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综述

## 内镜保胆取石术后结石复发因素的研究进展

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**摘要:** 内镜保胆取石术(CGPS)是胆囊结石的治疗方式之一,优点是保留了胆囊的功能,但术后胆囊结石复发一直是饱受争议的问题。该文对CGPS术后患者结石复发的相关因素及预防措施进行综述,以期保胆取石术后降低复发率提供指导依据。

**关键词:** 胆囊结石; 内镜保胆取石术; 复发

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## Progress in study of recurrence factors of gallstone after choledochoscopic gallbladder-preserving surgery

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**Abstract:** Choledochoscopic gallbladder-preserving surgery (CGPS) is one of the surgical methods for the treatment of cholecystolithiasis. The advantage of minimally cholecystolithotomy is that it retains the function of the gallbladder. However, postoperative recurrence of gallbladder stones has always been a controversial issue. In this paper, the possible factors related to the recurrence of cholecystolithiasis after cholecystolithotomy and preventive measures were reviewed to provide guidance for the treatment of cholecystolithiasis and the reduction of recurrence rate.

**Keywords:** cholecystolithiasis; choledochoscopic gallbladder-preserving surgery; recurrence

随着腔镜技术的发展,腹腔镜胆囊切除术已经是公认的治疗胆囊结石的金标准,但切除胆囊后,可能会引起一些不良后果,如:胆汁反流性胃炎、医源性胆道损伤、肝肠循环受阻、胆总管结石发病率增高和消化不良等<sup>[1-3]</sup>。因此,其受到不少学者质疑。近年来,随着腔镜及胆道镜的发展,保胆取石术受到许多医师的关注。相对于胆囊切除术,微创保胆取石术的优点是保留了正常的胆囊功能,避免了胆道损伤及胆囊切除后所致的不良后果。

传统保胆取石术后结石复发率约41.46%<sup>[4]</sup>,复发

率高是许多学者反对保胆的主要原因。自从腹腔镜联合胆道镜被应用后,以保胆先驱张宝善为代表创立了内镜保胆术,规范了保胆手术操作流程,逐步解决了结石复发率高的问题<sup>[5]</sup>,复发率明显下降。刘强等<sup>[6]</sup>随访400例保胆取石的患者,复发率为10.50%;李骞等<sup>[7]</sup>统计了近千名保胆取石患者,随访3~60个月,总复发率为7.04%;陈建华等<sup>[8]</sup>对43例保胆取石患者进行随访,复发率为6.98%;张红伟<sup>[9]</sup>对38例保胆取石患者随访6个月,无结石复发;王建党<sup>[10]</sup>对47例保胆取石患者随访12个月,无结石复发;熊聪等<sup>[11]</sup>对

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70例完全腹腔镜下保胆取石患者进行随访,复发率为2.86%;沈刚等<sup>[12]</sup>治疗青少年胆囊结石时,采取单孔腹腔镜保胆取石,14例患儿随访3~34个月,无结石复发;LIN等<sup>[13]</sup>用腹腔镜和胆道镜保胆取石治疗23例患儿,随访9~12个月,无结石复发。保胆术后结石复发率不断降低,说明内镜微创保胆术日渐成熟,应用范围更广泛。而胆囊结石内镜保胆取石术(choledochoscopic gallbladder-preserving surgery, CGPS)后,最受关注的热点是胆囊结石的复发问题。现报道如下:

## 1 个人因素

### 1.1 年龄、民族和家族史

骆助林等<sup>[14]</sup>对保胆取石术后患者随访近10年,总结出家族史也是结石复发的因素之一,与患者的年龄和性别无关。家族史是公认的胆囊结石复发的危险因素,可能与遗传因素、共同的生活背景和饮食习惯等相关。肥胖人群中,胆囊结石患者明显多于正常人群,且与肥胖程度呈正相关,肥胖患者的胆汁的胆固醇浓度高,易于结晶形成结石。刘永茂等<sup>[15]</sup>随访了4686例保胆取石患者,得出结论:少数民族也是胆囊结石复发的因素之一。不同地区和不同民族的患者,胆囊结石患病率及复发率也明显不同<sup>[16]</sup>。LI等<sup>[17]</sup>随访了720例保胆取石患者,发现影响胆囊结石复发的重要因素为患者个人体重指数、家族史及胆囊收缩功能。年龄与胆囊结石复发呈正相关,年龄越大,结石对胆囊黏膜损伤更大,结石复发率更高,老年患者胆汁流速慢,也易于结晶形成结石。年轻患者环境变化因素更复杂,如:妊娠、饮食偏好和药物影响等,高龄患者相对来说饮食简单,胆汁分泌减少,可能降低结石复发率。

### 1.2 性别

女性在妊娠时腹压增加,会影响胆囊排空率,以致胆汁淤积,形成结石。同时雌激素水平升高,可使胆汁中胆固醇浓度上升,胆囊收缩受限,促使结石形成。

### 1.3 小儿胆囊结石

小儿胆囊结石多与肥胖、感染、饮食、溶血性疾病和应用抗生素等有关<sup>[18-19]</sup>,如:遗传性球形红细胞增多症患者多伴有胆囊结石。随着小儿外科及腔镜外科的发展,很多儿外科也渐渐开展了小儿胆囊保胆取

石术<sup>[19-21]</sup>,效果良好。目前,儿童保胆取石的结石复发率很低,可能与可以开展儿童微创保胆的单位少、样本量小和随访时间短有关,仍需大样本长期验证。

## 2 保胆手术方式

### 2.1 保胆取石手术方式

目前,保胆取石手术常在内镜辅助下完成。内镜保胆取石手术方式分为小切口内镜微创保胆取石术、腹腔镜辅助内镜微创保胆术(laparoscopy-assisted choledochoscopic gallbladder-preserving surgery, La-CGPS)和腹腔镜下内镜微创保胆术(laparoscopic CGPS, L-CGPS)<sup>[22]</sup>。后两者属于双镜联合手术。La-CGPS是在腹腔镜辅助下,将胆囊底部从腹壁外小切口提出,胆囊切开、取石和缝合均在腹壁外完成。La-CGPS根据腹壁戳孔数量、大小和位置不同,分为多孔腹腔镜、经脐单孔腹腔镜和针孔辅助腹腔镜操作<sup>[23]</sup>。L-CGPS是在完全腹腔镜下完成所有切胆、胆道镜取石和缝胆操作,优点是能够真正达到切口美观的效果,甚至达到无瘢痕,但是操作难度大,学习曲线较长,无疑增加了手术难度及时间。且刘永茂等<sup>[15]</sup>研究表明,术后结石复发的危险因素与手术时间相关。

### 2.2 保胆手术成功的关键

手术适应证的选择是保胆手术成功的关键。保胆取石术主要适用于胆囊结石伴或不伴慢性胆囊炎的患者<sup>[22]</sup>。严重的慢性胆囊炎,合并以下情况不宜行CGPS<sup>[24]</sup>,包括:胆囊壁厚度 $>5\text{ mm}$ ;无胆囊腔;胆囊体狭窄,分隔孔 $<5\text{ mm}$ ;胆囊壁弥漫罗-阿窦结石或弥漫型腺肌症。胆囊结石伴急性胆囊炎的患者,如能控制急性期炎症发展,症状好转后复查,胆囊水肿消退,胆囊壁厚度 $\leq 5\text{ mm}$ ,可按照“指南”<sup>[23]</sup>的要求行CGPS。

### 2.3 改良CGPS

近年来,多位学者在CGPS术式上进行改良。胡浩等<sup>[25]</sup>采用免气腹单孔法保胆取石,与腹腔镜辅助胆道镜保胆术相比,减少了手术时间,提高了胆囊缝合质量。魏健等<sup>[26]</sup>采用透明帽辅助胆道镜进行保胆取石,由于透明帽可固定视野并增加可视空间,使用透明帽辅助可缩短手术时间,并降低胆囊结石复发率。黄彬等<sup>[27]</sup>采用3D腹腔镜联合硬镜保胆取石,与2D腹腔镜手术相比,同样减少了手术时间,术后并发症并

无明显差异。秦靖宜等<sup>[28]</sup>比较了硬质胆囊镜与软质胆道镜联合腹腔镜保胆取石的效果,结果显示,硬质胆囊镜手术时间短,术后恢复快,而软质胆道镜术后出血量少,术后并发症率较低,两者术后结石复发率无差异。何小建等<sup>[29]</sup>采用胃镜经脐保胆取石 15 例,胃镜下 HOOK 刀切开胆囊取石,以钛夹关闭胆囊壁切口,美容效果较好,术后无结石复发。而刘妍等<sup>[30]</sup>采取经胃肠自然腔道软式内镜保胆取石,经胃完成 24 例,经肠完成 15 例,结石复发率 5.40%,该手术为新兴技术,手术难度较大,尚未完全推广,如何取净结石,仍需探索。胆囊结石合并遗传性球形红细胞增多症患者,可在腹腔镜切脾时联合胆道镜保胆取石,成人 3 例<sup>[31]</sup>,儿童 4 例<sup>[20]</sup>,均未发现胆囊结石复发,说明:联合手术不影响结石复发率,但病例数量较少,仍需长期验证。

### 3 胆囊自身因素

#### 3.1 胆囊收缩功能

保胆取石的前提是保住有功能的胆囊,而胆囊收缩功能是胆囊的重要功能之一。俞士勇等<sup>[32]</sup>认为,术前脂餐试验可评估胆囊收缩功能,这对于选择切胆还是保胆具有重要意义。杨帆等<sup>[33]</sup>认为,胆囊收缩功能异常是保胆取石患者术后复发的独立危险因素,胆囊收缩功能小于 50%,将会延迟排空胆汁,胆汁潴留致胆汁过于浓缩,易于形成结石。

#### 3.2 胆囊壁厚度

胆囊壁厚度若大于 5 mm,经过保胆取石后,胆囊功能无法在术后立即恢复,若伴有胆汁浓缩,胆囊壁毛糙,结石易复发。胆囊壁增厚,必然会减弱胆囊收缩功能,胆汁过于浓缩,易形成结石。因此,胆囊壁厚度也是保胆术后结石复发的独立危险因素。

#### 3.3 胆囊管堵塞

胆囊通过胆囊管排出胆汁,若胆囊管堵塞,胆汁排出不畅或延时,胆汁过于浓缩,胆色素及胆固醇易结晶形成结石。若保胆术中未能完全解除胆囊管梗阻,术后极易再次形成结石。

### 4 胆囊结石的形成因素

#### 4.1 胆囊结石的性质

胆囊结石依据性质及成分,分为胆固醇结石、胆

色素结石及混合型结石。就硬度而言,胆固醇结石 > 混合型结石 > 胆色素结石,胆固醇结石质地硬,自身及取石时易损伤胆囊黏膜及胆囊壁,术后胆囊壁恢复时间长。就数量而言,胆固醇结石多为单发结石或数量较少,胆色素结石多为泥沙样结石,数量多,与胆囊壁接触的面积更大,更容易损伤胆囊黏膜及胆囊壁。陈超等<sup>[34]</sup>的研究结果表明,胆囊多发结石和泥沙样结石为保胆取石术后胆囊结石复发的重要独立危险因素,而胆囊泥沙样结石复发率较非泥沙样结石更高。

#### 4.2 胆囊结石的位置

胆囊结石的位置同样影响术后结石复发率。结石仅在胆囊腔内的患者,结石对胆囊壁损伤较小,取石相对容易,复发率低。胆囊颈部结石嵌顿,胆囊管阻塞,若不使用胆道镜保胆手术,取石非常困难,结石不易取净,而且容易损伤胆囊黏膜,术后易复发。胆囊壁间结石与胆囊腔相通,常有胆汁淤积,较易形成结石。周海军等<sup>[35]</sup>对 102 例保胆取石患者随访 1 年发现,当胆囊壁间结石数 > 10 处时,保胆取石后结石易复发,胆囊收缩功能有所降低,而胆囊壁间结石 ≤ 10 处时,胆囊收缩功能改善,无结石复发。

### 5 预防结石复发的措施

为进一步降低保胆术后胆囊结石复发率,笔者总结出以下经验:①术前评估胆囊功能非常必要,不切实际的保胆,保留无功能的胆囊,必然会增加结石复发率,给患者带来痛苦;②小切口缝合胆囊底切口时,缝线不要穿过黏膜层,避免异物刺激<sup>[12]</sup>;③取石时应用取石网篮,尽可能避免夹碎结石,取石时可夹住胆囊管根部,避免结石脱落至胆总管,取石顺序为先小后大;④术中需彻底止血,胆囊腔内及胆囊管内的血凝块、胆泥等要彻底清除,否则这些异物在术后可能形成结石;⑤取石完成后再次复查确认,确保胆囊结石取净无残留;⑥术后继续口服熊去氧胆酸(ursodeoxycholic acid, UDCA)和牛磺熊去氧胆酸(taur-UDCA, TUDCA)<sup>[36-37]</sup>,改善饮食结构,减少高胆固醇和高脂肪食物摄入,这样做可有效改善胆囊收缩功能,减少胆囊结石复发;中药胆宁片具有消炎利胆作用,可预防胆固醇性结石的形成,效果优于 TUDCA<sup>[38]</sup>。



## 6 展望

CGPS治疗胆囊结石,既保留了胆囊的正常生理功能,又取净了结石,避免了切除胆囊后所致的并发症发生。保胆还是切胆,虽长期存在争论,但其重点还是在适应证的把握和术后的预防措施,不宜一味切胆,也不可盲目保胆,医生需综合个体差异,为患者提供最适宜的治疗方式。正如保胆先驱张宝善<sup>[2]</sup>所言,要以人为本,既要去除结石,又要保住胆囊功能。随着对术后结石复发因素的探究,复发的危险因素和机制趋于清晰,需综合患者的适应证来选择,细化手术流程,改进手术技术,术后胆囊结石复发率有望进一步降低。

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