

Mini Review

New perspectives of gynecological surgery – quo vadimus?

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We are living in amazing time. The progress in all fields of science and technique is really tremendous. We can see this well in medicine. Someone who finished medical school two decades ago do not perform 'the same medicine' which was presented in the books or taught at university. This progress can be easily observed in gynecological surgery. We don't have here space to discuss whole history of modern gynecological surgery from its beginning in ancient times or even last centuries. It is enough to focus only on trends in this field during last two decades and it will be sufficient proof how much it has changed in surgical techniques, pharmacotherapy, antisepsis, but also in our understanding of human anatomy and pathophysiology. This progress is really clearly visible in minimally invasive techniques. Modern gynecological endoscopy started from very simply diagnostic procedures dedicated for patients with acute pelvic pain and suspicious of ectopic pregnancy. Due to poor availability of instrumentation, and less effective light sources and electrosurgical devices at the beginning those procedures were limited to diagnostic purposes. Than with the constant progress of surgeons ideas supported by engineers and manufacturers, gynecological endoscopy developed to the level which we observe nowadays where minimally invasive access is not dedicated only to simply procedures and benign cases but also is a first choice for advance pelvic surgery and some oncologic cases. Introduction of endoscopy to gynecological surgery brought indisputably many advantages i.e. decreased blood loss, shorter hospitalization and recovery, less postoperative pain and improved cosmetic effect. Good example of parallel development of medicine and other sciences and industry is introduction of robots to the surgery. At the beginning created for military purposes to replace surgeons in battle field, now available for surgeons from different specialties. Robotic surgery potential revolutionized laparoscopy by introduction high definition three dimensional view, and special instrument which distal parts mimics movements of human hand.

We can ask a question - what is the future of gynecological surgery, what are perspectives? Are we going to limit this progress

only to technical development? What is the main idea for modern gynecological surgery?

Maybe future gynecological surgery should be characterized by this statement - radical as necessary, harmless as possible. Radical means here surgery which treats disease or correct existing defect totally and with long-lasting effect. Harmless means in this context to prevent not only direct complications of surgery but also to limit the result of surgery only to one assessed preoperatively purpose with minimal interaction and disruption with human physiology. The example of this tendency, which occurred already in medicine, is nerve sparing surgery. Two decades ago only few thought about respecting pelvic innervation during radical hysterectomy. The main goal was to perform radical oncologic procedure. The result of such approach was good from an oncologic point of view but was also accompanied by complications (urinary retention, paresthesia) which decrease quality of life. Now we have this knowledge that nerve sparing surgery is something crucial for postoperative wellbeing of patients therefore we see the importance of respecting pelvic innervation. Years ago it was much more difficult due to the lack of good imaging techniques and optical tools which we use during endoscopy. Anatomical knowledge was based on autopsy. Due to current knowledge which we possessed and whole new section of science - pelveology, it is become possible and mandatory to respect those structures. One of the problems which still exist are differences in innervation among patients. Maybe future perspective is to develop tools (neurosensors) which together with imaging techniques will help to create preoperatively personal network of pelvic nerves which may be use intraoperatively to spare autonomic and somatic innervation of each patient. This is only one example, but we can find them more. There is much to do in urogynecology. After renaissance of meshes in pelvic organ prolapse surgery and nowadays problems with its use, there is a need to search for other biologic materials which could replace the function of weak connective tissue within the woman pelvis. Back to traditional native tissue repairs doesn't seem to be the best option due to high rate of recurrences. Maybe biologic materials taken from animals or created by germ cells culture could replace synthetic materials in this area? Also current debate about use of power morcelation in laparoscopy is very interesting but observed direction chosen

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by many physicians due to the fear of medico legal problems is very disappointing. Total ban on power morcelation can decrease development and use of minimally invasive techniques which at the end will negatively influence quality of life of many patients who could be safely operated by this approach. Development of new techniques of specimens extraction, morcelation in a bag, these are current problems which should be resolved.

As it was mentioned at the beginning we are living in amazing time therefore we can expect that gynecological surgery will

develop in multiple fields and directions. The only thing that we should care for, is that this scientific and technical progress should be parallel to development of our empathy and complemented with rational thinking. It should also stay in mind, that regardless technical development, surgeons knowledge, skills, experience and common sense remain the most valuable factor affecting quality of surgery. Because even if we think about robotic surgery, it is still only robot-assisted surgery, guided and tailored by the human for human.