</sup>。术前影像指导，结合娴熟技术，早期行腹腔镜下胆囊切除具有较多优势，Lyu等<sup>[12]</sup>收集既往发表文献，进行荟萃分析，结果表明：从症状出现到手术干预，1周内和延迟微创手术并发症相似，但早期干预能够缩短住院天数；本研究均行一期微创手术。

因结石嵌顿于汇合部，汇合部完整显露、胆总管的微切开是避免结石残留的关键，但胆总管微切开长度是多少合适，具体情况具体分析。有文献<sup>[19-20]</sup>报道，行胆总管探查时，微切开胆管长度为2~3 mm，便于置入胆道镜、去除结石。而本研究目的是解决胆囊管与肝总管汇合部结石，微切开长度1 mm左右即可达到目的，对于部分需胆道探查患者，为了置入胆道镜，微切开长度可接近2 mm。由于微切开长度较小，加之缝合技术过关，使经胆囊管微切开一期缝合术后狭窄的概率大大降低<sup>[21]</sup>。特殊情况下，如患者肝外胆管较细，直径 $\leq 3$  mm，采取本方法需慎重。本研究在随访周期内，无胆道狭窄出现。胆总管切开后是否胆道探查应结合术前影像学检查及术中操作所决定，部分患者胆囊管肝管汇合部多发结石或者单发结石，操作过程中怀疑结石排入胆总管；术前合并有胆总管继发结石者。上述是胆总管探查指征，本研究中，仅有3例患者需要探查，2例术前明确，1例术中怀疑结石掉入胆总管。

胆总管切开后既往常规放置T型管，T型管放置有诸多弊端，临床出现了胆总管切开一期缝合术式，但该技术胆总管结石的治疗中应用指征严格，并不是所有患者都适用<sup>[22-23]</sup>，但汇合部结石特点决定经胆囊管微切开一期缝合是有效解决手段，因胆总管微切开，即使有少量的胆汁漏，短期内也会快速愈合。刘燕南等<sup>[24]</sup>报道，只要熟练掌握腹腔镜的基本技术及镜下缝合技术，胆囊管微切开胆汁漏发生率1%左右；而传统的腹腔镜下胆总管切开一期缝合的胆汁漏发生率可达20%~30%左右<sup>[25-27]</sup>。本研究仅有1例胆汁漏，恢复排气后自行消失。

微切开缝合材料选择，临床存在较大争议，Vicryl、prolene还是V-Loc<sup>TM</sup>180单向倒刺缝合线临床均有应用，效果基本一致<sup>[28-29]</sup>。如果有条件，亦可选用PDS-Ⅱ线<sup>[30]</sup>。缝合方式选择间断缝合还是连续缝合，可依据术者意愿、术中切开胆管情况

而定。本研究中,因行微切开一期缝合,选择空间更大,笔者所在单位无PDS-Ⅱ线,更习惯采用Vicry间断缝合,对技术要求更低些,便于初学者掌握。

综上所述,尽管病例数有限,但初步研究发现,腹腔镜经胆囊管微切开一期缝合治疗汇合部结石是安全有效的,能够有效避免结石残留或者胆道探查T型管引流。

#### 参考文献

- [1] Lee SR, Kim HO, Shin JH. Clinical outcomes of single-incision robotic cholecystectomy versus conventional 3-port laparoscopic cholecystectomy[J]. *Can J Surg*, 2019, 62(1):52–56. doi: 10.1503/cjs.000118.
- [2] 中华医学会外科学分会胆道外科学组,中国医师协会外科医师分会胆道外科医师委员会. 胆囊切除术后常见并发症的诊断与治疗专家共识(2018版)[J]. *中华消化外科杂志*, 2018, 17(4):325–328. doi:10.3760/cma.j.issn.1673-9752.2018.04.001.  
Biliary Surgery Group of Surgical Branch of Chinese Medical Association, Chinese Committee of Biliary Surgeons. Expert consensus on diagnosis and treatment of common complications after cholecystectomy (2018 edition)[J]. *Chinese Journal of Digestive Surgery*, 2018, 17(4):325–328. doi:10.3760/cma.j.issn.1673-9752.2018.04.001.
- [3] Navez J, Gigot JF, Deprez PH, et al. Long-term results of secondary biliary repair for cholecystectomy-related bile duct injury: results of a tertiary referral center[J]. *Acta Chir Belg*, 2019, 7:1–10. doi: 10.1080/00015458.2019.1570741. [Epub ahead of print]
- [4] Gangemi A, Danilkowicz R, Bianco F, et al. Risk Factors for Open Conversion in Minimally Invasive Cholecystectomy[J]. *JLS*, 2017, 21(4). pii: e2017.00062. doi: 10.4293/JLS.2017.00062.
- [5] Chowbey P, Sharma A, Goswami A, et al. Residual gallbladder stones after cholecystectomy: A literature review[J]. *J Minim Access Surg*, 2015, 11(4):223–230. doi: 10.4103/0972-9941.158156.
- [6] Singh A, Kapoor A, Singh RK, et al. Management of residual gall bladder: A 15-year experience from a north Indian tertiary care centre[J]. *Ann Hepatobiliary Pancreat Surg*, 2018, 22(1):36–41. doi: 10.14701/ahbps.2018.22.1.36.
- [7] Gerard J, Luu MB, Poirier J, et al. Acute cholecystitis: comparing clinical outcomes with TG13 severity and intended laparoscopic versus open cholecystectomy in difficult operative cases[J]. *Surg Endosc*, 2018, 32(9):3943–3948. doi: 10.1007/s00464-018-6134-z.
- [8] 张俊晶,李得溪,孟兴凯,等. 磁共振胰胆管造影结合MRI图像检查在胆总管相对探查指征患者中的应用[J]. *中国全科医学*, 2008, 11(23):2171–2172. doi:10.3969/j.issn.1007-9572.2008.23.028.
- [9] Zhang JJ, Li DX, Meng XK, et al. Application of MRCP Combined with MRI Source Images to the Management of Patients with Relative Indication of Common Bile Duct Exploration[J]. *Chinese General Practice*, 2008, 11(23): 2171–2172. doi: 10.3969/j.issn.1007-9572.2008.23.028.
- [9] Chisholm PR, Patel AH, Law RJ, et al. Preoperative predictors of choledocholithiasis in patients presenting with acute calculous cholecystitis[J]. *Gastrointest Endosc*, 2018, pii: S0016-5107(18)33288-7. doi: 10.1016/j.gie.2018.11.017. [Epub ahead of print]
- [10] Aranovich D, Zilbermintz V, Goldberg N, et al. Detection of Common Bile Duct Stones in Mild Acute Biliary Pancreatitis Using Magnetic Resonance Cholangiopancreatography[J]. *Surg Res Pract*, 2018, 2018:5216089. doi: 10.1155/2018/5216089.
- [11] Murabayashi T, Kanno Y, Ito K, et al. Correction: Severe peritonitis after successful endoscopic ultrasound-guided gallbladder drainage for acute gangrenous cholecystitis[J]. *Endoscopy*, 2018, 50(6):C8. doi: 10.1055/a-0666-6316.
- [12] Lyu Y, Cheng Y, Wang B, et al. Early versus delayed laparoscopic cholecystectomy for acute cholecystitis: an up-to-date meta-analysis of randomized controlled trials[J]. *Surg Endosc*, 2018, 32(12):4728–4741. doi: 10.1007/s00464-018-6400-0.
- [13] 刘平西,周钧,唐腾龙,等. 腹腔镜胆囊切除术联合ERCP解决术中棘手问题30例分析[J]. *中国普通外科杂志*, 2015, 24(2):293–296. doi:10.3978/j.issn.1005-6947.2015.02.028.  
Liu PX, Zhou J, Tang TL, et al. The solution of difficult problems encountered during laparoscopic cholecystectomy combined with endoscopic retrograde cholangiopancreatography: an analysis of 30 cases[J]. *Chinese Journal of General Surgery*, 2015, 24(2):293–296. doi:10.3978/j.issn.1005-6947.2015.02.028.
- [14] Sedaghat N, Cao AM, Eslick GD, et al. Laparoscopic versus open cholecystectomy in pregnancy: a systematic review and meta-analysis[J]. *Surg Endosc*, 2017, 31(2):673–679. doi: 10.1007/s00464-016-5019-2.
- [15] Dissanaik S. A Step-by-Step Guide to Laparoscopic Subtotal Fenestrating Cholecystectomy: A Damage Control Approach to the Difficult Gallbladder[J]. *J Am Coll Surg*, 2016, 223(2):e15–18. doi: 10.1016/j.jamcollsurg.2016.05.006.
- [16] Schreuder AM, Busch OR, Besselink MG, et al. Long-Term Impact of Iatrogenic Bile Duct Injury[J]. *Dig Surg*, 2019, doi: 10.1159/000496432. [Epub ahead of print]
- [17] Spira RM, Nissan A, Zamir O, et al. Percutaneous transhepatic cholecystostomy and delayed laparoscopic cholecystectomy in critically ill patients with acute calculus cholecystitis[J]. *Am J Surg*, 2002, 183(1):62–66.

- [18] Fleming MM, DeWane MP, Luo J, et al. A propensity score matched comparison of readmissions and cost of laparoscopic cholecystectomy vs percutaneous cholecystostomy for acute cholecystitis[J]. *Am J Surg*, 2019, 217(1):83–89. doi: 10.1016/j.amjsurg.2018.10.047.
- [19] 牛小娟, 宋京海, 陈剑, 等. 腹腔镜下经胆囊管汇入部微切开途径行胆道探查术在老年胆总管结石患者中的应用[J]. *中华老年医学杂志*, 2016, 35(9):960–963. doi:10.3760/cma.j.issn.0254-9026.2016.09.009.
- Niu XJ, Song JH, Chen J, et al. Micro-incision of the cystic duct confluence in laparoscopic common bile duct exploration for choledocholithiasis in elderly patients[J]. *Chinese Journal of Geriatrics*, 2016, 35(9):960–963. doi:10.3760/cma.j.issn.0254-9026.2016.09.009.
- [20] He MY, Zhou XD, Chen H, et al. Various approaches of laparoscopic common bile duct exploration plus primary duct closure for choledocholithiasis: A systematic review and meta-analysis[J]. *Hepatobiliary Pancreat Dis Int*, 2018, 17(3):183–191. doi: 10.1016/j.hbpd.2018.03.009.
- [21] Chen XM, Zhang Y, Cai HH, et al. Transcystic approach with micro-incision of the cystic duct and its confluence part in laparoscopic common bile duct exploration[J]. *J Laparoendosc Adv Surg Tech A*, 2013, 23(12):977–981. doi: 10.1089/lap.2013.0309.
- [22] 杨彦, 林师佈, 韩霖, 等. 腹腔镜联合胆道镜胆总管探查一期缝合术治疗胆囊结石合并胆总管结石的临床效果分析[J]. *临床肝胆病杂志*, 2018, 34(3):526–530. doi:10.3969/j.issn.1001-5256.2018.03.015.
- Yang Y, Lin SB, Han L, et al. Clinical effect of primary duct closure in laparoscopic cholecystectomy combined with laparoscopic common bile duct exploration among patients with gallstones complicated by common bile duct stones[J]. *Journal of Clinical Hepatology*, 2018, 34(3):526–530. doi:10.3969/j.issn.1001-5256.2018.03.015.
- [23] 张森, 谈永飞. 腹腔镜下经胆囊管胆总管探查术与胆总管探查并一期缝合术治疗胆总管结石的对比研究[J]. *中国普通外科杂志*, 2017, 26(2):151–156. doi:10.3978/j.issn.1005-6947.2017.02.004.
- Zhang M, Tan YF. Comparison of laparoscopic transcystic common bile duct exploration and laparoscopic common bile duct exploration with primary suture for common bile duct stones[J]. *Chinese Journal of General Surgery*, 2017, 26(2):151–156. doi:10.3978/j.issn.1005-6947.2017.02.004.
- [24] 刘燕南, 陈剑, 贺修文, 等. 腹腔镜经胆囊管汇入部微切开胆道探查术后胆漏的预防[J]. *中华普通外科杂志*, 2016, 31(6):479–481. doi:10.3760/cma.j.issn.1007-631X.2016.06.013.
- Liu YN, Chen J, He XW, et al. The prevention of bile leakage in laparoscopic common bile duct exploration through micro-incision approach at the cystic duct-CBD junction[J]. *Zhong Hua Pu Tong Wai Ke Za Zhi*, 2016, 31(6):479–481. doi: 10.3760/cma.j.issn.1007-631X.2016.06.013.
- [25] 张晓君, 董梦醒, 张军, 等. 腹腔镜胆总管切开取石术中一期缝合的临床研究[J]. *中华普通外科杂志*, 2017, 32(4):314–316. doi:10.3760/cma.j.issn.1007-631X.2017.04.009.
- Zhang XJ, Dong MX, Zhang J, et al. A clinical study on laparoscopic choledocholithotomy and primary suture in treatment of choledocholithiasis[J]. *Zhong Hua Pu Tong Wai Ke Za Zhi*, 2017, 32(4):314–316. doi: 10.3760/cma.j.issn.1007-631X.2017.04.009.
- [26] Zhu H, Wu L, Yuan R, et al. Learning curve for performing choledochotomy bile duct exploration with primary closure after laparoscopic cholecystectomy[J]. *Surg Endosc*, 2018, 32(10):4263–4270. doi: 10.1007/s00464-018-6175-3.
- [27] Zhang W, Li G, Chen YL. Should T-Tube Drainage be Performed for Choledocholithiasis after Laparoscopic Common Bile Duct Exploration? A Systematic Review and Meta-Analysis of Randomized Controlled Trials[J]. *Surg Laparosc Endosc Percutan Tech*, 2017, 27(6):415–423. doi: 10.1097/SLE.0000000000000472.
- [28] 吴鹏, 方路, 付小伟, 等. 单向倒刺线与普通可吸收线在腹腔镜下胆总管切开取石一期缝合术中应用的对比研究[J]. *中国内镜杂志*, 2016, 22(9):52–56. doi:10.3969/j.issn.1007-1989.2016.09.012.
- Wu P, Fang L, Fu XW, et al. Comparison of one-way barbs line and normal line in primary suturing of laparoscopic choledocholithotomy[J]. *China Journal of Endoscopy*, 2016, 22(9):52–56. doi: 10.3969/j.issn.1007-1989.2016.09.012.
- [29] Selvi F, Cakarar S, Can T, et al. Effects of different suture materials on tissue healing[J]. *J Istanbul Univ Fac Dent*, 2016, 50(1):35–42. doi: 10.17096/jiufd.79438.
- [30] 赵玉沛, 张太平. 普通外科缝合技术的基本原则与缝合材料规范化使用[J]. *中国实用外科杂志*, 2019, 39(1):3–5. doi: 10.19538/j.cjps.issn1005-2208.2019.01.02.
- Zhao YP, Zhang TP. Basic principles of surgical suture technology and selection of suture materials in general surgery[J]. *Chinese Journal of Practical Surgery*, 2019, 39(1):3–5. doi: 10.19538/j.cjps.issn1005-2208.2019.01.02.

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