妊娠期纤维蛋白原的床旁检测

Point-of-Care Fibrinogen Testing in Pregnancy

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通过血栓弹力图和传统实验方法估计的产妇的纤维蛋白原浓度的一致性还未被确定。因此，我们招募了 56 名产妇，用克劳斯法和功能性纤维蛋白原水平测试进行了检测。检测结果的平均差为 36.8mg/dL（95%置信区间，-40.8—-92.5），标准差为 52.8mg/dL。一致性的计算限值为 140.2mg/dL（95%置信区间，166.3—114.6）和-66.6mg/dL（95%置信区间，-40.8—-92.5），最大允许差值为 165mg/dL。因此，我们得出结论，虽然大多数测量结果都在一致范围内，我们仍需要进行工多工作来确定这项测试在产科人群中的作用。
（吴兆艺译 潘艳、薛张纲校）

Agreement between estimated fibrinogen concentration via thromboelastography and traditional assays is not established in the parturient. We therefore recruited 56 parturients and performed Clauss and functional fibrinogen level (FLEV) tests. Mean difference of measurements was 36.8 mg/dL (95% CI, 21.8-51.9) with a standard deviation of 52.8 mg/dL. Calculated limits of agreement were 140.2 mg/dL (95% CI, 166.3-114.6) and -66.6 mg/dL (95% CI, -40.8 to -92.5), within the maximum allowable difference of 165 mg/dL. We therefore conclude that while most measurements fell within the limits of agreement, more work is needed to clearly define the role of this test in the obstetric population.

无干扰的诱导区域：一家大型研究型儿童医院内一项用以提升病人麻醉质量和安全的质量改进措施

Distraction-Free Induction Zone: A Quality Improvement Initiative at a Large Academic Children’s Hospital to Improve the Quality and Safety of Anesthetic Care for Our Patients

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背景：手术室内的噪音可能在关键时刻导致分心，并影响医务人员之间的交流。实施麻醉诱导时，即使只是片刻的注意力分散也可以导致错误和严重的后果。对于一名麻醉医生来说，在关键时刻例如诱导或者苏醒时的分心关乎着病人的性命安全。出于对全麻诱导期间不可接受的噪音水平和注意力分散程度的关注，我们的研究机构提出了一项改进医疗质量的措施——建立无干扰的诱导环境。该研究的具体目标是在儿童耳鼻喉科手术室内使得干扰医务人员注意力的事件如播放的音乐、不必要的交流、吵闹的噪声等，的发生率从 61%降至 15%。
方法：为了实施这项研究，一个多学科团队使用了改善科学方法，其中包括了使用 Plan-Do-Study-Act 循环圈进行检测干预措施改善的模型。我们使用了不同的

工具，例如 Key Driver Diagram, Pareto Charts, Process Flow Chart, Plan-Do-Study-Act 等工作表。数据由人工进行收集并且每周一次输入至 Excel 表格。统计分析采用的统计过程控制方法包括了运行表格和 P 值控制表格。研究的测量结局是一种复合测量，即在全麻诱导过程中观察三件导致分心的事情之一。
结果：我们实施并利用 Plan-Do-Study-Act 循环圈测试了几项干预措施，其中三项主要措施在全麻诱导期间被观察到和分心事件发生率的下降有关。这些措施包括：教育手术室内的医务人员，帮助他们理解麻醉医生的注意力集中和病人安全高度相关；巡回护士应该承担暂停手术室内的任何音乐的责任；麻醉医生应提醒手术室内的人员诱导的时刻，如果存在分散注意力的情形时应要求安静。在儿童耳鼻喉科手术室内，全麻诱导期间引起注意力分散的事件发生率截止 2017 年 4 月 15 日从 61%降至了 15%，截止 2017 年 6 月 4 日，发生率降至 10%。
结论：利用改进科学方法，我们在全麻诱导期间观察到影响注意力集中事件发生率的下降，并通过改进过程鼓励改变从而提升研究型儿童医院病人的麻醉质量和安全感。
（王沛译 潘艳、薛张纲校）
BACKGROUND: Noise in the operating room may cause distractions during critical periods andimpair reliable communication between staff. Even momentary inefficiency while administering
anesthesia can lead to errors and serious consequences for the patient. Distractions to an anesthesia provider during critical periods such as induction and emergence are a patient safety issue. Because of concerns regarding unacceptable noise levels and distractions during induction of general anesthesia, our institution developed a quality improvement initiative, the “Distraction-Free Induction Zone.” The specific aim of this project was to decrease the percentage of caseswith a distraction, described as music, unnecessary conversations, or loud noises, occurring duringinduction of general anesthesia in pediatric otolaryngology operating rooms from 61% to 15%.
METHODS: To complete this quality improvement initiative, a multidisciplinary team used improvement science methods, including The Model for Improvement with interventions tested via Plan-Do-Study-Act cycles. We used tools such as the Key Driver Diagram, Pareto Charts, Process Flow Chart,and Plan-Do-Study-Act worksheets. Data were manually collected and entered weekly in an Excel spreadsheet. Statistical process control methods, including a run chart and a P-control chart, were used for data analysis. Our measure was a composite measure in which observation of 1 of the 3 distractions during induction of general anesthesia categorized the case as a case with a distraction.
RESULTS: We tested and implemented several interventions via Plan-Do-Study-Act cycles in which 3 main interventions collectively were associated with an observed decrease in distractions during induction of general anesthesia. These included educating the perioperative staff present inthe operating room to help them understand that distractions to anesthesia providers represent a

patient safety issue, the operating room circulating nurse taking responsibility to pause any musicon arrival to the operating room, and the anesthesiologist reminding the staff in the operating room of induction time and/or asking for quiet during induction if a distraction occurs. The percentageof cases with a distraction during induction of general anesthesia in our pediatric otolaryngology operating rooms decreased from 61% to 15% by April 15, 2017 and to 10% by June 5, 2017.

CONCLUSIONS: Using improvement science methods, we observed a decrease in distractionsduring induction of general anesthesia, improved a process, and encouraged change in cultureat a large academic children's hospital to enhance the quality and safety of the anesthetic carewe provide our patients.

通过麻醉和重症监护病房服务转运重症患者：手术室工作流程的前后研究

Transport of Critically Ill Patients by the Anesthesia Versus the Intensive Care Unit Service: A Before-After Study of Operating Room Workflows

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背景：本机构实施了一项新政策，即重症监护病房（ICU）患者运送到手术室（OR）的责任从麻醉人员转为 ICU 人员。我们假设这种方法与准时开始手术时间的增加以及接台时间减少有关。

方法：在传统模型中，插管患者或机械循环辅助（MCA）的患者主要是通过麻醉人员负责运送到 OR（“ICU 前接送”）。但在我们的新模型中，这些患者先通过 ICU 人员转送到术前等待区域（Pre-op），再转到麻醉服务（“ICU 后转移”）。如果经 ICU 或麻醉科判断后决定是否需要通过麻醉人员（“ICU 后接送”）运送患者。我们回顾性地审查了新政策之前（2014 年 1 月至 2015 年 5 月）和实施后（2016 年 7 月至 2017 年 6 月）手术患者的病例追踪数据。主要结果为选择性、工作日首例且准时开始的病例比例。为了调整包括合并症和时间趋势在内的混杂因素，我们进行了分段逻辑回归分析，评估了干预对主要结果的影响。次要结果是接台时间和术前匹配的准确性。

结果：我们在 ICU 前接送组中确定了 95 例首台和 86 例接台病例，在 ICU 后转移组中确定了 70 例首台和 88 例接台病例，在 ICU 后接送组中确定了 6 例接台病例。忽略时间趋势，准时开始手术的原始比例从 ICU 前接送组的 32.6％增加到 ICU 后接送组的 77.1％。经过分段逻辑回归调整年龄、性别、美国麻醉医师协会（ASA）身体状况、序贯器官衰竭评估（SOFA）评分、呼吸衰竭、气管内插管、MCA、充血性心力衰竭（CHF）、心脏瓣膜病和心源性及出血性休克等情况，ICU 后接送组在干预开始时比 ICU 前接送组在拟干预时更准时开始（比值比，11.1; 95％置信区间，1.3-125.7; P = .043）。在对上述混杂因素进行分段线性回归调整后，ICU 后接送和 ICU 前接送组之间平均接台时间的估计差异不显着（-6.9 分钟; 95％ CI，-17.09 至 3.27; P = .17 ）。在 ICU 后接送组患者中，离开 ICU 之前确认

了病史、体格检查(H&P)以及手术部位标记情况的病例，分别为92.9%，93.2%和89.2%。整个研究期间未报告任何不良事件。
结论：将ICU患者运送到OR的服务，从麻醉到ICU的过渡并没有缩短接台时间，但有较多手术准时开始和准确术前信息匹配的结果。
（李玮珊译潘艳、薛张纲校）

BACKGROUND: We implemented a new policy at our institution where the responsibility for intensive care unit (ICU) patient transports to the operating room (OR) was changed from the anesthesia to the ICU service. We hypothesized that this approach would be associated with increased on-time starts and decreased turnover times.
METHODS: In the historical model, intubated patients or those on mechanical circulatory assistance (MCA) were transported by the anesthesia service to the OR ("pre-ICU Pickup"). In our new model, these patients are transported by the ICU service to the preoperative holding area (Pre-op) where care is transferred to the anesthesia service ("post-ICU Transfer"). If judged necessary by the ICU or anesthesia attending, the patient was transported by the anesthesia service ("post-ICU Pickup"). We retrospectively reviewed case tracking data for patients undergoing surgery before (January 2014 to May 2015) and after implementation (July 2016 to June 2017) of the new policy. The primary outcome was the proportion of elective, weekday first-case, on-time starts. To adjust for confounders including comorbidities and time trends, we performed a segmented logistic regression analysis assessing the effect of our intervention on the primary outcome. Secondary outcomes were turnover times and compliance with preoperative checklist documentation.
RESULTS: We identified 95 first-start and 86 turnover cases in the pre-ICU Pickup, 70 first-start and 88 turnover cases in the post-ICU Transfer, and 6 turnover cases in the post-ICU Pickup group. Ignoring time trends, the crude proportion of on-time starts increased from 32.6% in the pre-ICU Pickup to 77.1% in the post-ICU Transfer group. After segmented logistic regression adjusting for age, sex, American Society of Anesthesiologists (ASA) physical status, Sequential Organ Failure Assessment (SOFA) score, respiratory failure, endotracheal intubation, MCA, congestive heart failure (CHF), valvular heart disease, and cardiogenic and hemorrhagic shock, the post-ICU Transfer group was more likely to have an on-time start at the start of the intervention than the pre-ICU Pickup group at the end of the preintervention period (odds ratio, 11.1; 95% confidence interval [CI], 1.3–125.7; $P = .043$). After segmented linear regression adjusting for the above confounders, the estimated difference in mean turnover times between the post-ICU Pickup and pre-ICU Transfer group was not significant (-6.9 minutes; 95% CI, -17.09 to 3.27; $P = .17$). In post-ICU Transfer patients, consent, history and physical examination (H&P), and site marking were verified before leaving the ICU in 92.9%, 93.2%, and 89.2%

of the cases, respectively. No adverse events were reported during the study period.
CONCLUSIONS: A transition from the anesthesia to the ICU service for transporting ICU patients to the OR did not change turnover times but resulted in more on-time starts and high compliance with preoperative checklist documentation.

成人在行全髋或全膝关节置换术时关节周围酮洛酸的药代动力学特性

Population Pharmacokinetics of Periarticular Ketorolac in Adult Patients Undergoing Total Hip or Total Knee Replacement Surgery

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背景：酮洛酸氨丁三醇作为多模式镇痛的一部分已被骨科医生用于关节周围浸润。本研究的目的在于探讨酮洛酸 S(-)和酮洛酸 R（+）两种对映体在成人全髋关节置换术（THA）或全膝关节置换术（TKA）患者体内的药代动力学特性。
方法：对于术前肾功能正常的成人患者，在全髋关节置换（THA）或全膝关节置换（TKA）手术结束时，给与含有 30mg 酮洛酸氨丁三醇的 0.2%罗哌卡因 100mL 外加 1mg 麻黄素行关节周围浸润。在给药后的不同时间段抽取静脉血样本，使用 PMetrics1.5.0 系统建立药代动力学模型。
结果：从 18 位实验对象中获取并分析了 104 份血样本。酮洛酸 S(-)比酮洛酸 R（+）血浆药物峰值浓度低，两者在全髋关节置换术（THA）的血浆药物峰值浓度分别为 0.19-1.22mg/L 和 0.39-1.63mg/L，在全膝关节置换（TKA）的血浆药物峰值浓度分别为 0.28-0.60mg/L 和 0.48-0.88mg/L。酮洛酸 S(-)比酮洛酸 R(+)在体内的清除率高，分别为 4.50±2.27L/h 和 1.40±0.694L/h.
结论：我们的研究结果表明，与酮洛酸 R（+）相比，酮洛酸 S(-)具有更高的体内清除率、变化更大的分布容积和更低的血浆药物峰值浓度。
（石平译 潘艳、薛张纲校）
BACKGROUND: Ketorolac tromethamine has been used for joint infiltration by the orthopedic surgeons as a part of postoperative multimodal analgesia. The objective of this study is to investigate the pharmacokinetic properties of S (-) and R (+) enantiomers of ketorolac in adult patients undergoing total hip (THA) and knee arthroplasty (TKA).
METHODS: Adult patients with normal preoperative renal function received a periarticular infiltration of 30 mg of ketorolac tromethamine along with 100 mL of 0.2% ropivacaine and 1 mg of epinephrine at the end of their THA or TKA surgery. Blood samples were taken from a venous cannula at various time points after infiltration. Pharmacokinetic modeling was performed using PMetrics 1.5.0.
RESULTS: From 18 participants, 104 samples were analyzed. The peak plasma concentration for S (-) ketorolacwas found to be lower than that of R

(+) ketorolac, for both THA (0.19-1.22 mg/L vs 0.39-1.63 mg/L, respectively) and TKA (0.28-0.60 mg/L vs 0.48-0.88 mg/L, respectively). The clearance of the S (-) ketorolac enantiomer was higher than R (+) ketorolac (4.50 ± 2.27 vs 1.40 ± 0.694 L/h, respectively).
CONCLUSIONS:Our study demonstrates that with periarticular infiltration, S (-) ketorolac was observed to have increased clearance rate and highly variable volume of distribution and lower peak plasma concentration compared to R (+) ketorolac.

双侧胸椎旁阻滞与胸段硬膜外镇痛在中线切口腹部手术中的比较:一项实用的非劣效性临床试验

Bilateral Thoracic Paravertebral Blocks Compared to Thoracic Epidural Analgesia After Midline Laparotomy: A Pragmatic Noninferiority Clinical Trial.

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背景:双侧胸段椎旁阻滞(PVB)是一种可替代胸段硬膜外镇痛(TEA)用于腹部手术的方法。本随机临床试验旨在确定PVB在腹部手术后镇痛方面是否不劣于于TEA。
方法:70名ASA分级I-III,拟行中线切口腹部手术的患者,随机分配接受胸段硬膜外镇痛(TEA组)或连续双侧椎旁阻滞镇痛 (PVB组),作为非盲法试验设计中多模式镇痛方案的一部分。在0-10分的数值评分量表(NRS)中,如果两组患者术后24小时运动疼痛的平均差异在2分的范围内,认为得出非劣效性的结论。术后72小时内的休息和运动疼痛评分、镇痛药物消耗量、血流动力学和不良事件是评估镇痛效果的次要指标。PVB组还记录了阻滞后、稳态时血浆罗哌卡因浓度和染色扩散模式。
结果:与TEA组比较,PVB组的术后24小时运动疼痛评分无显著性差异(95%置信区间[CI], 0.43[-0.72-1.58])。两组患者在休息和其他时间点的疼痛评分均在临床可接受的范围内,随着时间的推移,两组间无显著差异。34例患者中有9例动脉血浆罗哌卡因水平在安全范围内,而稳态静脉水平高于可接受阈值。
结论:双侧胸段椎旁阻滞作为多模式镇痛的组成部分,与胸段硬膜外镇痛相比,在中线切口腹部手术中提供非劣性的镇痛效果。
(王甲利译 潘艳、薛张纲校)
BACKGROUND: Bilateral paravertebral block (PVB) is a suitable alternative to thoracic epidural analgesia (TEA) for abdominal surgeries. This randomized clinical trial aims to determine if PVB is noninferior to TEA in terms of analgesia after midline laparotomy.
METHODS: Seventy American Society of Anesthesiologists (ASA) class I-III patients undergoing a laparotomy through a midline incision were randomized to receive either TEA (TEA group) or continuous bilateral PVB (PVB group) as a part of a multimodal analgesia regimen in an open-label design. Noninferiority was to be concluded if the mean between-group difference in pain on movement at the 24 postoperative hours was within

a margin of 2 points on a 0-10 numerical rating scale (NRS). Pain score at rest and on movement, analgesic consumption, hemodynamics, and adverse events during the first 72 postoperative hours were the secondary outcome measures assessed for superiority. Postblock and steady-state plasma concentrations of ropivacaine and pattern of dye spread were also recorded in the PVB group.

RESULTS: The primary outcome of pain scores on movement at 24 postoperative hours was noninferior in PVB group in comparison to TEA group (mean difference [95% confidence interval {CI}], 0.43 [-0.72-1.58]). The pain scores at rest and on movement at other time points of assessment were within clinically acceptable limits in both groups with no significant differences between the groups over time. Arterial plasma ropivacaine levels were within safe limits, while steady-state venous level was higher than an acceptable threshold in 9 of 34 cases.

CONCLUSIONS: As a component of multimodal analgesia, bilateral PVB provides noninferior analgesia compared to TEA for midline laparotomy.

常用的肌力药物逆转胆碱能性的支气管收缩：大鼠离体肺灌流的随机实验研究

Reversing Cholinergic Bronchoconstriction by Common Inotropic Agents: A Randomized Experimental Trial on Isolated Perfused Rat Lungs

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背景：肌力药物改变气道反应性和肺组织力学的能力没有得到比较在一个控制良好的实验模型中。因此，我们比较了在离体大鼠肺灌流模型中常用的肌力药物对改变肺组织粘弹性和支气管扩张作用的可能性。

方法：用乙酰胆碱（ach）诱导大鼠稳态肺灌注后的持续性支气管收缩。然后将分离的大鼠肺随机分为 6 组，分别用生理盐水组（n=8）；递增浓度的肌力药物肾上腺素组（n=8）；多巴胺组（n=7）；多巴酚丁胺组（n=7）；米力农组（n=8）；或左旋门冬氨酸组（n=6）。将添加剂添加到全血灌流液中。气道阻力（raw）、肺组织阻尼（g）和弹性在基线条件下被测量，在稳态乙酰胆碱诱导的支气管收缩过程中以及在每种肌力药物作用下。

结果：在生理盐水组 RAW 未观察到明显的变化。和生理盐水组相比多巴胺组 RAW 显著降低最大差异[95%CI]为 29[12-46]%，p=0.004）；左旋门冬氨酸组 RAW 下降（58[39-77]%，p<0.001）；肾上腺素组（37[21-53]%，p<0.001））。而任何剂量的米力农和多巴酚丁胺组均未观察到显著差异。（5[-12 至 22]%）和（4[-13 至 21]%）。与对照组相比，动物的肺组织阻尼（G）降低接受在最高剂量肾上腺素组（22[7-37]、P=.015）、多巴酚丁胺组（20[5-35]、P=.024）、米力农组（20[6-34]、P=.026）和左旋门冬氨酸组（36[19-53]、P<0.001）。

结论：虽然多巴酚丁胺和米力农不能缓解胆碱能性的额支气管收缩，但它们能逆转乙酰胆碱诱导的肺组织阻力增高。相反，肾上腺素、多巴胺和左西门冬氨酸对乙酰胆碱酯酶有很强的支气管扩张作用，并降低肺组织阻尼。需要进一步的研究来确定这些效应是否与人类的临床相关。

（王硕 译 潘艳、薛张纲校）

BACKGROUND: The ability of inotropic agents to alter airway reactivity and lung tissue mechanics has not been compared in a well-controlled experimental model. Therefore, we compared the potential to alter lung tissue viscoelasticity and bronchodilator effects of commonly used inotropic agents in an isolated perfused rat lung model.

METHODS: After achieving steady state lung perfusion, sustained bronchoconstriction was induced by acetylcholine (ACh). Isolated rat lungs were then randomly allocated to 6 groups treated with either saline vehicle (n = 8) or incremental concentrations of inotropes (adrenaline, n = 8; dopamine, n = 7; dobutamine, n = 7; milrinone, n = 8; or levosimendan, n = 6) added to the whole-blood perfusate. Airway resistance (Raw), lung tissue damping (G), and elastance were measured under baseline conditions, during steady-state ACh-induced constriction and for each inotrope dose.

RESULTS: No change in Raw was observed after addition of the saline vehicle. Raw was significantly lower after addition of dopamine (maximum difference [95% CI] of 29 [12 - 46]% relative to the saline control, P = .004), levosimendan (58 [39 - 77]%, P < .001), and adrenaline (37 [21 - 53]%, P < .001), whereas no significant differences were observed at any dose of milrinone (5 [-12 to 22]%) and dobutamine (4 [-13 to 21]%). Lung tissue damping (G) was lower in animals receiving the highest doses of adrenaline (difference: 22 [7 - 37]%, P = .015), dobutamine (20 [5 - 35]%, P = .024), milrinone (20 [6 - 34]%, P = .026), and levosimendan (36 [19 - 53]%, P < .001) than in controls.

CONCLUSIONS: Although dobutamine and milrinone did not reduce cholinergic bronchoconstriction, they reversed the ACh-induced elevations in lung tissue resistance. In contrast, adrenaline, dopamine, and levosimendan exhibited both potent bronchodilatory action against ACh and diminished lung tissue damping. Further work is needed to determine whether these effects are clinically relevant in humans.

俯卧脊柱手术和急性肾损伤时血管加压剂输注：回顾性队列分析

Vasopressor Infusion During Prone Spine Surgery and Acute Renal Injury: A Retrospective Cohort Analysis

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背景：低血压与急性肾损伤有关，但用于治疗低血压的血管加压药也可能损害肾功能。因此，我们验证了复杂脊柱手术期间输注升压药物与肾功能受损无关的假设。

方法：在这项回顾性队列分析中，我们考虑了 2005 年 1 月至 2014 年 9 月在克利夫兰诊所主校区进行复杂脊柱手术的成年人。我们的主要结果是术后估计的肾小

球滤过率。其次，我们使用急性肾损伤网络标准评估肾功能。我们获得了 1814 例手术的数据，包括 689 例患者（38％），术中输注升压药物≥30 分钟，1125 例患者（62％）未进行。540 名未输注加压素的患者和 540 名患者在 32 个潜在的混杂变量中进行了很好的匹配。

结果：在匹配的患者中，升压药输注持续平均 173±100 分钟（SD），并给予 3.4mg（1.5,6.7mg）去氧肾上腺素当量的中位剂量（第 1 个五分位，第 3 个五分位数）。每个匹配组的平均动脉压和低血压量相似。有和没有升压药输注的患者的平均估计肾小球滤过率的术后差异仅为 0.8 mL / min / 1.73 m 2（95％CI，-0.6 至 2.2 mL / min / 1.73 m 2）（P = .28）。术中输注升压药也与增加的急性肾损伤阶段的几率增加无关。

结论：由于害怕促进肾脏损伤，临床医生不应该避免典型的围手术期升压药剂量。容忍低血压以避免使用升压药物可能是一种不好的策略。

魏婉婷译 潘艳、薛张纲校）

BACKGROUND: Hypotension is associated with acute kidney injury, but vasopressors used to treat hypotension may also compromise renal function. We therefore tested the hypothesis that vasopressor infusion during complex spine surgery is not associated with impaired renal function.

METHODS: In this retrospective cohort analysis, we considered adults who had complex spine surgery between January 2005 and September 2014 at the Cleveland Clinic Main Campus. Our primary outcome was postoperative estimated glomerular filtration rate. Secondarily, we evaluated renal function using Acute Kidney Injury Network criteria. We obtained data for 1814 surgeries, including 689 patients (38%) who were given intraoperative vasopressors infusion for ≥30 minutes and 1125 patients (62%) who were not. Five hundred forty patients with and 540 patients without vasopressor infusions were well matched across 32 potential confounding variables.

RESULTS: In matched patients, vasopressor infusions lasted an average of 173 ± 100 minutes (SD) and were given a median dose (1st quintile, 3rd quintile) of 3.4-mg (1.5, 6.7 mg) phenylephrine equivalents. Mean arterial pressure and the amounts of hypotension were similar in each matched group. The postoperative difference in mean estimated glomerular filtration rate in patients with and without vasopressor infusions was only 0.8 mL/min/1.73 m ^{2} (95% CI, -0.6 to 2.2 mL/min/1.73 m ^{2}) (P =.28). Intraoperative vasopressor infusion was also not associated with increased odds of augmented acute kidney injury stage.

CONCLUSIONS: Clinicians should not avoid typical perioperative doses of vasopressors for fear of promoting kidney injury. Tolerating hypotension to avoid vasopressor use would probably be a poor strategy.

排除问题：术前使用大麻素对围术期疼痛的影响

Weeding Out the Problem: The Impact of Preoperative Cannabinoid Use on Pain in the Perioperative Period

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背景：大麻素的娱乐及医疗使用日益增加。然而多数研究着重于大麻素在急性疼痛管理中的作用，尚未有研究探讨术前使用大麻素对手术患者术后结局的影响。这项回顾性队列研究探讨了在行大型骨科手术患者中，术前使用大麻素对术后疼痛评分及疼痛相关结局的影响。
方法：本研究回顾了 2015 年 5 月 1 日至 2017 年 6 月 30 日，与我院行大型骨科手术患者的结局。数据来自于急性疼痛信息在线处理网（Networked Online Processing of Acute Pain Information），这是一个本地开发的数据库用于我们的急性疼痛服务。本研究使用倾向得分匹配方法来平衡使用大麻素与未使用大麻素的两组间的基线变量，包括年龄、性别、手术类型、既往抑郁焦虑史、围术期区域麻醉使用情况。术后早期（定义为术后 36 小时内）活动时疼痛强度为本研究的主要结局。次要结局（都是在术后早期）包括静息状态下疼痛情况、阿片类药物使用情况、皮疹发生率、恶心呕吐、镇静、谵妄、便秘、睡眠及躯体活动影响、患者对于镇痛的满意度，及急性疼痛服务的随访时长。
结果：本研究共纳入 3793 位患者。其中 155 患者术前出于娱乐或是医学指征使用了大麻素。在倾向性得分匹配后，我们比较了 155 位使用了大麻素的患者和 155 位未使用大麻素患者的数据。发现术前使用大麻素的患者疼痛数值评分更高（中位数 [25 百分位，75 百分位]），静息时(5.0 [3.0, 6.1] vs 3.0 [2.0, 5.5], P =.010），活动时 (8.0 [6.0, 9.0] vs 7.0 [3.5, 8.5], P =.003)，有更高的静息时中重度疼痛发生率(分别为 62.3% vs 45.5%, P = 0.004; 比值比, 1.98; 95% CI, 1.25 - 3.14)及活动时中重度疼痛发生率（分别为 85.7% vs 75.2% respectively, P = 0.021; 比值比, 1.98; 95% CI, 1.10 - 3.57）。术后早期，术前使用大麻素的患者较之未使用的患者睡眠中断的发生率也更高。
结论：本倾向性配对的回顾性队列研究显示大麻素的使用与行大型骨科手术患者术后早期更高的疼痛评分及更差的睡眠质量相关。
（叶姗姗 译 潘艳、薛张纲校）

BACKGROUND: The recreational and medical use of cannabinoids has been increasing. While most studies and reviews have focused on the role of cannabinoids in the management of acute pain, no study has examined the postoperative outcomes of surgical candidates who are on cannabinoids preoperatively. This retrospective cohort study examined the impact of preoperative cannabinoid use on postoperative pain scores and pain-related outcomes in patients undergoing major orthopedic surgery.
METHODS: Outcomes of patients who had major orthopedic surgery at our hospital between April 1, 2015 and June 30, 2017 were reviewed. Data were obtained from Networked Online Processing of Acute Pain Information, a locally developed database for our Acute Pain Service. Propensity score matching was used to balance baselines variables including age, sex, type of surgery, history of depression or anxiety, and perioperative use of

regional anesthesia between patients who reported use of cannabinoids and those not on this substance. Intensity of pain with movement in the early postoperative period (defined as up to 36 hours after surgery) was the primary outcome of this study. The secondary outcomes (all in early postoperative period) were pain at rest, opioid consumption, incidence of pruritus, nausea and vomiting, sedation, delirium, constipation, impairment of sleep and physical activity, patient satisfaction with analgesia, and the length of Acute Pain Service follow-up.

RESULTS: A total of 3793 patients were included in the study. Of these, 155 patients were identified as being on cannabinoids for recreational or medical indications in the preoperative period. After propensity score matching, we compared data from 155 patients who were on cannabinoids and 155 patients who were not on cannabinoids. Patients who were on preoperative cannabinoids had higher pain numerical rating score (median [25th, 75th percentiles]) at rest (5.0 [3.0, 6.1] vs 3.0 [2.0, 5.5], P = .010) and with movement (8.0 [6.0, 9.0] vs 7.0 [3.5, 8.5], P = .003), and a higher incidence of moderate-to-severe pain at rest (62.3% vs 45.5%, respectively, P = .004; odds ratio, 1.98; 95% CI, 1.25 - 3.14) and with movement (85.7% vs 75.2% respectively, P = .021; odds ratio, 1.98; 95% CI, 1.10 - 3.57) in the early postoperative period compared to patients who were not on cannabinoids. There was also a higher incidence of sleep interruption in the early postoperative period for patients who used cannabinoids.

CONCLUSIONS: This retrospective study with propensity-matched cohorts showed that cannabinoid use was associated with higher pain scores and a poorer quality of sleep in the early postoperative period in patients undergoing major orthopedic surgery.

持续的痛觉促进小鼠条件性位置偏爱模型中吗啡诱导作用的消失

Persistent Nociception Facilitates the Extinction of Morphine-Induced Conditioned Place Preference

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背景：随着阿片类药物滥用和成瘾已经发展成为一场重大的国家健康危机，用于疼痛管理的阿片类药物的处方变得更具争议性。然而，阿片类药物能通过缓解疼痛和改善生活质量来帮助一些患者。为了更好地了解阿片类药物在慢性疼痛条件下的成瘾性质，我们使用条件性位置偏爱（CPP）范例来检查持续性伤害感受的大鼠中吗啡的有益特性。

方法：用神经损伤（SNI）模型用于诱导大鼠持续性伤害感受。通过 von Frey 测试评估伤害感受行为。 使用 CPP 测试检查吗啡的有益特性。

结果：我们的研究结果如下：（1）SNI 大鼠与假手术大鼠注射后第 1 天吗啡诱导

CPP 量值的差异无显注差异（双向方差分析; SNI 与假手术，F [1， 42] = 0.014，P = .91;平均值差异的 95％置信区间，-5.9 [-58 至 46]，0.76 [-51 至 53]和 0.90 [-51 至 53]对于 2.5,5，分别为 10 毫克/千克）;（2）增加吗啡剂量（2.5,5 和 10 mg / kg）不会进一步增加假手术和 SNI 大鼠的 CPP 大小（剂量：F [2,42] = 0.94，P = .40）;（3）吗啡诱导的 CPP 持续存在于假手术大鼠中，但在最后一次吗啡注射后 8 天测试时在 SNI 大鼠中灭绝。(SNI 大鼠与假手术大鼠的实验：Bonferroni 校正,5 和 10 毫克/千克剂量均为 p<0.06;方法差的置信区间为 95%，5 和 10 毫克/千克分别为 80.3[19.7-141]和 87.0[26.3-148])。

结论：我们的数据提供了新的证据支持大脑的效应电路在持续疼痛的情况下发生变化的观点。这项观察性研究表明，未来对存在阿片类药物影响的神经生物学的研究需要考虑阿片类镇痛药的使用情况。

（应美晶译 潘艳、薛张纲校）

BACKGROUND: As opioid abuse and addiction have developed into a major national health crisis, prescription of opioids for pain management has become more controversial. However, opioids do help some patients by providing pain relief and improving the quality of life. To better understand the addictive properties of opioids under chronic pain conditions, we used a conditioned place preference (CPP) paradigm to examine the rewarding properties of morphine in rats with persistent nociception.

METHODS: Spared nerve injury (SNI) model was used to induce persistent nociception in rats. Nociceptive behavior was assessed by von Frey test. CPP test was used to examine the rewarding properties of morphine.

RESULTS: Our findings are as follows: (1) SNI rats did not show a difference compared with sham rats in magnitude of morphine-induced CPP 1 day after last morphine injection (2-way analysis of variance; for SNI versus sham, $F[1,42] = 0.014$, $P = .91$; and 95% confidence intervals for difference of means, -5.9 [-58 to 46], 0.76 [-51 to 53], and 0.90 [-51 to 53] for 2.5, 5, and 10 mg/kg, respectively); (2) increasing morphine dosage (2.5, 5, and 10 mg/kg) did not further increase the magnitude of CPP in both sham and SNI rats (for dosage: $F[2,42] = 0.94$, $P = .40$); and (3) morphine-induced CPP persisted in sham rats but extinguished in SNI rats when tested at 8 days after last morphine injection (for sham versus SNI: Bonferroni correction, $P < .006$ for both 5 and 10 mg/kg doses; and 95% confidence intervals for difference of means, 80.3 [19.7 - 141] and 87.0 [26.3 - 148] for 5 and 10 mg/kg, respectively).

CONCLUSIONS: Our data provide new evidence supporting the notion that the brain's reward circuitry changes in the context of persistent pain. This observational study suggests that future investigation into the neurobiology of opioid reward requires consideration of the circumstances in which opioid analgesics are administered.

超声心动图舒张功能不全 III 级与手术后主要不良心血管事件风险增加相关：一项回顾性队列研究

Grade 3 Echocardiographic Diastolic Dysfunction Is Associated With Increased Risk of Major Adverse Cardiovascular Events After Surgery: A Retrospective Cohort Study

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背景：心室舒张功能不全常见且可能会增加心血管并发症的风险。本研究调查如下假设：在孤立性左心室舒张功能障碍的患者中，较高等级的舒张功能不全与手术后主要不良心血管事件（MACE）的风险增加有关。

方法：这是一项回顾性队列研究。 收集 2015 年 1 月 1 日至 2015 年 12 月 31 日接受非心脏手术的孤立性超声心动图显示的舒张功能不全（射血分数≥50％）的成年患者资料。 主要终点是住院期间术后 MACE 的发生，包括急性心肌梗死，充血性心力衰竭，卒中，非致死性心脏骤停和心源性死亡。 使用多变量逻辑模型评估舒张功能不全等级与 MACE 发生之间的关联。

结果：最终分析共纳入 2976 名患者。其中，297 例（10.0％）手术后发生 MACE。矫正混杂因素后，与舒张功能不全 I 级和 II 级相比，III 级与更高的术后 MACE 风险相关（比值比，1.71; 95％置信区间，1.28-2.27; P <.001）。与舒张功能不全 I 级和 II 级相比，III 级存在更多的非 MACE 并发症（未校正比值比，1.44; 95％置信区间，1.07-1.95; P = .017）。

结论：接受非心脏手术的孤立性舒张功能不全患者中，10.0％术后住院期间发生 MACE; 舒张功能不全 III 级与 MACE 风险增加有关。

蒋旭亮 译　陈杰 校

Background: Diastolic dysfunction is common and may increase the risk of cardiovascular complications. This study investigated the hypothesis that, in patients with isolated left ventricular diastolic dysfunction, higher grade diastolic dysfunction was associated with greater risk of major adverse cardiovascular events (MACEs) after surgery.

Methods: This was a retrospective cohort study. Data of adult patients with isolated echocardiographic diastolic dysfunction (ejection fraction, ≥50%) who underwent noncardiac surgery from January 1, 2015 to December 31, 2015 were collected. The primary end point was the occurrence of postoperative MACEs during hospital stay, which included acute myocardial infarction, congestive heart failure, stroke, nonfatal cardiac arrest, and cardiac death. The association between the grade of diastolic dysfunction and the occurrence of MACEs was assessed with a multivariable logistic model.

Results: A total of 2976 patients were included in the final analysis. Of these, 297 (10.0%) developed MACEs after surgery. After correction for confounding factors, grade 3 diastolic dysfunction was associated with higher risk of postoperative MACEs (odds ratio, 1.71; 95% confidence interval, 1.28-2.27; P < .001) when compared with grades 1 and 2. Patients with grade 3 diastolic dysfunction developed more non-MACE complications when compared with grades 1 and 2 (uncorrected odds ratio, 1.44; 95% confidence interval, 1.07-1.95; P = .017).

Conclusions: In patients with isolated diastolic dysfunction undergoing noncardiac surgery, 10.0% develop MACEs during hospital stay after surgery; grade 3 diastolic dysfunction is associated with greater risk of MACEs.

机械通气或血管加压素支持和/或死亡可作为围术期监护研究的推荐综合预后指标。

Invasive Respiratory or Vasopressor Support and/or Death as a Proposed Composite Outcome Measure for Perioperative Care Research

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背景：如今需要临床相关且可行的预后指标以便于围术期监护学的临床研究。这项大规模的回顾性队列研究提出了一种新的综合预后测量指标，包括机械通气或血管加压素支持（IRVS）和死亡。作者描述接受大型腹部手术的患者中 IRVS 的发生率，并评估了将 IRVS 与死亡相结合以形成复合预后指标的有效性。

方法：作者回顾性收集了在京都大学医院接受大型腹部手术（肝脏，结肠直肠，胃，胰腺或食管切除术）的 2776 名患者的围术期数据。将 IRVS 定义为术后≥24 小时接受机械通气，术后再次插管或术后给予血管加压素治疗。在术后 30 天内评估 IRVS 的发生率，并调查 IRVS 与随后临床预后之间的关联。关注的主要预后指标是长期生存率。进行多变量 Cox 比例回归分析以校正基线患者和手术特征。次要预后指标是住院时间和住院死亡率。

结果：总共有 85 例患者（3.1％）在术后 30 天内接受了 IRVS，其中 15 例在 30 天内死亡.相比非 IRVS 患者，IRVS 患者的长期生存率更低（1 年和 3 年生存率，66.1％和 48.5％）分别为 95.2％和 84.0％; P <0.001，对数秩检验。在校正基线患者和手术特征后，IRVS 与较低的长期生存率显著相关（校正风险比，2.72; 95％置信区间，1.97-3.77; P <0.001）。 IRVS 组有更长的住院时间（中位数[四分位数]，65 [39-326]对 15 [12-24]天;校正后 P <0.001）和更高的住院死亡率（24.7％对 0.5％;校正后的 P <0.001）。此外，当分析仅限于 30 天幸存者时，IRVS 与随后的临床预后负相关，包括较低的长期生存率（校正风险比，1.78; 95％置信区间，1.21-2.63; P = 0.004）。

结论：IRVS 患者即使在术后第 30 天存活，也可能经历严重并发症发生和长期生存率较低的风险。本研究结果支持使用 IRVS 和/或死亡作为围术期监护学临床研究的综合预后指标的有效性。

（蒋旭亮 译　陈杰 校）

Background: There is a need for a clinically relevant and feasible outcome measure to facilitate clinical studies in perioperative care medicine. This large-scale retrospective cohort study proposed a novel composite outcome measure comprising invasive respiratory or vasopressor support (IRVS) and death. We described the prevalence of IRVS in patients undergoing major abdominal surgery and assessed the validity of combining IRVS and death to form a composite outcome measure.

Methods: We retrospectively collected perioperative data for 2776 patients undergoing major abdominal surgery (liver, colorectal, gastric, pancreatic, or esophageal resection) at Kyoto University Hospital. We defined IRVS as requirement

for mechanical ventilation for ≥24 hours postoperatively, postoperative reintubation, or postoperative vasopressor administration. We evaluated the prevalence of IRVS within 30 postoperative days and examined the association between IRVS and subsequent clinical outcomes. The primary outcome of interest was long-term survival. Multivariable Cox proportional regression analysis was performed to adjust for the baseline patient and operative characteristics. The secondary outcomes were length of hospital stay and hospital mortality.

Results: In total, 85 patients (3.1%) received IRVS within 30 postoperative days, 15 of whom died by day 30. Patients with IRVS had a lower long-term survival rate (1- and 3-year survival probabilities, 66.1% and 48.5% vs 95.2% and 84.0%, respectively; P < .001, log-rank test) compared to those without IRVS. IRVS was significantly associated with lower long-term survival after adjustment for the baseline patient and operative characteristics (adjusted hazard ratio, 2.72; 95% confidence interval, 1.97-3.77; P < .001). IRVS was associated with a longer hospital stay (median [interquartile range], 65 [39-326] vs 15 [12-24] days; adjusted P < .001) and a higher hospital mortality (24.7% vs 0.5%; adjusted P < .001). Moreover, IRVS was adversely associated with subsequent clinical outcomes including lower long-term survival (adjusted hazard ratio, 1.78; 95% confidence interval, 1.21-2.63; P = .004) when the analyses were restricted to 30-day survivors.

Conclusions: Patients with IRVS can experience ongoing risk of serious morbidity and less long-term survival even if alive at postoperative day 30. Our findings support the validity of using IRVS and/or death as a composite outcome measure for clinical studies in perioperative care medicine.**通过混合输注辣椒素和河豚毒素加载的脂质体延长局部麻醉持续时间。**

Prolonged Duration Local Anesthesia by Combined Delivery of Capsaicin- and Tetrodotoxin-Loaded Liposomes

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背景：辣椒的活性成分辣椒素可产生选择性外周感觉神经阻滞。共同给予辣椒素和河豚毒素（位点 1 钠通道阻滞剂）可以对神经阻滞的持续时间产生协同效应。然而，辣椒素可能具有神经毒性，河豚毒素可引起全身毒性。作者评估混合输注辣椒素和河豚毒素载药脂质体是否可以实现延长局部麻醉而无局部或全身毒性反应。

方法：辣椒素和河豚毒素载药脂质体已实现。在雄性 Sprague-Dawley 大鼠坐骨神经处注射游离辣椒素，辣椒素载药脂质体，游离河豚毒素，河豚毒素载药脂质体和空白脂质体，单独或混合使用。分别通过改良的热板试验和负重试验评估感觉和运动神经阻滞。通过注射部位组织的组织学评分和坐骨神经的透射电子显微镜检查评估局部毒性。通过对侧神经缺陷和/或死亡率评估全身毒性。

结果：辣椒素载药脂质体和河豚毒素载药脂质体的混合注射实现了平均感觉阻滞持续时间为 18.2 小时（3.8 小时）[平均值（SD）]，远远长于辣椒素载药脂质体[0.4 小时（0.5 小时）]（P <0.001）或者河豚毒素载药脂质体[0.4 小时（0.7 小时）]

（P <0.001）的单独注射，在游离溶液中分别给予或不给予第二种药物。这种组合带来最小的肌肉毒性和肌肉炎症，并且无髓鞘轴突的百分比或直径没有变化。因此无全身毒性。
结论：包载河豚毒素和辣椒素的组合注射显著延长神经阻滞的时间。该组合不会引起可检测的局部或全身毒性。即使使用非常小的安全剂量，由于存在在其他配方的协同效应，辣椒素也具实用性。
（蒋旭亮 译　陈杰 校）

Background: Capsaicin, the active component of chili peppers, can produce sensory-selective peripheral nerve blockade. Coadministration of capsaicin and tetrodotoxin, a site-1 sodium channel blocker, can achieve a synergistic effect on duration of nerve blocks. However, capsaicin can be neurotoxic, and tetrodotoxin can cause systemic toxicity. We evaluated whether codelivery of capsaicin and tetrodotoxin liposomes can achieve prolonged local anesthesia without local or systemic toxicity.
Methods: Capsaicin- and tetrodotoxin-loaded liposomes were developed. Male Sprague-Dawley rats were injected at the sciatic nerve with free capsaicin, capsaicin liposomes, free tetrodotoxin, tetrodotoxin liposomes, and blank liposomes, singly or in combination. Sensory and motor nerve blocks were assessed by a modified hotplate test and a weight-bearing test, respectively. Local toxicity was assessed by histologic scoring of tissues at the injection sites and transmission electron microscopic examination of the sciatic nerves. Systemic toxicity was assessed by rates of contralateral nerve deficits and/or mortality.
Results: The combination of capsaicin liposomes and tetrodotoxin liposomes achieved a mean duration of sensory block of 18.2 hours (3.8 hours) [mean (SD)], far longer than that from capsaicin liposomes [0.4 hours (0.5 hours)] ($P < .001$) or tetrodotoxin liposomes [0.4 hours (0.7 hours)] ($P < .001$) given separately with or without the second drug in free solution. This combination caused minimal myotoxicity and muscle inflammation, and there were no changes in the percentage or diameter of unmyelinated axons. There was no systemic toxicity.
Conclusions: The combination of encapsulated tetrodotoxin and capsaicin achieved marked prolongation of nerve block. This combination did not cause detectable local or systemic toxicity. Capsaicin may be useful for its synergistic effects on other formulations even when used in very small, safe quantities.

通过使用 Belmont 加温快速输注系统 进行输血与术中严重低血压发生的相关性研究

Profound Intraoperative Hypotension Associated With Transfusion via the Belmont Fluid Management System

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这项在 2 个大型教学医院，为期 4 年的回顾性观察研究收集了 15 例术中在使用

Belmont 加温快速输注系统进行血制品快速输注后即刻出现严重低血压的病例。停止输血和给予血管活性剂后低血压现象消失。除非使用血管活性药物，否则再次使用**加温快速输注系统**进行输血会导致低血压的重复出现。目前病因未明。该研究是一项调查急性低血压输血反应与应用于外科患者的任一快速输注系统样本量最大的相关性研究。

（吴彤 译　陈杰 校）

This retrospective observational case series conducted at 2 large academic centers over a 4-year period consists of 15 cases of profound hypotension in surgical patients immediately after initiation of the Belmont Fluid Management System for rapid transfusion of blood products. Halting the infusion and administering vasoactive agents led to resolution of hypotension. Repeat transfusion with the Belmont system resulted in repeat hypotension unless counteracted with vasopressors. No etiology was elucidated. This represents the largest documented association of acute hypotensive transfusion reaction with any rapid infusion system in surgical patients.

入住重症监护病房对术后住院时间和费用的影响：一项预设定的倾向性匹配队列研究

The Impact of Postoperative Intensive Care Unit Admission on Postoperative Hospital Length of Stay and Costs: A Prespecified Propensity-Matched Cohort Study

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背景：在这项预设定的队列研究中，作者调查了接受中度风险手术的患者术后入住重症监护室或外科病房对医疗资源利用的影响。

方法：针对没有绝对术后入住 ICU 的全麻手术成年患者，基于 23 项重要的术前和术中的倾向评分预测变量，作者将 3530 例术后入住 ICU 的患者与 3530 例术后入普通病房的患者进行匹配。术后住院时间和住院费用分别定义为主要和次要终点。

结果：在术后 ICU 入住倾向评分较低的患者中，选择术后入住 ICU 与术后住院时间的延长（发病率为 1.69 [95％CI，1.59-1.79]; P <0.001）以及住院费用的增加（发病率，1.92 [95％CI，1.81-2.03]; P <0.001）相关。相反，高倾向评分患者术后入住 ICU 与术后住院时间缩短（发生率，0.90 [95％CI，0.85-0.95]; P <0.001）和降低住院费用（发病率，0.92 [95% CI, 0.88–0.97]; P = 0.001）相关。关于术后 ICU 资源使用的决定受到麻醉和外科医生个人偏好的影响。

结论：对于进入重症监护室指征不明确的患者，术后入住重症监护病房可能会延长术后住院时间且增加医疗费用。术后病人的安置去向会因为麻醉和手术医生个人偏好而产生很大差异，但最优的评估方式是通过对手术结束时患者的状态进行客观评估。

（吴彤 译　陈杰 校）

Background: In this prespecified cohort study, we investigated the influence of

postopera- tive admission to the intensive care unit versus surgical ward on health care utilization among patients undergoing intermediate-risk surgery.

Methods: Of adult surgical patients who underwent general anesthesia without an absolute indication for postoperative intensive care unit admission, 3530 patients admitted postoperatively to an intensive care unit were matched to 3530 patients admitted postoperatively to a surgical ward using a propensity score based on 23 important preoperative and intraoperative predictor variables. Postoperative hospital length of stay and hospital costs were defined as primary and secondary end points, respectively.

Results: Among patients with low propensity for postoperative intensive care unit admission, initial triage to an intensive care unit was associated with increased postoperative length of stay (incidence rate ratio, 1.69 [95% CI, 1.59–1.79]; P < .001) and hospital costs (incidence rate ratio, 1.92 [95% CI, 1.81–2.03]; P < .001). By contrast, postoperative intensive care unit admission of patients with high propensity was associated with decreased postoperative length of stay (incidence rate ratio, 0.90 [95% CI, 0.85–0.95]; P < .001) and costs (incidence rate ratio, 0.92 [95% CI, 0.88–0.97]; P = .001). Decisions regarding post- operative intensive care unit resource utilization were influenced by individual preferences of anesthesiologists and surgeons.

Conclusions: In patients with an unclear indication for postoperative critical care, intensive care unit admission may negatively impact postoperative hospital length of stay and costs. Postoperative discharge disposition varies substantially based on anesthesia and surgical provider preferences but should optimally be driven by an objective assessment of a patient's status at the end of surgery.

加速外科康复方式下行妇科微创手术入院的预测因素

Predictors of Admission After the Implementation of an Enhanced Recovery After Surgery Pathway for Minimally Invasive Gynecologic Surgery

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背景：在妇科手术中加速康复外科（ERAS）途径已被证明在不影响再入院的情况下可减少住院时间，但尚未有研究对该人群的入院预测因素进行评估。本研究目的是确定在 ERAS 理念下进行腹腔镜子宫切除术（LH）和机器人辅助子宫切除术（RAH）后入院的预测因素。

方法： 这是一项前瞻性观察性研究，纳入了在 ERAS 诊疗方式中具有接受 LH / RAH 治疗适应症的女性。该研究所收集的数据包括当天出院/入院原因，紧急诊所和急诊室（ER）就诊的发生率，再入院率，再次手术率以及下面列出的 9 个假定的入院预测因素。使用 Fisher exact 和 Student t 检验比较两组（手术当天出院的 ERAS 患者与住院患者）患者人口统计学资料，基线健康指标和临床结果。校正年龄、种族、体重指数、ASA 评分、提示子宫切除术的术前诊断、术前慢

性疼痛、完成前期疼痛治疗咨询会议、手术时间以及对 ERAS 的依从情况后，多变量逻辑回归用于评估住院的潜在风险因素。

结果： 在 ERAS 途径中有 165 名患者接受 LH / RAH 治疗; 93 例（56％）手术当天出院，72 例住院。ER 就诊，再入院和再次手术组间没有显着差异（ER 就诊率：出院组 13％，住院组 13％，P = 0.99; 90 天内再入院率：出院组 4％，住院组 7％，P = 0.51；和 90 天内再次手术率：出院组 4％，住院组 3％，P =0.70）。住院的最常见原因是术后尿潴留（n = 21，30％），疼痛控制不佳（n = 21，30％），术后恶心和呕吐（n = 7，10％）和计划住院（n = 7，10％）。ASA 评分增加、非洲裔美国人以及手术时间延长与住院风险增加显著相关（AS III 级与 ASA I 或 II 级：优势比[OR]，3.12; 95％置信区间[CI]，1.36-7.16; P = 0.007;非洲裔美国人：OR，2.47；95％CI，1.02-5.96；P =0.04；以及手术时间长度，以 30 分钟为递增量进行评估：OR，1.23;；95％CI ，1.02-1.50；P = 0.04）。

结论：该研究确定以 ERAS 方式行 LH / RAH 治疗的患者住院预测因素。 ASA 评分增加、非洲裔美国人和手术时间的延长与 ERAS 方式下进行 LH / RAH 的住院显著相关。此外，手术当天出院的紧急门诊和急诊室就诊，再入院和再次手术的发生率与手术当天出院患者相似。

（吴彤 译　陈杰 校）

Background: Enhanced recovery after surgery (ERAS) pathways in gynecologic surgery have been shown to decrease length of stay with no impact on readmission, but no study has assessed predictors of admission in this population. The purpose of this study was to identify predictors of admission after laparoscopic hysterectomy (LH) and robotic-assisted hysterectomy (RAH) performed under an ERAS pathway.

Methods: This is a prospective observational study of women undergoing LH/RAH for benign indications within an ERAS pathway. Data collected included same-day discharge, reason for admission, incidences of urgent clinic and emergency room (ER) visits, readmissions, reoperations, and 9 postulated predictors of admission listed below. Patient demographics, markers of baseline health, and clinical outcomes were compared between groups (ERAS patients discharged on the day of surgery versus admitted) using Fisher exact and Student t tests. Multivariable logistic regression was used to assess the potential risk factors for being admitted, adjusting for age, race, body mass index, American Society of Anesthesiologists (ASA) physical status score, preop- erative diagnosis indicative of hysterectomy, preoperative chronic pain, completion of a preprocedure pain-coping skills counseling session, procedure time, and compliance to the ERAS pathway.

Results: There were 165 patients undergoing LH/RAH within an ERAS pathway; 93 (56%) were discharged on the day of surgery and 72 were admitted. There were no significant differences in ER visits, readmissions, and reoperations between groups (ER visits: discharged 13% versus admitted 13%, P = .99; 90-day readmission: discharged 4% versus admitted 7%, P = .51; and 90-day reoperation: discharged 4% versus admitted 3%, P = .70). The most common reasons for admission were postoperative urinary retention (n = 21, 30%), inadequate pain control (n = 21, 30%), postoperative nausea and vomiting (n = 7, 10%), and planned admissions (n = 7, 10%). Increased ASA physical status, being African American, and increased length of procedure were significantly associated with an increased risk of admission (ASA

physical status III versus ASA physical status I or II: odds ratio [OR], 3.12; 95% confidence interval [CI], 1.36–7.16; P = .007; African American: OR, 2.47; 95% CI, 1.02–5.96; P = .04; and length of procedure, assessed in 30-minute increments: OR, 1.23; 95% CI, 1.02–1.50; P = .04).

Conclusions: We were able to define predictors of admission for patients having LH/RAH managed with an ERAS pathway. Increased ASA physical status, being African American, and increased length of procedure were significantly associated with admission after LH/RAH performed under an ERAS pathway. In addition, the incidences of urgent clinic and ER visits, readmissions, and reoperations within 90 days of surgery were similar for patients who were discharged on the day of surgery compared to those admitted.

一项随机对照试验：气管导管热软化技术是否有助于视频喉镜引导下经鼻气管插管？

Is Tube Thermosoftening Helpful for Videolaryngoscope-Guided Nasotracheal Intubation？A Randomized Controlled Trial.

Kim EM，Chung MH，Lee MH，Choi EM，Jun IJ，Yun TH，Ko YK，Kim JH，Jun JH.

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背景：气管导管（ETT）热软化技术和使用硅橡胶气管导管已经被建议用于经鼻气管插管（NTI）以减少鼻衄。然而，已知使用热软化技术会造成 NTI 期间如不使用麦氏插管钳将难以进行气管插管。无论气管导管硬度如何，在直接喉镜引导时套囊充气已经被建议作为一种替代气管插管钳进行引导的有效方法。作者评估硅橡胶导管的热软化是否在减少鼻部损伤方面具有额外的益处。同时还评价气管导管热软化在套囊充气协助的视频喉镜引导经鼻插管期间是否增加了其引导难度。

方法：根据是否加温软化气管导管，将 140 名患者随机分配到 2 组中。主要预后指标是 NTI 期间鼻衄的发生率。次要结果是气管导管的引导性，通过引导等级和在各阶段插入气管导管所需的时间[从鼻到口咽，从口咽到声门入口（如需要，进行套囊充气）以及从声门入口到气管]来评估。

结果：所有 140 名患者均成功进行经鼻气管插管。与对照组相比，热软化组的鼻衄发生率和严重程度显著更低（7％VS51％;差异率 44.2％; 95％置信区间，29.9％-56.2％; *P* <0.001），气管导管通过鼻腔具有更低的阻力（*P* = 0.001）和更短的时间（*P* <0.001）。 两组从口咽到声门入口（两组之间分别为 *P*>0.99 和 *P* =0.054）和从声门入口到气管导管插入（两组之间分别为 *P*>0.99，*P*=0.750）的引导等级和所需时间的难易程度没有差异。所有气管导管都可以在不使用插管钳的情况下引导到气管中。

结论：由于显着降低鼻衄发生率并且不会增加气管导管进入口咽的引导难度，在视频喉镜引导的经鼻气插管期间使用热软化的硅橡胶气管导管并进行套囊充气辅助具有益。

BACKGROUND：Thermosoftening of the endotracheal tube (ETT) and telescoping the ETT into a rubber catheter have been suggested as a method for reducing epistaxis during nasotracheal intubation (NTI). However, thermosoftening technique is known

to make it difficult to navigate the ETT into trachea without the use of Magill forceps during NTI. The cuff inflation technique has been suggested as an effective alternative to the use of Magill forceps to improve the oropharyngeal navigation of the ETT, irrespective of their stiffness, during direct laryngoscope-guided NTI. We evaluated whether thermosoftening of the ETT telescoped into rubber catheters has an additional benefit in reducing nasal injury. Simultaneously, we also evaluated whether thermosoftening of the ETT worsened orotracheal navigability during cuff inflation-supplemented videolaryngoscope-guided NTI.

METHODS：One hundred forty patients were randomly assigned to 1 of the 2 groups depending on whether the ETT was softened by warming or not. The primary outcome was the incidence of epistaxis during NTI. The secondary outcome was nasotracheal navigability of the ETT, assessed by navigation grade and time required for insertion of ETT in each phase (from nose to oropharynx, from oropharynx to glottic inlet aided by cuff inflation if needed, and from glottic inlet to trachea).

RESULTS：The ETTs were successfully inserted through the selected nostril of all 140 patients. In the thermosoftening group, the incidence and severity of epistaxis was significantly lower (7% vs 51%; difference of 44.2%; 95% confidence interval, 29.9%-56.2%; P < .001), and the ETT passed through the nasal cavity with lower resistance (P = .001) and less time (P < .001) when compared to the control group. No difference was found in the ease of ETT insertion (navigation grade and time required) from the oropharynx to the glottic inlet (P > .99 and P = .054, respectively) and from the glottic inlet to the trachea (P > .99 and P = .750, respectively) between the 2 groups. In both groups, all ETTs could be navigated into the trachea without the use of Magill forceps.

CONCLUSIONS：Supplemented with cuff inflation during videolaryngoscope-guided NTI, thermosoftening of the ETT telescoped into rubber catheters has a substantial benefit because it significantly reduces the incidence of epistaxis without worsening the oropharyngeal navigability of the ETT.

一项初步研究：老年患者的神经认知障碍与结肠镜检查的关系

Pilot Study: Neurocognitive Disorders and Colonoscopy in Older Adults.

Arias F，Riverso M，Levy SA，Armstrong R，Estores DS，Tighe P，Price CC

Anesthesia & Analgesia: 2019 129 e89-p e93

摘要：在对 64 岁以上患者进行包含综合神经心理学检查的术前麻醉准备时，作者完成了一项关于神经认知障碍与遗漏结肠镜检查频率和肠道准备质量之间关系的初步研究。胃肠病医生为获得每位患者的波士顿肠道准备量表（BBPS）信息。 在 47 名老年患者中，68％符合神经认知障碍标准。所有未参加结肠镜检查的患者都符合重度神经认知障碍标准。不充分的胃肠道准备与 100%的重度神经认知障碍和 28%的中度神经认知障碍有关。此试验数据表明，在高危人群中，神经认知障碍是错过预约和肠道准备不足的风险因素。这些试验数据可为未来的干预方法提供参考依据。

In a preoperative anesthesia setting with integrated neuropsychology for individuals >64 years of age, we completed a pilot study examining the association

between neurocognitive disorders with frequency of missed colonoscopies and quality of bowel preparation (prep). Gastroenterologists completed the Boston Bowel Preparation Scale (BBPS) for each patient. Of 47 older adults seen in our service, 68% met criteria for neurocognitive disorders. All individuals failing to attend the colonoscopy procedure had met criteria for major neurocognitive disorder. Poor bowel prep was also identified in 100% of individuals with major neurocognitive disorder and 28% of individuals with mild neurocognitive disorder. Our pilot data suggest that, in high-risk individuals, the presence of neurocognitive disorders is risk factors for missed appointments and inadequate bowel prep. These pilot data provide reference statistics for future intervention protocols.

副交感神经张力活性评价判断猪的酮咯酸和酮咯酸/曲马多镇痛水平

Parasympathetic Tone Activity Evaluation to Discriminate Ketorolac and Ketoro lac/TramadolAnalgesia Level in Swine.

Leitão CJ，Lima-Rodríguez JR，Ferreira F，Avelino C，Sánchez-Margallo FM，Antunes L.

Anesthesia & Analgesia: 2019 129 - p882-p889.

背景：根据临床标准进行全身麻醉过程中疼痛，镇痛平衡的评估仍然具有挑战性。可以使用副交感神经张力活动（PTA）监测器优化使用的镇痛药物。本研究使用 PTA 监测仪比较酮咯酸和酮咯酸/曲马多平衡镇痛。

方法：在平稳的七氟醚麻醉下，对猪进行伤害性刺激后使用 0-100 数字状态量表（PTA）评估疼痛强度反应。我们还测量了 BIS，心率，无创血压和呼吸参数。将动物分成 3 组：无镇痛组，酮咯酸组和酮咯酸/曲马多组。使用方差分析和非参数 Kruskal-Wallis 检验的混合模型进行重复测量分析，然后进行 Bonferroni 或 Dunn 多重比较，比较选定时间段内的平均值或曲线下的平均面积（AUC）。

结果：在没有镇痛且仅用酮咯酸治疗的动物中施用刺激物后，观察到 PTA，AUC 平均值显着降低。对照组的 PTA，AUC 平均值显着低于酮咯酸组中的相应平均值。酮咯酸/曲马多组显示出最高的 PTA，AUC 平均值，与其他 2 组比较有显著差异，并且在不同时间点没有检测到显着差异。BIS 在不同时间点或不同治疗组之间没有显着的统计学意义。在进行刺激后，无镇痛和酮咯酸/曲马多组间的心率 AUC 平均值显着增加。无创血压在各时间点和治疗组之间没有显示出统计学差异。

结论：该研究表明，酮咯酸和曲马多的低剂量组合足以在给药后 20 分钟阻断使用持针器对猪的刺激因引起的疼痛反应。PTA 监测仪能够清楚地识别治疗之间的镇痛水平，并可用于优化给药。

BACKGROUND：Evaluation of nociceptive-antinociceptive balance during general anesthesia is still challenging and routinely based on clinical criteria. Analgesic drug delivered may be optimized with parasympathetic tone activity (PTA) monitor. This study compares ketorolac and ketorolac/tramadol balance analgesia using a PTA monitor.

METHODS：Pain intensity response was assessed using a 0-100 numerical state scale (PTA) after nociceptive stimuli in pigs under stable sevoflurane anesthesia. Bispectral index, heart rate, noninvasive blood pressure, and respiratory parameters were also

measured. Animals were divided into 3 groups: without analgesia, ketorolac, and ketorolac/tramadol. Mean values or mean areas under the curve (AUC) in selected time periods were compared over time and between groups through a mixed-model repeated measures analysis of variance and nonparametric Kruskal-Wallis tests, followed by Bonferroni or Dunn's multiple comparisons.

RESULTS： It was observed a significant decrease in the PTA AUC mean value after application of the stimulus in animals treated without analgesia and only with ketorolac. The PTA AUC mean value in the control group was significantly lower than the corresponding mean in ketorolac group. The ketorolac/tramadol group showed the highest PTA AUC mean values, significantly different from those obtained for the other 2 groups, with no significant differences detected over time. Bispectral index means showed no statistically significant differences either over time periods or between different treatment groups. Heart rate showed only a statistically significant increase in AUC mean between without analgesia and ketorolac/tramadol group, in the time period after the stimulus application. Noninvasive blood pressure means showed no statistically significant differences over time and between treatment groups.

CONCLUSIONS: This study shows that a low dose combination of ketorolac and tramadol is sufficient to block the pain responses induced with a needle holder in pigs 20 minutes after its administration. The PTA monitor was able to clearly recognize the analgesic level between treatments and may be used to optimize analgesic drug delivered.

外科病人围手术期通过短信戒烟方案的可行性

Feasibility of a Perioperative Text Messaging Smoking Cessation Program for Surgical Patients

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尽管吸烟的外科病人可以从围手术期戒烟中获益，但目前很少有人能够做到。该项初步研究确定了围手术期通过短信戒烟计划的可行性和可接受性。100 名患者（73%的符合条件的患者有吸烟史）注册了一项特定于手术的信息服务，30 天内每天收到 1-3 条关于吸烟和手术康复的信息。只有 17 名患者没有注册，大多数病人对提示信息作出回应，对该项目的满意度很高。外科病人对于短信息干预具有依从性；在外科病人中，有必要对短信息戒烟支持的预期疗效进行进一步的试验。

（吴洁译 李士通校）

Although surgical patients who smoke could benefit from perioperative abstinence, few currently receive support. This pilot study determined the feasibility and acceptability of a perioperative textmessaging smoking cessation program. One hundred patients (73% of eligible patients approached) enrolled in a

surgery-specific messaging service, receiving 1-3 daily messages about smoking and surgical recovery for 30 days. Only 17 patients unenrolled, the majority responded to prompting messages, and satisfaction with the program was high. Surgical patients are amenable to text message-based interventions; a future efficacy trial of text messaging smoking cessationsupport in surgical patients is warranted.

镁对预防外科手术病人寒战的作用：系统回顾与荟萃分析

Effectiveness of Magnesium in Preventing Shivering in Surgical Patients: A Systematic Review and Meta-analysis

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背景：镁围手术期抗寒战作用的临床试验结果不一致。我们对围手术期使用镁剂预防寒战的效果进行了系统回顾和荟萃分析，并进行了试验序列分析。

方法：我们搜索了 PubMed、EMBASE、科学网、Cochrane 临床对照试验中心注册库和 2 个注册网站，以获得随机临床试验，这些试验比较了患者术中使用镁剂与安慰剂或不接受任何治疗的情况。荟萃分析的主要结果是寒战的发生率。采用随机效应模型，将寒战发生率与 95%可信区间合并为风险比。在亚组分析中评估给药途径的效果，并进行 1 型错误风险为 5%和检验力 90%的试验序列分析。对每项试验的质量进行评估，并使用证据推荐分级的评估、制定与评价系统对证据质量进行评估。我们还评估了不良事件。

结果：一共纳入 64 个试验和 4303 名患者（分别是镁组 2300 名和对照组 2003 名患者）。镁组和对照组的总寒战发生率分别为 9.9%和 23.0%（风险比为 0.42；95%可信区间为 0.33-0.52）。亚组分析显示，静脉注射（风险比为 0.29；95%可信区间为 0.29-0.54；推荐性评估、制定与评价分级为中度）、硬膜外注射（风险比为 0.24；95%可信区间为 0.13-0.43；推荐性评估、制定与评价分级为低级）和鞘内注射（风险比为 0.64；95%可信区间为 0.43-0.96；推荐性评估、制定与评价分级为中等）的寒战发生率较低。只有低偏倚风险的试验被纳入试验序列分析中。尽管只有 34.9%的目标样本量，但静脉给予镁剂的 z 累积曲线通过了试验序列分析监测边界以获得效益。硬膜外或鞘内给药的 z-累积曲线没有通过试验序列分析监测边界。不良事件没有增加。

结论：围手术期静脉注射镁能有效地减少寒战，试验序列分析表明，无需再进行试验来证实静脉注射镁能有效地减少寒战。

（吴洁译 李士通校）

BACKGROUND: Clinical trials regarding the antishivering effect of perioperative magnesium have produced inconsistent results. We conducted a systematic review and meta-analysis with Trial Sequential Analysis to evaluate the effect of perioperative magnesium on prevention of shivering.

METHODS: We searched PubMed, EMBASE, Web of Science, Cochrane Central Register of Controlled Trials, and 2 registry sites for randomized

clinical trials that compared the administration of magnesium to a placebo or no treatment in patients undergoing surgeries. The primary outcome of this meta-analysis was the incidence of shivering. The incidence of shiveringwas combined as a risk ratio with 95% CI using a random-effect model. The effect of the route of administration was evaluated in a subgroup analysis, and Trial Sequential Analysis with a risk of type 1 error of 5% and power of 90% was performed. The quality of each included trial was evaluated, and the quality of evidence was assessed using the Grading of Recommendation Assessment, Development, and Evaluation approach. We also assessed adverse events.

RESULTS: Sixty-four trials and 4303 patients (2300 and 2003 patients in
magnesium and control groups, respectively) were included. The overall incidence of shivering was 9.9% in the magnesium group and 23.0% in the control group (risk ratio, 0.42; 95% CI, 0.33-0.52). Subgroup analysis revealed that the incidence of shivering was lower with IV (risk ratio, 0.29; 95% CI, 0.29-0.54; Grading of Recommendation Assessment, Development, and Evaluation, moderate), epidural (risk ratio, 0.24; 95% CI, 0.13-0.43; Grading of Recommendation Assessment, Development, and Evaluation, low), and intrathecal administration (risk ratio, 0.64; 95% CI, 0.43-0.96; Grading of Recommendation Assessment, Development, and Evaluation, moderate). Only trials with low risk of bias were included for Trial Sequential Analysis. The Z-cumulative curve for IV magnesium crossed the Trial Sequential Analysis monitoring boundary for benefit even though only 34.9% of the target sample size had been reached. The Z-cumulative curve for epidural or intrathecal administration did not cross the Trial Sequential Analysis monitoring boundary for benefit. No increase in adverse events was reported.

CONCLUSIONS: Perioperative IV administration of magnesium effectively reduced shivering and Trial Sequential Analysis suggested that no more trials are required to confirm that IV magnesium effectively reduces shivering.

一项前瞻性观察队列研究，对大学附属三级医院手术室单元的求助的研究。

A Prospective Observational Cohort Study of Calls for Help in a Tertiary Care Academic Operating Room Suite

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尽管有大量关于医院“代码呼叫”的文献，但缺乏对手术室内帮助呼叫的相关研究。本研究的目的是量化在一所大学附属医院手术室内寻求帮助的比率和性质。在一年的时间里，记录所有加州大学欧文医学中心主手术室的呼叫。每 1000 个麻醉小时的平均呼叫率为 1.4（95%CI 为 1.1-1.8），相当于每 1000 例麻醉呼叫

率为 5.0（3.8-6.5）。最常见的呼叫原因是与气道（44%）、心脏（32%）和出血（11%）相关的紧急情况。手术室内需要求助的患者 30 天死亡率接近 11%。
（吴洁译 李士通校）
While significant literature exists on hospital-based "code calls," there is a lack of research on calls for help in the operating room (OR). The purpose of this study was to quantify the rate and nature of calls for help in the OR of a tertiary care hospital. For a 1-year period, all calls were recorded in the main OR at The University of California, Irvine Medical Center. The average rate of calls per 1000 anesthesia hours was 1.4 (95% CI, 1.1-1.8), corresponding to a rate of 5.0 (3.8-6.5) calls per 1000 cases. Airway (44%), cardiac (32%), and hemorrhagic (11%) emergencies were the most common etiologies. Thirty-day mortality approached 11% for patients who required a call for help in the OR.

术后角膜损伤：发病率和危险因素
Postoperative Corneal Injuries: Incidence and Risk Factors
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背景：先前对术后角膜损伤率的研究依赖于一些当事人提供的事件报告，这可能低估了真实的发病率。术后给予丙泊卡因滴眼液几乎只用于诊断角膜损伤，因此，确定实际给药病例可以更好地估计角膜损伤情况。我们比较了丙泊卡因给药和提供者提供的报告，以确定角膜损伤的发生率。此外，通过相匹配的病例对照研究评估临床变量和损伤之间的潜在关系。
方法：回顾了 132511 例先后进入麻醉后复苏室（2011 年 1 月 1 日至 2017 年 6 月 30 日）的成年病人病历，以确定术后给予丙胺卡因和角膜损伤的事件报告情况。角膜损伤患者以 1:2 的比例与对照组患者进行配对，以评估损伤相关因素。
结果：442 例患者使用丙胺卡因滴眼（其中 425 例患者为使用丙胺卡因做诊断性治疗，17 例患者因无关原因接受丙胺卡因治疗）。事件报告确定 320 例角膜损伤，角膜损伤总病例数为 436 例（发病率为每 1000 例全麻患者 3.3 例 [95%置信区间 CI 为 3.0-3.6]。与事件报告相比，使用丙胺卡因的病例确定率更高（分别为 97.5%对 73.4%; P<0.001）。匹配的病例对照分析发现，麻醉持续时间较长（优势比为 1.05 每 10 分钟麻醉时间 [95%可信区间为 1.03-1.07]；p<0.001）和非正位手术（优势比为 3.89[95%可信区间，2.17-6.98]；p<0.001）的风险更大。在麻醉恢复期间，存在角膜损伤的患者在复苏室内有更多的镇静和躁动的证据。
结论：使用几乎专门用于诊断特定损伤（角膜损伤）的药物（丙哌卡因滴眼液）计算发病率表明，病例确定率高于事件报告的方法。类似的策略可用于监测其他不良事件的发生率。
（吴洁译 李士通校）
BACKGROUND: Previous studies of postoperative corneal injury rates relied on provider-initiated incident reports, which may underestimate the true incidence. Postoperative administration of proparacaine eye

drops is used almost exclusively to diagnose corneal injury; therefore, identifying instances of administration may provide a better estimate of corneal injuries. We compared proparacaine administration versus provider-initiated reports to determine rates of corneal injury. In addition, potential associations between clinical variables and injury were assessed with a matched case-control study.

METHODS: The health records of 132,511 sequential adult postanesthesia recovery room admissions (January 1, 2011 to June 30, 2017) were reviewed to identify postoperative proparacaine administration and incident reports of corneal injury. Patients with corneal injury were matched with control patients at a 1:2 ratio to assess factors associated with injury.

RESULTS: Proparacaine drops were administered to 442 patients (425 patients received proparacaine for diagnosis and 17 patients received proparacaine for unrelated reasons). Incident reports identified 320 injuries, and the aggregate corneal injury count was 436 (incidence, 3.3 injuries [95% confidence interval {CI}, 3.0-3.6] per 1000 cases of general anesthesia). Proparacaine administration had a greater case ascertainment percentage than incident reporting (97.5% vs 73.4%; P < .001). The matched case-control analysis found greater risks associated with longer duration of anesthesia (odds ratio, 1.05 [95% CI, 1.03-1.07] per 10 minutes of anesthesia; P < .001) and nonsupine surgical position (odds ratio, 3.89 [95% CI, 2.17-6.98]; P < .001). Patients with injuries also had more evidence of sedation and agitation during anesthesia recovery.

CONCLUSIONS: Calculation of incidence by using the administration of a medication (proparacaine eye drops) that is almost exclusively used to diagnose a specific injury (cornealinjury) showed higher case ascertainment percentage than incident-reporting methods. Similar strategies could be used to monitor the rates of other adverse events.

创伤中纤维蛋白溶解停止：历史回顾与临床意义

Fibrinolysis Shutdown in Trauma: Historical Review and Clinical Implications

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尽管认识到在创伤后存在纤维蛋白溶解异常已经超过半个世纪，但在了解引起这些变化的潜在机制以及由此导致的无效治疗策略方面我们仍然处于初期。随着粘弹性止血试验（VHAS）在创伤中纤维蛋白溶解测定中的应用越来越多，出现的问

题比答案更多。虽然 VHA 测定的低纤溶活性似乎是损伤后常见的，并与死亡率的增加有关，但我们现在认识到该人群中的亚症状类型，即特定的队列出现取决于采集样本时损伤的特定时间。未来的研究应该集中在这些细节和区别上，因为低纤维蛋白溶解、急性纤溶终止和持续纤溶终止似乎代表了不同的、独特的临床类型，具有不同的病理生理学过程，并警示需要不同的治疗策略。

（吴洁译 李士通校）

Despite over a half-century of recognizing fibrinolytic abnormalities after trauma, we remain in our infancy in understanding the underlying mechanisms causing these changes, resulting in ineffective treatment strategies. With the increased utilization of viscoelastic hemostatic assays (VHAs) to measure fibrinolysis in trauma, more questions than answers are emerging. Although it seems certain that low fibrinolytic activity measured by VHA is common after injury and associated with increased mortality, we now recognize subphenotypes within this population and that specific cohorts arise depending on the specific time from injury when samples are collected. Future studies should focus on these subtleties and distinctions, as hypofibrinolysis, acute shutdown, and persistent shutdown appear to represent distinct, unique clinical phenotypes, with different pathophysiology, and warranting different treatment strategies.

硬膜外分娩镇痛对母乳喂养的影响：一项混合产次队列的前瞻性观察队列研究

The Effect of Labor Epidural Analgesia on Breastfeeding Outcomes: A Prospective Observational Cohort Study in a Mixed-Parity Cohort

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背景：在一些有不同结果的研究中，分别评估了硬膜外分娩镇痛（LEA）对成功母乳喂养的影响。在鼓励母乳喂养的大环境中，我们假设 LEA 不会影响产后 6 周拟母乳喂养妇女的母乳喂养状态。

方法：在这项前瞻性观察性队列研究中，共有 1204 名妇女拟行母乳喂养，在有或无 LEA 的情况下进行自然阴道分娩；在产后 3 天和 6 周记录母乳喂养情况。主要结果是 6 周时母乳喂养情况，根据产次及以往母乳喂养情况，采用 x^2 检验比较使用 LEA 和未使用 LEA 分娩的产妇。记录硬膜外使用芬太尼总剂量和催产素使用情况（是/否）。对影响 6 周母乳喂养的因素进行多变量 logistic 回归分析。

结果：6 周时的母乳喂养率为 76.9%，使用 LEA 的产妇（74.0%）明显低于未使用 LEA 的妇女（83.4%；$p<0.001$）。在 398 名初产妇中，有 84.9%使用 LEA 分娩，而经产妇有 61.8%使用 LEA（$P<0.001$）。经产妇（n=806）在 6 周时更有可能实施母乳喂养（经产妇的 80.0%对初产妇的 70.6%；$P<0.001$）。使用包含 14 个协变量（包括产次和使用 LEA 之间的相互作用项）的多变量 logistic 回归，使用 LEA 与 6 周时母乳喂养的减少显著相关（优势比为 0.60；95%置信区间为

0.40-0.90；P=0.015）。在一个改进的多变量 logistic 回归分析中，既往的母乳喂养经验取代了产次，无论是作为协变量还是在交互作用期，只有既往的母乳喂养经验与 6 周时母乳喂养的增加相关（优势比为 3.17；95%置信区间为 1.72－5.80；P<0.001）。

结论：在我们的混合产次队列中，使用 LEA 分娩与 6 周母乳喂养的可能性降低有关。然而，结合妇女以往的母乳喂养经验，在使用或未 LEA 的经产妇中，母乳喂养比率没有差异。因此，我们的研究结果表明，为没有母乳喂养经验的妇女提供哺乳支持可能是提高母乳喂养成功率的简单方法。这一概念符合妇女在面临不期望的结果的风险时，应以个性化的方式提供量身定制的干预措施的理念。

（吴洁译 李士通校）

BACKGROUND: The effect of labor epidural analgesia (LEA) on successful breastfeeding has been evaluated in several studies with divergent results. We hypothesized that LEA would not influence breastfeeding status 6 weeks postpartum in women who intended to breastfeed in an environment that encourages breastfeeding.

METHODS: In this prospective observational cohort study, a total of 1204 women intending to breastfeed, delivering vaginally with or without LEA, were included; breastfeeding was recorded at 3 days and 6 weeks postpartum. Primary outcome was breastfeeding at 6 weeks, and the x^2 test was used for comparisons between women delivering with and without LEA, according to parity status and previous breastfeeding experience. Total epidural fentanyl dose and oxytocin use (yes/no) were recorded. A multivariable logistic regression was performed to assess factors affecting breastfeeding at 6 weeks.

RESULTS: The overall breastfeeding rate at 6 weeks was 76.9%; it was significantly lower among women delivering with LEA (74.0%) compared with women delivering without LEA (83.4%; $P < .001$). Among 398 nulliparous women, 84.9% delivered with LEA, compared with 61.8% of multiparous women ($P < .001$). Multiparous women (N = 806) were more likely to breastfeed at 6 weeks (80.0% vs 70.6% nullipara; $P < .001$). Using multivariable logistic regression that accounted for 14 covariates including parity, and an interaction term between parity and LEA use, LEA was significantly associated with reduced breastfeeding at 6 weeks (odds ratio, 0.60; 95% confidence interval, 0.40－0.90; $P = .015$). In a modified multivariable logistic regression where parity was replaced with previous breastfeeding experience, both as a covariate and in the interaction term, only previous breastfeeding experience was associated with increased breastfeeding at 6 weeks (odds ratio, 3.17; 95% confidence interval, 1.72－5.80; $P < .001$).

CONCLUSIONS: In our mixed-parity cohort, delivering with LEA was associated with reduced likelihood of breastfeeding at 6 weeks. However, integrating women's previous breastfeeding experience, the breastfeeding rate was not different between women delivering with and without LEA among the subset of multiparous women with previous

breastfeeding experience. Therefore, our findings suggest that offering lactation support to the subset of women with no previous breastfeeding experience may be a simple approach to improve breastfeeding success. This concept subscribes to the notion that women at risk for an undesired outcome be offered tailored interventions with a personalized approach.

接受非心脏手术的输血患者术后初始血红蛋白值和临床结果

Initial Postoperative Hemoglobin Values and Clinical Outcomes in Transfused Patients Undergoing Noncardiac Surgery

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背景：术中输注红细胞（RBC）很常见，但输血策略仍存在争议，因为在急性出血期间，很难利用常规输血前血红蛋白输血指标值。另外，术后血红蛋白值可提供有关输血实践的有用信息，但最佳指标仍不明确。

方法：这是一项单中心观察队列研究，针对 2010 年至 2014 年非心脏手术期间接受异体红细胞的成人患者。对患者疾病、实验室紊乱指标和手术特征进行多变量回归分析，以评估术后初始血红蛋白值与住院日期等主要结局之间的关系。

结果：一共包括 8060 名患者。与参考范围 9.5-10.4 g/dl（总 P 值 0.003）相比，初始术后血红蛋白<7.5 或≥11.5 g/dl 的患者的住院天数[95%置信区间[CI] 平均值分别为-1.45（-2.50 至-0.41）和-0.83（-1.42 至-0.24）少于血红蛋白 9.5－10.4 g/dL 的患者（总 P 值为 0.003）。对于血红蛋白<7.5 g/dl 的患者，次要结局的概率（95%可信区间）包括急性肾损伤（AKI）为 1.43（1.03－1.99）、死亡率为 2.10（1.18－3.74）和脑缺血发生率为 3.12（1.08－9.01）。血红蛋白≥11.5 g/dl 的术后机械通气的概率为 1.33（1.07－1.65）。多次比较调整后的次要结果相关性不显著（Bonferroni P<0.0056）。

结论：在输血患者中，术后血红蛋白值介于 7.5-11.5 g/dl 之间与更极端的值相比，具有更好的预后。该范围可能代表术中输血的目标，尤其是在活动性出血时，现有输血前血红蛋白阈值可能不实用或不准确。考虑到这一范围内的类似结果，尽管有必要进行前瞻性验证，但在较低层面说明靶向血红蛋白目标输注可能更可取。

（吴洁译 李士通校）

BACKGROUND: Intraoperative red blood cell (RBC) transfusion is common, yet transfusion strategies remain controversial as pretransfusion hemoglobin triggers are difficult to utilize during acute bleeding. Alternatively, postoperative hemoglobin values may provide useful information regarding transfusion practices, though optimal targets remain undefined.

METHODS: This is a single-center observational cohort study of adults receiving allogeneic RBCs during noncardiac surgery from 2010 through 2014. Multivariable regression analyses adjusting for patient illness, laboratory derangements, and surgical features were used to assess

relationships between initial postoperative hemoglobin values and a primary outcome of hospital-free days.

RESULTS: A total of 8060 patients were included. Those with initial postoperative hemoglobin <7.5 or ≥11.5 g/dL had decreased hospital-free days [mean (95% confidence interval [CI]), −1.45 (−2.50 to −0.41) and −0.83 (−1.42 to −0.24), respectively] compared to a reference range of 9.5–10.4 g/dL (overall P value .003). For those with hemoglobin <7.5 g/dL, the odds (95% CI) for secondary outcomes included acute kidney injury (AKI) 1.43 (1.03–1.99), mortality 2.10 (1.18–3.74), and cerebral ischemia 3.12 (1.08–9.01). The odds for postoperative mechanical ventilation with hemoglobin ≥11.5 g/dL were 1.33 (1.07–1.65). Secondary outcome associations were not significant after multiple comparisons adjustment (Bonferroni P < .0056).

CONCLUSIONS: In transfused patients, postoperative hemoglobin values between 7.5 and 11.5 g/dL were associated with superior outcomes compared to more extreme values. This range may represent a target for intraoperative transfusions, particularly during active bleeding when pretransfusion hemoglobin thresholds may be impractical or inaccurate. Given similar outcomes within this range, targeting hemoglobin at the lower aspect may be preferable, though prospective validation is warranted.

在术前麻醉诊所合并脆弱性和认知筛查方案的可行性和理论基础

Feasibility and Rationale for Incorporating Frailty and Cognitive Screening Protocols in a Preoperative Anesthesia Clinic

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背景：据报道，高龄、虚弱、受教育程度低和认知障碍通常与术后认知并发症有关。为了将研究结果转化为全医院的术前评估临床实践，我们检查了在一家附属医疗中心择期手术的所有老年人实施术前脆弱性和认知评估的可行性。我们使用时钟和 3 字记忆评分估计了术前样本中轻度至重度认知障碍的患病率，研究了年龄、受教育程度、虚弱与共存疾病之间的关系，并研究了住院时长的相关因素。

方法：医务人员对年龄在 65 岁以上的成年人进行了虚弱程度、一般认知（通过时钟绘图测试命令和重复、3 字记忆测试）的筛查，并获知受教育年限。可行性研究分两个阶段进行：（1）试点阶段涉及 4 名高级护士，以及（2）2 个月的实施阶段涉及所有术前工作人员。我们追踪缺失数据的来源，调查研究变量与认知测量的相关性，并使用 2 种方法来估计样本病人患有痴呆的可能性（即，使用现有数据和逻辑回归模型，并使用最小 COG 切割分数）。我们探讨了与住院时间相关的方案变量。

结果：最终实施阶段样本包括 678 名患者。时钟和 3 字记忆分数与年龄、虚弱程

度和受教育程度显著相关。不同手术类型的受教育程度、时钟评分和 3 字评分无显著差异。术前认知功能障碍的可能性约为 20%，手术类型无差异。住院时间与术前共存疾病和时钟复制情况的表现显著相关。
结论：虚弱程度和认知筛查方案是可行的，为围手术期护理计划提供信息。临床相应工作的挑战包括工作人员培训、防止数据缺失和额外的护理时间。这些挑战似乎与在一个术后认知结果风险阴性的组中识别患者虚弱程度和认知障碍的益处无关。
（吴洁译 李士通校）
BACKGROUND: Advanced age, frailty, low education level, and impaired cognition are generally reported to be associated with postoperative cognitive complications. To translate research findings into hospital-wide preoperative assessment clinical practice, we examined the feasibility of implementing a preoperative frailty and cognitive assessment for all older adults electing surgical procedures in a tertiary medical center. We examined associations among age, education, frailty, and comorbidity with the clock and 3-word memory scores, estimated the prevalence of mild to major cognitive impairment in the presurgical sample, and examined factors related to hospital length of stay.
METHODS: Medical staff screened adults ≥65 years of age for frailty, general cognition (via the clock-drawing test command and copy, 3-word memory test), and obtained years of education. Feasibility was studied in 2 phases: (1) a pilot phase involving 4 advanced nurse practitioners and (2) a 2-month implementation phase involving all preoperative staff. We tracked sources of missing data, investigated associations of study variables with measures of cognition, and used 2 approaches to estimate the likelihood of dementia in our sample (ie, using extant data and logistic regression modeling and using Mini-Cog cut scores). We explored which protocol variables related to hospital length of stay.
RESULTS: The final implementation phase sample included 678 patients. Clock and 3-word memory scores were significantly associated with age, frailty, and education. Education, clock scores, and 3-word scores were not significantly different by surgery type. Likelihood of preoperative cognitive impairment was approximately 20%, with no difference by surgery type. Length of stay was significantly associated with preoperative comorbidity and performance on the clock copy condition.
CONCLUSIONS: Frailty and cognitive screening protocols are feasible and provide information for perioperative care planning. Challenges to clinical adaptation include staff training, missing data, and additional administration time. These challenges appear minimal relative to the benefits of identifying frailty and cognitive impairment in a group at risk for negative postoperative cognitive outcome.