
(14)

精準麻醉與永續醫療：術後加速康復療程(ERAS)的創新與進展

Precision Anesthesia and Sustainable Healthcare: Innovations and Advances in Enhanced Recovery After Surgery (ERAS)

時間：113 年 6 月 22 日(星期六) 08:30~12:00
地點：臺北榮民總醫院 三門診 9 樓創意沙龍

08:30-08:40	Opening Remarks	余黃平理事長 Huang-Ping Yu
	座長：張文貴 部長 (Wen-Kuei Chang)	
08:40-09:10	加強術後恢復在肝臟移植受贈者經驗分享 Enhanced Recovery for Liver Recipient: What We Do for Perioperative Care	王審之醫師 Shen-Chih Wang
	座長：曹正明 主任 (Cheng-Ming Tsao)	
09:10-09:40	脊椎 ERAS 麻醉雞尾酒 The Making of a Spine ERAS Cocktail	劉靖揚醫師 Jing-Yang Liou
	座長：黎乃良 醫師 (Nai-Liang Li)	
09:40-10:10	精準麻醉在乳房手術中的應用 Application of Precise Anesthesia in Breast Surgery	鄧惟濃醫師 Wei-Nung Teng
10:10-10:30	Coffee Break	
	座長：林世斌 主任 (Shih-Pin Lin)	
10:30-11:00	從實證醫學到數位雙胞胎 From Evidence-Based Medicine to Digital Twin	陳立昇教授 Li-Sheng Chen
	座長：宋俊松 主任 (Chun-Sung Sung)	
11:00-11:30	大腸直腸手術精準麻醉的演進：臺北榮總 ERAS 經驗 The Evolution of Pain Management in Colorectal Surgery: VGHTPE ERAS Protocol	李易軒醫師 Yi-Shiuan Li
	座長：鄭宏煒 醫師 (Hung-Wei Cheng)	
11:30-12:00	胰臟手術後加速復健：臺北榮總經驗 Enhanced Recovery After Pancreatic Surgery in VGHTPE	柯惠瑄醫師 Hui-Hsuan Ke
12:00-12:10	Closing Remarks	林世斌主任 Shih-Pin Lin

Enhanced recovery for liver recipient: What we do for perioperative care

加強術後恢復在肝臟移植受贈者經驗分享

Shen-Chih Wang

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Considering the dramatic hemodynamic changes during liver transplant, liver recipients are vulnerable to organ damage. The challenge to improve quality of liver recipients' recovery is how to integrate what we already know into practice. The general principles we followed for liver transplant perioperative care are:

1. Adequate hydration: We use beat to beat stroke volume variation derived from arterial blood pressure waveform to guide our isotonic crystalloid hydration.
2. Adequate perfusion pressure: We try our best to keep the mean blood pressure above 65mmHg. However, surgical procedures dealing with shunting due to portal hypertension vary case by case.
3. Avoid unnecessary anesthetic agents use: We use BIS index to guide our anesthetic agents use and surgical pleth index to guide our opioid use during the surgical procedure.
4. Avoid unnecessary blood product use: After years of experience in TEG-guided transfusion strategy, we now transfuse our patient only for uncontrollable bleeding.
5. Avoid postoperative opioid use: We use bilateral rectus sheath catheters for local anesthetic wound infiltration after liver transplant. Our result indicates that this is an effective and uncomplicated way to decrease postoperative opioid use.

Comorbidities of liver recipients sometimes make these general principles difficult to follow. To further individualize perioperative care for every liver recipient, we investigate the information hidden beneath the arterial blood pressure waveform. With unsupervised manifold learning and diffusion map, we analyze the morphology dynamics of arterial blood pressure waveform. Currently we are able to show that richer variation of arterial waveform correlates to better outcomes. Such correlation cannot be explained by blood pressure read outs. Our finding may provide a potential way toward delicate hemodynamic management to each liver recipient.

The making of a Spine ERAS Cocktail

脊椎 ERAS 麻醉雞尾酒

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ERAS, as an emerging clinical pathway, is being increasingly implemented in many hospitals worldwide. Taiwan has just begun its pace in the long run. There's no hard definition to qualify for the term, but rather it represents a general direction for improving patient recovery. Stepwise component inclusion is often the case. One important anesthesia component is to provide precise general anesthesia that gives rapid and stable induction, maintenance and emergence. As more and more emphasis is laid upon recovery, one would easily work toward an opioid-sparing regime. Other drugs must be used to work around opioids, many of which may impact the clinical judgement of anesthesia precision. However, these drugs are in no way new or novel. The use of the non-opioid drugs in a perioperative and total intravenous anesthesia setting is discussed, including benefits and controversies swirling around some of these drugs. We will share how our protocol has evolved through a 4-year journey of ERAS in spine surgery.

Application of precise anesthesia in breast surgery

精準麻醉在乳房手術中的應用

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Breast surgery can be done with peripheral nerve blockade and intravenous sedation, which can reduce the side effects of general anesthesia such as nausea and vomiting, intubation discomfort and postoperative pain. The distribution of breast nerves is complex. Common nerve block methods are paravertebral blocks and pectoral nerve blocks. By using advanced monitors, the precise areas of analgesia may be confirmed. The analgesia nociception index and surgical plethmographic index are two important monitors in anesthesia. By monitoring the patient's heart rate change and measuring the patient's parasympathetic tone, the analgesic drug can be administered according to the patient's individual differences to avoid insufficient or excessive analgesic dose. The EEG derived density spectral array is another tool used in breast surgeries to help understand analgesia and sedation levels. Intraoperative and emergence DSA pattern may be used to predict post-operative pain and delirium.

From evidence-based medicine to digital twin

從實證醫學到數位雙胞胎

Li-Sheng Chen

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The evolution of healthcare science has seen significant advancements from Evidence-based Health in 1970, with clinical randomized intervention assessments, to Precision Health in 1990, which refined personal strategy models, and most recently to Smart Health in 2015, which incorporates Artificial Intelligence for real-time evaluations. To develop Smart Health, the real-time assessment of both physical and virtual health care information while maintaining the spirit of classical evidence-based health science is essential.

Anesthesia is a crucial component of patient care during surgery. Achieving the optimal depth of anesthesia tailored to individual patients and specific surgeries underscores the importance of precision personalized anesthesia. With technological advancements and the development of AI, precision personalized anesthesia has seen significant breakthroughs. The need for personalized monitoring in anesthesia includes the collection of big data and personal health information through electronic medical records and the Internet of Things to enable proactive deployment. Furthermore, the use of digital twins for precise anesthesia allows for better assessment and implementation, as well as post-operative rehabilitation.

This presentation will focus on the principal digital twins in the metaverse, discussing how to integrate personalized, precision machine learning models and incorporate federal learning to develop a new paradigm in metaverse healthcare.

The evolution of pain management in colorectal surgery: VGHTPE ERAS protocol

大腸直腸手術精準麻醉的演進：臺北榮總 ERAS 經驗

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The Enhanced Recovery After Surgery (ERAS) Society care pathways include evidence-based items designed to reduce perioperative stress, maintain postoperative physiological function and accelerate recovery after surgery. Since the first published guidelines in 2005, providing a multimodal stress-minimizing approach has been shown repeatedly to reduce rates of morbidity, improve recovery and shorten length of stay (LOS) after major colorectal surgery.

The benefit of using a multimodal approach to pain management is based on the concept that several multiple pain reducing mechanisms will improve pain control while avoiding the side effects of each drug. Opioid avoiding or sparing techniques in colorectal surgery is associated with early mobilization, fast return of bowel function, fewer complications and a reduction in length of stay.

Enhanced recovery after pancreatic surgery in VGHTPE

胰臟手術後加速復健：臺北榮總經驗

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Pancreatic surgery is a high-risk abdominal procedure with significant rates of complications and mortality. Advances in diagnostic and surgical techniques over recent decades, coupled with improvements in intensive care unit management, have led to better outcomes following pancreatic resections.

Enhanced Recovery After Surgery (ERAS) protocols represent perioperative care aimed at promoting early recovery postoperatively through strategies such as maintaining intravenous fluid restriction, early oral intake postoperatively, more effective pain management, early removal of drains and tubes, and early mobilization of patients. The goal of ERAS is to accelerate postoperative recovery and reduce length of hospital stay (LOS) without increasing morbidity or readmission rates.

Basic elements of ERAS protocols for pancreatic surgery include preoperative counseling, avoidance of mechanical bowel preparation, multimodal postoperative pain control, restrictive intravenous fluid therapy postoperatively, early oral feeding, early removal of nasogastric tubes, urinary catheters, and abdominal drains. Experiences at Taipei Veterans General Hospital demonstrate that implementing ERAS protocols for pancreatic surgery results in patients experiencing the aforementioned benefits, accelerating time to ambulation, increasing rehabilitation walking distance, and achieving higher patient satisfaction.