PROBLEMS IN MALIGNANT TUMORS STAGING AND INNOVATIVE SURGICAL TECHNIQUES

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Abstract: Innovations in medicine affect everyone. The question to what extent a given innovation can be reconciled with the disease itself and its course so as to obtain a positive result of the treatment remains open. The aim of the study is to determine at what stage of development of the oncological disease in gynecology surgical intervention is carried out by means of robot-assisted surgery. A statistical method was used. The data were processed using the Microsoft Excel program. A total of two hundred and five cases of robot-assisted gynecological surgery were studied, divided into two groups according to the location of the tumor - the body of the uterus and the cervix. One hundred and thirty-eight cases were found to be malignant neoplasms of the body of the uterus and sixty-seven cases to be malignant neoplasms of the cervix, over a one-year period. Based on the staging of the tumor according to the TNM classification, it was reported at what stage of the disease the surgical intervention was carried out through robot-assisted surgery. The ratio by localization of a malignant neoplasm in gynecology is sixty-seven percent for endometrial carcinoma and thirty-three percent. Of the thirty-eight cases of carcinoma of the uterine body, one hundred and three patients or seventy-five percent were registered in the T1a stage, twenty-six cases or nineteen percent in the T1b stage, and eight patients or six percent in the T2 stage . Of the sixty-seven cases of carcinoma of the cervix, fifteen patients or twenty-three percent were registered in the T1a stage, forty cases or sixty in the T1b stage, and twelve patients or eighteen percent in the T2 stage. Discussion: In carcinoma of the body and cervix, robot-assisted surgery has been found to operate in patients with stage II carcinoma as well as sarcoma. It follows that the treatment strategy was determined based on clinical staging, namely: examination, biopsy and imaging studies. With the technology, it would not be able to accurately assess the presence of nearby metastases, a prerequisite for desemination. The thesis is supported by the fact that some patients undergo chemotherapy. Establishing precise criteria for the application of robot-assisted surgery in oncological diseases is of urgent importance for patient survival and cure. Conclusion: Currently, the main problems facing robot-assisted surgery in gynecology are: Tumor staging; The participation and commitment of the oncology commissions in determining the treatment strategy for cancer patients; Costing and cost-benefit analysis. There is a need for: Determination of the exact criteria at which stage robot-assisted surgery should be applied in gynecology (for example - first). Conducting a cohort study for Bulgaria, regarding survival and quality of life in patients treated by robot-assisted surgery. Study of the "Cost-Benefit" ratio in the given type of carcinomas
Keywords: robot-assisted surgery, uterine body carcinoma, cervical carcinoma, uterine sarcoma, carcinoma staging

1. INTRODUCTION

Innovations in medicine affect everyone. Through them, new methods of prevention, diagnosis and control of diseases, new drugs, operational techniques and technologies for monitoring and treatment of diseases are introduced into medical practice. At the same time, medical innovation is about expanding the knowledge base and transforming current technologies and business models to better meet changing needs and expectations. The question to what extent a given innovation can be reconciled with the disease itself and its course so as to obtain a positive result of the treatment remains open.

The purpose of the study is to determine at what stage of development of oncological disease in gynecology surgical intervention is carried out by means of robot-assisted surgery

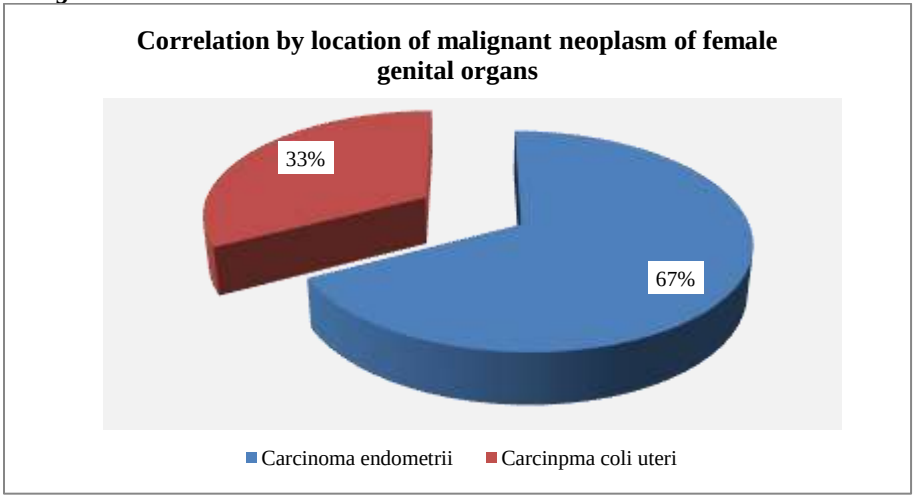
A statistical method was used. The data were processed using the Microsoft Excel program.

A total of 205 cases of robot-assisted surgery in the field of gynecology were studied, divided into two groups according to the localization of the tumor - the body of the uterus and the cervix. 138 cases were found to have uterine body malignancy and 67 cases were found to have cervical malignancy over a one-year period.

Based on the staging of the tumor according to the TNM classification, it was reported at what stage of the disease the surgical intervention was carried out through robot-assisted surgery.

The ratio by location of malignancy in gynecology was also 67 percent for endometrial carcinoma and 33 percent for cervical carcinoma (Figure 1)

Figure 1 Correlation between endometrial carcinoma and cervical carcinoma



Of 138 cases of uterine body carcinoma, 103 patients or 75% were registered in T1a stage, 26 cases or 19% in T1b stage, and 8 patients or 6% - in T2 stage (table 1). In one case, a sarcoma of the body of the uterus was found.

Table 1 Staging of uterine body carcinoma according to TNM classification

Carcinoma corporis uteri			
TNM	T1a	T1b	T2
Number	103	26	8
%	75	19	6

Of 67 cases of carcinoma of the cervix, 15 patients or 23% were registered in T1a stage, 40 cases or 60% in T1b stage, and 12 patients or 18% - in T2 stage (table 2).

Table 2 Staging of cervical carcinoma according to TNM classification

Carcinoma coli uteri			
TNM	T1a	T1b	T2
Number	15	40	12
%	22	60	18

2. DISCUSSION

The tumor staging process represents the level/stage of its spread, or the "amount" of cancer in the body. Staging is one of the most important moments in the diagnosis of tumors, because it determines the method of treatment.

The stages of endometrial cancer range from stage I to IV. The lower the number, the less the cancer has spread. Stage IV means the cancer has spread to other parts of the body. Within a stage, an earlier letter means a lower stage.

Tumor staging is important because diseases with similar stages tend to have a similar outlook and are often treated in much the same way.

Two staging systems are used for gynecological tumors:

- FIGO (International Federation of Gynecology and Obstetrics) and
- TNM (American Joint Committee on Cancer Staging System)

The stages in both systems are based on three factors:

- The size of the tumor (T): How far has the cancer grown in the uterus? Has the cancer spread to nearby structures or organs?

- Spread to nearby lymph nodes (N): Has the cancer spread to? These are the lymph nodes in the pelvis or around the aorta (the main artery that runs from the heart down the back of the abdomen and pelvis).

- Spread (metastasis) to distant sites (M): Has the cancer spread to distant lymph nodes or distant organs in other parts of the body?

When comparing the data obtained from table 1 and the TNM classification presented in table 3, it is found that in case of carcinoma of the body of the uterus in 94% of cases the treatment by robot-assisted surgery was carried out when the tumor spread within the organ and only when 6% of cases were invasion outside the organ (Table 3).

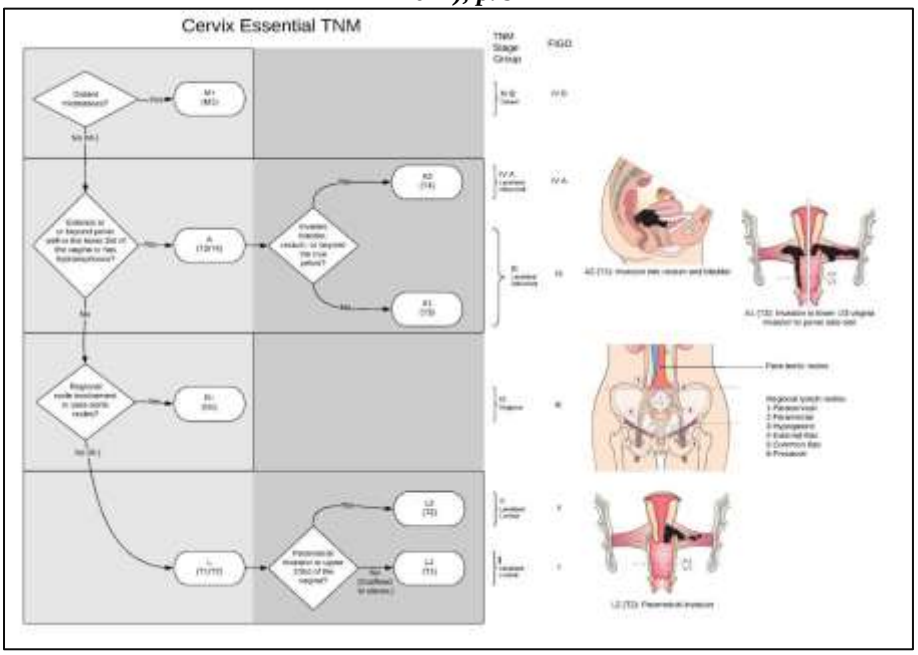
Table 3 TNM and FIGO clasification

for endometrial cancer

TNM	FIGO	T - Primary Tumor
TX		Primary tumor cannot be assessed
T0		No evidence of primary tumor
Tis	0	Carcinoma in situ
T1	I	Tumor confined to corpus uteri
T1a	IA	Tumor limited to endometrium
T1b	IB	Tumor invades less than one half of the myometrium
T1c	IC	Tumor invades one half or more of the myometrium
T2	II	Tumor invades cervix but does not extend beyond uterus
T2a	IIA	Endocervical glandular involvement only
T2b	IIB	Cervical stromal invasion
T3	III	Local and/or regional spread as specified in T3a, b, and/or N1 and FIGO IIIA, B, and C below
T3a	IIIA	Tumor involves serosa and/or adnexa (direct extension or metastasis) and/or cancer cells in ascites or peritoneal washings
T3b	IIIB	Vaginal involvement (direct extension or metastasis)
N1	IIIC	Metastasis to the pelvic and/or para-aortic lymph nodes
T4	IVA	Tumor invades bladder mucosa and/or bowel mucosa (bullous edema is not sufficient to classify a tumor as T4)
N—Regional Lymph Nodes		
NX		Regional nodes cannot be assessed
N0		No regional nodal metastasis
N1		Regional nodal metastasis
M—Distant Metastasis		
MX		Distant metastasis cannot be assessed
M0		No distant metastasis
M1	IVB	Distant metastasis (includes metastasis to intra-abdominal lymph nodes other than para-aortic, and/or inguinal lymph nodes; excludes metastasis to vagina pelvic serosa, or adnexa)

Cervical cancer metastasizes to bone, lung, and brain. Tumor invasion into the bladder, rectum, or beyond the pelvis is a sign of advanced carcinoma and refers to stage four (Fig. 2).

Figure 2 Staging of carcinoma coli utery Sour: Users Guide to essential TNM, version 3_8 Cancer Sites (April 2022), p. 9



Regional lymph nodes that can be affected are: paracervical, parametrial, hypogastric, iliac, presacral and lateral sacral nodes.
Extension of the tumor to the lower third of the vagina to the pelvic wall should be sought, which may lead to hydronephrosis due to obstruction of the ureter.
Most cervical cancers are staged using FIGO, for which stage I-IV codes are the same as TNM.
In the present study, 18% of cervical carcinoma cases were assessed as stage II: T2 by TNM and II by FIGO. This means that parametrial invasion is present in these patients.
When comparing the data obtained from table 2 and the TNM classification presented in figure 2, it is found that in cervical carcinoma in 82% of cases the treatment by robot-assisted surgery was carried out when the tumor spread within the organ and in 18 % of cases was invasion outside the organ.
From the data of the present study, it can be concluded that in cervical carcinoma, robot-assisted surgery was preferred to a greater extent in carcinoma invasion outside the organ.
A number of studies present the advantages of robotic surgery in gynecology, such as a minimally invasive method, reduction of perioperative morbidity, lower overall costs at hospital and national level [2,3,4].
In 2019, results from two US clinical trials comparing minimally invasive surgery with open surgery reported that women with early-stage cervical cancer who underwent minimally invasive radical hysterectomy had an increased risk of recurrence and worse survival outcomes than women who had open surgery [5]. Most of these patients required major surgery, including hysterectomy and lymph node dissection, which is necessary for staging.
It follows that patients who are suitable for operation by robot-assisted surgery are those with early-stage carcinoma of the body of the uterus, cervix and ovaries.
The LACC study and several other large studies have linked minimally invasive radical hysterectomy to a higher risk of cancer return and death in women with early-stage cervical cancer, said Dr. Pedro Ramirez, professor of gynecologic oncology at the Cancer Center Anderson at the University of Texas and lead investigator of the LACC trial [7].
As a result of the present study, it was found that robot-assisted surgery in the field of gynecology is applied to carcinoma of the body of the uterus in the first stage and to carcinoma of the cervix in the first and second stages.

3. CONCLUSION

Currently, the main problems facing robot-assisted surgery in gynecology are:
• Tumor staging;
• The participation and commitment of the oncology commissions in determining the treatment strategy for cancer patients;
• Costing and cost-benefit analysis.
There is a need for:
• Determination of the exact criteria at which stage robot-assisted surgery should be applied in gynecology (for example - first).
• Conducting a cohort study for Bulgaria, regarding survival and quality of life in patients treated by robot-assisted surgery.
• Study of the "Cost-Benefit" ratio in the given type of carcinomas

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