

## Streszczenie w języku angielskim

Endometrial cancer is the most common gynecological cancer in developed countries, and the fourth most common cancer in women [1]. During the last three decades, the rates of uterine cancer have increased by over 50%. This increase in incidence has been largely attributable to elevated rates of obesity [2]. The most significant treatment for endometrial cancer is surgery.

The aim of the first study was to describe the risk factors that have a significant impact on the course of surgical treatment of endometrial cancer in traditional surgical mode. In 2011, approximately 90% of endometrial cancer cases were treated with open surgery in our hospital. In the first study the course of treatment for 70 patients with endometrial cancer operated on using the traditional method was analyzed. This was a non-randomized, prospective cohort study followed by observation limited to hospitalization duration and 30 days post-discharge. The factors modifying the course of surgical treatment of endometrial cancer include method of surgery, various obesity parameters, histological type of the cancer, cancer clinical stage, type of lymphadenectomy, patient' age, comorbidities, pelvic anatomical parameters, and the number of previous abdominal surgeries. In the perioperative period, selected parameters were monitored and they were recognised as indicators of in-hospital outcome of operational treatment: the duration of surgery (minutes), the loss of haemoglobin — the difference in the serum concentration before surgery and on the second day after surgery (g/dL), the occurrence of procedural-related complications, and the duration of hospitalisation (days). The results of the study were published in the journal *Ginekologia Polska*. Obese patients presented more advanced clinical stages of endometrial cancer before operation. The duration of operation ( $94.9 \pm 21.6$  min. vs.  $76.1 \pm 13.5$  min.,  $p < 0.0001$ ), hospitalisation ( $12.4 \pm 3.4$  days vs.  $10 \pm 2.3$  days,  $p = 0.0009$ ) and haemoglobin loss ( $2.5 \pm 0.9$  g/dL vs.  $1.9 \pm 0.8$  g/dL,  $p = 0.004$ ) were significantly greater in obese patients. Multivariate analysis, among the independent predictors of the duration of operation, has confirmed the correlation between BMI, waist circumference and weight and the duration of hospitalisation. Waist and hip circumference and BMI coupled with external conjugate dimension and intertrochanteric distance have been linked with haemoglobin loss. The strongest correlation for the duration of operation, hospitalisation and haemoglobin loss was noticed for waist circumference ( $r = 0.7$ ,  $r = 0.57$  and  $r = 0.59$ ). The most important conclusions from this study were that: obesity predisposes to the later diagnosis of endometrial cancer at a more advanced stage, which may contribute to worse treatment results both in terms of the effectiveness of the procedure and mortality in the follow-up period. Secondly that waist circumference seems to be the most sensitive marker, indicating the possibility of extending the duration of the procedure and hospitalization, which is also associated with increased blood loss associated with the procedure.

In 2011, approximately 90% of endometrial cancer cases were treated with open surgery in our hospital. In less than a decade, this proportion has practically reversed, and in 2019 the vast majority of endometrial cancer cases are qualified for laparoscopic treatment. The aim of the second study was to determine the factors that have the greatest influence on the course of laparoscopic surgery for endometrial cancer, with particular emphasis on the influence of obesity. The observation was carried out from January to August 2019. The study included 75 females who were treated for endometrial cancer by laparoscopic surgery. A pre-operative clinical interview was conducted which included questions about age, number of deliveries, education in years, previous abdominal surgery and comorbidities. The following parameters were determined in the preoperative examination: body height and mass, waist and hip circumference (cm) using a tape measure, as well as dimensions of the pelvic bone measured via a pelvis meter. The duration of surgery and hospitalization stay, loss of hemoglobin, and procedural-related complications served as parameters of in-hospital outcomes.

The results of the study were published in the journal *Ginekologia Polska* (IF-0,941). Multiple linear regression analysis indicate the body mass as most sensitive parameter of obesity which influence in-hospital outcomes in patients treated with laparoscopic procedure. Procedural-related complications occurred in the group of patients with significantly greater WC and BMI. Multiple linear regression indicates also histological grading (G1–G3), external conjugate, intertrochanteric distance as significant risk factors. The multiple linear regression analysis confirmed also that implementation of sentinel lymph node procedure is related with decreased hemoglobin loss in patients with cancer of endometrium compare to lymphadenectomy without sentinel node biopsy (Est.: 0.488; 95% CI: 0.083–0.892,  $p = 0.018$ ). The most important conclusions from this study were: the most sensitive risk factor of in-hospital outcomes in laparoscopic treatment of endometrial cancer is body mass, and the implementation of the sentinel node procedure is associated with reduced surgery time and reduced hemoglobin loss.

In the third study the group of patients treated with the traditional method in 2011 and the group of patients treated with laparoscopy in 2019 for endometrial cancer were analyzed and compared. In the last decade, due to improvement of the laparoscopic method of treatment for endometrial cancer and the development of surgeons' skills, both obese patients and those at a higher clinical stage of cancer were more frequently qualified for laparoscopic treatment. As a result of improvement in the laparoscopic treatment method, in 2019, more than 80% of patients with endometrial cancer were treated by laparoscopy at our clinic. As a consequence of these changes, in the observational study of patients treated with the traditional and laparoscopic methods, an analogous group with similar clinical characteristics was obtained. The evaluated risk factors of surgical treatment of endometrial cancer included: the method of surgery, type of lymphadenectomy, patient's age, various obesity parameters, histological grading, cancer clinical staging, pelvic dimensions, previous abdominal surgeries, comorbidities, and number of deliveries. The duration of hospitalization, operation time, loss of hemoglobin, and procedure-related complications were used as parameters of perioperative outcomes. The results of the study were published in *Journal Clinical of Medicine* (IF –3.303). Multivariable linear regression analysis confirmed the following factors as being predictors of worse perioperative outcomes: laparotomy, abdominal obesity (waist circumstance and waist-to-hip ratio), range of lymphadenectomy, prior abdominal surgeries, and larger pelvic dimensions. This study confirmed that regardless of the method of surgical treatment, abdominal obesity is a significant risk factor in the treatment of endometrial cancer.