

Interdisciplinary Frontiers – The View of Surgery

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Introduction

Some years ago gastroenterologists and surgeons decided to join forces and instead of their separate yearly meeting they have shared one congress called Visceral Medicine. The decision proved to be visionary as both disciplines cooperate nowadays not only in improving the daily patient care routine but also in elaborating guidelines or research projects and clinical studies. This interdisciplinary cooperation intensifies day by day and the enthusiasm is increasing on both sides as it leads to an improved standard of patient care. However, this is mainly possible because gastroenterologists and surgeons do focus on a better understanding of what each other does. It is absolutely important to improve the knowledge of the evidence of the partner discipline, the shared guidelines and procedures as well as the challenges that may confront gastroenterologists and surgeons, respectively, in the clinical practice.

Perhaps one of the best examples of working and evolving together is a paradigm shift which we are increasingly experiencing in the last years. Thus, not only that many malignancies are discovered early due to better endoscopic technology, but even those patients profit nowadays from endoscopical resections instead of undergoing potentially mutilating procedures. One should consider in this context not only the rectal cancer or the cancer of the gastro-esophageal junction but also benign

conditions such as Zenker's diverticulum, achalasia, or gastro-esophageal reflux disease, which are increasingly treated endoscopically. On the other hand, gastroenterologists are now able to resolve postoperative complications endoscopically, such as anastomotic leakage, stenoses and furthermore as well as to palliate conditions such as malignant bile-duct or digestive stenoses.

This year's conference motto "With reasoning and gut feeling" reflects the importance of solid medical knowledge, accurate clinical and experimental research on one hand and experience and empathy on the other hand. The combination of these fascinating virtues is indispensable and represents the holistic approach of a physician. Some special aspects of this meeting, with emphasis on the view of surgery, are the young surgeons and the new opportunities that enable an improved, continuous education and specialization, the achievements of the surgical oncology and the multiple innovations in surgery that have been and will be developed in order to improve surgical techniques, intraoperative imaging and the planning of complex resections.

Young Surgeons and New Opportunities

The CAJC (young surgeons) and JUGA (young gastroenterologists) have organized a whole day for young surgeons and gastroenterologists as well as medical students with emphasis on several important aspects that are vital for their further medical education. It includes workshops about clinical basics, research methodology, grant application, leadership skills and practical courses to train sewing, laparoscopic/robotic surgery, and gastro-/colonoscopy. This stresses the willingness of both

societies to support young colleagues in this new era of visceral medicine.

Times have changed in surgery and for the young generation of surgeons, the training methods and facilities are different and will continue to evolve including artificial intelligence, virtual reality, and simulation. This is not only due to the European Working Time Act but also because of the different perceptions of the work life balance. Furthermore there is an increasing need for working flexibility such as working part time and combining personal and professional life. The combination of digital and virtual training methods offers a vast field of opportunities for establishing routines in a quiet and comforting surrounding that also gives space for constructive feed-back. However, future surgeons will be more specialized in a certain field. This provides several advantages such as excellent routine due to high number of similar procedures, low morbidity and minimal mortality, good functional and long-term results.

Moreover, young surgeons and gastroenterologists are more involved in research projects. They mostly work in university hospitals and participate in translational as well as in clinical studies.

Special Focus on Surgical Oncology

Surgical oncology has evolved considerably and remains the best chance of cure for solid cancers when diagnosed early. About 80% of the patients with solid tumors do require surgical intervention in course of their disease. However, surgery is more than the resection of a tumor mass. Surgery is necessary to reduce hereditary risk of cancer, to diagnose or classify disease, to treat locally advanced cancer or metastatic diseases, and to preserve or restore quality of life especially for palliative illness.

Nevertheless, there is no specialization in surgical oncology in Germany. Therefore the German Society of General and Visceral Surgery and its Association for Surgical Oncology are offering a comprehensive curriculum on surgical oncology including clinical attachments and courses, completed by a final exam organized by the European Union of Medical Specialists (UEMS) and the European Society of Surgical Oncology (ESSO). This exam will again be part of our meeting this year. This is one of the collaborative efforts that surgeons in Europe are making, as recommended by the Europe's Beating Cancer Plan.

The sessions and lectures dedicated to surgical oncology do stress the importance of multidisciplinary teams and of an individualized cancer treatment offered with low morbidity and mortality. Surgical procedures are personalized as the anatomic configuration, tumor characteristics, and risk factors are combined in an unique pattern in every single patient.

Innovations in Surgery

Innovations such as robotics, functional imaging, and artificial intelligence are opening new horizons to enhance high-quality visceral surgery. Robotic systems are now available in a large diversity and the number of procedures performed with robotic support is increasing every day. In particular in the field of visceral surgery, many teams are approaching new organs and procedures. Huge advantages have been seen for very demanding operations such as esophageal resection or low anterior rectal resection. Patients do recover more rapidly and the functional results are better due to the reduced trauma. New imaging procedures including intraoperative fluorescence angiography and image fusion enable surgical teams to better identify the anatomy and its relation to the tumor site. Combining this with virtual reality and artificial intelligence, operations can be simulated in advance and adapted to the intraoperative circumstances, thus lowering the risk for the patient. Moreover, they have the advantage of improved training for the whole team and also a better understanding of the patients' needs with regard to planned surgical procedures. However, continuous research is necessary to refine technologies, surgical techniques, and processes to allow more patients to benefit from an efficacious, safe, and minimally invasive cost-effective treatment.

The Future of Visceral Surgery

Future generations must also be convinced of the fascination of surgery. Old fashion clichés describe it as a time consuming medical specialty, physically demanding in a context of (strong) hierarchical structures dominated by male surgeons. The fact that this is changing right now has not been registered by everyone. Forty percent of all members of our German Society of General and Visceral Surgery are younger than 40 years and about half of them are female. The European Working Time Act and flexible working time models have improved the reliability of every surgeon with regard to his work life balance. The stimulating power of the gratitude shared by our patients and the satisfaction generated by a successful operation are still highly motivating for every surgeon. However, future generations of surgeons will become increasingly specialized and will complete their training using artificial intelligence, virtual reality, and simulation. This will be possible as more and more procedures will be performed minimally invasive using laparoscopic and robotic systems that can also incorporate imaging fusion.

The specialization will lead to the formation of centers that offer adequate structures, high treatment quality, and a large number of surgical procedures. The centers will have to be accredited and certified and demanding

surgical procedures will get concentrated in these centers. This process is still ongoing and may be completed in the near future. Looking at the certified cancer treatment centers of the German Cancer Society only 60% of all German patients with gastrointestinal malignancies are operated in certified centers.

Within centers and among specialists, the collaborations and interactions will continue to intensify, as surgeons and gastroenterologists are doing it within the visceral medicine now. However, not only the multidisciplinary but also the multiprofessional care will become increasingly important. Finally, the elaboration of treatment guidelines will precisely describe clinical situations and recommendations based on present literature evidence as well as on consensus among specialists.

Interactions at international level will have to be added to the national guidelines. Looking at Europe's Beating Cancer Plan one can understand the importance of the harmonization of medical training and treatment strategies within Europe with emphasis on the detection of treatment inequalities. Nevertheless, excellency in many medical programmes should be inspiring for others.

It is important to bear in mind that research activities are very important for future developments. Many unanswered questions regarding surgical procedures and surgical diseases in general have to be addressed through clinical trials, experimental, or translational research. The number of applications for Deutsche Forschungsgemeinschaft (DFG) Bundesministerium für

Bildung und Forschung (BMBF) and Deutsche Krebshilfe is increasing year by year demonstrating the high motivation to generate more evidence and develop new treatment strategies among surgeons.

Despite all progresses and technical innovations, the importance of a holistic approach will not change. The need for empathy, for treatment decisions based on a large personal experience as well as for participative decision making together with patients will not change. "With reasoning and gut feeling" – this is how surgeons and gastroenterologists can help their patients the most.

Conflict of Interest Statement

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