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Mini Review

Forensic Aspects and Dilemmas in Gynecological Laparoscopy

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Abstract

Gynecological laparoscopy has to be analyzed also in the context of complications that occur during the surgical procedures. Complications occur daily. For this reason, emphasis should be placed on lifelong continuous education and training. Given the risks and complications we face, we must be trained to deal with them. This improves the safety of laparoscopic operations. Without such certainty, gynecological laparoscopy would not be the method of choice in a minimally invasive approach. This requires significant commitment, effort, and responsibility. In this way, we provide our patients with the best and highest quality healthcare service. Likewise, with such an approach, the frequency of complications is reduced to a minimum. New perspectives and possibilities are associated with the application of robotic surgery.

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Introduction

In the atmosphere of recent knowledge about gynecological laparoscopy, more and more emphasis is placed on forensic aspects. For doctors and other medical personnel, forensic aspects are increasingly challenging. Due to new perspectives, we face numerous life, professional, humanitarian, and existential dilemmas. With new expectations and interactions comes a redefinition of the relationship between doctor and patient. The aforementioned imposes the implementation of new modalities and concrete solutions related to the treatment of complications, which must be documented, well taken care of, and communicated. There are many medico-legal aspects associated with fibroid morcellation. Iavazzo, et al. [1] and Mercorio, et al. [2] concluded that the safety of laparoscopic morcellation of giant fibroids is questionable. A case-by-case approach and great deliberation are required when making decisions about treatment modalities. In our daily work, we are obliged to respect international and national rules and regulations, based on scientific and professional postulates. Because of this, forensic aspects are gaining more and more importance, in gynecological laparoscopy. This ultimately leads to safer procedures and greater patient well-being [3,4].

Minimally invasive gynecological surgery is a revolutionary concept compared to classic gynecological surgery. It implies significant benefits for patients, greater precision, less invasiveness of surgical procedures, faster recovery, and restoration of working ability. Ultimately, it leads to big savings in the healthcare system. Today, younger gynecologists implement the basics of gynecological laparoscopy during their education. Because of this, they master the operative technique much sooner. These moments affect numerous aspects of everyday work. It is undeniable that each method of gynecological laparoscopy has its limits and applications. And some numerous forensic dilemmas and rules need to be respected. We must treat this extremely responsibly for the sake of the patient's well-being. Forensic aspects of gynecological laparoscopy relate to endoscopic equipment, operative techniques, side effects, medical errors, and complications [5,6].

Forensic aspects in the daily practice of gynecological laparoscopy

When preparing patients for surgical procedures in gynecological laparoscopy, patients should be informed in detail about the procedures themselves. In addition to the existence of written procedures, procedures, and guidelines, patients must understand and be familiar with the planned

surgical procedures. It is also very important that they agree to the mentioned surgical procedures by accepting and signing an informed consent for each type of surgical procedure. We must inform patients well and prepare them for laparoscopic gynecological operations. When obtaining informed consent, it is necessary to explain to the patient the nature of her disease and the complexity of laparoscopic surgery. Informed consent provides patients with the necessary information and helps doctors better prepare and perform laparoscopic operations. This guarantees us a more successful recovery and follow-up of patients. Likewise, knowledge of operative methods and procedures is important for safer and better performance of gynecological laparoscopy. Each participant in the preparation, implementation, and recovery of patients must be expert and professional. This applies to patients, operators, assistants, instrument technicians, anesthesiologists, non-anesthesiological technicians, and support staff [5,6].

The drafting of procedures, guidelines, and informed consent should be the responsibility of professional medical associations. Quality medical documentation facilitates communication and daily work for doctors and other medical personnel, as well as for patients. We need to pay more and more attention to laws and regulations in the field of medical law. Improving the quality of communication and establishing trust between patients doctors and other medical staff should be our priority [7,8].

The risk of complications is associated with everyday procedures, including procedures in gynecological laparoscopy. Our goal is to minimize the frequency of complications. Medical errors should be completely avoided or minimized. By medical error, we mean the violation of generally recognized rules of treatment due to carelessness or careless action. Complications reported in the medical literature are associated with unfavorable disease outcomes. They are also associated with injuries or conditions associated with inappropriate procedures, equipment, treatment, or organization. This is one of the most significant reasons for the "escape" of doctors and other health personnel from high-risk professions. Obstetricians and gynecologists, as well as other surgical professions, are especially under attack. There are great challenges facing healthcare personnel today. Detailed regulation of laparoscopic procedures is a guarantee of better outcomes. This is in the interest of doctors, patients, and the entire healthcare system [9-11].

For top achievements in gynecological laparoscopy, top education and lifelong training is a prerequisite. Even with high-quality education and extensive experience, we are faced with ever-increasing challenges and possible complications. Damage compensation and accountability are challenges that make every day work difficult. Quality management of medical documentation is very important. Informed consent is also necessary for all gynecological laparoscopic procedures. It is indisputable that the complications that arise during gynecological laparoscopies depend on the operative technique and the experience of the operator. The risk of complications during laparoscopy is lower than during classic surgery and amounts to 3/1000 to 5/1000 operations [12]. The above confirms the superiority of gynecological laparoscopy. This is precisely why the laparoscopic approach in minimally invasive gynecological surgery has no alternative [13,14].

Gynecological laparoscopy has a long tradition in diagnostics and surgical treatment of gynecological patients. The beginnings of modern gynecological laparoscopy date back to the 1970s. Professor Kurt Semm from Kiel, Germany, is responsible for the development of modern gynecological laparoscopy. Thanks to him, gynecological endoscopy spread all over the world, largely displacing classic gynecological surgery. Just prof. Semm also performed the first laparoscopic appendectomy. In the last thirty years, there has been an unprecedented development of gynecological laparoscopy. This is largely due to the development of a new generation of laparoscopic instruments and techniques. Today, gynecological endoscopy is widely available. More and more demanding laparoscopic procedures are being introduced in gynecological endoscopy, as well as in gynecological oncology. This imposes the prerequisite of acquiring the necessary education and continuous renewal of knowledge, which leads to better success. This minimizes possible complications. High-quality gynecological endoscopy results in significantly shorter hospitalization time, sparing of the procedure itself, and minimal invasiveness. The aforementioned also generates significant savings for the public health system and society as a whole. Modern gynecological laparoscopic procedures lead to significantly shorter and easier recovery of patients, faster mobilization, and a reduction in the risk of thromboembolism and thrombosis. Laparoscopic operations enable better visualization of the organs of the abdominal cavity. Laparoscopy enables more exact hemostasis, minimal traumatization and tissue drying, and better hydration of patients. Newer endoscopic devices have the option of CO2 heaters, which maintain physiological body temperature and thus lowering hypothermia [15,16].

In the context of the quality of work and the success of gynecological laparoscopists, it is of great importance to know the complexity of laparoscopic gynecological surgical procedures. In doing so, it is always necessary to respect the mentioned facts and to know one's limits and limitations well, with a responsible approach. The quality of endoscopic equipment and instruments is of great impact, it is closely related to the education of the endoscopist. Other very important things are the endoscopist's training and the quality of each member of the endoscopic team. Precisely because of the aforementioned, as well as because of increasingly demanding surgical procedures, several classifications and gradations of laparoscopic surgical procedures are in use. It helps for easier comparison, evaluation, and the need for scientific

and professional improvement of laparoscopic treatment. The guarantee of quality and reduction of complications in gynecological laparoscopy is also the application of the most modern technologies [17].

Complications in gynecological laparoscopy

Each of the gynecological endoscopists has encountered and will encounter complications related to gynecological endoscopy procedures. Complications can occur during every part of surgical procedures. We must emphasize the importance of preoperative preparation, which includes premedication by the anesthesiologist, and washing and disinfecting the operating field. The induction of anesthesia and the administration of anesthesia as well as the patient's awakening. The central part, which is of particular interest to gynecological laparoscopists, is the surgical procedure itself. A large number of laparoscopic complications are related to the introduction and manipulation of the Vares needle into the abdominal cavity and the introduction of the trocar. This can lead to emphysema appearance and numerous other complications. Emphysema can be preperitoneal, subcutaneous, omental, or mesenteric. Lesions of smaller or larger blood vessels are also possible, which can be life-threatening. Lesions of the small and large intestine and other organs of the abdominal cavity, which can be caused by the use of other instruments used in laparoscopy, have also been described. Each of the possible complications gives a certain symptomatology. The endoscopist has a great responsibility to recognize and treat complications in time. The entire process of laparoscopic surgery must be well-prepared. Procedures must have their own rules, starting with the preparation of patients for surgery. Likewise, the correctness and quality of instruments and endoscopic devices must be constantly checked. Respecting the rules of the profession is of particular importance. We also emphasize dermal lesions, caused by the application of different forms of energy produced with the help of medical generators. We also highlight skin lesions and abdominal organ lesions. The most dramatic reactions can cause lesions of the intestines, ureters, and large blood vessels as well as other complications [18-21].

Qiu, et al. [22] emphasize the prophylactic effect of intraoperative infusion of esketamine on postoperative sleep disorders (PSD) in patients undergoing laparoscopic surgery. In the research of Kloeva-Mogensen, et al. [23], he points out the increased Polygenic Risk Score (PRS) for all types of endometriosis. Zahid, et al. [24] describe a safe laparoscopic approach for extragonadal teratoma. They emphasize the importance of experience and continuous education. According to Kostov, et al. [25], avascular spaces are useful anatomical landmarks in retroperitoneal anatomy and pelvic surgery. Knowledge of anatomy increases the quality of laparoscopic gynecological operations. Nine avascular areas of the pelvis in women are described. Different approaches are described, what should be paid attention to in the dissection of avascular spaces, and their practical application is highlighted. This reduces the frequency of complications during laparoscopy.

Bankar, et al. [26] conclude that robotic surgery has a lower conversion rate to open procedures compared to conventional gynecological laparoscopy. The aforementioned is based on the far better mobility of robotic instruments, which represents an evolution compared to conventional laparoscopic surgery. Khan, et al. [27] highlight the significant advantages of "natural orifice transluminal endoscopic surgery" (NOTE). This is defined as a surgical approach that uses the body's natural openings to access the abdominal cavity. The mentioned approaches are promising and can contribute to improving the quality and safety of laparoscopic operations as well as reducing the frequency of complications. [28]. Moszynski, et al. [28] investigated the influence of hemostasis methods on ovarian reserve in laparoscopic operations. The level of Anti-Mullerian Hormone (AMH) was analyzed. A significantly lower level of AMH was demonstrated in patients in whom hemostasis was achieved by using bipolar coagulation compared to those in whom it was performed by using modified polysaccharides.

In his research, Mynbaev [29] points out that since 2014, the FDA has banned the use of morcellation in laparoscopy to prevent the dissemination of myosarcoma. As a safer morseling method, morseling in an endo bag is recommended today. Failure to follow the mentioned recommendations can cause unwanted complications. According to Kostov, et al. [30], we learn that rare cases of chylous ascites have been described after laparoscopic morcellation. It is characterized by the presence of milk-like peritoneal fluid, rich in triglycerides. It is accompanied by flatulence, pain, nausea and vomiting. It occurs due to a lesion of the lymphovascular system and in benign pathology. It is recommended to be sparing in laparoscopic operations. Zaami, et al. [31] emphasize the importance of following procedures and guidelines when applying Power morcellation. With the mentioned approach, the procedures are safer with significantly fewer complications. Loddo, et al. [32] state that with the laparoscopic treatment of uterine fibroids, we must be guided by the surgeon's knowledge and responsibility. The most important thing is to follow the prescribed protocols and procedures to prevent possible complications.

Pirtea, et al. [33] point out that laparoscopic pectopexy stands out as one of the more effective methods in urogynecology. Complications that were related to the use of meshes are reduced to a minimum by the exact application of this laparoscopic technique. Chapple [34] and Höfner, et al. [35] conclude that synthetic meshes for the treatment of pelvic floor defects can only be used in more complex conditions when other methods are out of the question. These procedures should be performed by the most experienced operators in specialized institutions. This reduces the risks of operations where polypropylene embedding materials are applied. The

guidelines significantly help in deciding on the choice of entry technique in the application of gynecological laparoscopy. Vilos, et al. [36] performed a literature analysis from 2005 to PubMed/MEDLINE, Embase, Science Direct, Scopus, and Cochrane Library related to abdominal entry techniques. Based on the results obtained, the Canadian Working Group for Preventive Health Care adopted guidelines that significantly reduce the frequency of laparoscopic complications.

Capozzi, et al. [37] states that with experienced laparoscopists, rates of urological complications are rare. However, radical hysterectomy itself, FIGO stage, and adjuvant treatment are independent factors associated with urinary tract complications. Abdalmageed and colleagues [38] conducted research on nerve lesions during laparoscopic operations in gynecology. The frequency of lesions is related to the extent of surgical interventions.

The issue of complications in gynecological laparoscopy is very demanding. It requires great engagement, reflection, responsibility, and an individual approach from all of us. Our priority should always be the betterment of our patients. With such a way of thinking and making decisions, we will be able to minimize the possibility of complications in gynecological laparoscopy. Robotic surgery also has a promising role in this regard (Gokmen, et al. [39]).

Conclusion

Even the most experienced endoscopists may experience complications during laparoscopic surgery. This should not discourage and deter us from performing gynecological endoscopies. We always emphasize the best and highest quality education so that we are always one step ahead and know how to recognize complications in time that we must be able to take care of. Forensic aspects of gynecological laparoscopy are becoming an integral part of our daily work in minimally invasive gynecological surgery. In the future, there will be an increasing emphasis on them. For this reason, the entire gynecological profession is faced with the need to change the way it functions. The aforementioned imposes the need for continuous and lifelong education of all who are part of the team in gynecological endoscopy. This is the best guarantee of minimizing risk and reducing the frequency of complications. Because of its minimal invasiveness, gynecological laparoscopy has become the method of choice in the surgical treatment of numerous gynecological patients. By changing existing paradigms and accepting new perspectives, we are making strides that are a guarantee of better outcomes in gynecological laparoscopy. We provide these patients with the best and highest quality medical treatment with the minimization or absence of complications occurrence. Perspectives of robotic surgery in the field of gynecological laparoscopy are gaining more and more importance every day. Robotics is associated with much better treatment outcomes and the future in the development of gynecological endoscopy lies in it.

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