

Henrik Kehlet, M.D., Ph.D., Recipient of the 2014 Excellence in Research Award

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DR. Henrik Kehlet is perhaps the most well-known surgeon among anesthesiologists around the world due to his substantial contributions toward the understanding of surgical pathophysiology. Dr. Kehlet completed his medical studies and surgical residency at the University of Copenhagen, Denmark. He then enrolled in a Ph.D. within the same institution, authoring a thesis pertaining to the study of the hypothalamic–pituitary–adrenocortical function in glucocorticoid-treated surgical patients. Dr. Kehlet served as the Chief of Surgery and Professor of Surgery, Copenhagen University at Hvidovre University Hospital from 1989 to 2004, and was subsequently appointed as a Professor of Perioperative Therapy and Head of the Section for Surgical Pathophysiology at the Rigshospitalet, in Copenhagen. Dr. Kehlet continues to be an extremely prolific writer, having authored more than 950 scientific articles covering topics of surgical pathophysiology, acute pain physiology and pharmacotherapy, surgical stress response, regional anesthesia and analgesia, perioperative immune function, fast-track surgery, and the transition from acute to chronic pain. His work has been cited thousands of times and he currently holds an H-index of 80. For his outstanding contributions to research, Dr. Kehlet has received numerous honorary awards from distinguished learned societies such as the Royal College of Anaesthetists of Great Britain and the American College of Surgeons and American Surgical Association. He has also been invited worldwide to lecture and has given revered eponymous lectures such as the Bonica lecture, the Labat lecture, the Carl Koller lecture, and the Simpson Memorial lecture.

From Surgical Stress Response to Multimodal Analgesia

I had the personal fortune of meeting Dr. Kehlet for the first time in the late 1980s at the European Society of Regional Anaesthesia. At that time, he was investigating the effect of regional anesthesia on stress, pain, and postoperative outcome. This original and ambitious research resulted in our current understanding of the effect of central neuraxial blockade on the endocrine and catabolic response to surgery. Dr. Kehlet demonstrated that a negative postoperative nitrogen balance could be attenuated by epidural blockade with local anesthetics. He then subsequently demonstrated the association between optimal perioperative pain relief, in particular,



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the effects of regional anesthetic techniques, on surgical outcomes. Building on these results, Dr. Kehlet hypothesized that a multimodal analgesia approach, combining different analgesics with synergistic or additive effects, could provide better perioperative pain control and reduce side effects. Dr. Kehlet and others would go on to validate this groundbreaking hypothesis, effectively transforming the manner by which perioperative analgesia is administered.

Preemptive Analgesia and Transition from Acute to Chronic Pain

Dr. Kehlet and coworkers are credited with proposing and evaluating the concept of preemptive analgesia, whereby analgesic administration commences before surgical injury, to decrease the intensity and duration of postoperative pain. His development of several randomized studies with subsequent reviews and editorials provided critical analysis of this preemptive concept, later resulting in the principle of “preventive analgesia.” The high-level evidence found in Dr. Kehlet’s studies also served as the introduction to our understanding of how acute postoperative pain could possibly persist into chronic pain, a finding later confirmed through large epidemiological studies in Denmark. Dr. Kehlet’s research in this area provided one of the first risk factor assessments for the development of persistent postsurgical pain. Dr. Kehlet also investigated how surgical treatments such as hernia mesh removal and neurectomy in the setting of neuropathic pain could assist in the treatment of chronic postoperative pain after hernia surgery.

Submitted for publication July 3, 2014. Accepted for publication July 3, 2014. From the Department of Anesthesia, McGill University, Montreal, Quebec, Canada.

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Fast-track Surgery

After a natural evolution from his studies on surgical stress response, Dr. Kehlet launched in the mid-1990s the concept of “fast-track surgery”: a multimodal, evidence-based approach to surgical care. Through a series of prospective cohort studies and randomized controlled trials initially using the model of colonic surgery, Dr. Kehlet demonstrated that modifying the perioperative surgical stress response and revising traditional surgical care could have a dramatic impact on postoperative recovery and shorten length of hospital stay. The success of the “fast-track” methodology is based on provision of effective dynamic pain relief (nonopioid, multimodal analgesia allowing early mobilization and early feeding), thus reducing perioperative organ dysfunction and catabolic stress and accelerating postoperative recovery. From colonic surgery, Dr. Kehlet has recently focused on fast-track hip and knee replacement surgery in multicenter collaboration with a focus on detailed assessment of early recovery aspects and minimizing morbidity. Since its introduction, Dr. Kehlet’s “fast-track” concept has been met with universal acclaim, resulting in the implementation of “fast-track surgery” protocols throughout the Western hemisphere. Recognizing that success of fast-track protocols requires a stronger collaboration among surgeons and anesthesiologists, Dr. Kehlet established evidence-based procedure-specific guidelines for perioperative pain management, also called PROSPECT. The aim of this collaboration has been to provide procedure-specific evidence for optimal analgesia, thus identifying appropriate and best analgesic techniques with minimal side effects.

Establishing Prospective Patient Databases

In addition to his contributions to perioperative pain management, Dr. Kehlet is responsible for establishing the first nation-wide hernia database in Denmark with the purpose of optimizing outcome and documenting various approaches to improve care. The database has been widely recognized as an outstanding example of knowledge translation and has served as the model for other patient databases used across Europe and North America.

Summary

Dr. Kehlet’s record of insatiable intellectual curiosity and impeccable scientific merit serves as an excellent model for future leaders in surgery and anesthesia who are actively involved in investigating perioperative pathophysiology and surgical outcomes. Despite his astonishing contributions, Dr. Kehlet continues to be academically active and devotes his time to mentoring young physicians. When he is not challenging lingering surgical dogmas, Dr. Kehlet shares his passion for art and music with his wife Susanne and tries to find the time to leave Copenhagen and take refuge in their ocean cottage. Henrik is a great friend, an outstanding colleague, and a passionate debater. I can think of few people more deserving of this fine award.

Acknowledgments

Support was provided solely from institutional and/or departmental sources.

Competing Interests

The author declares no competing interests.