

V. M. Zaporozhan<sup>1</sup>, I. Z. Gladchuk, N. M. Rozhkovska, V. G. Marichereda, A. G. Volyanska

## RETROSPECTIVE ANALYSIS, CURRENT STATE AND CHALLENGES OF ENDOSCOPIC AND MINIINVASIVE SURGERY IN THE ODESSA NATIONAL MEDICAL UNIVERSITY (1975–2012)

The Odessa National Medical University, Odessa, Ukraine

УДК 617-089-072.1(477.74-25)(091)

В. Н. Запорожан, И. З. Гладчук, Н. Н. Рожковская, В. Г. Маричереда, А. Г. Волянская  
РЕТРОСПЕКТИВНЫЙ АНАЛИЗ, СОСТОЯНИЕ И РАЗВИТИЕ ЭНДОСКОПИЧЕСКОЙ  
И МАЛОИНВАЗИВНОЙ ХИРУРГИИ В ОДЕССКОМ НАЦИОНАЛЬНОМ МЕДИЦИНСКОМ УНИВЕР-  
СИТЕТЕ (1975–2012)

*Одесский национальный медицинский университет, Одесса, Украина*

Эндоскопия является приоритетным направлением научной и лечебной деятельности Одесского национального медицинского университета — ведущего центра эндоскопической хирургии Украины. Первые эндоскопические операции в Одессе были выполнены в гинекологической клинике в конце 70-х годов прошлого века, видеоэндоскопические — в 1992 г. За 35-летний период становления и развития эндоскопической гинекологической хирургии в Одесском национальном медицинском университете проанализировано более 20 000 гинекологических эндоскопических и малоинвазивных вмешательств. Увеличение количества операций и снижение числа осложнений связаны как с усовершенствованием оборудования, так и с повышением квалификации хирургов. Этому в значительной мере способствовали создание учебного и тренировочного центра эндоскопической и малоинвазивной хирургии в 2001 г., проведение конференций, мастер-классов, сотрудничество с ведущими эндоскопическими центрами мира.

**Ключевые слова:** эндоскопическая и малоинвазивная хирургия, анализ, Одесский национальный медицинский университет.

UDC 617-089-072.1(477.74-25)(091)

V. M. Zaporozhan, I. Z. Gladchuk, N. M. Rozhkovska, V. G. Marichereda, A. G. Volyanska  
RETROSPECTIVE ANALYSIS, CURRENT STATE AND CHALLENGES OF ENDOSCOPIC AND  
MINIINVASIVE SURGERY IN THE ODESSA NATIONAL MEDICAL UNIVERSITY (1975–2012)

*The Odessa National Medical University, Odessa, Ukraine*

Endoscopy is an exclusive tool of modern medicine and a priority direction of scientific and medical activity of the Obstetrics and Gynecology Department of the Odessa National Medical University, the leading recognized center of endoscopic surgery of Ukraine. The first endoscopic operations in Odessa gynecologic clinics were implemented at the end of 70th years last century, videoendoscopic — since 1992. Alongside with cryosurgical techniques, we have started operative endoscopy interventions using high-frequency currents, laser energy, and other newest mechanical tools and manipulations. We have analyzed more than 35-year period of formation and development of endoscopic gynecologic surgery at the Odessa National Medical University. We have studied more than 20,000 gynecologic endoscopic interventions, considering indications to operations, analyzed their types during a certain period, and specific complications of video-endoscopic interventions, that were executed in gynecologic clinics of Odessa. The retrospective analysis of endoscopic interventions of more than 35 years' period shows stable dynamics of increase in number of endoscopic interventions, especially during last ten years. Substantially it is connected with improvement of endoscopic operational equipment, introduction of modern operative endoscopic techniques, improvement of qualification and accumulation of experience of gynecologic endoscopic surgeons. Complications rate during operative laparoscopy was near 1%. The gained experience in the field of endoscopic surgery in gynecology was the background for foundation of the Educating and Training Center since 2001, organization of conferences and master-classes, cooperation with the leading centers of endoscopic surgery, cooperation with the world leading centers of endoscopic surgery.

**Key words:** endoscopic and miniinvasive surgery, analysis, the Odessa National Medical University.

Endoscopy is an exclusive tool of modern medicine. It is a priority direction of scientific and medical activity of Obstetrics and Gynecology Department of the

Odessa National Medical University, the leading recognized center of endoscopic surgery of Ukraine. Hysteroscopic treatment of hyperplastic processes

of endometrium and myometrium was conducted for the first time in the ONMedU by the end of 70's last century [1–3]. We have managed to verify clinical and morphological aspects of intrauterine pathology due to these operations, via domestic

<sup>1</sup> Rector of ONMedU, academician of National Academy of Medical Science of Ukraine, President of Ukrainian Gynecologic Endoscopic Association, Head of Obstetric & Gynecology Department N 1 ONMedU.



equipment "LOMO", "Krasnogvardeets" and German "Carl Zeiss". The fundamental background of mini-invasive method's medical effect was shown according to the results of cryo-hysteroscopy implementation [1; 15; 16]. Practical results of the research in cryo-endoscopic surgery promoted developing of unique cryo-endoscopic device (CED-1), using liquid nitrogen [14; 17].

Videoendoscopy have been implemented in gynecologic clinics of Odessa since 1992. Alongside with cryosurgical techniques, we have started operative endoscopy interventions using high-frequency currents, laser energy and other newest mechanical tools and manipulators. We have gradually mastered various ligation techniques, ultrasonic scalpel, etc. [3–5; 12; 13]. Professional skills of the gynecologists specializing in endoscopic surgery, is constantly increasing, as like as number of the doctors, obtaining endoscopic surgery skills. The number of endoscopic operations in our clinic has three times increased comparing to 1998 and reached about 2000 in 2012. The list of endoscopic operations has considerably extended and their parameters have changed.

At modern stage, the treatment of more than 90% benign gynecologic pathology, requiring surgical intervention, are carried out by means of endoscopic surgery [6–11; 13]. At the same time, the problems connected with a laparoscopy and surgical methods, which arise at many gynecologic laparoscopic manipulations, demand the detailed analysis. Thus, we have analyzed more than a 35-year period of formation and development of endoscopic gynecologic surgery at the Odessa National Medical University. We have studied more than 20,000 gynecologic endoscopic interventions, considering indications to operations, analyzed their types during certain period, and specific complications of video-endo-

scopic interventions, that were executed in gynecologic clinics of Odessa.

All the operations are being conducted by application of modern video-endoscopic equipment of Karl Storz (Germany), Olympus (Japan), Martin (Germany), Circon Acmi (USA), Everest Medical (USA) and others. Firms "Martin" (Germany), bipolar cutting nippers BICOAG "Everest Medical" (USA), medical laser system Medilas 4060 of MVV (Germany), ultrasonic (harmonic) scalpel of "Olympus" (Japan), staplers of "Ethicon Endo-Surgery" (USA), Ukrainian cryosurgical equipment, generators of a high frequency current. Hysteroscopy is maintained by application of flexible and rigid hysteroscopes. The cryo-endoscopic techniques and various mechanical tools are used while operative hysteroscopy, Nd YAG laser and resectoscopy techniques were introduced in 1993–1994.

Preoperative preparation of patients for laparoscopic operations is similar to laparotomic interventions, and has not changed essentially at the expired period. Anesthesia is carried out by means of endotracheal narcosis. Intravenous anesthesia is used at hysteroscopic operations, and spinal/peridural anesthesia — at vaginal operations [2].

We conduct only gas laparoscopy with carboxiperitoneum. At suspicion of presence of widespread intraperitoneal adhesions, we prefer an open Hasson method (1989) with pneumoperitoneum. We try to preserve a level of intra-abdominal pressure within the limits of 9–16 mm Hg during operation. The quantity of laparoscopic ports is defined by clinical situation, but in overwhelming majority of cases, we use three punctures, one of that is intended for optics, and two others — for manipulators. Evacuation of macropreparations of solid structure, which do not exceed 3–4 cm diameters, is done through punctures for manipulators. Solid masses

of greater sizes are removed through posterior colpotomy aperture or by means of tissue morcellator. Abdominal cavity drainage is applied under indications [1].

The analysis of structure of indications for laparoscopy, diagnostic or medical, shows certain differences. It is notable, that less than 3% of laparoscopies were diagnostic. The most part of indications was infertility, endometriosis and chronic pelvic pain, benign gynecologic pathologies (95%). Other indications for laparoscopy were the control of hysteroscopic procedures (1.5%) and suspected müllerian duct anomaly (0.5%).

Operative hysteroscopy was used because of the polyps (29%) and hyperplastic process of endometrium (27%), submucous fibroids of uterus (17%). Less often indications to operative hysteroscopy were resection of intrauterine septa (11%), fallopian tube occlusions in the proximal part (5%), uterine synechias in fertility disorders (5%) and retention of a small fragment of IUD (1%), retention of product of conception parts (4 %).

Introduction of new operative techniques promoted increasing of endoscopic operations and expansion of their list [14]. During last five years, quantity of endoscopic interventions due to uterine and ovarian pathology have noticeably increased, just as laparoscopic surgery of endometriosis, its severe form, in most of cases (74%). On a background of increase of total number of endoscopic interventions, the quantity of laparoscopic salpingostomy and tubal sterilization remained unchanged [5; 8].

The remote results of the operations of various factors of infertility testify to correctly chosen management and an adequate professional level of surgery, 41% pregnancy has come within 1.5–2 years after operation; more than 700 infertile patients in the period 1998–2012 had ART.



In 1994 we have started laparoscopic-assisted vaginal hysterectomy (LAVH) [6], in 1996 — mastered the technique of laparoscopic supracervical hysterectomy (LSH), in 1997 — total laparoscopic hysterectomy (LH). Laparoscopic access is more actively applied at combined gynecologic and simultaneous operations, urgent conditions in gynecology, pelvic inflammatory diseases, in urological gynecology and oncological gynecology.

The method of endosurgical staging in patients with clinical stage I of endometrial cancer became popular during last decade. This approach means a combination of laparoscopic assisted vaginal radical or total laparoscopic hysterectomy with bilateral salpingoophorectomy and laparoscopic bilateral pelvic lymphadenectomy. Pelvic lymphadenectomy only, or in a complex with paraaortal lymphadenectomy, plays the important role in surgical staging of endometrial cancer, and shows more precise prognostic information. The therapeutic role of lymphadenectomy, its ability to change adjuvant therapy, is studied less, and available publications have inconsistent character.

Our experience includes 86 patients with clinical stage I of endometrial cancer [1; 7]. At 64 patients, laparoscopic procedure included full survey of abdominal cavity, peritoneal lavage and radical laparoscopic assisted or total laparoscopic hysterectomy. During laparoscopy pelvic and aortic lymphatic nodes samplings was carried out at all patients with G2 or G3, the same as for patients with the first stage of damage in which depth of myometrial invasion was more, than 1/2 on the frozen section, or those with more aggressive type of cancer (adenocarcinoma, papillary serous or clear-cell carcinoma) were found. Laparoscopy revealed the later stage of endometrial carcinoma in 7 patients, therefore we performed laparotomy with omentectomy.

The received results testify to reduction of duration of operation in comparison with laparotomic access ((150.4±10.2) min) and ((115.3±9.2) min) ( $p<0.05$ ), duration of stay in hospital (2.9±0.5 and 6.3±1.4), of complications rate (1.7% and 10.5%). All patients are alive within 5 years [7].

A high-level operative endoscopic technique of simultaneous laparoscopic operations, which we have started since 1995, was revealed during this research. The multidisciplinary operative interventions that we perform are laparoscopic hysterectomy in combination with laparoscopic cholecystectomy (57 cases), laparoscopic supracervical hysterectomy and laparoscopic holecystectomy (17 cases) and others [15].

The annual quantity of hysteroscopic operation during noted period also constantly increased. It was promoted by introduction of laser and electro-surgical operative technics with endometrial ablation and submucous fibroid resection.

Frequency of complications at carrying out operative laparoscopy was near 1%. The most frequent complication happened during introduction of Veress needle and trocar (67%). Less often complications took place during an operative stage of laparoscopy. Only 3 cases have been classified, as severe among all the complications. They were puncture of intestines ( $n=1$ ), damage of the bladder ( $n=1$ ) and thermal damage of the urether ( $n=1$ ). Frequency of complications at hysterectomy was 1.4%. There are three cases of uterine punching among them. All three complications have occurred at the stage of dilatation of the uterine cervix. Late complications included uterine bleedings ( $n=13$ ).

During the last years, gynecologic endoscopy has reached a new level because of technical progress. The retrospective analysis of endoscopic interventions

of more than 35 years' period shows stable dynamics of increase in quantity of endoscopic interventions, especially during last ten years. Substantially it is connected with improvement of endoscopic operational equipment, introduction of modern operative endoscopic techniques, improvement of qualification and accumulation of experience of gynecologic endoscopic surgeons.

The most significant increase concerns operative endoscopic interventions, both laparoscopic, and hysteroscopic. It was promoted by expansion of a spectrum of operations, like laparoscopic surgery of ovarian and fallopian tubes pathology, hysterectomy, laparoscopic treatment of severe forms of endometriosis and simultaneous endoscopic operation. Development of technology of endoscopic equipments stimulated expansion of indications for laparoscopic surgery and increasing in quantity of patients year after year. Similar succession of events could lead to the justified increase in complications during or after laparoscopic interventions. However, increasing of number of more complex endoscopic operations has not led to uphold the frequency of surgical complications. Both at laparoscopy, and hysteroscopy, their frequency during last five years, remained stable and corresponded to data of the other authors. There were no complications connected with surgical wound of blood vessels. Evidence distinction between the quantity of the complications, which have arisen after endoscopic and laparotomic operations at similar pathology, has not been established. We aspire to improvement of skills in laparoscopic surgery and optimization of usage of endoscopic tools for the greatest possible reduction of complications further. Careful research of the complications, which may increase due to increase in number of endoscopic interventions in our clinics, allows developing



strategy of their prevention and optimum conducting.

Nowadays almost all the operative interventions at the gynecologic clinics of the ONMedU are carried out via endoscopic access, for example, surgery of benign and malignant tumors of ovaries, extrauterine pregnancy, tumor-like formations of the uterine appendages, plastic surgery of fallopian tubes pathology, inflammatory diseases of uterine appendages, conservative myomectomy, hysterectomy of vaginal prolapse, stress incontinence, correction of all types of developmental anomalies of genitals, endometriosis involving intestines and excretory tract, malignant lesions of uterus and uterine cervix combined with lymphadenectomy, etc. Our experience testifies, that endoscopy may and should be accepted in obstetrics, in extragenital pathology, demanding operative intervention, such as ovarian tumors, postnatal endometritis and complications of operative delivery, like haematoma, bleeding, and pelvic abscesses. Endoscopic access allows reducing essentially postoperative period, and thus frequency of postoperative complications makes 0.36 per cent. Operative treatment in our center is carried out not only to inhabitants of Odessa and regions of Ukraine, but also from near and far abroad.

More than 2,000 operations were done per year 2012, among them 1,100 laparoscopies, 250 hysteroscopies, 135 combined interventions (laparoscopy + hysteroscopy), 355 vaginal operations, 210 laparotomic ones. Total amount of endoscopic operations have increased by 123% comparing with 1998, 4.7 times as much laparoscopies, and 2.9 as much hysteroscopies, comparing with 1998.

The acquired experience in the field of endoscopic surgery in gynecology was a background for foundation of the Training Center based on Department of Mini-Invasive Technologies of the

ONMedU in 2001, organization of conferences and master-classes. We realized that physicians in regional hospitals do not use most of the advances in endoscopic surgery promoted in the University clinic. Leading surgeons and professors, recognized for their surgical skills, are heading the training courses.

The cadets master complex laparoscopic manipulations during the courses. Still, despite of increase in quantity of complex operative interventions with participation of cadets, the level of complications remains stable. Training in the center of gynecologic endoscopy improves a professional level of cadets, without being reflected on quality of medical aid to patients of our clinic. The received professional experience allows introducing modern endoscopic techniques in the hospitals of trained doctors, and, thus, raising the quality of the gynecologic aid for patients across the whole Ukraine.

Integral and significant part of our activity is research. We conduct research in the field of genetics, morphology, immunology, biochemical aspects of endometriosis and rare internal genital abnormalities [16; 17]. Innovative techniques of treatment of mentioned pathology are being developed and modified. New pathogenesis mechanisms of infertility, endometriosis, chronic pelvic pain syndrome are established. The scientific basis of new medical and diagnostic techniques is being worked out too.

The clinic is proud of cooperation with the leading centers of endoscopic surgery in Europe (Poland, Germany, France, Italy, Russia), Asia (China) in which members of our staff train every year. Owing to this cooperation, we organize the international scientifically practical conferences. During the conferences, in a mode of a "live surgery", the latest achievements in endoscopic surgery are demonstrated from different clinic outside Ukraine. Conferences stimulate free ex-

change of experience that, undoubtedly, promotes our professional growth.

The analysis of introduction and development of endoscopic surgery in gynecologic practice in the Odessa National Medical University clinic shows that positive dynamics of an annual gain of quantity of endoscopic operations, expansion of indications for them, corresponds to world tendencies. Modern endoscopy means the universal access, allowing carrying out both diagnostic and surgical treatment within the adequate limit, and postoperative monitoring. The conventional advantages of endoscopy such as minimal operative trauma, fast rehabilitation of patients and excellent cosmetic effect comprise high quality and patient-oriented treatment and, thereof, high quality of life of gynecologic patients. Modern endoscopic technologies allow replacing many gynecologic laparotomic operations; however, alternative methods of surgical treatment in gynecology, oncology, gynecology, and urologic gynecology should also be actively developed.

Along with low-invasive endoscopic surgery, other methods of innovative gynecological surgery are introduced at the University clinics. The technique of retro-pubic urethropexy by TVT/TVT-O is used in the treatment of genuine urinary stress incontinence in women since 2002–2003. According to our data, both methods are highly effective (over 85%) under the adequate selection of patients. Lower risk of complications for the application of TVT-O promotes more frequent using of this method. Treatment of vaginal prolapse is performed by transvaginal sacrospinous colposuspension using the Miya hook, since 2003. This method significantly improves the results of vaginal reconstructive surgery of total uterine prolapse complicated by vaginal eversion (enterocele). Nevertheless, a revolutionary approach to



prolapse surgery is undoubtedly technique using polypropylene mesh. We used Prolift System (Anterior, Posterior, Total) since 2003, just as our own construction — polypropylene allotransplantate. From our point of view, these innovative methods undoubtedly improve results and reduce the frequency of relapses to the minimum level. However, operative technique is currently quite complex and demands perfect anatomical dissection to avoid intra- and post-operative complications. There were 2 complications in 90 operations: intraoperative injury of the bladder — 1, mesh erosion — 1. No recurrences were observed within 1–5 years.

We believe that endoscopic and mini-invasive innovative technologies will be widely implicated in the integrated complex of diagnostics, treatment and monitoring of gynecologic pathology, and in prospective research in the nearest future.

#### REFERENCES

1. Запорожан В. М. Ендоскопічна хірургія в гінекології / В. М. Запорожан // Вісник Академії медичних наук України. — 1998. — № 4. — С. 25–31.
2. Запорожан В. М. Ендохірургія в гінекології: тенденції та перспективи / В. М. Запорожан // Одеський медичний журнал. — 1998. — № 3. — С. 3–7.
3. Запорожан В. М. Становлення і здобутки Одеської школи гінекологічної ендоскопії / В. М. Запорожан // Одеський медичний журнал. — 2003. — № 4 (78). — С. 9–12.
4. Запорожан В. М. Лапароскопічне, комбіноване і повторне лапароскопічне лікування у безплідних хворих із тяжким ендометріозом / В. М. Запорожан, І. З. Гладчук, А. Г. Волянська // Одеський медичний журнал. — 1998. — № 4. — С. 28–30.
5. Запорожан В. М. Досвід лапароскопічного лікування раку ендометрія / В. М. Запорожан, І. З. Гладчук, Н. М. Рожковська // Зб. наук. праць Асоціації акушерів-гінекологів України. — К.: Інтермед, 2004. — С.182–185.
6. Запорожан В. М. Комбінована з лапароскопічним етапом гістеректомія у лікуванні жінок з опущенням і випадінням внутрішніх статевих органів / В. М. Запорожан, В. В. Стежковий, І. З. Гладчук // ПАГ. — 1995. — № 6. — С. 61–63.
7. Запорожан В. Н. Видеозендоскопические операции в хирургии и гинекологии / В. Н. Запорожан, В. В.

Грубник, В. Ф. Саенко. — К.: Здоров'я, 1999. — 301 с.

8. Запорожан В. Н. Лазеры в эндоскопии / В. Н. Запорожан, В. В. Грубник, Б. К. Поддубный. — К.: Здоров'я, 1998. — 206 с.
9. Endoscopic Surgery for Gynecologists / ed. by C. Sutton, M. Diamond. — L.: W. B. Saunders, 1993. — 416 p.
10. Gallinat A. Gynecologic Laparoscopy and Hysteroscopy in Day Clinic: Trends and Perspectives / A. Gallinat, W. Nugent, R. Lueken // The Journal of the American Association of Gynecologic Laparoscopists. — 1994. — N 2 (1). — P. 103–111.
11. Zaporozhan V. Intratissue Laser Thermotherapy in Treatment of Uterine Myoma / V. Zaporozhan // The Journal of the American Association of Gynecologic Laparoscopists. — 1996. — N 4 (3). — P. 310–311.
12. Zaporozhan V. Electrosurgical and Nd:YAG Lasers to Treat Infertile Women with Severe Endometriosis / V. Zaporozhan, I. Gladchuk // The Journal of the American Association of Gynecologic Laparoscopists. — 1997. — N 4 (4). — P. 40–41.
13. Simultaneous laparoscopic Surgery: First Results / V. Zaporozhan, I. Gladchuk, E. Kononenko, M. Kashtalian // Proceedings of the World Congress of Gynecologic Endoscopy. — Rome, 1997. — P. 160–165.
14. Zaporozhan V. Combined Laparoscopic Cryosurgery in the Treatment of Polycystic Ovarian Disease / V. Zaporozhan // The Journal of the American Association of Gynecologic Laparoscopists. — 1994. — N 4 (1). — P. 40–47.
15. Zaporozhan V. N. Conservative Myomectomy / V. N. Zaporozhan, I. I. Gladchuk, N. N. Rozhkovska // Zaawansowane techniki laparoskopowe w ginekologii. — Lodz, 2005. — P.127–129.
16. Zaporozhan V. N. Regenerative medicine: state in Ukraine / V. N. Zaporozhan, V. Kordium, O. Kholodkova // Regenerative medicine. — 2007. — N 5 (2). — P. 715.
17. Zaporozhan V. N. Cryoendoscopy in the Treatment of Some Forms of Tubal Infertility, Polyps, and Endometrial Hyperplasia / V. N. Zaporozhan, O. V. Khait // Proceedings of the World Congress of Gynecologic Endoscopy 20th Annual Meeting of the AAGL. — Chicago, Illinois, 1991. — P. 211–215.

#### REFERENCES

1. Zaporozhan V.N. Endoscopic surgery in gynecology. Visnyk Akademii medychnykh nauk Ukrainy 1998; 4:25-31.
2. Zaporozhan V.N. Endosurgery in gynecology: trends and perspectives Odesky medychny zhurnal 1998;3:3-7.
3. Zaporozhan V.N. Formation and achievements of the Odessa School of gynecological endoscopy. Odesky medychny zhurnal 2003;4(78):9-12.
4. Zaporozhan V.N., Gladchuk I.Z., Volyanska A.G. Laparoscopic, com-

bined and second-look laparoscopic treatment in infertility patients with severe endometriosis. Odesky medychny zhurnal 1998;4:28-30.

5. Zaporozhan V.N., Gladchuk I.Z., Rozhkovska N.M. Experience of laparoscopic treatment of endometrial carcinoma. Zbyrnik naukovykh prats Asociaii akusheriv-ginecologiv Ukrainy. Kyiv: Intermed;2004:82-185.
6. Zaporozhan V.M., Stezhkoviy V.V., Gladchuk I.Z. Combined with laparoscopy part hysterectomy in treatment genital organ prolapses in women. PAG 1995;6:61-63.
7. Zaporozhan V.N., Grubnik V.V., Saenko V.F. Videoendoscopic operations in surgery and gynecology. Kyiv, Zdorovya, 1999:301.
8. Zaporozhan V.N., Grubnik V.V., Poddubny B.K. Lasers in endoscopy Kyiv, Zdorovya;1998:206.
9. Endoscopic Surgery for Gynecologists. Edited by C. Sutton, M. Diamond, London, W.B.Saunders;1993: 416.
10. Gallinat A., Nugent W., Lueken R. Gynecologic Laparoscopy and Hysteroscopy in Day Clinic: Trends and Perspectives. The Journal of the American Association of Gynecologic Laparoscopists. 1994;2(1):103-111.
11. Zaporozhan V. Intratissue Laser Thermotherapy in Treatment of Uterine Myomata. The Journal of the American Association of Gynecologic Laparoscopists 1996;4(3):310-311.
12. Zaporozhan V., Gladchuk I. Electrosurgical and Nd:YAG Lasers to Treat Infertile Women with Severe Endometriosis. The Journal of the American Association of Gynecologic Laparoscopists 1997;4(4):40-41.
13. Zaporozhan V., Gladchuk I., Kononenko E., Kashtalian M.. Simultaneous laparoscopic Surgery: First Results (Proceedings of the World Congress of Gynecologic Endoscopy), Rome,1997:160-165.
14. Zaporozhan V., Gladchuk I., Khait O. Combined Laparoscopic Cryosurgery in the Treatment of Polycystic Ovarian Disease. The Journal of the American Association of Gynecologic Laparoscopists 1994;4(1):40-47.
15. Zaporozhan V.N., Gladchuk I.I., Rozhkovska N. Conservative Myomectomy. Zaawansowane techniki laparoskopowe w ginekologii. Lodz, 2005: 127-129.
16. Zaporozhan V.N., Kordium V., Kholodkova O. Regenerative medicine:state in Ukraine. Regenerative medicine, 2007;5(2):715.
17. Zaporozhan V.N., Khait O.V. Cryoendoscopy in the Treatment of Some Forms of Tubal Infertility, Polyps, and Endometrial Hyperplasia // Proceedings of the World Congress of Gynecologic Endoscopy 20th Annual Meeting of the AAGL. Chicago, Illinois, 1991:211-215.

Submitted 17.07.2012

