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Original Research Article

Incidence of cervical stump metastasis after subtotal hysterectomy done to cases proved later by histopathology to be endometrial cancer in Al Shatby university maternity hospital patients

Hossam El Sokkary^{1*}, Eman Abd El Zaher²

¹Department of Obstetrics and Gynecology, Faculty of Medicine, Al Shatby University Maternity Hospital, Alexandria, Egypt

²Department of pathology, Faculty of Medicine, Alexandria University Hospital, Alexandria, Egypt

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***Correspondence:**

Dr. Hossam El Sokkary,

E-mail: hossamsokkary@hotmail.com

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ABSTRACT

Background: Subtotal hysterectomy is associated with lesser complication, lesser time consuming than total one, but total hysterectomy has advantage of radicality of its management in cases of accidentally undiagnosed endometrial cancer proved later on by histopathology, that why hysterectomy should be total even in apparently benign causes that indicate it. The aim of this study was to access incidence of cervical stump invasion by malignancy in endometrial cancer cases and its relation to pathological types after subtotal hysterectomy done to cases proved later by histopathology to be endometrial cancer.

Methods: Following approval by our institutional ethics committee a prospective and retrospective observational descriptive study was done on 100 patients recruited from gyne-oncological outpatient clinic of Shatby university hospital of Alexandria from August 2018 to June 2021 with past history of subtotal hysterectomy. All these cases were proved later after histopathological examination of the uterine body to have type 1 or type 2 endometrial cancer. Stumpectomy was done to all patients after a written informed consent were taken from them before the study. Histopathological examinations of the cervical stumps were done and incidence of stump invasion with cancer in relation to its type was analyzed.

Results: Histopathological examination of the stump of all cases revealed that only 13 cases showed microscopic stump invasion. 7 cases with stump invasion were type 1 endometrial cancer, 4 cases were grade 1 and 3 cases were grade 2 in relation to 6 cases of stump invasion were type 2 endometrial cancer with papillary serous adenocarcinoma. Regarding relation between stump invasion and pathological types of endometrial cancer there was a significant statistical difference between them as type 2 are associated by higher number of stump invasion ($p=0.0001$).

Conclusions: The present study concluded that cases subjected to subtotal hysterectomy with undiagnosed endometrial cancer are associated with considerable incidence of cervical stump invasion and type 2 endometrial cancer have higher incidence of cervical stump invasion in relation to type 1 endometrial cancer.

Keywords: Subtotal hysterectomy, Cervical stump invasion, Type 1 and 2 endometrial cancer

INTRODUCTION

Hysterectomy is the most common surgical interference in gynecology world widely.¹ Its indication varies widely whether due to benign indication or malignant one.²

In malignant causes, hysterectomy should be done extra fascial total type while in benign causes some Gynecologist prefer to do the subtotal one. Their selection is explained by many causes as reduction of complication like bladder and ureteric injuries, decrease time of

operation, minimizing blood loss, decrease hospital stay, no need to remove the cervix in benign causes and to escaping surgical difficulties.³

At the same time subtotal hysterectomy has many disadvantages in relation to total one as attacks of irregular uterine bleeding, cervical stump prolapse, continuation of cervical intraepithelial neoplasia and its progression to cancer cervix.^{4,5}

In addition to this drawback, the risk of the presence of a hidden uterine malignancy and the probability of cervical stump invasion cannot be excluded as in this study in which assessment of cervical stump invasion by malignancy percentage in those cases will be estimated in order to discourage against subtotal hysterectomy to avoid this probability which endangers patients life due to necessity of another surgical interference and malignancy dissemination.

The aim of this study was to access incidence of cervical stump invasion by malignancy in endometrial cancer cases and its relation to pathological types after subtotal hysterectomy done to cases proved later by histopathology to be endometrial cancer.

METHODS

Following approval by Alexandria university institutional ethics committee a prospective and retrospective observational descriptive study was done on 100 patients recruited from gyne-oncological outpatient clinic of Shatby university hospital of Alexandria from August 2018 to June 2021 with past history of subtotal hysterectomy due to many indications as simple endometrial hyperplasia without atypia, multiple fibroid uterus with failed medical treatment, adenomyosis and undiagnosed abnormal uterine bleeding.

All these cases are proved later after histopathological examination of the uterine body to have type 1 or type 2 endometrial cancer. Stumpectomy was done to all patients after a written informed consent were taken from them before the study. Histopathological examinations of the cervical stumps were done and incidence of stump invasion with cancer in relation to its type was analyzed.

Sample size

Sample size was calculated based on a previous study and by using Med Calc statistical software. Assuming area under ROC to be 0.80, an alpha of 0.05 and power of study 90.0%. A typical advice is to reject the null hypothesis H0 if the corresponding p value smaller than 0.05. A minimum sample size required was 100 patients which was required for this study.

Statistical analysis

Data were fed to the computer using IBM SPSS software package version 24.0. Qualitative data were described using number and percent. Comparison between different groups regarding categorical variables was tested using Chi square test.

RESULTS

Histopathological examination of the uterine body for all the cases before stumpectomy operation revealed the following: 90 cases out of 100 had type 1 endometrial cancer 62 of them with grade 1 endometrioid adenocarcinoma, 8 cases of them showing lower uterine segment invasion and 28 cases with grade 2 with 5 cases with lower uterine segment invasion in comparison to 10 cases with type 2 endometrial cancer all of them were papillary serous adenocarcinoma with 6 cases of them showing lower uterine segment invasion (Table 1 and 2).

Table 1: Distribution of endometrial cancer cases according to pathological types and grading.

Type of endometrial cancer	Type 1 endometrial cancer (endometrioid adenocarcinoma)		Type 2 endometrial cancer			
	Grade 1	Grade 2	Grade 3 endometrioid	Papillary serous adenocarcinoma	Clear cell carcinoma	Carcinosarcoma
Numbers of cases	62	28	0	10	0	0

Table 2: Cases with safety margin invasion in relation to pathological types.

Numbers of cases with lower segment invasion	Type of endometrial cancer		X2; P value
	Type 1 endometrial cancer (endometrioid adenocarcinoma) n=90	Type 2 endometrial cancer (papillary serous adenocarcinoma) n=10	
	N (%)	N (%)	
	13 (14.4)	6 (60.0)	12.1; 0.00049*
	Grade (n=62)	Grade 2 (n=28)	
	8 (12.9)	5 (17.9)	0.178; 0.67 N.S.

Table 3: Distribution of stump invasion according to pathological types and safety margin.

Type of endometrial cancer	Type 1 endometrial cancer (endometrioid adenocarcinoma) (n=90)		Type 2 endometrial cancer (papillary serous adenocarcinoma) (n=10)	X ² ; P value
	N (%)		N (%)	
Number of cases with stump invasion	7 (7.8)		6 (60.0)	21.7; 0.0001*
Number of cases with stump invasion	Grade (n=62)	Grade 2 (n=28)		0.488; 0.454 N.S.
	4 (6.5)	3 (10.7)		

Table 4: Comparison between the incidence of stump invasion in the cases with lower uterine segment invasion in the two types of endometrial cancer.

Type of endometrial cancer with lower segment invasion	Type 1 endometrial cancer (endometrioid adenocarcinoma) cases with lower uterine segment invasion (n=13)	Type 2 endometrial cancer (papillary serous adenocarcinoma) cases with lower uterine segment invasion (n=6)	FET; P value
	N (%)	N (%)	
Number of cases with stump invasion	7 (53.8)	6 (100.0)	0.001*

FET=Fisher exact test.

Regarding relation between pathological types and stump invasion, type 2 were associated by higher incidence of stump invasion as 6 cases out of 10 in type 2 endometrial cancer in comparison to 13 cases out of 90 in type 1 endometrial cancer with a significant statistical difference ($p=0.00049$). Considering effect of grading in type 1 and lower uterine segment invasion 8 cases out of 62 grade 1 showed lower uterine segment invasion in relation to 5 cases out of 28 cases grade 2 with no significant statistical difference between them ($p=0.67$). Histopathological examination of the stump of all cases revealed that only 13 cases showed microscopic stump invasion. 7 cases with stump invasion were type 1 endometrial cancer, 4 cases were grade 1 and 3 cases were grade 2 in relation to 6 cases of stump invasion were type 2 endometrial cancer with papillary serous adenocarcinoma. Regarding relation between stump invasion and pathological types of endometrial cancer there was a significant statistical difference between them as type 2 were associated by higher number of stump invasion ($p=0.0001$) but there was no significant difference between grade 1 and grade 2 in type 1 endometrial cancer and stump invasion ($p=0.454$) as shown in Table 3. All the cases of stump invasion from both endometrial cancer types had lower uterine segment invasion but in type 1 endometrial cancer 13 cases had lower uterine segment invasion but only 7 of them had stump invasion as shown in Table 3.

Regarding comparison between the incidence of stump invasion in the cases with lower uterine segment invasion in the two types of endometrial cancer, the present study showed that there was a significant difference between them as all the 6 cases with lower segment invasion in type

2 were associated with stump invasion in comparison with 7 cases out of 13 (53.8%) ($p=0.001$) as shown in Table 4.

DISCUSSION

Types of hysterectomy include total and subtotal considering cervical removal, subtotal one was simple, associated with less complications as bladder and ureteric injuries with less blood loss and less intraoperative time but must be done for benign indication after exclusion of malignancy by diagnostic workup including endometrial sampling and regular PAP smear with no atypical cell.⁶ Total hysterectomy were associated with more complication, time consuming and should be done by skilled surgeon but it had many advantages including radical management in cases of hidden undiagnosed uterine body malignancies that can be associated with cervical stump invasion and decrease incidence of vaginal prolapse, in addition to prevention of *de novo* cancer cervix later on.⁷ In this study assessment of cervical stump metastasis incidence in relation to pathological types after subtotal hysterectomy of cases proved later on to have hidden undiagnosed endometrial cancer was studied. The study was done on 100 cases, 90 cases were type 1 and 10 cases were type 2, regarding grading in type 1, 62 cases were grade 1 and 28 grade 2. 13 cases of type 1 showed lower uterine segment invasion 8 cases of them were grade 1 and 5 cases were grade 2 compared to 6 cases in type 2 endometrial cancer with lower uterine segment invasion. Statistically there was a significant difference between type 1 and type 2 endometrial cancer ($p=0.00049$) in relation to lower uterine segment invasion as type 2 had more incidence in this matter. In agreement with the present study in relation to lower uterine segment invasion,

Feinberg et al studied a comparison between type 1 and type 2 endometrial cancer in relation to risk factors and outcome and showed a significant difference between type 2 and type 1 considering lower uterine segment invasion as 55.2% of type 2 cases were associated with lower segment invasion in relation to 42.4% of cases in type 1 ($p=0.001$).⁸ In the present study there is no statistical difference between grade 1 and grade 2 type 1 endometrial cancer and lower uterine segment invasion as 8 cases out of 62 (12.9%) in grade 1 compared to 5 cases out of 28 (17.9%) in grade 2 ($p=0.178$) in agreement with that, Lavie et al studied the outcome of patients with stage I endometrial cancer involving the lower uterine segment and showed that only grade 3 are associated with higher incidence of lower uterine segment invasion and no difference between grade 1 and grade 2.⁹ Regarding stump invasion incidence and its relation to pathological types 13 cases out of 100 cases of endometrial cancer were associated with stump invasion (13%) distributed as follows 7 out of 90 cases (53.8%) of them were of type 1 in relation to 6 out of 10 cases (60%) were type 2 and there was a significant statistical difference between both types as type 2 was associated with more stump invasion ($p=0.0001$) in agreement with this study in relation to cervical stump invasion Feinberg et al found that there was a significant difference between type 1 and type 2 endometrial cancer and advanced stage ($p<0.001$) (Table 3).⁸ Considering grading in type 1 endometrial cancer and cervical stump invasion, the present study showed no significant difference between grade 1 and grade 2 (Table 3). In agreement with the present study Limbachiya found that there was no significant difference between grade 1 and 2 endometroid adenocarcinoma and stage 2 endometrial cancer (cervical stump invasion) but higher stages was associated with grade 3.¹⁰ In relation to lower uterine segment invasion and cervical stump invasion in both types of endometrial cancer, the present study showed that there was a significant difference between both types of endometrial cancer ($p=0.001$), as all 6 cases in type 2 with lower segment invasion were associated with cervical stump invasion (100%) in relation to 7 cases out of 13 cases with lower uterine segment invasion (53.8%) had cervical stump invasion, in agreement with that study Masuda et al found that endometrial cancer of both types with lower uterine segment involvement were associated with significant cervical stump invasion.¹¹

CONCLUSION

The present study concluded that cases subjected to subtotal hysterectomy with undiagnosed endometrial cancer are associated with considerable incidence of cervical stump invasion and type 2 endometrial cancer have higher incidence of cervical stump invasion in relation to type 1 endometrial cancer, that's why total

hysterectomy should be standardized even in apparently benign indications.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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