

Pioneer's lecture

Past, Present and Future of Enhanced Recovery

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Enhanced recovery (ERAS) was introduced in the mid-90's and since then repeatedly documented to improve postoperative outcome regarding length of stay and medical complications without increasing readmissions. Due to the complexity of postoperative recovery, several challenges remain to be solved including the surgical stress responses (inflammatory) where further research is required to reduce the "high-inflammatory" responders. Also, more procedure-specific research is required in pain management and with a focus on high-pain responders (pain catastrophizers, opioid users, etc.). Although most focus has been laid on length of stay, the important future challenges are to find the right balance between major outpatient vs. inpatient surgery regarding safety. Furthermore, to objectively assess post-discharge functional outcomes where new technology is available. Despite major progress, challenges still remain regarding compliance to a well-established simple procedure-specific ERAS program. Finally, a challenge exists about how to make progress, where the two extremes being big pragmatic RCT's vs. minor detailed hypothesis-generating cohort studies.

In summary, ERAS has come to stay, but need further improvement, implementation, better procedure-specific evidence of ERAS components and improved study design of ERAS, all based on the concept of "first better – then faster".

References:

- Berwick DM. The science of improvement. *JAMA*. 2008;299(10):1182-4.
- Feldman LS, Lee L, Fiore J, Jr. What outcomes are important in the assessment of Enhanced Recovery After Surgery (ERAS) pathways? *Can J Anaesth*. 2015;62(2):120-30.
- Fragiadakis GK, Gaudilliere B, Ganio EA, Aghaeepour N, Tingle M, Nolan GP, et al. Patient-specific immune states before surgery are strong correlates of surgical recovery. *Anesthesiology*. 2015;123(6):1241-55.
- Kehlet H, Jorgensen CC. Advancing surgical outcomes research and quality improvement within an enhanced recovery program framework. *Ann Surg*. 2016;264(2):237-8.
- Kehlet H, Joshi GP. Enhanced Recovery After Surgery: Current Controversies and Concerns. *Anesth Analg*. 2017;125(6):2154-5.
- Michard F, Gan TJ, Kehlet H. Digital innovations and emerging technologies for enhanced recovery programmes. *Br J Anaesth*. 2017;119(1):31-9.
- Gilron I, Carr DB, Desjardins PJ, Kehlet H. Current methods and challenges for acute pain clinical trials. *Pain Rep*. 2018:e647.
- Joshi GP, Alexander JC, Kehlet H. Large pragmatic randomised controlled trials in peri-operative decision making: are they really the gold standard? *Anaesthesia*. 2018;73(7):799-803.
- Kehlet H, Lindberg-Larsen V. High-dose glucocorticoid before hip and knee arthroplasty: To use or not to use-that's the question. *Acta Orthop*. 2018.
- Luna IE, Kehlet H, Wede HR, Høevsgaard SJ, Aasvang EK. Objectively measured early physical activity after total hip or knee arthroplasty. *J Clin Monit Comput*. 2018.
- Vehmeijer SBW, Husted H, Kehlet H. Outpatient total hip and knee arthroplasty. *Acta Orthop*. 2018;89(2):141-4.
- Yeung J, Gillies MA, Pearse RM. Pragmatic trials in peri-operative medicine: why, when and how? *Anaesthesia*. 2018;73(7):803-7.