Report on the Development and Execution of the First International Congress of Translational Anesthesiology in Association with Tech-Talk

Ali Dabbagh [ID] [1], Alireza Shakeri [ID] [2], Firoozeh Madadi [ID] [3, *]

[1] Department of Anesthesiology, Anesthesiology Research Center, Shahid Modarres Hospital, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[2] Department of Anesthesiology, Anesthesiology Research Center, Imam Hossein A.S Hospital, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[3] Department of Anesthesiology, Anesthesiology Research Center, Ayatollah Taleghani Hospital, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Corresponding Author: Department of Anesthesiology, Anesthesiology Research Center, Ayatollah Taleghani Hospital, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran. Email: fmadadi33@gmail.com

Dear Editor,

Our journey began a year and a half ago, sparked by a pivotal moment when the head of the Anesthesiology Department contacted me with a simple yet profound request: "Study translational medicine". This marked the starting point of an in-depth exploration into both translational research and translational medicine in our department at Shahid Beheshti University of Medical Sciences (SBMU).

Shortly thereafter, the department head delivered the first formal presentation on translational medicine at the Academy of Medical Sciences of Iran. The concept of bench-to-bedside research ([1]) was introduced within the Foresight Committee as a solution to increase the productivity and applicability of domestic research. It was not long before this idea was shared in departmental meetings at SBMU, which led to the establishment of the translational anesthesiology task force. This working group aimed to foster multidisciplinary research and pave the way for more practical, collaborative scientific outputs. Anesthesiologists are competent team workers and can be eligible facilitators of translational research, especially in the field of neuroscience ([2]).

The idea of organizing a congress was born out of the ambition to deepen and expand these interdisciplinary ties. The congress was organized around four principal themes at the convergence of anesthesiology and innovation: Artificial intelligence ([3-5]), neuroscience ([2]), novel technologies ([4], [6]), and regenerative medicine. A multidisciplinary scientific committee was formed to ensure the integration of basic, clinical, and technological topics within the congress agenda.

The preliminary program draft was evaluated in a collaborative meeting with the members of the scientific committee. Constructive criticism was collected and integrated, resulting in a polished, well-structured scientific schedule. The congress included more than 100 expert presenters and panels addressing diverse subjects, including opioid-free anesthesia, pharmacogenomics, regenerative pain treatment, AI-guided perioperative care, and neuromodulation techniques. Panels included specialists from anesthesiology, neurology, bioengineering, and pharmacology to exchange thoughts and stimulate interdisciplinary discourse. Each day, cutting-edge technological solutions were showcased, including autonomous robotic intubation, smart infusion systems, AI-based decision support dashboards, and non-invasive monitoring devices. The Tech Market also included workshops, poster sessions, and legal briefings to ensure intellectual property protection for the innovations presented.

Given that product development is a key goal of translational anesthesiology, the congress was held in conjunction with the first-ever Anesthesiology Tech Market. Over the course of the three-day event (April 23 - 25, 2025), one hour each day was allocated for "Tech-Talks" — sessions where innovators had five minutes to

How to Cite: Dabbagh A, Shakeri A, Madadi F. Report on the Development and Execution of the First International Congress of Translational Anesthesiology in Association with Tech-Talk. J Cell Mol Anesth. 2025; 10 (4): e166937. https://doi.org/10.5812/jcma-166937.

present their ideas or prototypes in front of expert judges. This setup allowed real-time critique and discussion of each innovation, encouraging both academic and commercial advancement.

The inaugural Anesthesiology Tech Market, held alongside the First International Congress of Translational Anesthesiology in April 2025, introduced Tech-Talk — a dynamic platform designed to fast-track the translation of technological innovations into clinical practice. Launched in February 2024, this initiative invited researchers and technologists to submit proposals addressing critical challenges in anesthesia care. The enthusiastic response included 45 projects spanning artificial intelligence, biomedical engineering, and novel clinical tools. An expert evaluation system — drawing on perspectives from industry, science, and business — ensured that only the most promising and practical projects advanced to the main event, where 40 participants presented their innovations.

Presentations were thematically organized, covering major fields such as smart imaging, automated perioperative monitoring, and health informatics. Within these domains, the submitted projects reflected the latest trends in medical technology: Proposals ranged from the use of AI for reconstructing and enhancing medical images, to systems for real-time prediction and management of postoperative pain and complications, and comprehensive solutions for electronic health records and integration of operating room data. In addition, fields such as smart anesthesia drug delivery systems, innovative approaches for regional anesthesia, and the application of machine learning in blood loss estimation and ultrasound-based diagnoses formed important parts of this year's spectrum of ideas.

To ensure fair judgment, each presentation was evaluated with a focus on clarity, practical relevance, and the ability to bridge the gap between academic research and clinical application. The structured format of the event promoted direct and effective discussions, enabling judges to give precise and actionable feedback to participants. This process not only helped surface the most impactful proposals but also guided teams in refining their ideas for real-world use.

The success of Tech-Talk resided in its capacity to facilitate collaboration among inventors, industry leaders, and clinicians, thus expediting the transition from concept to implementation. The best 15 proposals were later chosen for presentation to potential investors and future development, demonstrating the event's dedication to practical solutions. These initiatives demonstrate a diverse array of advancements targeting essential requirements, encompassing AI-driven solutions in imaging and diagnostic instruments, sophisticated medication administration systems, and perioperative monitoring.

Although the event's findings were encouraging, it is essential to recognize specific constraints, including the event's relatively small scale and difficulties in attaining widespread adoption of the proposed concepts. Nevertheless, the program demonstrated a distinct and ambitious vision for future development trajectories, emphasizing continuous interdisciplinary collaboration, the refinement of new concepts, and their global implementation expansion. By centering on interdisciplinary exchange and operational feasibility, Tech-Talk stands as a replicable model for driving healthcare innovation. Its experience demonstrates that synergy between academia, industry, and clinical practice is vital for fulfilling the evolving demands of anesthesiology. As the program develops, it will continue to promote new, patient-centered, technology-driven advances and establish itself as a foundation for translational progress.

In conclusion, this congress was not only a platform for academic exchange but also a launchpad for future collaborations, products, and policies in the evolving landscape of translational anesthesiology.

Footnotes

Authors' Contribution: A. D. conceptualized the study. A. S. and F. M. wrote the initial draft, and A. D. revised the manuscript.

Conflict of Interests Statement: The authors declare no conflict of interest.

References

1. Dabbagh A, Elyasi H. Cellular and molecular anesthesia: from bench to bedside. *J Cell Mol Anesth.* 2016;**1**(1).

2. Dabbagh A, Ariannik M, Madadi F, Nashibi M, Zangi M, Amirdosara M, et al. Neuroscience and Anesthesiology: Could Anesthesiologist in the Developing Countries Serve as the Main Applied/Clinical Neuroscientists. *J Cell Mol Anesth.* 2025;**10**(2). https://doi.org/10.5812/jcma-164125.

3. Dabbagh A, Madadi F, Larijani B. Role of AI in Competency-Based Medical Education: Using EPA as the Magicbox. *Arch Iran Med.* 2024;**27**(11):633-5. [PubMed ID: 39534999]. [PubMed Central ID: PMC11558609]. https://doi.org/10.34172/aim.31795.

4. Dabbagh A, Sabouri AS. Toward Artificial Intelligence-Driven Precision Anesthesia. *Anesthesiol Clin*. 2025;**43**(3):xv-xvii. [PubMed ID: 40752959]. https://doi.org/10.1016/j.anclin.2025.06.001.

5. Dabbagh A, Sabouri AS. The Role of Artificial Intelligence in Medicine with a Special Focus on Anesthesiology and Perioperative Care. *Anesthesiol Clin*. 2025;**43**(3):389-403. [PubMed ID: 40752943]. https://doi.org/10.1016/j.anclin.2025.04.002.

6. Nathan N. Robotics and the Future of Anesthesia. *Anesth Analg*. 2024;**138**(2):238. [PubMed ID: 38215703]. https://doi.org/10.1213/ANE.0000000000006878.