

SURGERY

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CONTENTS *December 2022 Volume 172 Number 6*

EDITORS NOTE

- 1595 **Arts and Scalpels: Exploring the Role of Art in Surgery**
M. Baimas-George, MD, MPH, K. Behrns, MD,
S.D. Wexner, MD, PhD

BEST IN SURGERY

- 1598 **Adherence and outcomes of a surgical prophylaxis guideline promoting cephalosporin use among patients with penicillin allergy**

S. Bhathal, BS, E. Joseph, BS, M.D. Nailor, PharmD,
K.J. Goodlet, PharmD

Among surgical patients with a documented penicillin allergy, most (82%) received a cephalosporin as recommended by institutional surgical prophylaxis guidelines, with zero reported allergic reactions and reduced rates of postprocedural acute kidney injury compared with patients who did not receive a β -lactam for surgical prophylaxis. The importance of this report is to highlight the safety of cephalosporin prophylaxis among patients with penicillin allergies and the potential for worsened outcomes when non- β -lactam alternate prophylaxis is used in this population.

- 1604 **Invited commentary: Promoting cephalosporin use among patients with penicillin allergy**
K.M. Alexander, PharmD

BILIARY

- 1606 **Success, complication, and mortality rates of initial biliary drainage in patients with unresectable perihilar cholangiocarcinoma**

A.-M. van Keulen, MD, M.P. Gaspersz, MD, PhD,
J.L.A. van Vugt, MD, PhD, E. Roos, MD, PhD,
P.B. Olthof, MD, PhD, R.J.S. Coelen, MD, PhD,
M.J. Bruno, MD, PhD, L.M.J.W. van Driel, MD, PhD,
R.P. Voermans, MD, PhD, C.H.J. van Eijck, MD, PhD,
J.E. van Hooft, MD, PhD, MBA, K.P. van Lienden, MD, PhD,
J. de Jonge, MD, PhD, W.G. Polak, MD, PhD,
J.-W. Poley, MD, PhD, C.J. Pek, MSc, A. Moelker, MD, PhD,
F.E.J.A. Willemsen, MD, T.M. van Gulik, MD, PhD,
J.I. Erdmann, MD, PhD, L. Hol, MD, PhD,
J.N.M. Ijzermans, MD, PhD, S. Büttner, MD, PhD,
B.G. Koerkamp, MD, PhD

Initial biliary drainage in patients with unresectable pCCA had a success rate of 45% and a 90-day mortality rate of 36%. The importance of this finding is to improve success of biliary drainage to increase patient wellbeing and increase the number of patients that are eligible for palliative systemic chemotherapy.

COLON/RECTUM/ANUS

- 1614 **Redo ileocolic resection for recurrent Crohn's disease: A review and meta-analysis of surgical outcomes**

M.R. Freund, MD, S.H. Emile, MD, N. Horesh, MD,
Z. Garoufalia, MD, R. Gefen, MD, M. Perets, MD,
S.D. Wexner, MD

In this meta-analysis that included 12 studies and 1,203 patients, we aimed to present the collective evidence on the surgical outcomes of redo ileocolic resection for recurrent Crohn disease, including overall and major complication and anastomotic leak and conversion rates. Although redo ileocolic resection for patients with recurrent Crohn disease has a relatively high overall complication rate, a majority of these complications are minor and the anastomotic leak rate is relatively low.

- 1622 **Trends in infectious complications after partial colectomy for colon cancer over a decade: A national cohort study**

C.E. Sharon, MD, S. Grinberg, MD, R.J. Straker III, MD,
N.N. Mahmoud, MD, R.R. Kelz, MD, MBA, MSCE,
J.T. Miura, MD, G.C. Karakousis, MD

In this American College of Surgeons National Surgical Quality Improvement Program analysis of patients with colon malignancies who underwent partial colectomy between 2001 and 2019, there was a decrease in all infectious complications except for organ space infections, which increased throughout the study period, driven by patients without a low anastomosis. Changing patient characteristics may contribute to this observed trend, as there was a notable increase in patients who were American Society of Anesthesiologists class III and IV to V, although further study is needed to better understand the rising organ space site infections rates to help mitigate this complication.

- 1629 **Disparities in treatment and survival for patients with isolated colorectal liver metastases**

F.A. Ahmed, MD, M. Elshami, MD, MMSc, J.J. Hue, MD,
H. Kakish, MD, L.M. Drapalik, MD, L.M. Ocuin, MD,
J.M. Hardacre, MD, J.B. Ammori, MD, E. Steinhagen, MD,
L.D. Rothermel, MD, MPH, R.S. Hoehn, MD

Nonmedical patient factors, such as race, socioeconomic status, and geography, are associated with treatment and survival for isolated colorectal liver metastases. These barriers must be addressed to improve care for vulnerable cancer patients.

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CONTENTS *continued*

- 1636 **Tailoring surgery for obstructed defecation syndrome to the 'iceberg diagram': Long-term results**
M. Pescatori, MD, A.P. Zbar, MD, S.M. Ayabaca, MD

This paper deals with a novel approach for the management of obstructed defecation, tailored on the iceberg diagram, which indicates both evident ($n = 2$) and occult ($n = 10$) diseases. When based upon the aforementioned system, the surgery of obstructed defecation cured two-thirds of the patients after a median follow-up of 6 years.

COVID-19

- 1642 **The financial impact of COVID-19 on a surgical department: The effects of surgical shutdowns and the impact on a health system**

D.M. Mazzaferro, MD, MBA, V. Patel, MD, N. Asport, MSHI, R.L. Stetson, MHA, D. Rose, MBA, N. Plana, MD, J.M. Serletti, MD, R.P. DeMatteo, MD, L.C. Wu, MD, MBA

This study examined the financial impact of suspending nonessential surgeries on our institution's health system during COVID-19, which resulted in a net revenue loss of >\$99 million. These findings support the role of elective surgery in a hospital's cash flow and financial solvency, and highlight the importance of identifying innovative and alternative solutions to increase capacity, offer comprehensive care to patients, and prevent shutdowns of surgical activity throughout a pandemic.

- 1651 **Telemedicine and intraductal papillary mucinous neoplasms: Analysis of a new follow-up strategy during COVID-19 outbreak**

J. Farguell, MD, V. Holguin, MD, C. González, MD, I. Gil, MD, C. Arrocha, MD, F. Landi, MD, E. Vaquero, MD, PhD, A. Gines, MD, PhD, C. Fillat, MD, PhD, F. Ausania, MD, PhD

In this study, we described our experience with the telemedicine follow-up of patients with intraductal papillary mucinous neoplasms during the COVID-19 era and analyzed those factors associated with patient satisfaction. The importance of this report is that was the first study to analyze predictive factors for successful telemedicine follow-up.

EDUCATION

- 1656 **AMPATH surgical app: Low-cost simulator for the open appendectomy**

J. Matthews, BA, M.B. Bhatia, MD, C. Thomas, MD, P. Okoth, MMed, C.R. Martinez, MD, J.S. Levy, MD, D. Stefanidis, MD, PhD, FACS, FASMB, J.L. Hunter-Squires, MD, S.I. Saruni, MBBS, FCS (ECSA)

A low-cost appendectomy model supporting a comprehensive open appendectomy curriculum was developed and refined with the support of international academic surgeons. The importance of this simulator is to provide training in places where the procedure is done with limited surgical background.

Presented at the Academic Surgical Congress 2022

- 1665 **Demographics and medical school exposures to rural health influence future practice**

Z.S. Meade, MD, H.W. Li, MD, H. Allison, MS, M.B. Bhatia, MD, MS, T.S. Joplin, MD, C. Simon, BS, L. Darkwa, BS, C. Keung, MD, A.D. McDow, MD

This study revealed that educational deficits of the rural health care crisis remain, with not enough medical students indicating interest in rural practice to meet the rural health care demands. This is important because identified deficits and perspectives allow medical schools, residencies, and hospitals to better recruit individuals.

- 1673 **Preoperative alcohol interventions for elective surgical patients: Results from a randomized pilot trial**
A.C. Fernandez, PhD, L. Chapman, MPH, T.Y. Ren, BA, C. Baxley, PhD, A.K. Hallway, BA, M.J. Tang, BS, J.F. Waljee, MD, P.D. Friedmann, MD, M. Mello, MD, B. Borsari, PhD, F. Blow, PhD

This study demonstrated that preoperative alcohol interventions of varying intensities are feasible and acceptable to elective surgical patients. The findings are important because high-risk alcohol use is associated with life-threatening surgical complications, and yet few patients are offered education or counseling that may help mitigate this risk.

ENDOCRINE

- 1682 **Impact of dedicated multidisciplinary service on patient selection and outcomes for surgical treatment of primary aldosteronism**

J. Zhang, MD, J. Yang, MBBS, PhD, R. Libianto, MBBS, J. Shen, MBBS, PhD, P.J. Fuller, MBBS, PhD, S. Grodski, MBBS, J.C. Lee, MBBS, PhD

In this retrospective cohort study, a dedicated Endocrine Hypertension Service was found to be associated with superior surgical selection and improved perioperative and postoperative outcomes for patients with primary aldosteronism. The importance of this is that referral to a dedicated multidisciplinary service is recommended for all patients with primary aldosteronism who wish to pursue a surgical cure.

ESOPHAGUS

- 1689 **Long-term outcome of patients with epiphrenic diverticula: A retrospective single-center analysis over 20 years**

U. Nitsche, MD, PhD, M. Seitz, H. Friess, MD, H. Feussner, MD, N. Hüser, MD, A. Jell, MD

This retrospective study analyzed 51 patients who underwent conservative or surgical treatment of epiphrenic diverticula over 20 years. Despite that perioperative morbidity of surgically treated patients was as high as 50%, those patients had significantly better functional long-term outcomes than conservatively treated patients.

HEALTHCARE

- 1697 **Deep sleep and beeps II: Sleep quality improvement project in general surgery patients**

R.W. Allen, MD, R.D. Shaw, MD, C.P. Burney, MD, L.E. Newton, MD, A.Y. Lee, BS, B.G. Judd, MD, S.J. Ivatury, MD, MHA

In-patient sleep on surgical floors is worse than in the intensive care unit. Using Fitbit sleep trackers and validated sleep surveys, a PostOp Pack to include sleep-protective nursing protocols and physical items was designed and implemented resulting in improved sleep quality in elective general surgery patients.

HEPATIC

1704 Resectable and transplantable hepatocellular carcinoma: Integration of liver stiffness assessment in the decision-making algorithm
 P. Tortajada, MD, R. Doamba, MD, L. Cano, PhD, M. Ghallab, MD, M.A. Allard, MD, PhD, O. Ciacio, MD, G. Pittau, MD, C. Salloom, MD, D. Cherqui, MD, PhD, R. Adam, MD, PhD, A. Sa Cunha, MD, D. Azoulay, MD, PhD, A. Pascale, MD, E. Vibert, MD, PhD, N. Golse, MD, PhD

We identified a simple preoperative score predictive of early hepatocellular carcinoma recurrence after liver resection including the following: age ≥ 70 years, liver stiffness measurement ≥ 11 kPa, international normalized ratio ≥ 1.2 , and maximum hepatocellular carcinoma recurrence diameter ≥ 3 cm. Patients with a score < 2 ($n = 22$) demonstrated greater mean overall survival (69.7 vs 54.8 months, $P = .02$) and disease-free survival (52.2 vs 34.7 months, $P = .02$) than those with a score ≥ 2 .

1712 Impact of sarcopenia on the surgical outcomes in patients with hepatolithiasis: A multicenter 10-year experience
 T. Wang, MD, X. Chen, MD, C. Liao, MD, D. Wang, MD, L. Huang, MD, PhD, G. Li, MD, J. Chen, MD, PhD, C. Lin, MD, L. Wang, MD, J. Pan, MD, C. Zhang, MD, S. Zhou, MD, F. Qiu, MD, Y. Wang, MD, Z. Zhang, MD, Y. Chen, MD, X. Zheng, MD, PhD, Y. Tian, MD, S. Chen, MD, PhD

Compared with the sarcopenic obesity patients, the sarcopenic and nonobese patients benefited more from laparoscopy, and surgeons progressed through the learning curve for laparoscopic hemihepatectomy more quickly. Although the sarcopenic obesity patients had more complications and slower postoperative recovery than the sarcopenic and nonobese patients, laparoscopic surgery can improve their situation, but a longer learning curve is required.

INFECTION/INFLAMMATION

1722 Adhesion barriers and intraperitoneal or uterine infections after cesarean section: A retrospective cohort study
 Y. Wada, MD, H. Takahashi, MD, PhD, H. Matsui, MPH, H. Yasunaga, MD, PhD, H. Fujiwara, MD, PhD, Y. Sasabuchi, MD, PhD

We found an association between the use of adhesion barriers and intraperitoneal or uterine infections after cesarean section, retrospectively. The importance of this finding is that it adds new information for making a decision to use adhesion barriers.

INNOVATION

Presented at the Academic Surgical Congress 2022

1728 Development and validation of a model for surveillance of postoperative bleeding complications using structured electronic health records data
 A.R. Dyas, MD, Y. Zhuang, MS, R.A. Meguid, MD, MPH, W.G. Henderson, PhD, MPH, H.J. Madsen, MD, M.R. Bronsert, PhD, MS, K.L. Colborn, PhD, MSPH

We created a parsimonious, accurate model for identifying patients with bleeding complications using machine learning techniques applied to electronic health records data. This model can be used to augment the manual chart review for the surveillance and reporting of perioperative bleeding complications, enabling the inclusion of all surgeries in quality improvement efforts.

NUTRITION/METABOLISM

1733 Very low energy diets before nonbariatric surgery: A systematic review and meta-analysis
 T. McKechnie, MD, C.A. Povolo, MD, J. Lee, MD, Y. Lee, MD, L. Park, MD, A.G. Doumouras, MD, MPH, D. Hong, MD, MSc, M. Bhandari, MD, PhD, C. Eskicioglu, MD, MSc

This was the first systematic review evaluating the use of preoperative very low energy diets in nonbariatric surgery. Although currently available evidence is heterogenous, preoperative very low energy diets are safe, well tolerated, and effectively induce preoperative weight loss in patients undergoing nonbariatric surgery.

OUTCOMES

1744 Determinants and barriers to junior faculty well-being at a large quaternary academic medical center: A qualitative survey
 P. Zmijewski, MD, MA, R. Obiarinze, MD, A. Gillis, MD, J. Fazendin, MD, H. Chen, MD, B. Lindeman, MD, MEHP

We interviewed junior faculty regarding barriers to job satisfaction and well-being and found that they are most often affected at the department level. Qualitative data collection from junior faculty regarding barriers to well-being and academic/clinical productivity can be invaluable for departments and institutions seeking to make cultural or systemic improvements.

Presented at the Academic Surgical Congress 2022

1748 Surrogate consent for surgery among older adult patients
 S.M. Miller, MD, N. Nagarkatti, MD, V. Ahuja, MD, E.B. Schneider, PhD, S. Mohanty, MD, R.A. Rosenthal, MD, L.M. Kodadek, MD

Patients who underwent an operation with surrogate consent were more likely to be older, female, have a higher comorbidity burden, be acutely ill, have preoperative functional limitations, and have preoperative cognitive impairment. The variability observed in these initial findings suggest the need for better insight into the assessment of surgical decision-making capacity in older adults.

Presented at the Academic Surgical Congress 2022

1753 Early-stage gastric and gastroesophageal junction cancer: Is there a survival benefit to neoadjuvant therapy?
 G.C. Waller, MD, D.J. Patel, MD, M.S. Baker, MD, MBA

In an analysis of 1,258 patients from the NCDB with stage IB gastric/gastroesophageal cancer treated with either upfront resection or neoadjuvant therapy, there was no significant difference in overall survival between treatment approach. The importance of this finding is that the efficacy of neoadjuvant therapy for patients with stage IB gastric/gastroesophageal cancer remains unknown.

1759 Patient prompts in surgical consultations: A systematic review
 Y.Y. Ting, MBBS, J.D. Ey, E.C. Treloar, BMedSc(Hons), J.L. Reid, PhD, E.L. Bradshaw, BMedSci, G.J. Maddern, PhD

This systematic review aimed to evaluate the use of question prompt lists in surgical outpatient consultations. Our results indicated that there is limited evidence to promote prompting documents in perioperative surgical consultations and suggested that further high-quality randomized controlled trials are required.

PANCREAS

- 1768 **Prognostic impact of postoperative infection in patients with pancreatic cancer: A multicenter cohort study**
 K. Okada, MD, K. Uemura, MD, H. Ohge, MD, M. Iseki, MD, M. Mizuma, MD, H. Shinkawa, MD, R. Takahata, MD, T. Aoki, MD, K. Makino, MD, H. Arai, MD, T. Miyake, MD, S. Takeda, MD, Y. Yokoyama, MD, Y. Yaguchi, MD, M. Kobayashi, MD, A. Matsuda, MD, H. Shiomi, MD, M. Watanabe, S. Akagi, MD, T. Inoue, MD, K. Tanemoto, MD, H. Maruyama, MD

The aim of this multicenter cohort study was to determine the prognostic impact of postoperative infection after pancreatectomy in patients with pancreatic cancer. We conclude that adjuvant therapy was highly associated with better survival in patients with pancreatic cancer, and postoperative infection may prevent timely adjuvant therapy and indirectly worsen the prognosis.

- 1776 **Clinical significance of immunocytochemical staining for peritoneal lavage cytology in pancreatic cancer**
 H. Kubo, MD, PhD, K. Ohgi, MD, N. Ohike, MD, PhD, K. Tone, PhD, T. Norose, MD, PhD, T. Sugiura, MD, PhD, R. Ashida, MD, PhD, M. Yamada, MD, PhD, S. Otsuka, MD, PhD, K. Uesaka, MD, PhD

This study revealed that diagnosis of peritoneal lavage cytology in pancreatic cancer by conventional Papanicolaou staining alone may lead to false-negative results in some patients and that additional immunocytochemical staining contributed to improve the diagnostic results. The peritoneal lavage cytology status should be confirmed by additional immunocytochemical staining.

- 1782 **Predictive factors for early recurrence after pancreaticoduodenectomy in patients with resectable pancreatic head cancer: A multicenter retrospective study**
 S. Ono, MD, PhD, T. Adachi, MD, PhD, T. Ohtsuka, MD, PhD, R. Kimura, MD, PhD, K. Nishihara, MD, PhD, Y. Watanabe, MD, PhD, H. Nagano, MD, PhD, Y. Tokumitsu, MD, PhD, A. Nanashima, MD, PhD, N. Imamura, MD, PhD, H. Baba, MD, PhD, A. Chikamoto, MD, PhD, M. Inomata, MD, PhD, T. Hirashita, MD, PhD, M. Furukawa, MD, PhD, T. Idichi, MD, PhD, H. Shinchi, MD, PhD, Y. Maruyama, MD, PhD, M. Nakamura, MD, PhD, S. Eguchi, MD, PhD

We defined an optimal duration of 6 months for early recurrence post-pancreaticoduodenectomy for resectable pancreatic head-pancreatic ductal adenocarcinoma. Prognostic factors for early recurrence were a preoperative serum carbohydrate antigen 19-9 level ≥ 120 U/mL, retroperitoneal tumor invasion, and diabetes mellitus, which were all independently associated with early recurrence.

- 1791 **Lymph node metastases and recurrence in pancreatic neuroendocrine neoplasms**
 A. Nießen, MD, S. Schimmack, MD, M. Lewosinska, MD, U. Hinz, MSc, F.A. Bechtiger, MD, T. Hackert, MD, M.W. Büchler, MD, O. Strobel, MD

The presence and extent of lymph node metastases have a considerable prognostic impact in pancreatic neuroendocrine neoplasms, regardless of grading. The importance of this report is the validation of a pN1 (1–3) and pN2 (≥ 4 positive lymph nodes) lymph node category for well-differentiated pancreatic neuroendocrine tumors, which calls for revision of the TNM classification for G1 and G2 differentiated pNEN.

- 1800 **A novel tool to predict nodal metastasis in small pancreatic neuroendocrine tumors: A multicenter study**
 A.A. Javed, MD, A. Pulvirenti, MD, J. Zheng, MD, T. Michelakos, MD, Y. Sekigami, MD, S. Razi, MD, C.A. McIntyre, MD, E. Thompson, MD, D.S. Klimstra, MD, V. Deshpande, MD, A.D. Singhi, MD, PhD, M.J. Weiss, MD, C.L. Wolfgang, MD, PhD, J.L. Cameron, MD, A.C. Wei, MD, MSc, A.H. Zureikat, MD, C.R. Ferrone, MD, J. He, MD, PhD, Pancreatic Neuroendocrine Disease Alliance (PANDA)

In this study we developed a model to predict the presence of nodal disease in patients with small (< 2 cm) nonfunctional pancreatic neuroendocrine tumor with good discriminatory ability. The importance of this report is that integration of this tool into clinical practice could help guide management of these patients.

- 1807 **Effect of preoperative biliary stent on postoperative complications after pancreaticoduodenectomy for cancer: Neoadjuvant versus upfront treatment**
 D. Tamburrino, MD, PhD, G. Guarneri, MD, L. Provinciali, MD, V. Riggio, MD, N. Pecorelli, MD, L. Cinelli, MD, S. Partelli, MD, PhD, S. Crippa, MD, PhD, M. Falconi, MD, G. Balzano, MD

The present study analyzes the role of the association between neoadjuvant chemotherapy (NACT) and preoperative biliary stent (BS) on postoperative outcomes and, in particular, on infectious complications. Our results demonstrated that BS increases postoperative infectious complications specifically in patients treated by NACT, thus suggesting that a different perioperative antibiotic prophylaxis should be taken in account for BS patients, in particular for those who underwent NACT.

PLASTICS/WOUND HEALING

- 1816 **Combined pectoralis and rectus abdominis flaps are associated with improved outcomes in sternal reconstruction**
 D. Chi, MD, PhD, P.S. Yesantharao, MD, MS, L. Vuong, BS, R.J. Sachar, AB, S.N. Chiang, BS, S. Raman, BS, A.Y. Ha, MD, R.P. Parikh, MD, MPH, M.F. Masood, MD, I.K. Fox, MD

A large retrospective cohort of 215 patients with sternal wounds after cardiothoracic surgery was investigated to identify modifiable treatment factors for sternal reconstruction and found that combined pectoralis and rectus abdominis muscle flaps are associated with improved outcomes. This surgical decision framework can guide multidisciplinary surgical collaborations to preserve more efficacious reconstructive options for improving patient care.

TRANSPLANTATION

Presented at the Academic Surgical Congress 2022

- 1823 **The benefit of liver transplant beyond Milan criteria: An analysis using the National Cancer Database**
 P. Kim, MS, M. Littau, T.B. Baker, MD, Z. Abdelsattar, MD, C. Tonelli, DO, C. Bunn, MD, S. Kulshrestha, MD, F.A. Luchette, MD, S. Scaglione, M.S. Baker

In this analysis of 815 patients from the National Cancer Database with clinical stage III to IVA hepatocellular carcinoma, propensity-matched analysis revealed an approximate 30-month survival benefit for patients undergoing liver transplantation compared with surgical resection alone. These findings suggest that a liver transplant offers the potential to be an effective treatment modality in select patients presenting with stage III and IVA hepatocellular carcinoma.

TRAUMA/CRITICAL CARE

Presented at the Academic Surgical Congress 2022

- 1829 **Storage with ethanol attenuates the red blood cell storage lesion**
 S.W. Zingg, MD, R. Schuster, MS, B. Joseph, BS, C.C. Caldwell, PhD, A.B. Lentsch, PhD, M.D. Goodman, MD, T.A. Pritts, MD, PhD

In the present study, we evaluated the effect of the addition of ethanol to the storage solution of packed red blood cells (RBCs). We found that the addition of ethanol led to an attenuated RBC storage solution and decreased the inflammatory response to treatment with stored packed RBCs.

- 1837 **National analysis of whole blood and component versus component transfusions in civilian trauma patients who underwent a thoracotomy or laparotomy: Toward improving patient outcomes and quality of care**
 R. Andrade, BS, M. Yeager, BS, J. Concepcion, BS, J. Spardy, BS, D. Ang, MD, MPH, PhD, L. Kornblith, MD, A. Elkbuli, MD, MPH, MBA

A retrospective review of the American College of Surgeons Trauma Quality Improvement Programs dataset (2016–2019) investigated the associations of whole blood and component versus component transfusions with trauma outcomes. The study findings suggested that a combined resuscitation with whole blood and component transfusion in adult civilian trauma patients is a viable alternative to component transfusion alone.

- 1844 **The variation of opioid prescription after injury and its association with long-term chronic pain: A multicenter cohort study**
 M. El Moheb, MD, J.P. Herrera-Escobar, MD, MPH, L.R. Maurer, MD, MPH, K.M.C. Langeveld, BSc, C. Kapoen, BSc, A. Heyman, BA, S. Garvey, MSc, A. Gebran, MD, K. Breen, BSc, S.E. Sanchez, MD, MPH, A. Salim, MD, G.C. Velmahos, MD, PhD, D. Nehra, MD, H.M.A. Kaafarani, MD, MPH

In this multicenter prospective cohort study, we demonstrated that patient, injury, and clinical-related factors explain <21% of the variation in the amount of opioid prescribed after injury. Furthermore, we found that opioid prescribing correlates independently with long-term chronic pain and continued analgesic use postinjury.

- 1851 **Multidimensional machine learning models predicting outcomes after trauma**
 D. Moris, MD, MSc, PhD, R. Henao, H. Hensman, L. Stempora, S. Chasse, S. Schobel, C.J. Dente, A.D. Kirk, E. Elster

The development of advanced modeling tools from multidimensional data sources including immunological analytes, and clinical and administrative data can predict outcomes in trauma patients.

- 1860 **Defining obstacles to emergency transfer of trauma patients: An evaluation of triage processes from nontrauma and lower-level Illinois trauma centers**
 J.D. Slocum, MPH, J.L. Holl, MD, MPH, R. Love, MA, M. Shi, BS, R. Mackersie, MD, H. Alam, MD, T.M. Loftus, MD, R. Andersen, MD, K.Y. Bilimoria, MD, MS, A.M. Stey, MD, MSc

We conducted a failure mode effects and criticality analysis of the triage processes at nontrauma and level II trauma centers in a single health care system. The obstacles to determining the clinical indications for triage and identifying a receiving level I trauma center represented opportunities to improve triage processes.

SPECIAL SERIES: DISABILITY AND SURGERY

- 1866 **Impact of hospital volume on people with disability and outcomes for cancer surgery**
 K.E. Yeob, PhD, S.Y. Kim, MD, PhD, J.P. Lee, RN, PhD, J.E. Park, PhD, J.H. Park, MD, MPH, PhD

- ◆ In this retrospective cohort study, patients with disability were more likely to visit low-volume hospitals compared with those without disability for all procedures.
- ◆ The 30-day mortality rate after surgery at low-surgery-volume hospitals was higher in patients with disability

DEBATES AND DILEMMAS

- 1873 **Origins and implications of proper citation practices on academic integrity in surgical literature**
 T. Breeding, BS, A. Elkbuli, MD, MPH, MBA

LETTERS TO THE EDITOR

- 1875 **Classification of intraoperative adverse events in visceral surgery**
 M. Barrios, D. Florez, J. De la Hoz-Valle

- 1875 **Response to Letter to Editor**
 L. Gawria, MD, H. van Goor, MD, PhD, S. Dell-Kuster, MD, MSc

- 1877 **Acknowledgments of peer reviewers**

READER SERVICES

- A1 **Information for readers**
 A8 **Information for authors**
 1655 **Change of address**
 1727 **Surgery is abstracted**

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