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Vaginal Hysterectomy for Treatment of Endometrial Cancer, 30 Years of Experience

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Abstract

Objective: It has been suggested that Vaginal Hysterectomy (VH) be considered for the treatment of low-risk Endometrial Cancer (EC) patients, but prior studies have been limited by patient selection, sample size and histology [1-3]. VH has been used judiciously over the last 30 years for treatment of EC at our institution. The objective of our study is to validate VH for the treatment of EC for select patients by evaluating oncologic outcomes.

Methods: Retrospective review of all EC patients treated at Medical University of South Carolina from 1987 to 2017 was performed. Patients were included if they had preoperative pathology with grade 1 endometrioid (type 1) EC and if they subsequently underwent Vaginal Hysterectomy (VH) +/- Bilateral Salpingo-Oophorectomy (BSO), Abdominal Hysterectomy (AH) +/- BSO, or Robotic Hysterectomy (RH) +/- BSO. For the purpose of our study, no patients with lymph node assessment were included. VH patients were compared to AH and RH patients with regard to the following: Age, race, BMI, comorbidities, number of days hospitalized, incidence of post-op-transfusion (s), postoperative infection(s), postoperative morbidity and readmission. When oncologic outcomes were evaluated, the AH and RH groups were similar and therefore VH patients were compared to AH+RH patients with regard to hysterectomy pathology, recurrence, disease free survival and overall survival.

Results: Sixty patients underwent VH and 111 underwent AH (n=76) or RH (n=35) for grade 1 endometrioid EC. Demographic differences and perioperative differences between the three groups were evaluated (Table 1 and 2). VH patients were noted to have significant differences in BMI and rates of comorbidities when compared to both AH and RH patients. Demographic and perioperative outcomes were superior in the VH group compared to the AH group, no difference was noted between the VH and RH groups. Recurrence rated disease-free survival, and overall survival was similar between the VH and AH+RH groups with no statistically significant difference.

Conclusion: Vaginal hysterectomy may be utilized in medically at risk Endometrial Cancer (EC) patients with oncologic outcomes similar to EC patients treated via the abdominal route whenever lymph node assessment is not feasible or not indicated.

Keywords: Vaginal hysterectomy; Endometrial cancer; AH; RH; BMI

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Introduction

Endometrial Cancer (EC) is the most common gynecologic cancer encountered in the United States. In US women, it is the 4th most common cancer and the 6th most common cancer-related cause of death [4]. The American Cancer Society estimates that there will be 65,620 new cases of EC and 12,500 associated deaths in 2020. In their 2020 report, the American Cancer Society notes that while overall rates of cancer and cancer-related deaths are declining, EC rates and EC related deaths are rising. From 2006 to 2016 the incidence of EC increased by 1% per year in white women and 2% per year in black women. From 2007 to 2016 the cancer-related deaths rose 2% per year in both white and black women [4]. While increasing life expectancy may play a role in these statistics, the "obesity epidemic" in the US may play a larger role. Obesity alone is a risk factor for developing EC with 70% of cases attributed to excess body weight [4]. Endometrioid histology is

the most common cell type in obese women and is associated with a lower histologic grade and a lower cancer stage at time of diagnosis.

Many women with EC or a history of EC actually do not die from their cancer, but rather from other causes, commonly cardiovascular disease. Not only do these patient characteristics affect overall survival, but they make surgical treatment difficult to successfully complete [5].

Obesity alone can be a barrier to a successful surgery [6]. There are EC patients that are so obese and at such high perioperative risk that they cannot tolerate Trendelenburg and or general anesthesia, thus if surgery is to be considered a VH under spinal anesthesia may be their only option if medical interventions have failed.

Treatment of EC has historically included a full staging surgery with pelvic and para-aortic lymphadenectomy utilizing an open or minimally invasive approach. Given that the majority of EC patients are obese, there is an increased risk in perioperative morbidity associated with these lengthy staging procedures. Fortunately with the application of the Mayo criteria, the use of robotics, and the use of sentinel lymph node assessment, many patients can be successfully treated using a minimally invasive approach and without full lymphadenectomy. If a patient is relatively low risk of requiring lymph node assessment and or cannot tolerate the Trendelenburg position needed for laparoscopic surgery, a vaginal hysterectomy may be a reasonable surgical option in order to remove the primary tumor.

At our institution medically at risk patients with grade 1 endometrioid endometrial cancer are offered VH for primary treatment of their cancer in lieu of traditional staging procedures in an effort to decrease overall morbidity and mortality. With the advent of robotic surgery VH has been utilized less frequently in our institution starting in 2009, but VH was still utilized in patients who could not safely be placed in Trendelenburg position. Prior to offering VH, many of these patients had previously failed medical management.

The objective of this study is to evaluate VH for the treatment Cofi E n select patient, who are unable to tolerate Trendelenburg safely and in whom a lymph node assessment is not necessary or achievable.

Materials and Methods

Retrospective review of all EC patients treated at the Medical University of South Carolina from 1987 to 2017 was performed. Patients evaluated in this study had evidence of endometrioid endometrial cancer that was clinical stage 1, grade 1 and underwent VH +/- BSO, AH +/- BSO, or RH +/- BSO. There were no patients included in this study who had their nodal status evaluated.

VH patients were compared to AH and RH patients with regard to age, race, BMI, presence or absence of comorbid medical conditions, number of days hospitalized after surgery, incidence to post-op-transfusion(s), postoperative infection(s), postoperative morbidity, readmission rate, final surgery pathology, recurrence rates, disease-free survival and overall survival. Oncologic outcomes were similar when AH was compared to RH and were combined for comparison to VH.

Patient age was defined at the time of diagnosis. Race was documented as white, black, or other. "Other" races were few but included patients of Native American, Asian, and Hispanic descent. Comorbidities were noted preoperatively and included diabetes mellitus, hypertension, prior myocardial infarction, prior cerebrovascular accident, and any other comorbid medical condition requiring mediation or preoperative clearance such as hypothyroidism, chronic obstructive pulmonary disease or asthma. The number of days hospitalized postoperatively was recorded as the number of midnights the patient spent in the hospital after their surgery. Postoperative transfusion was noted if a patient received one of more units of blood after leaving the operating room. Postoperative infection was recorded if the patient received a course of antibiotics either inpatient or outpatient for any infection felt to be related to their surgery, excluding outpatient urinary tract infection treatment. Postoperative morbidity included one or more of the following events: Cardiac event or myocardial infarction, deep vein thrombosis, pulmonary embolism, cerebrovascular accident, ileus or any other major diagnosis that may have prolonged hospital stay such as pneumonia or respiratory distress syndrome. Readmission was any admission within 30 days of initial discharge. Final pathology was noted by reviewing surgical pathology reports. Grade was determined by FIGO standards.

Disease-free survival and overall survival were examined at 5 years. Characteristics of each group were compared using Chi-square tests for categorical variables, as appropriate and two-sample t-tests for continuous variables.

Times to event outcomes (disease-free survival and overall survival) were examined *via* Kaplan-Meier plots and log-rank tests. All statistical calculations were performed using SAS/STAT software, Version 94 of the SAS System for Windows, and a p-value of <0.05 was considered statistically significant.

Results

There were 60 patients who underwent VH, 76 AH, and 35 RH for grade 1 endometroid EC. Age, BMI and race information is displayed in Table 1. Perioperative information is displayed in Table 2. When comparing VH to AH, there was no significant difference in age, race, or postoperative infection (p=0.07). There was a significant difference in BMI (p=0.0001), hospital days (p=0.0003), comorbidities (p=0.0031), postoperative transfusion (p=0.0182), postoperative morbidity (p=0.0004), and readmissions (p=0.05). When comparing VH to RH, there was no significant difference in age, race, hospital days, postoperative transfusions, postoperative infection, postoperative morbidity or readmissions but there was a significant difference in BMI (p=0.0001) and comorbidities (p=0.0193).

To examine oncologic outcomes, the remaining comparisons were between the VH group and the combined AH+RH group. Final hysterectomy pathology for all patients was examined revealing 97% endometroid histology with 79% being grade 1. There was no statistical significance between the two groups with regard to final surgical histology (p=0.05816), (Table 3). Those patients with grade 3 or type 2 were offered adjuvant therapy with radiation +/- chemotherapy. Their recurrence rates and survival were similar to those with endometrioid histology grades 1 and 2.

Regardless of final surgical pathology, recurrence rate, disease-free survival, and overall survival were similar between the two groups (Figure 1 and 2). There was no statistically significant difference in disease-free survival between VH and AH+RH patients (Figure 1, p=0.3) or overall survival (p=0.5). It is notable that overall survival for both groups was low with 30% of VH patients and 44% of AH+RH

Table 1: Age, BMI and race information.

	VH (n=60)	AH (n=76)	P-value	RH (n=35)	P-value
Age [mean (SD)]	59 (11.3)	61.5 (*)	NS	60.6 (*)	NS
BMI [mean (SD)]	44.5 (11.4)	35.2 (*)	<0.0001	34.1 (*)	<0.0001
Race					
White	73%	63%	NS	82%	NS
Black	22%	35%	NS	18%	NS
Comorbidities	90%	77%	0.003	75%	0.0193

Table 2: Peri-operative information.

	VH (n=60)	AH (n=76)	P-value	RH (n=35)	P-value
Hospital Days	1.3	5.9	0.0003	1.7	0.6437
Postop Morbidity	3%	19%	0.0004	9%	0.277
Postop Transfusion	4%	15%	0.0182	0%	0.3085
Postop Infection	5%	10%	0.0751	2%	0.6747
Readmission	5%	11%	0.05	9%	0.2831

Table 3: Hysterectomy pathology.

	VH (60)	AH+RH (109)+
Endometrioid	56 (93%)	108 (99%)
Grade 1	42 (70%)	93 (85%)
Grade 2	13 (22%)	12 (11%)
Grade 3	1 (2%)	3 (3%)
Type 2	4 (7%)	1 (1%)

+n= 109 as 2 patients were missing data

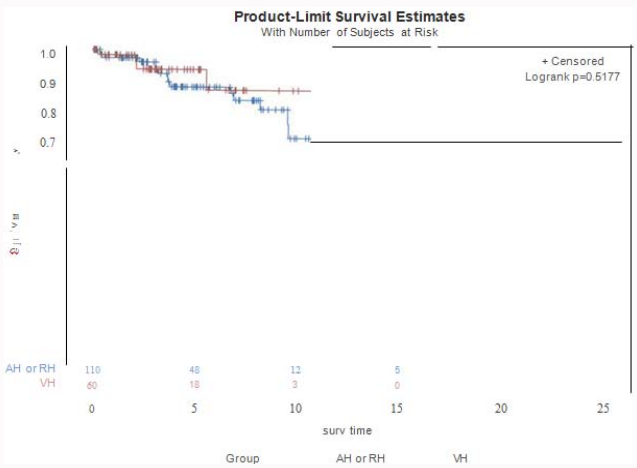

Figure 1: Product limit survival estimation.

patients alive at 5 years (Figure 1). On review most of these patients died independent of disease, most notably due to cardiovascular disease.

Discussion

VH patients had superior perioperative outcomes when compared to abdominal hysterectomy patients. Perioperative outcomes were similar to those who underwent robotic hysterectomy. This has been validated by other authors and our study is consistent with their findings [1,6,7].

This study included only patients with preoperative pathology proven grade 1 endometrioid endometrial cancer who had their

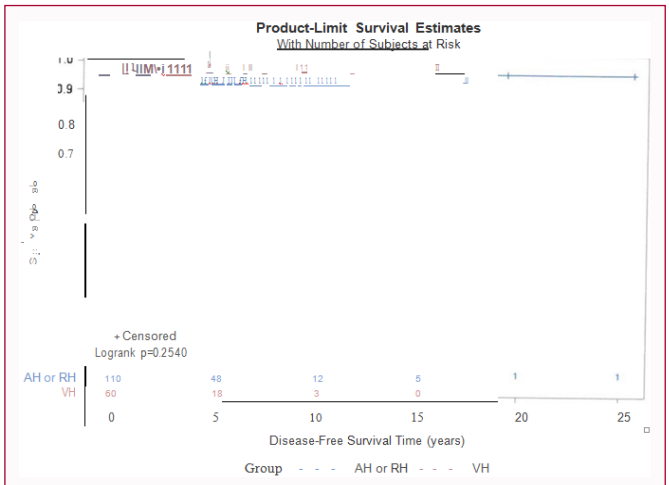

Figure 2: Product limit survival estimation.

primary tumor removed *via* vaginal, abdominal, or robotic hysterectomy. None of these patients underwent full staging procedures [8-10].

Oncologic outcomes (PFS and OS) were similar between those treated with VH and those treated with AH or RH. Our study validates the use of vaginal hysterectomy for patients with grade 1 endometroid endometrial cancer.

Weakness of our study include the fact that this was a retrospective study, the number of patients included was limited and selection bias was evident in the fact that patients who were selected for VH were morbidly obese and/or too medically complicated to safely undergo other surgical modalities [11-14].

This study reminds us that the vaginal hysterectomy remains a tool that should be considered by all gynecologic surgeons and can be performed in even the most medically complicated patient.

We recommend that these patients be counseled regarding their other life-threatening comorbid medical conditions-obesity, cardiovascular disease, diabetes, and other diseases in regards to planned surgery. Eradicating cancer cannot be our only goal in the care of the medically complex patient.

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