doi:10.7659/j.issn.1005-6947.260060
http://dx.doi.org/10.7659/j.issn.1005-6947.260060
China Journal of General Surgery, 2026, 35(2):252-259.

·专家论坛·

老年及高龄胆囊结石诊疗困境与策略思考

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摘　要　随着我国人口老龄化加剧，老年及高龄人群胆囊结石发病率持续升高，严重影响患者预期寿命及生活质量。老年患者常存在生理储备下降、多病共存及临床表现与病理损伤程度不匹配等特点，显著增加胆囊结石诊治难度。近年来，精准个体化医疗理念强调通过多学科综合评估，对老年患者实施“筛查—诊断—评估”的全流程管理，早期识别高危人群并开展干预。对已确诊患者应在积极干预与手术风险之间取得平衡，制定个体化诊疗策略并把握最佳手术时机。腹腔镜胆囊切除术仍为首选治疗方式，但需遵循损伤控制原则。对于高危患者，可采用经皮肝胆囊穿刺引流术作为“两步法”桥接策略以降低围手术期风险。术中可借助吲哚菁绿荧光或术中超声辅助辨识解剖结构，必要时行胆囊次全切除或及时中转开腹。围手术期精细化管理是促进老年患者快速康复的重要环节。未来可依托大数据与人工智能构建适用于中国高龄人群的风险预测模型，推动区域性胆道疾病中心建设，实现从社区筛查到全流程管理的闭环诊疗模式。

关键词　胆囊结石病/治疗；老年人；精准医学
中图分类号：R657.4

Challenges and strategic considerations in the diagnosis and treatment of gallstones in elderly and advanced-age patients

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Abstract　With the acceleration of population aging in China, the incidence of gallstones among elderly and advanced-age individuals has continued to rise, seriously affecting patients' life expectancy and quality of life. Elderly patients often present with reduced physiological reserve, multimorbidity, and a mismatch between clinical manifestations and the severity of pathological injury, which markedly increases the difficulty of diagnosis and treatment. In recent years, the concept of precision individualized medicine has emphasized multidisciplinary comprehensive assessment and the implementation of a full-process management model of "screening-diagnosis-evaluation" for elderly patients, enabling early identification of high-risk populations and timely intervention. For patients with confirmed gallstones, it is essential to balance active intervention with surgical risk, formulate individualized treatment strategies, and determine the optimal timing for surgery. Laparoscopic cholecystectomy remains the

收稿日期：2026-01-27；**修订日期**：2026-02-15。
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treatment of choice, but the principles of damage control should be strictly followed. For high-risk patients, percutaneous transhepatic gallbladder drainage can be adopted as a bridging strategy in a "two-step" approach to reduce perioperative risk. Intraoperatively, indocyanine green fluorescence imaging or intraoperative ultrasound may assist in identifying anatomical structures; if necessary, subtotal cholecystectomy or timely conversion to open surgery should be performed to ensure safety. Refined perioperative management is a key component in promoting rapid recovery in elderly patients. In the future, big data and artificial intelligence may help establish risk prediction models tailored to the elderly population in China, facilitate the development of regional biliary disease centers, and ultimately achieve a closed-loop management model ranging from community screening to whole-process care.

Key words Cholecystolithiasis/ther; Aged; Precision Medicine

CLC number: R657.4

随着我国社会发展与公共卫生水平的提升，人口老龄化已成为21世纪我国面临的重要公共卫生挑战，根据世界卫生组织及国际老年医学学会标准，≥65岁为老年，80~89岁为高龄，≥90岁为超高龄[1-2]。一项纳入10 937 993成年人的研究[3]显示，我国成年人胆囊结石发病率约为5.13%，而在老年及高龄人群中可升至10%以上[4]。同时，大量未接受胆囊切除的中年患者逐步进入老年阶段，进一步加重老年胆道疾病负担。胆囊结石已成为影响老年人健康寿命与生活质量的重要疾病[5-6]。尽管胆囊结石的诊治体系已相对成熟，但由于老年患者生理机能衰退、常合并多种基础疾病，个体差异极大，给临床决策带来特殊挑战[7]。因此，如何在循证医学基础上结合老年患者个体差异，制定更加安全、合理的诊疗策略，是当前胆道外科需要重点思考的问题。

老年胆囊结石的特殊性和复杂性，使临床实践面临诸多现实困境。如积极手术与保守治疗的选择、合并多基础病急性发作患者的处理时机、手术方式的个体化选择等，已成为当前老年胆道外科的核心命题。随着《老年人胆囊结石诊断和治疗专家共识（2026版）》[8]的发布，为我国临床实践提供了重要的标准化指导。国际指南如世界急诊外科学会相关推荐在急性胆囊炎处理上亦趋于一致，多主张灵活运用经皮肝胆囊穿刺引流术（percutaneous transhepatic gallbladder drainage，PTGD）作为“分步治疗”的桥接手段，降低急诊手术所致脏器功能衰竭风险[9-10]。面对我国数量庞大、病情复杂的高龄患者群体，单纯依赖指南仍难以完全覆盖复杂临床情境，需在循证基础上结合个体经验动态权衡。诊疗理念从“以病为中心”转向“以患者为中心”，从整体视角制定个体化方案。本文结合临床实践经验，探讨老年及高龄胆囊结石诊疗中的现实困境，并从个体化评估、微创策略优化及全流程管理等维度提出思考，以期构建更科学、安全、精准的诊疗路径。

1　老年胆囊结石诊疗中的特殊性及困境

1.1　老年胆囊结石手术与非手术治疗间的矛盾

老年胆囊结石诊疗范式已从经验导向逐步转向循证导向。我国老年胆道外科先后经历“保守救命”“微创探索”和“精准个体化医疗”三个阶段。早期因高龄患者手术风险高，临床多倾向保守治疗或单纯胆囊造瘘，虽短期规避手术风险，但反复炎症导致粘连加重，增加后续手术难度。随着微创技术、麻醉水平及对老年病理生理认知的提升，现有证据明确提示生理年龄并非手术绝对禁忌，早期或择期微创干预在改善远期生存质量、降低急诊手术死亡率方面具有明显优势[11]。对预期生存期极短或全身状态极差的患者，可采取对症支持治疗。

目前，腹腔镜胆囊切除术（一步法）与PTGD序贯择期手术（两步法）是两种主要策略。国内外指南均推荐，条件允许时首选腹腔镜下胆囊切除术，以缩短疗程，加速康复[12-13]。但老年患者常因基础疾病多、生理储备差，难以耐受一期手术。加之老年胆囊结石临床表现隐匿，体征与炎症程度不匹配，即使已发生坏疽甚至穿孔，腹膜刺激征仍可不明显。此时一期手术易造成感染播散、

全身炎症反应综合征，诱发基础疾病恶化及多器官功能障碍[14]。相比之下，“两步法”通过胆囊引流快速减压、控制感染，为患者争取时间调整基础病、改善全身状态，再择期手术，安全性更高[15-16]。值得注意的是，“两步法”存在结石嵌顿、Mirizzi综合征、炎症快速进展等风险，导致延误病情、影响预后[17]。

因此，临床实践需客观量化患者对麻醉与手术的代偿能力，在“筛查—诊断—评估”全流程实现风险前瞻性分层（图1）。术前尽早启动多学科协作（multi-disciplinary team，MDT），对重要脏器功能及营养状态进行预康复干预，确定最佳手术时间窗，为安全治疗奠定生理基础。

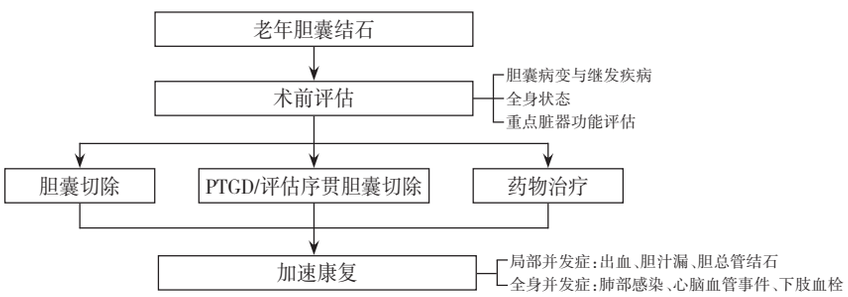

图1 老年胆囊结石诊疗流程图

Figure 1 Diagnosis and treatment flowchart of geriatric cholecystolithiasis

1.2 老年患者诊疗高需求与有限医疗资源间的矛盾

老年患者并非中青年患者生理特征的简单延续，其脏器储备功能多处于临界状态，病理生理特点独特。同时多病共存现象普遍，对手术应激耐受性大幅下降，围手术期风险显著增加[18]。

临床应尽可能采用多维度评估体系。对胆囊结石本身，除腹部超声外，宜完善磁共振胰胆管成像（magnetic resonance cholangiopancreatography，MRCP）或腹部增强CT检查，明确胆囊炎症程度、胆囊形态，结石数量、大小及嵌顿情况、毗邻结构及解剖变异；同时排除胆道梗阻及恶性肿瘤[19]。更重要的是评估全身基础情况，由于个体衰老速度、基础疾病状态存在差异，不能仅依赖年龄判断。目前推荐以美国麻醉医师协会（American Society of Anesthesiologists，ASA）分级和衰弱指数（Clinical Frailty Scale，CFS）量表、生理学和手术严重性评分（Physiological and Operative Severity Score for the enUmeration of Mortality and Morbidity，P-POSSUM）等工具综合评估手术耐受与围手术期风险[20-23]。ASA>III级、CFS>5提示高危；P-POSSUM预测死亡率>5%者需强化围手术期管理，>15%的极高龄患者更适合PTGD序贯手术[21,24-26]；临床实践中可以P-POSSUM为辅助，对于P-POSSUM预测死亡率>5%的患者应采取强化康复干预，对于高龄且预测死亡率>15%的患者，可考虑PTGD序贯胆囊切除术[21,26]。对合并严重心、肺、脑、肾功能障碍或恶性肿瘤者，需评估预期寿命，器官衰竭或预期生存期有限者以提高生活质量为主要目标，避免过度治疗。

但在实际临床工作中，受限于医疗资源与效率，难以对所有老年患者实施全套评估。因此更强调重点脏器、重点风险的靶向评估，结合病史与临床表现，在可及资源内最大限度提升围手术期安全性。

1.3 老年患者经济社会因素与疾病诊疗间的矛盾

部分老年患者认知能力下降，难以准确叙述病史及症状，就医主动性差，易延误病情。沟通及配合度下降会影响增强CT、MRCP等检查的完成质量，降低诊断准确率。合并认知障碍的老年患者易对检查与诊疗产生抵触和恐惧心理，不利于治疗实施[18]。此外，老年患者收入、自理能力与社会支持下降，家属通常倾向于保守甚至消极治疗，从而错过最佳手术时机。叠加家庭经济压力，更易干扰最佳治疗决策的制定和实施，临床实践中应加强医患沟通，强化人文关怀，提高老年患者及家属依从性，保障诊疗顺利实施。

2　老年胆囊结石应遵循未病先治、早诊早治原则

随着肝胆外科及基础研究的发展，“温床学说”揭示：饮食、血脂、激素及代谢等各类因素导致胆囊胆固醇积聚，胆囊功能受损，最终形成胆囊结石，这为胆囊结石的预防与早诊早治提供了理论基础[27-29]。老年人的生理条件脆弱，如不能及时识别胆囊功能异常阶段并加以干预，疾病的自然演进将使患者面临更复杂的临床情况。故此应采取“预防为主、早诊早治”为核心的积极干预策略。老年胆囊结石的病理生理特点决定了保守观察常伴随着不可控的远期风险。老年人胆囊动脉常存在不同程度硬化，胆囊壁血供储备显著低于中青年群体[4]。加之老年患者起病隐匿，症状容易被忽视，导致胆囊在炎症打击下缺乏有效的代偿，极易迅速由单纯性炎症演变为坏疽、积脓甚至穿孔。《老年人胆囊结石诊断和治疗专家共识（2026 版）》[8]显示，老年急性胆囊炎患者中发生胆囊坏疽的比例更高，保守观察会显著增加后期高风险急诊手术概率。

从整体获益角度，适度前移干预时机有利于老年患者的长期获益，在全身状态相对稳定的择期窗口期主动干预，既可规避未来因急性结石嵌顿、感染性休克而进行高危急诊手术的困境，更阻断长期慢性胆囊炎向胆囊癌的演变。老年患者胆囊长期暴露于慢性炎症刺激，导致的胆囊壁增厚及瓷化胆囊均为明确的胆囊癌风险因素[30]。通过积极的诊疗介入，实现在控制良性疾病及纠正胆囊功能异常的同时，对高龄人群高发的胆囊癌进行预防性阻断，将老年胆囊结石从“被动式”治疗向“主动式”早诊早治模式转换[31-32]。

基于老年胆囊结石的流行病学数据，多部指南均推荐对老年人群进行腹部超声筛查，以便早期防治。明确胆囊的形态、功能、结石情况有利于疾病稳定期管理与急性发作时快速决策。对具有胆囊结石高危因素或超声提示胆囊有成石前表现的老年患者，进行生活方式教育指导或药物治疗，通过促进胆汁分泌、降低胆道内压力、改善胆囊收缩功能及胆囊壁炎症破坏胆囊成石温床，延缓甚至阻断胆囊结石形成。对已确诊胆囊结石的老年患者，精准术前评估是个体化诊疗的基础。需常规排查胆囊癌与胆总管结石，必要时联合增强 CT、磁共振成像（magnetic resonance imaging，MRI）/MRCP 全面评估病变及毗邻结构；同时评价重要脏器功能与生理储备，量化手术耐受阈值。在此基础上实施 MDT 术前优化与预康复，是保障高危老年患者安全手术的关键。

3　老年胆囊结石手术治疗的特殊性

老年人常合并多种基础病，部分药物可能影响围手术期安全，如血管紧张素转换酶抑制剂、血管紧张素II受体拮抗剂等可能增加麻醉相关低血压风险[33]；胰高血糖素样肽-1 受体激动剂增加围手术期低血糖、酮症酸中毒及胃排空延迟风险[34]；抗血小板及抗凝药增加出血及凝血功能异常风险[35]，术前需参照相关指南共识或经 MDT 讨论规范管理。手术治疗仍以腹腔镜胆囊切除术为首选。老年人生理功能储备差，应尽量缩短手术时间，降低气腹压以降低气腹对心肺功能影响[36]。由于老年人胆囊结石病程长、慢性炎症重，术中需仔细观察胆囊壁是否存在不规则增厚或占位，必要时行术中冷冻病理检查，避免遗漏早期癌变[37]。如因胆囊炎症粘连严重，胆囊三角区解剖困难，可使用吲哚菁绿荧光或术中超声辅助辨认，或采取胆囊次全切[38-41]。腹腔镜操作困难时应果断选择开腹手术，提高手术安全性并缩短手术时间。围手术期精细化管理同样是老年胆囊结石诊治的重要部分，是实现老年人快速康复外科的核心，重点在于降低非计划性二次手术率及术后严重并发症发生率[42]。研究[43]表明，老年人术后全身并发症发生率增加 3~6 倍，局部和全身并发症明显增加。加之肝肾功能储备差，推荐实施目标导向液体治疗与多模式镇痛，积极防治术后谵妄及认知功能障碍[44]。鼓励术后早期进食、早期活动以促进胃肠动力恢复，预防坠积性肺炎和深静脉血栓。对于老年人术后并发症需早识别、早干预，避免进展为多器官功能障碍[45]。

4　老年胆囊结石继发病变诊疗思考

部分老年患者因体检意愿低、家庭或社会原因等，即使发现胆囊结石仍选择长期保守观察，直至出现急性胆囊炎、胆道梗阻、胆源性胰腺炎甚至胆囊癌才就诊。老年胆囊结石继发病变起病

急，进展快，极易造成多器官功能衰竭甚至死亡，是临床实践中的重点和难点。

急性结石性胆囊炎最为常见，老年患者免疫功能下降，局部感染易播散全身，从而快速出现全身炎症反应甚至感染性休克[46]。确诊时应立即进行抗感染治疗，快速评估能否耐受全身麻醉，无法耐受手术者应果断进行PTGD，快速降低胆囊压力和细菌负荷，择期行胆囊切除术。阶梯治疗策略不仅降低了急诊手术的死亡率，更通过将急诊手术转化为择期手术，显著提升了手术的安全性与成功率[47-49]。此外，胆总管结石合并急性胆管炎也是老年胆囊结石患者常见的继发疾病，70岁以上患者近半数合并胆总管结石[11,50]。如患者全身条件较好、无胆道梗阻表现，首选腹腔镜胆囊切除联合胆总管探查。对于一般情况较差或存在胆道梗阻，可先解除胆道梗阻，择期行胆囊切除术。根据《中国急性胰腺炎诊治指南（2021）》[51]，老年急性胆源性胰腺炎的治疗以胆道充分引流、解除梗阻、控制感染为主，待急性胰腺炎病情稳定后再次评估行胆囊切除术，避免胰腺炎反复发作。

老年胆囊结石的胆囊癌风险随年龄增加而增长，胆囊结石同时是胆囊癌的独立危险因素[52]。当老年患者明确诊断胆囊癌时，应对患者的全身麻醉、化疗耐受性进行评估，并考虑患者或家庭意愿综合制定个性化治疗方案。对于可手术患者，应根据肿瘤分期决定手术方式，术后根据病理诊断及分子诊断确定术后治疗方案，以延长患者生存期，提高患者生活质量。

5 总结与展望

老年胆道外科既是外科学的重要分支，也是社会医学与老年医学的交汇领域，老年及高龄胆囊结石的诊治历经多年发展，已逐步形成基于循证证据的个体化外科策略。确立以“筛查—诊断—评估”为核心的临床路径，不再单纯以年龄作为决策依据，而是基于全面评估制定个体化诊疗方案，时间上覆盖从社区筛查、成石前期预防、胆囊结石诊治到继发病处理的全周期。空间上强调局部与全身并重，脏器功能、衰弱状态与预期生存期共同决定治疗策略。临床决策以指南与研究证据为支撑，灵活运用腹腔镜、PTGD、药物及预康复等手段，以加速康复理念贯穿围手术期管理，最终实现外科获益与生活质量的平衡。

展望未来，构建符合我国国情的分级诊疗与区域枢纽相结合的老年胆道疾病管理模式，是提升整体诊疗水平的重要方向。依托大数据与人工智能开发高龄人群胆道手术风险预测模型，有助于提高术前风险预判能力与决策科学性；推动区域性胆道疾病中心建设，有利于整合资源、规范流程，实现从社区筛查、早期预警到MDT干预的闭环管理。但需要客观说明的是，上述方向目前仍以展望性与探索性为主，尚缺乏大样本、前瞻性、长期随访的实证研究直接支持。在实践中仍面临若干现实挑战：如高质量多中心临床数据积累不足、区域医疗资源分布不均、老年衰弱与共病评估体系尚未标准化、人工智能模型的外部验证与临床落地仍需完善等。因此，现阶段更宜将其作为中长期发展方向稳步推进，同时继续夯实现有循证基础，优化可及、安全、规范的临床路径。

未来可进一步开展更多针对中国老年人群的临床研究，包括胆道微生物组、衰弱预康复、个体化风险评分等方向，为临床实践提供更高等级证据。最终推动我国老年胆囊结石诊疗更加规范化、精准化、同质化，逐步实现从经验驱动向证据驱动的高质量转型。

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利益冲突：所有作者均声明不存在利益冲突。

参考文献

[1] Chow WB, Rosenthal RA, Merkow RP, et al. Optimal preoperative assessment of the geriatric surgical patient: a best practices guideline from the American College of Surgeons National Surgical Quality Improvement Program and the American Geriatrics Society[J]. J Am Coll Surg, 2012, 215(4):453-466. doi: 10.1016/j.jamcollsurg.2012.06.017.

[2] World Health Organization. World report on ageing and health[M]. Geneva: World Health Organization, 2015.

[3] Song Y, Ma Y, Xie FC, et al. Age, gender, geographic and clinical differences for gallstones in China: a nationwide study[J]. Ann Transl Med, 2022, 10(13):735. doi:10.21037/atm-21-6186.

[4] Qi S, Li L, Yan Y, et al. Prevalence of gallstone disease and its association with altitude and ethnicity among employee health check-upers in the Qinghai-Tibet Plateau[J]. BMC Gastroenterol, 2025, 25(1):873. doi:10.1186/s12876−025−04480−z.

[5] Shaffer EA. Epidemiology of gallbladder stone disease[J]. Best Pract Res Clin Gastroenterol, 2006, 20(6):981−996. doi:10.1016/j.bpg.2006.05.004.

[6] Loozen CS, van Ramshorst B, van Santvoort HC, et al. Early cholecystectomy for acute cholecystitis in the elderly population: a systematic review and meta-analysis[J]. Dig Surg, 2017, 34(5):371−379. doi:10.1159/000455241.

[7] Okamoto K, Suzuki K, Takada T, et al. Tokyo Guidelines 2018: flowchart for the management of acute cholecystitis[J]. J Hepatobiliary Pancreat Sci, 2018, 25(1): 55−72. doi: 10.1002/jhbp.516.

[8] 中国研究型医院学会老年外科专业委员会, 中国医师协会外科医师分会胆道外科专家工作组. 老年人胆囊结石诊断和治疗专家共识(2026 版)[J]. 中华外科杂志, 2026, 64(2):111−117. doi:10.3760/cma.j.cn112139−20251124−00542.
Chinese Society of Geriatric Surgery, Chinese Medical Doctor Association Biliary Surgery Expert Working Group. Expert consensus on the diagnosis and treatment of gallstones in elderly population (2026 edition)[J]. Chinese Journal of Surgery, 2026, 64(2):111−117. doi:10.3760/cma.j.cn112139−20251124−00542.

[9] Manes G, Paspatis G, Aabakken L, et al. Endoscopic management of common bile duct stones: European Society of Gastrointestinal Endoscopy (ESGE) guideline[J]. Endoscopy, 2019, 51(5):472−491. doi:10.1055/a−0862−0346.

[10] Pisano M, Allievi N, Gurusamy K, et al. 2020 World Society of Emergency Surgery updated guidelines for the diagnosis and treatment of acute calculus cholecystitis[J]. World J Emerg Surg, 2020, 15(1):61. doi:10.1186/s13017−020−00336−x.

[11] Chhoda A, Mukewar SS, Mahadev S. Managing gallstone disease in the elderly[J]. Clin Geriatr Med, 2021, 37(1):43−69. doi:10.1016/j.cger.2020.08.005.

[12] Sadaka AH, Tseng JF, Itani KMF. Indications for and optimal management of percutaneous cholecystostomy drainage: a systematic review[J]. JAMA Surg, 2025, 160(12):1368−1377. doi:10.1001/jamasurg.2025.3260.

[13] Pesce A, Ramírez-Giraldo C, Arkoudis NA, et al. Management of high-surgical-risk patients with acute cholecystitis following percutaneous cholecystostomy: results of an international Delphi consensus study[J]. Int J Surg, 2025, 111(5): 3185−3192. doi:10.1097/JS9.0000000000002325.

[14] Kamarajah SK, Karri S, Bundred JR, et al. Perioperative outcomes after laparoscopic cholecystectomy in elderly patients: a systematic review and meta-analysis[J]. Surg Endosc, 2020, 34(11): 4727−4740. doi:10.1007/s00464−020−07805−z.

[15] Pan YL, Wu PS, Chen JH, et al. Early cholecystectomy following percutaneous transhepatic gallbladder drainage is effective for moderate to severe acute cholecystitis in the octogenarians[J]. Arch Gerontol Geriatr, 2023, 106: 104881. doi: 10.1016/j.archger.2022.104881.

[16] 詹峰, 张楷, 程宝亮, 等. 经皮经肝胆囊穿刺置管引流术后序贯腹腔镜胆囊切除术(LC)与一期 LC 治疗Ⅱ级急性胆囊炎疗效的倾向性评分匹配比较[J]. 中国普通外科杂志, 2023, 32(2):171−180. doi:10.7659/j.issn.1005−6947.2023.02.002.
Zhan F, Zhang K, Cheng BL, et al. Propensity score matching comparison of sequential laparoscopic cholecystectomy(LC)after percutaneous transhepatic gallbladder drainage and urgent LC for grade II acute cholecystitis[J]. China Journal of General Surgery, 2023, 32(2):171−180. doi:10.7659/j.issn.1005−6947.2023.02.002.

[17] Terrone A, Di Martino M, Saeidi S, et al. Percutaneous cholecystostomy in elderly patients with acute cholecystitis: a systematic review and meta-analysis[J]. Updates Surg, 2024, 76(2): 363−373. doi:10.1007/s13304−023−01736−9.

[18] Griffiths R, Beech F, Brown A, et al. Peri-operative care of the elderly 2014: association of anaesthetists of Great Britain and Ireland[J]. Anaesthesia, 2014, 69(Suppl 1): 81−98. doi: 10.1111/anae.12524.

[19] Wu X, Huang ZJ, Zhong JY, et al. Laparoscopic common bile duct exploration with primary closure is safe for management of choledocholithiasis in elderly patients[J]. Hepatobiliary Pancreat Dis Int, 2019, 18(6):557−561. doi:10.1016/j.hbpd.2019.07.005.

[20] Hu ZW, Xin RQ, Xia YJ, et al. Application of POSSUM and P-POSSUM in surgical risk assessment of elderly patients undergoing hepatobiliary and pancreatic surgery[J]. Clin Interv Aging, 2020, 15:1121−1128. doi:10.2147/CIA.S258659.

[21] Chen T, Wang H, Wang H, et al. POSSUM and P-POSSUM as predictors of postoperative morbidity and mortality in patients undergoing hepato-biliary-pancreatic surgery: a meta-analysis[J]. Ann Surg Oncol, 2013, 20(8): 2501−2510. doi: 10.1245/s10434−013−2893−x.

[22] Liu J, Li J, He J, et al. The Age-adjusted Charlson Comorbidity Index predicts post-operative delirium in the elderly following thoracic and abdominal surgery: a prospective observational cohort study[J]. Front Aging Neurosci, 2022, 14: 979119. doi: 10.3389/fnagi.2022.979119.

[23] Aguilar-Frasco JL, Rodríguez-Quintero JH, Moctezuma-Velázquez P, et al. Frailty index as a predictive preoperative tool in the elder population undergoing major abdominal surgery: a prospective analysis of clinical utility[J]. Langenbecks Arch Surg, 2021, 406(4):

1189−1198. doi:10.1007/s00423−021−02128−6.

[24] Amon JN, Ridley EJ. Clinimetrics: clinical frailty scale[J]. J Physiother, 2022, 68(2):147. doi:10.1016/j.jphys.2021.10.003.

[25] Park B, Alani Z, Sulistio E, et al. Frailty using the Clinical Frailty Scale to predict short- and long-term adverse outcomes following emergency laparotomy: meta-analysis[J]. BJS Open, 2024, 8(4): zrae078. doi:10.1093/bjsopen/zrae078.

[26] Wong GYM, Wadhawan H, Roth Cardoso V, et al. 30-day morbidity and mortality after cholecystectomy for benign gallbladder disease (AMBROSE): a prospective, international collaborative cohort study[J]. Ann Surg, 2025, 281(2):312−321. doi: 10.1097/SLA.0000000000006236.

[27] 顾利国, 郑亚民, 许臣, 等. 胆囊结石形成风险因素研究进展和成石期预防策略[J]. 国际外科学杂志, 2023, 50(8):557−561. doi: 10.3760/cma.j.cn115396−20230724−00006.
Gu LG, Zheng YM, Xu C, et al. Progress in risk factors for gallstone formation and prevention strategies for stony stage[J]. International Journal of Surgery, 2023, 50(8):557−561. doi:10.3760/cma.j.cn115396−20230724−00006.

[28] Hu H, Shao W, Liu Q, et al. Gut microbiota promotes cholesterol gallstone formation by modulating bile acid composition and biliary cholesterol secretion[J]. Nat Commun, 2022, 13:252. doi: 10.1038/s41467−021−27758−8.

[29] Di Ciaula A, Garruti G, Frühbeck G, et al. The role of diet in the pathogenesis of cholesterol gallstones[J]. Curr Med Chem, 2019, 26 (19):3620−3638. doi:10.2174/0929867324666170530080636.

[30] European Association for the Study of the Liver (EASL). EASL Clinical Practice Guidelines on the prevention, diagnosis and treatment of gallstones[J]. J Hepatol, 2016, 65(1):146−181. doi: 10.1016/j.jhep.2016.03.005.

[31] 郑亚民, 顾利国, 许臣 . 无症状胆囊结石临床诊治的争议与思考[J]. 国际外科学杂志, 2023, 50(8):509−513. doi:10.3760/cma.j.cn115396−20230724−00007.
Zheng YM, Gu LG, Xu C. Disputes and thinking on the clinical diagnosis and treatment of asymptomatic gallstones[J].International Journal of Surgery, 2023, 50(8): 509−513. doi: 10.3760/cma. j.cn115396−20230724−00007.

[32] Shabanzadeh DM. The symptomatic outcomes of cholecystectomy for gallstones[J]. J Clin Med, 2023, 12(5): 1897. doi: 10.3390/jcm12051897.

[33] Shiffermiller JF, Monson BJ, Vokoun CW, et al. Prospective randomized evaluation of preoperative angiotensin-converting enzyme inhibition (PREOP-ACEI)[J]. J Hosp Med, 2018, 13(10): 661−667. doi:10.12788/jhm.3036.

[34] Jalleh RJ, Rayner CK, Hausken T, et al. Gastrointestinal effects of GLP-1 receptor agonists: mechanisms, management, and future directions[J]. Lancet Gastroenterol Hepatol, 2024, 9(10):957−964. doi:10.1016/S2468−1253(24)00188−2.

[35] Smilowitz NR, Berger JS. Perioperative cardiovascular risk assessment and management for noncardiac surgery: a review[J]. JAMA, 2020, 324(3):279−290. doi:10.1001/jama.2020.7840.

[36] Aytekin A, Sen E, Ulusal H. Evaluation of thiol-disulfide homeostasis under low and standard pneumoperitoneum in elderly patients undergoing laparoscopic cholecystectomy: a prospective comparative study[J]. Eur J Med Res, 2025, 30(1): 1192. doi: 10.1186/s40001−025−03480−9.

[37] Feo CF, Ginesu GC, Fancellu A, et al. Current management of incidental gallbladder cancer: a review[J]. Int J Surg, 2022, 98: 106234. doi:10.1016/j.ijsu.2022.106234.

[38] Ibrahim R, Abdalkoddus M, Mownah O, et al. Safety profile and outcomes of intraoperative ultrasound-guided remnant cholecystectomy[J]. Ann R Coll Surg Engl, 2023, 105(6):528−531. doi:10.1308/rcsann.2022.0142.

[39] Pimentel T, Queiroz I, Gallo Ruelas M, et al. Indocyanine green fluorescent cholangiography in laparoscopic cholecystectomy: a systematic review and meta-analysis with trial sequential analysis of randomized controlled trials[J]. Surgery, 2025, 181:109149. doi: 10.1016/j.surg.2025.109149.

[40] 王晓冬, 张楷, 王荇, 等. 吲哚菁绿荧光导航在单孔腹腔镜胆囊切除术中的临床应用价值[J]. 中国普通外科杂志, 2025, 34(8): 1718−1725. doi:10.7659/j.issn.1005−6947.250162.
Wang XD, Zhang K, Wang X, et al. Clinical value of indocyanine green fluorescence navigation in single-incision laparoscopic cholecystectomy[J]. China Journal of General Surgery, 2025, 34(8): 1718−1725. doi:10.7659/j.issn.1005−6947.250162.

[41] 赵健楠, 刘洋, 王向, 等. 胆囊结石处理的临床决策: 从适应证到术式选择的再探索[J]. 中国普通外科杂志, 2025, 34(2):245−252. doi:10.7659/j.issn.1005−6947.250061.
Zhao JN, Liu Y, Wang X, et al. Clinical decision-making in the management of gallstones: a re-exploration from indication to surgical options[J]. China Journal of General Surgery, 2025, 34(2): 245−252. doi:10.7659/j.issn.1005−6947.250061.

[42] Yu T, Zhao L, Zhao H, et al. The enhanced recovery after surgery (ERAS) protocol in elderly patients with acute cholecystitis: a retrospective study[J]. Medicine, 2023, 102(6):e32942. doi:10.1097/MD.0000000000032942.

[43] Snitkjær C, Rehné Jensen L, Soylu LÍ, et al. Impact of clinical frailty on surgical and non-surgical complications after major emergency abdominal surgery[J]. BJS Open, 2024, 8(3): zrae039. doi:10.1093/bjsopen/zrae039.

[44] Wang H, Wang L, Gao J, et al. Effect of intravenous esketamine on postoperative sleep disturbance, anxiety, and depression in elderly

patients undergoing laparoscopic abdominal surgery: a randomized controlled trial[J]. BMC Geriatr, 2025, 25(1): 148. doi: 10.1186/s12877-025-05787-y.

[45] Zietlow KE, Wong S, Heflin MT, et al. Geriatric preoperative optimization: a review[J]. Am J Med, 2022, 135(1): 39-48. doi: 10.1016/j.amjmed.2021.07.028.

[46] Asmar S, Bible L, Obaid O, et al. Frail geriatric patients with acute calculous cholecystitis: Operative versus nonoperative management?[J]. J Trauma Acute Care Surg, 2021, 91(1):219-225. doi:10.1097/TA.0000000000003115.

[47] Karabacak H, Balas Ş. Percutaneous cholecystostomy as a bridge therapy in the geriatric age group with acute cholecystitis[J]. Ir J Med Sci, 2024, 193(3): 1411-1418. doi: 10.1007/s11845-023-03550-z.

[48] Geng B, Sguinzi R, Litchinko A, et al. Value of percutaneous transhepatic gallbladder drainage for advanced acute cholecystitis as a bridging procedure: a single-center retrospective study[J]. J Clin Med, 2025, 14(22):7955. doi:10.3390/jcm14227955.

[49] Kuo IM, Liu EH, Chan SY, et al. Early laparoscopic cholecystectomy after percutaneous transhepatic gallbladder drainage in acute cholecystitis is appropriate and safe: an inverse probability of treatment weighting analysis[J]. Eur J Med Res, 2025, 30(1):866. doi:10.1186/s40001-025-03134-w.

[50] Fan L, Wang Y, Wu M, et al. Laparoscopic common bile duct exploration with primary closure could be safely performed among elderly patients with choledocholithiasis[J]. BMC Geriatr, 2023, 23(1):486. doi:10.1186/s12877-023-04149-w.

[51] 中华医学会外科学分会胰腺外科学组. 中国急性胰腺炎诊治指南(2021)[J]. 中国实用外科杂志, 2021, 41(7): 739-746. doi: 10.19538/j.cjps.issn1005-2208.2021.07.03.

Chinese Pancreatic Surgery Association, Chinese Society of Surgery, Chinese Medical Association. Guidelines for diagnosis and treatment of acute pancreatitis in China(2021) [J]. Chinese Journal of Practical Surgery, 2021, 41(7): 739-746. doi: 10.19538/j.cjps.issn1005-2208.2021.07.03.

[52] Dai H, Xu J. Preoperative geriatric nutritional risk index is an independent prognostic factor for postoperative survival after gallbladder cancer radical surgery[J]. BMC Surg, 2022, 22(1): 133. doi:10.1186/s12893-022-01575-2.

（本文编辑　熊杨）

本文引用格式:王方舟, 郑亚民. 老年及高龄胆囊结石诊疗困境与策略思考[J]. 中国普通外科杂志, 2026, 35(2):252-259. doi:10.7659/j.issn.1005-6947.260060

Cite this article as: Wang FZ, Zheng YM. Challenges and strategic considerations in the diagnosis and treatment of gallstones in elderly and advanced-age patients[J]. Chin J Gen Surg, 2026, 35(2):252-259. doi:10.7659/j.issn.1005-6947.260060

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