doi:10.11659/jjssx.08E025042

·临床研究·

加速康复外科方案依从性对急诊剖宫产术后恢复的影响

王 丹[1,2],方开云[1,2] (1.贵州医科大学麻醉学院,贵州 贵阳 550002;2.贵州省人民医院麻醉科,贵州 贵阳 550002)

[摘 要] **目的** 探讨加速康复外科(ERAS)方案依从性对急诊剖宫产患者术后恢复的影响。**方法** 纳入2023年1月至2024年9月在我院行急诊剖宫产术的576例患者,所有患者均遵循产科ERAS方案,根据依从率将患者分为高依从性组(依从率>80%,n=242)和低依从性组(依从率≤80%,n=334)。比较2组患者一般临床资料,ERAS要素依从性,术后30 d内Clavien-Dindo分级并发症,术后住院时间,30 d内再入院率,术后6 h、24 h、48 h、72 h静态及动态视觉模拟量表(VAS)评分,术后使用镇痛泵情况,术后功能恢复情况及阴道出血量。**结果** 2组患者麻醉方式、术前血红蛋白、术中出血量、输血及术后血红蛋白比较,差异均具有统计学意义(P<0.05)。高依从性组患者整体ERAS依从率高于低依从性组(P<0.001)。高依从性组患者术后首次进饮、进食、排气、下床活动及拔除尿管时间均早于低依从性组(P<0.001);与低依从性组相比,高依从性组患者术后6 h、24 h、48 h、72 h静态和动态VAS评分均降低(P<0.05),术后使用镇痛泵比例降低(P<0.05),术后24 h阴道出血量减少(P<0.05)。低依从性组患者术后发热、肠梗阻、术后输血比例及并发症总发生率高于高依从性组(P<0.05),术后住院时间长于高依从性组(P<0.05)。2组患者术后30 d再入院率比较,差异无统计学意义(P>0.05)。**结论** 提高ERAS方案依从性可以减少急诊剖宫产患者术后并发症,缩短术后住院时间,减轻疼痛,促进术后康复。

[关键词] 加速康复外科;急诊剖宫产;依从性;并发症;术后恢复
[中图分类号] R493 [文献标志码] A [收稿日期] 2025-08-10

Effect of enhanced recovery after surgery protocol adherence on postoperative recovery in patients undergoing emergency cesarean section

WANG Dan[1,2], FANG Kai-yun[1,2] (1. School of Anesthesiology, Guizhou Medical University, Guiyang Guizhou 550002, China; 2. Department of Anesthesiology, Guizhou Provincial People's Hospital, Guiyang Guizhou 550002, China)

Abstract: Objective To evaluate the effect of adherence to enhanced recovery after surgery (ERAS) protocol on postoperative recovery in patients undergoing emergency cesarean section. **Methods** A total of 576 patients who underwent emergency cesarean section at our hospital from January 2023 to September 2024 were included. All patients followed the obstetric ERAS protocol, and were divided into the high-adherence group (adherence rate>80%, n=242) and the low-adherence group (adherence rate≤80%, n=334) based on the adherence rate. The following parameters were compared between the two groups: general clinical data, adherence to ERAS elements, Clavien-Dindo graded complications within 30 days after operation, postoperative hospital stay, 30-day readmission rate, static and dynamic visual analogue scale (VAS) scores 6 hours, 24 hours, 48 hours, and 72 hours after operation, postoperative use of analgesic pump, postoperative functional recovery, and volume of vaginal bleeding. **Results** There were statistically significant differences between the two groups in terms of anesthesia method, preoperative hemoglobin, intraoperative blood loss, blood transfusion, and postoperative hemoglobin (P<0.05). Patients in the high-adherence group had a higher overall ERAS adherence rate than those in the low-adherence group (P<0.001). The times to first fluid intake, diet intake, ambulation, flatus, and urinary catheter removal in the high-adherence group were all earlier than those in the low-adherence group (P<0.001). Compared with the low-adherence group, the high-adherence group showed lower static and dynamic VAS scores 6 hours, 24 hours, 48 hours, and 72 hours after operation (P<0.05), a lower rate of postoperative use of analgesic pump (P<0.05), and reduced volume of vaginal bleeding 24 hours after operation (P<0.05). The low-adherence group exhibited higher proportions of postoperative fever, intestinal obstruction, and postoperative blood transfusion, and a higher total incidence of complications (P<0.05), as well as a longer postoperative hospital stay than those in the high-adherence group (P<0.05). There was no statistically significant difference in the 30-day readmission rate between the two groups (P>0.05). **Conclusion** Improving adherence to the ERAS protocol can reduce postoperative complications, shorten the postoperative hospital stay, alleviate pain and promote postoperative recovery in patients undergoing emergency cesarean section.

Keywords: enhanced recovery after surgery; emergency cesarean section; adherence; complications; postoperative recovery

[基金项目] 贵州省科技计划项目(黔科合支撑〔2019〕2815)
[通信作者] 方开云,E-mail: fangkaiyun@sina.cn

剖宫产是解决难产、妊娠严重合并症、挽救孕产妇及围产儿生命的有效手段[1]。然而,传统剖宫产管理模式面临诸多挑战,包括术前评估不完善、长时间禁饮禁食、需使用阿片类药物、术后胃肠道功能恢复延迟等,这可导致产妇恢复延迟及并发症增加;尤其急诊产妇术后更易发生胃肠胀气、尿潴留、出血增多、感染等并发症,严重影响其术后康复[2]。因此,对急诊剖宫产患者实施有效的围术期管理是提高其康复质量的重要方法。加速康复外科(enhanced recovery after surgery,ERAS)是一种在循证基础上建立的围术期管理方案,能够减轻患者应激反应及缩短术后恢复时间[3]。近年来,ERAS在剖宫产中的应用已取得较好临床效果[4-6]。但由于医疗卫生系统、多学科团队以及患者自身因素等影响,ERAS方案依从性较差。依从性是决定ERAS效果的关键因素,依从性越高,患者术后恢复越快。产科ERAS理念虽广受关注,但却很少有人重视其依从性。因此,本研究旨在探讨ERAS方案依从性对急诊剖宫产患者术后恢复的影响,进而为优化剖宫产ERAS方案提供借鉴。

1 资料与方法

1.1 临床资料

纳入2023年1月至2024年9月在贵州省人民医院行急诊剖宫产的患者。所有患者均遵循产科ERAS方案,参考既往循证研究阈值[7-9],将其分为高依从性组(依从率>80%)和低依从性组(依从率≤80%)。根据纳入及排除标准,共筛选出583例患者,其中低依从性组4例失访,高依从性组3例失访,最终纳入576例患者(低依从性组334例,高依从性组242例)。纳入标准:年龄>18岁,行急诊剖宫产(不限产次);美国麻醉医师协会(American Society of Anesthesiologists, ASA)分级Ⅱ~Ⅲ级。排除标准:先兆子痫或子痫、妊娠期高血压;妊娠前或妊娠期糖尿病;非甾体类药物使用禁忌;严重心脑血管疾病或精神异常;出现术中膀胱或肠道损伤等围术期并发症;计划进入重症监护室;凝血功能异常;术中大出血(失血量>1 000 mL);产前出血;术前诊断为胎盘植入、子宫破裂。剔除标准:失访;因特殊原因退出。本研究已获本院医学伦理委员会批准并进行注册(伦理批准号:2019-25;临床试验注册号:ChiCTR2100049852)。2组患者年龄、体质量指数、术前合并症、ASA分级、纽约心脏病协会心功能分级及剖宫产原因比较,差异均无统计学意义(P>0.05),具有可比性。

1.2 ERAS实施与依从性评估

由本院多学科ERAS团队执行,严格遵循本院依据国际ERAS协会产科指南[10-12]及产科麻醉与围产期学会专家共识[13]制定的产科ERAS方案,明确定义了方案中20项核心要素的依从标准,记录患者各要素执行情况,并计算患者对单个ERAS要素依从率(各组中对某个ERAS要素依从例数/该组总例数×100%)及整体ERAS方案依从率(实际依从的核心要素数量/20×100%)。

1.3 观察指标

1.3.1 临床资料 收集2组患者术前白蛋白、术前血红蛋白、术前血小板计数、麻醉方式、输血、液体总量、术中出血量、术后尿量、手术时间、术后血红蛋白及ERAS方案依从性。

1.3.2 术后情况 记录2组患者术后首次进饮、进食、排气、下床活动及拔除尿管时间,术后24 h阴道出血量,术后6 h、24 h、48 h、72 h静息及活动时视觉模拟量表(visual analogue scale, VAS)评分,术后使用镇痛泵情况(主要成分为阿片类药物)。

记录2组患者住院时间和30 d内再入院情况,根据Clavien-Dindo分级[14]对术后并发症进行分层。

1.4 统计学分析

采用SPSS 29.0软件进行统计学分析,符合正态分布的计量资料以均数±标准差($\bar{x}\pm s$)表示,组间比较采用t检验;偏态分布的计量资料以中位数(四分位间距)[$M(P_{25},P_{75})$]表示,组间比较采用秩和检验;计数资料以率(%)表示,组间比较采用χ^2检验。P<0.05为差异具有统计学意义。

2 结果

2.1 临床资料

2组患者间麻醉方式、术前血红蛋白、术中出血量、输血及术后血红蛋白比较,差异均具有统计学意义(P<0.05);2组患者其余指标比较,差异均无统计学意义(P>0.05),见表1。

2.2 患者ERAS要素依从性

高依从性组患者整体ERAS依从率[85%(85%,90%)]高于低依从性组[75%(70%,80%)],差异有统计学意义(Z=-20.837,P<0.001)。其中高依从性组患者在术前宣教、术前使用抗酸药物、术前糖负荷和水化、术前合并症优化、标准麻醉方案、术中多模式镇痛、术后继续多模式镇痛、术后2 h普通饮食、术后尽早拔除尿管、术后尽早离床活动等方面依从性显著高于低依从性组(P<0.001),高依从性组患者在术中及术后恶

心呕吐预防方面优于低依从性组(P<0.05)。2组患者在未口服药物或进行机械性肠道准备、缩宫素规范使用、保温、优化术中补液、皮肤准备及预防性使用抗生素、手术操作技术、促进术后肠道功能恢复、术后血栓预防等方面依从性比较,差异均无统计学意义(P>0.05),见表2。

表1 2组患者临床资料比较

项目		低依从性组(n=334)	高依从性组(n=242)	$\chi^2/Z/t$	P
术前白蛋白(g/L)		35.0(33.1,36.6)	35.1(33.5,36.5)	−0.582	0.561
术前血红蛋白(g/L)		117.8±13.6	120.4±11.5	2.434	0.015
术前血小板计数(×10^9/L)		192.0(164.0,237.0)	195.5(157.0,233.3)	−0.098	0.922
麻醉方式[例(%)]	全身麻醉	17(5.1)	0(0)	12.692	<0.001
	椎管内麻醉	317(94.9)	242(100)		
输血[例(%)]		14(4.2)	3(1.2)	4.269	0.039
液体总量(mL)		1 100.0(1 100.0,1 400.0)	1 100.0(1 100.0,1 400.0)	−0.953	0.341
术中出血量(mL)		300.0(300.0,400.0)	300.0(300.0,400.0)	−3.058	0.002
术后尿量(mL)		300.0(200.0,300.0)	250.0(200.0,300.0)	−0.528	0.597
手术时间(min)		57.0(47.0,69.0)	55.0(45.0,65.0)	−1.591	0.112
术后血红蛋白(g/L)		99.6±13.3	102.2±12.6	2.849	0.005

表2 2组患者ERAS要素依从情况[例(%)]

ERAS要素	低依从性组(n=334)	高依从性组(n=242)	χ^2	P
术前宣教	200(59.9)	242(100)	126.524	<0.001
术前使用抗酸药物	280(83.8)	241(99.6)	40.326	<0.001
未口服药物或进行机械性肠道准备	334(100)	242(100)		
术前糖负荷和水化	76(22.8)	182(75.2)	156.122	<0.001
术前合并症优化	161(48.2)	163(67.4)	20.915	<0.001
标准麻醉方案	280(83.8)	238(98.3)	32.647	<0.001
缩宫素规范使用	334(100)	242(100)		
保温	334(100)	242(100)		
优化术中补液	332(99.4)	242(100)	1.454	0.228
术中多模式镇痛	264(79.0)	237(97.9)	44.222	<0.001
术中恶心呕吐预防	327(97.9)	242(100)	5.134	0.023
皮肤准备及预防性使用抗生素	333(99.7)	242(100)	0.726	0.394
手术操作技术	334(100)	242(100)		
术后恶心呕吐预防	326(97.6)	242(100)	5.878	0.015
术后继续多模式镇痛	250(74.9)	229(94.6)	39.195	<0.001
术后2 h普通饮食	84(25.1)	189(78.1)	157.798	<0.001
术后尽早拔除尿管	268(80.2)	237(97.9)	40.654	<0.001
促进术后肠道功能恢复	25(7.5)	19(7.9)	0.027	0.870
术后尽早离床活动	49(14.7)	109(45.0)	65.022	<0.001
术后血栓预防	334(100)	242(100)		

2.3 患者术后情况比较

高依从性组患者术后首次进饮、进食、排气、下床活动及拔除尿管时间均早于低依从性组(P<0.001)。与低依从性组相比,高依从性组患者术后6 h、24 h、48 h、72 h静态和动态VAS评分均降低(P<0.05),术后使用镇痛泵比例降低(P<0.05),术后24 h阴道出血量减少(P<0.05),见表3、图1。

2.4 术后并发症、住院时间及30 d内再入院率比较

低依从性组患者术后发热、肠梗阻、术后输血比例及并发症总发生率高于高依从性组(P<0.05),术后住院时间长于高依从性组(P<0.05);2组患者术后30 d再入院率比较差异无统计学意义(P>0.05),见表4。

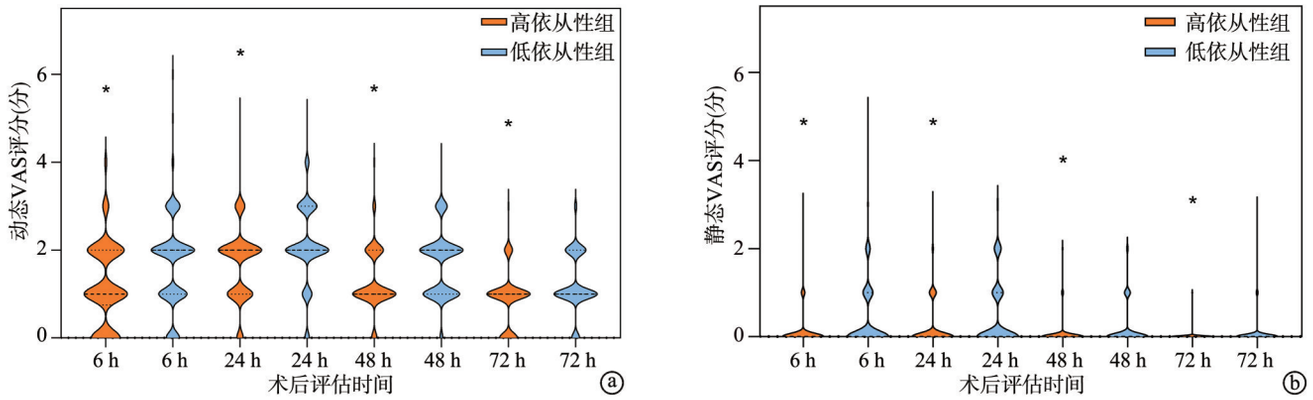
3 讨论

ERAS基于循证医学及多学科干预,推动了产科由传统医疗模式向最佳医疗实践转变。而评估ERAS方案依从性,有助于识别导致ERAS效果不佳的因素,进一步优化ERAS管理。本研究探讨了ERAS方案依从性对急诊剖宫产患者的影响,结果显示:提高ERAS方案依从性,可降低剖宫产患者Clavien-Dindo Ⅰ~Ⅲa级术后并发症发生率,有效缓解术后疼痛,缩短术后住院时间,从而促进患者术后恢复。

目前,不同研究对ERAS依从性界值评估尚未达成一致,国际ERAS协会指出,依从性是一个动态评估指标,无固定标准,其取决于实施起点和后续患者预后的改善程度[15-16]。因此,合适的依从性阈值需视具体情况而定。妇科手术[8-9]及结直肠手术[7]ERAS方案将高依从性定义为>80%。本研究参照此阈值,并结合我院ERAS实施情况,取80%作为分组界值,结果显

表3 2组患者术后情况

项目	低依从性组(n=334)	高依从性组(n=242)	χ^2/Z	P
术后首次进饮时间(min)	150.0(120.0,334.0)	120.0(120.0,120.0)	−10.161	0.001
术后首次进食时间(min)	399.0(360.0,523.0)	360.0(360.0,360.0)	−9.069	0.001
术后首次排气时间(min)	840.0(756.0,960.0)	750.0(720.0,840.0)	−8.174	0.001
术后首次下床活动时间(min)	854.0(600.0,1 113.0)	660.0(483.0,960.0)	−4.751	0.001
术后拔除尿管时间(min)	720.0(708.0,1 440.0)	720.0(690.0,746.0)	−5.073	0.001
术后24 h阴道出血量(mL)	65.0(50.0,86.0)	60.0(46.0,78.0)	−2.453	0.014
术后使用镇痛泵[例(%)]	10(3.0)	0(0)	7.374	0.007



a:动态VAS评分;b:静态VAS评分　*:与低依从性组同一时间点比较,$P<0.05$

图1　2组患者术后动态及静态VAS评分变化

表4　2组患者术后并发症、术后住院时间及30 d内再入院率比较

项目		低依从性组(n=334)	高依从性组(n=242)	χ^2/Z	P
Clavien-Dindo Ⅰ级[例(%)]	术后头晕头痛	27(8.1)	11(4.5)	2.851	0.091
	术后恶心呕吐	12(3.6)	4(1.7)	1.955	0.162
	瘙痒	11(3.3)	4(1.7)	1.489	0.222
	电解质紊乱	9(2.7)	2(0.8)	2.614	0.106
	腹胀	7(2.1)	5(2.1)	0.001	0.980
	术后发热(体温≥38 ℃)	23(6.9)	4(1.7)	8.602	0.003
	再次导尿	2(0.6)	0(0)	1.454	0.228
	伤口愈合不良	5(1.5)	3(1.2)	0.068	0.794
	伤口感染	2(0.6)	1(0.4)	0.093	0.760
Clavien-Dindo Ⅱ级[例(%)]	低蛋白血症	13(3.9)	5(2.1)	1.546	0.214
	术后输血	28(8.4)	8(3.3)	6.174	0.013
	肺部感染	6(1.8)	1(0.4)	2.236	0.135
	泌尿道感染	2(0.6)	0(0)	1.454	0.228
	产褥感染	2(0.6)	1(0.4)	0.093	0.760
	肺栓塞	2(0.6)	0(0)	1.454	0.228
Clavien-Dindo Ⅲa级[例(%)]	肠梗阻	6(1.8)	0(0)	4.393	0.036
	盆腔血肿	1(0.3)	0(0)	0.726	0.394
Clavien-Dindo Ⅲb级[例(%)]	二次手术	0(0)	0(0)		
Clavien-Dindo Ⅳ级[例(%)]	菌血症	1(0.3)	0(0)	0.726	0.394
术后并发症发生[例(%)]		112(33.5)	48(19.8)	13.125	<0.001
术后30 d再入院[例(%)]		4(1.2)	3(1.2)	0.002	0.964
术后住院时间(h)		70.8 (62.4,88.8)	67.2 (60.0,72.0)	−4.570	<0.001

示,2组间部分要素均为高依从性,如术前未口服药物或进行机械性肠道准备、抗生素预防等,这些要素在本院为标准医疗护理且被常规执行;而低依从性组患者在术前宣教、术前糖负荷和水化、术前合并症优化、术后2 h普通饮食、术后尽早离床活动等方面依从性较差。因此,应加强医护人员多学科协作意识,强化患者教育,建立监督反馈机制,进一步提高ERAS方案依从性。

本研究结果显示,高依从性组患者术后总体并发症发生率显著低于低依从性组(33.5% *vs.* 19.8%),这与骨科、胸科、结直肠外科等研究结果一致[17-19],表明高依从性与患者结局改善相关。根据Clavien-Dindo分级定义,本研究中高依从性组患者轻度并发症(术后发热、术后输血)及重度并发症(术后肠梗阻)发生率较低。在ERAS方案中,术后镇痛及术后早期活动等可协同减轻患者应激和炎症反应,进而减少术后发热[20],故患者ERAS依从性高有助于减少并发症的发生。术后阴道出血可增加患者输血需求。研究发现,术后早期活动有利于加强子宫收缩,减少术后阴道出血[21],这可潜在降低患者术后输血需求。一项妇科全子宫切除术Meta分析表明,ERAS可降低患者术后肠梗阻发生率[22],进一步论证了本研究的结果。

术后住院时间是评估患者术后恢复效益的重要指标。本研究中高依从性组患者术后住院时间较低依从性组缩短了约3.6 h,与Teigen等[23]的产科ERAS研究结果相似,说明提高ERAS依从性可缩短术后住院时间,促进术后恢复,从而使患者更早出院,具有重要临床意义。此外,剖宫产后早期出院可增加母婴接触,提高产妇满意度,并减少住院费用[24]。

在本研究中,与低依从性组相比,高依从性组患者术后6 h、24 h、48 h、72 h VAS评分显著降低,且患者在术后达到无阿片化多模式镇痛,而低依从性组有10例患者术后使用了阿片类药物;但总体上,多模式镇痛方案提供了有效的术后镇痛,降低了2组患者术后3 d的疼痛评分,减少了术后阿片类药物需求及恶心呕吐的发生,提高了镇痛的满意度。

本研究为单中心队列研究且样本量有限,未来需要进行多中心、大样本量研究进行验证。此外,ERAS方案依从性评估仍可能存在主观记录误差风险,日后可通过标准、规范化数据采集,最大限度减少偏倚。

综上所述,提高ERAS方案依从性可降低患者术

后并发症发生率,缩短术后住院时间并减轻术后疼痛,从而促进患者术后恢复。本研究还确定了需重点关注的低依从性ERAS要素,如术前宣教、术前糖负荷和水化、术前合并症优化、术后2 h普通饮食、术后尽早离床活动等,可据此针对性制定个性化ERAS方案,以促进患者术后快速康复。

[参考文献]

[1] 单 爽,张 斌,杨 青,等. ERAS在剖宫产术中的应用效果分析[J]. 中国妇幼健康研究,2023,34(2):54-58. doi:10.3969/j.issn.1673-5293.2023.02.011.

[2] 刘海晏,黄 乐,倪 萍,等. 加速康复外科理念在中转剖宫产围手术期中的应用[J]. 临床与病理杂志,2024,44(3):399-407. doi:10.11817/j.issn.2095-6959.2024.230646.

[3] Olsén MF,Andersson T,Nouh MA,et al. Development of and adherence to an ERAS® and prehabilitation protocol for patients undergoing pancreatic surgery:an observational study[J]. Scand J Surg,2023,112(4):235-245. doi:10.1177/14574969231186274.

[4] Özdemir MG,Gunaydin B,Bayram M,et al. Effect of enhanced recovery after surgery (ERAS) protocol on maternal and fetal outcomes following elective cesarean section:an observational trial[J]. BMC Pregnancy Childbirth,2025,25(1):517. doi:10.1186/s12884-025-07583-3.

[5] Matthews KC, White RS, Ewing J, et al. Enhanced recovery after surgery for cesarean delivery:a quality improvement initiative[J]. Am J Perinatol, 2024, 41(S 01):e362-e368. doi:10.1055/s-0042-1754405.

[6] Pinho B,Costa A. Impact of enhanced recovery after surgery (ERAS) guidelines implementation in cesarean delivery:a systematic review and meta-analysis[J]. Eur J Obstet Gynecol Reprod Biol,2024,292:201-209. doi:10.1016/j.ejogrb.2023.11.028.

[7] Pisarska-Adamczyk M, Zawadzka K, Torbicz G, et al. Does high compliance with the enhanced recovery after surgery protocol improve 5-year survival? A cohort study of 468 nonmetastatic colorectal cancer patients[J]. Pol Arch Intern Med,2025,135(5):16960. doi:10.20452/pamw.16960.

[8] Iniesta MD, Lasala J, Mena G, et al. Impact of compliance with an enhanced recovery after surgery pathway on patient outcomes in open gynecologic surgery[J]. Int J Gynecol Cancer, 2019, 29(9):1417-1424. doi:10.1136/ijgc-2019-000622.

[9] Hayek J, Zorrilla-Vaca A, Meyer LA, et al. Patient outcomes and adherence to an enhanced recovery pathway for open gynecologic surgery:a 6-year single-center experience[J]. Int J Gynecol Cancer, 2022,32(11):1443-1449. doi:10.1136/ijgc-2022-003840.

[10] Macones GA,Caughey AB,Wood SL,et al. Guidelines for postoperative care in cesarean delivery:Enhanced Recovery After Surgery (ERAS) Society recommendations (part 3)[J]. Am J Obstet Gynecol, 2019, 221(3):247.e1-247.e9. doi:10.1016/j.ajog.2019.04.012.

[11] Wilson RD, Caughey AB, Wood SL, et al. Guidelines for antenatal and preoperative care in cesarean delivery:Enhanced Recovery after Surgery Society recommendations (part 1)[J]. Am J Obstet Gynecol, 2018,219(6):523.e1-523.e15. doi:10.1016/j.ajog.2018.09.015.

[12] Caughey AB,Wood SL,Macones GA,et al. Guidelines for intraoperative care in cesarean delivery:Enhanced Recovery after Surgery Society recommendations (part 2)[J]. Am J Obstet Gynecol,2018,219(6):533-544. doi:10.1016/j.ajog.2018.08.006.

[13] Bollag L,Lim G,Sultan P,et al. Society for obstetric anesthesia and perinatology:consensus statement and recommendations for enhanced recovery after cesarean[J]. Anesth Analg,2021,132(5):1362-1377. doi:10.1213/ANE.0000000000005257.

[14] Katayama H, Kurokawa Y, Nakamura K, et al. Extended Clavien-Dindo classification of surgical complications:Japan Clinical Oncology Group postoperative complications criteria[J]. Surg Today,2016,46(6):668-685. doi:10.1007/s00595-015-1236-x.

[15] MA MÍ,Santos D,A FL-O,et al. Association between enhanced recovery after surgery protocol compliance and clinical complications:a cohort study[J]. Braz J Anesthesiol,2023,73(1):25-35. doi:10.1016/j.bjane.2021.08.018.

[16] Shen Y,Lv F,Min S,et al. Impact of enhanced recovery after surgery protocol compliance on patients′ outcome in benign hysterectomy and establishment of a predictive nomogram model[J]. BMC Anesthesiol,2021,21(1):289. doi:10.1186/s12871-021-01509-0.

[17] Stuart CM,Dyas AR,Chanes N,et al. Strict compliance to a thoracic enhanced recovery after surgery protocol is associated with improved outcomes compared with partial compliance:a prospective cohort study[J]. Surgery, 2024, 176(2):477-484. doi:10.1016/j.surg.2024.04.044.

[18] Ripollés-Melchor J,Ramírez-Rodríguez JM,Casans-Francés R,et al. Association between use of enhanced recovery after surgery protocol and postoperative complications in colorectal surgery:the Postoperative Outcomes Within Enhanced Recovery After Surgery Protocol (POWER) study[J]. JAMA Surg, 2019, 154(8):725-736. doi:10.1001/jamasurg.2019.0995.

[19] Ripollés-Melchor J,Abad-Motos A,Díez-Remesal Y,et al. Association between use of enhanced recovery after surgery protocol and postoperative complications in total hip and knee arthroplasty in the Postoperative Outcomes Within Enhanced Recovery After Surgery Protocol in Elective Total Hip and Knee Arthroplasty Study (POWER2)[J]. JAMA Surg,2020,155(4):e196024. doi:10.1001/jamasurg.2019.6024.

[20] Shi J,Chen S,Nie J,et al. Enhanced recovery after surgery protocol optimizes results and cost of laparoscopic radical nephroureterectomy[J]. BMC Surg,2025,25(1):14. doi:10.1186/s12893-025-02758-3.

[21] 程桂芝,倪倩倩,辛友地,等. 加速康复外科对剖宫产产妇术后康复和并发症的影响[J]. 安徽医药,2021,25(7):1335-1339. doi:10.3969/j.issn.1009-6469.2021.07.015.

[22] Nian J,Li Z,Chen P,et al. Enhanced recovery after surgery versus conventional postoperative care in patients undergoing hysterectomy:a systematic review and meta-analysis[J]. Arch Gynecol Obstet,2024,310(1):515-524. doi:10.1007/s00404-024-07475-5.

[23] Teigen NC,Sahasrabudhe N,Doulaveris G,et al. Enhanced recovery after surgery at cesarean delivery to reduce postoperative length of stay:a randomized controlled trial[J]. Am J Obstet Gynecol,2020,222(4):372.e1-372.e10. doi:10.1016/j.ajog.2019.10.009.

[24] Bowden SJ,Dooley W,Hanrahan J,et al. Fast-track pathway for elective caesarean section:a quality improvement initiative to promote day 1 discharge[J]. BMJ Open Qual,2019,8(2):e000465. doi:10.1136/bmjoq-2018-000465.

(编辑:龙小芬)