

# Subtotal hysterectomy reviewed: a stable or aperture for stump cervical malignancy. A referral hospital experience

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## Abstract

**Introduction:** To review the malignant potential of the stump after subtotal abdominal hysterectomy. Material and methods: Thirty-three patients with stump malignancy were diagnosed and treated between January 2018 and January 2022. All patients primarily underwent subtotal hysterectomy (STH) outside our hospital due to different indications, most of which seemed non-convincing. Upon presentation, they were evaluated properly and offered the best management plan.

**Results:** The presenting symptoms were abnormal histopathology report in 8 patients (24.24%), abnormal bleeding in 7 patients (21.21%), and postcoital bleeding and abnormal Pap smear in 6 patients (18.18%). The primary site of malignancy was endometrial in 17 patients (51.51%), on top of fibroid in 6 patients (18.18%), and cervical in 5 patients (15.15%). Eighteen patients (54.54%) underwent proper surgery, 9 patients (27.277%) were referred for chemoradiation, and 6 patients (18.18%) were candidates for palliative therapy.

**Conclusions:** Stump cancer cases show a worse stage silhouette compared with cancer cases in intact uterus. The high prevalence of cervical stump problems should be taken into account before a change in surgical approach from total to STH is deemed possible. Further prospective studies with prolonged follow-up periods are needed to evaluate the risks and benefits of retaining the cervix at hysterectomy. Subtotal hysterectomy is easier, does not require distinct skills that lead to experience and follow-up, and must be limited to the narrowest limits of practice, provided that the woman knows that there are no health benefits to keeping the cervix in place.

**Key words:** cervical cancer, subtotal hysterectomy, stump.

## Introduction

Abdominal hysterectomy is the most common gynaecological operation among women all over the world [1–3]. Approximately 300 out of every 100,000 women will undergo a hysterectomy for various reasons [4], and approximately 600,000 hysterectomies are performed annually in the United States [5]. Recent years have witnessed an increase in the number of subtotal hysterectomies compared to total hysterectomies; the number of patients undergoing this procedure has tripled [6, 7]. Supporters claim that removing the entire cervix may diminish sexual satisfaction during intercourse, affect urinary function, cause psychological disturbances, and interfere with pelvic floor support [8, 9]. Nevertheless, some recent publications oppose these assertions [2, 10–12], and few data exist on the adverse consequences of its removal. Before the introduction of total abdominal hysterectomy in 1929 by the American surgeon Richardson, to avoid serosanguinous

discharge of the cervical stump and the development of carcinoma of the cervix, subtotal hysterectomy (STH) was the norm [13]. In the 1950s, total abdominal hysterectomy became the primary approach for resecting the uterus, whether it was due to benign or malignant conditions. The definite difference between subtotal and total hysterectomy is the retained cervical stump. In the 1970s further studies emerged comparing total and subtotal hysterectomies. None of the related studies confirmed the perception that STH offers improved outcomes in terms of sexual, urinary, or bowel function when compared to total abdominal hysterectomy. Not surprisingly, women who underwent STH were more likely to experience ongoing cyclic bleeding up to a year after surgery compared to those who underwent total abdominal hysterectomy.

The advantages of STH include less extensive surgery, less operative time, and less perioperative bleeding. On the other hand, there should be some concern about the possibility of the development of carcinoma

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on the cervical stump, which can be determined only with relative accuracy during the procedure. The purpose of the current study is to identify and analyse the indication for STH in the study group, and highlight the reasons behind this practice. We are aware of certain limitations in our study including the short period of study, the limited number of patients included, surgeries being performed by different personnel, the inability to review operative reports and related circumstances of the original surgery, and difficulty in bringing the histopathology slides for review to standardize the diagnosis, with no clear referral policy.

**Material and methods**

This is a retrospective review of a total of 33 patients. Patients were included if they were operated on outside our hospital and referred to our care at Jordan University Hospital (JUH) (the only tertiary hospital in the capital city of Amman), after developing carcinoma on the cervical stump, and who presented during the period between January 2018 and January 2022. Patients were excluded if they had cervical prolapse, pelvic mass, pelvic pain, dyspareunia, or if the STH was performed based on the patient’s request. The group of patients who were suitable to be enrolled in this study was named the study group (group I), while the second group (group II) were named the control group, which comprised patients diagnosed and treated with a total abdominal hysterectomy at our hospital during the study period. All patients in both groups took the same etiquette of care and attention and were evaluated by the same surgeon (K, F). The study was carried out after the approval of the Institutional Review Board (IRB), the Ethics Committee, and the Scientific Research Committee (SRC) at our hospital. We used the Statistical Package for the Social Sciences for data analysis. The essential statistical analysis values of the study were calculated using the  $\chi^2$  and the Kruskal-Wallis test. Written consent signed by the patient to be involved in this study was also obtained. A full detailed history was taken after reviewing the indication of STH and its circumstances, stressing the necessary workup performed before surgery, particularly the endometrial biopsy result. All patients admitted to the hospital underwent complete physical examination, then proper workup including complete blood count, kidney function test, chest X-ray, tumour marker CA-125, cardiac, respiratory, and aesthetic evaluation. They then underwent examination under anaesthesia, endocervical curetting, and cystoscopy with urine sampling for cytology. We compared the outcomes of these data in group I with a similar group of patients diagnosed and treated at our hospital under our care where the cervix was excised completely in the primary surgery.

**Ethical issues**

The study proposal was approved by the Ethics Committee, the SRC, and IRB of JUH, University of Jordan, School of Medicine, Amman, Jordan (Ref. 10/2020/10939).

**Results**

A total of 33 patients diagnosed to have cervical malignancy on their stumps after being operated on previously by STH were eligible for enrolment in this study. The demographic data of the study group patients are summarized in Table 1, including age, which ranged from 29 to 69 years (average: 49.86), gravidity, which ranged from 0 to 9 (average 2.5), and parity, which ranged from 0 to 9 (average 2.35). The indications for STH are illustrated in Table 2, where the indication was due to heavy uterine bleeding in 16 patients (48.48%), fibroids in 8 patients (24.24%), and postpartum haemorrhage in 3 patients (9.09%). Table 3 shows the age of patients at the time of STH: 6 patients (18.18%) were below the age of 40 years, and 12 patients (36.36%) were aged 40 to 50 years. The number of patients and all the included data in the first 3 tables were similar in both groups for a fair comparison. The interval between the first surgery and the second assessment and management procedure is summarized in Table 4, which

**Table 1.** Demographic data

Characteristic	Average	Range
Age (years)	49.86	29–69
Marital status	21 M*, 5 S <sup>o</sup> , 4 W <sup>o</sup> , 3 D <sup>o</sup>	
Gravidity	3.5	0–9
Parity	3.25	0–9

<sup>o</sup>D – divorced, M\* – married, S<sup>o</sup> – single, W<sup>o</sup> – widow

**Table 2.** Indication for subtotal hysterectomy

Indication	Number	Incidence (%)
Heavy uterine bleeding	16	48.48
Fibroids	8	24.24
Ovarian mass	4	12.12
Postpartum haemorrhage	3	09.09
Pelvic pain	2	06.06

**Table 3.** Age at time of subtotal hysterectomy

Age (years)	Number	Incidence
20–29	2	06.06
30–39	4	12.12
40–49	12	36.36
50–59	12	36.36
60–69	3	09.09

**Table 4.** Time interval between the first surgery and second presentation

Parameters	Years	Number	Incidence
Years	1–9	19	57.57
Months	1–11	11	33.33
Days	10–21	3	09.09

**Table 5.** Presenting symptoms

Characteristic	Number	Percentage
Abnormal histopathology report	8	24.24
Abnormal vaginal bleeding	7	21.21
Postcoital bleeding	6	18.18
Abnormal pap smear	6	18.18
Cervical lesion	3	09.09
Pelvic pain	3	09.09

**Table 6.** Primary site of the tumour

Site	Number	Incidence
Endometrial	17	51.51
Cervical	5	15.15
Fibroid	5	15.15
Ovarian	4	12.12
Breast	2	06.06

was 1–9 years in 19 patients (57.57%), 1–11 months in 11 patients (33.33%), and 10–28 days in 3 patients (9.09%). The main reason to seek appropriate medical advice or referral was an abnormal histopathology report in 8 patients (24.24%), abnormal vaginal bleeding in 7 patients (21.21%), post-coital bleeding in 6 patients (18.18%), and 6 patients (18.18%) presented with an abnormal Pap smear (Table 5). There was a strong similarity between both groups for the site of the tumour; in the first group, the primary site of the tumour was endometrial in 16 patients (48.48%), cervical in 9 patients (27.27%), and fibroid in 4 patients (12.12%), as illustrated in Table 6. The second group contained 19 patients (57.57%) with endometrial cancer, 6 patients (18.18%) with fibroids, and 5 patients (15.15%) with cervical cancer, diagnosed before primary surgery. When comparing the treatment modality for the neoplastic conditions found in patients of both groups there was a noticeable difference in the suitable treatment option based on whether the neoplasm was discovered before hysterectomy (group 2) or diagnosed after surgery in the remnant cervical stump. In the first group, only 18 patients (54.54%) were candidates for surgery, which was complicated by the fact that they had previously undergone primary surgery. The remaining patient was not suitable for surgical intervention; instead, 9 patients (16.67%) went for chemoradiation, 5 patients (15.15%) for palliative therapy, and one patient was lost follow-up after diagnosis. It is important to mention here that the

new circumstances make the conditions of the second surgery difficult and marked hesitant by the surgical team due to the lack of complete knowledge of the conditions of the first operation, and the expectation of adhesions and changes in the anatomical nature of the pelvic organs, within the developments of medical accountability laws. On the other hand, all patients in the second group were candidates for surgery. What is interesting and novel about this series of patients who underwent a supracervical hysterectomy and subsequently developed gynaecological cancer is that half of their cases had endometrial cancer rather than cervical, i.e. confirmed cases such as endometrial cancer may have been in an undiagnosed stage of spread to the cervical region, and leaving the cervical region may have contributed to the development of the condition and its emergence as a cancerous case of the cervix later.

### Discussion

Our study reported that the rate of disease incidence was proportional to the original known universal rate, so the average age of the disease was about 50 years, and the average rate of parity was approximately 2.3% [2]. Carcinoma of the cervical stump is seen in 1–3% of patients with a history of subtotal abdominal hysterectomy, and thereby accounts for 3–9% of all cervical carcinomas [13, 14]. A change in the relative incidence of stump cancers was noted, varying 0.4–2.4%. It was challenging for us to stage patients in the study group according to the recent FIGO classification system, which imposes extreme difficulty to compare the staging of both groups of the study because we were not allowed to stage patients in the first study group. We confidently state that the outcome of patients in the second group was better than that in the first group, keeping in mind that cervical cancer is the fourth most common cancer among women in the world, with an average incidence of 10–12% among gynaecological cancers, and being the first in the underdeveloped countries, with a sharp reduction of the incidence after the implication of screening and vaccination programs in developing countries [15]. We applied the proper ideal surgical procedure because cervical cancer ranks third in Jordan [16]. Approximately 570,000 cases of cervical cancer and 311,000 deaths from the disease occurred in 2018. Cervical cancer was the fourth most common cancer in women, ranking next after breast cancer (2.1 million cases), colorectal cancer (0.8 million), and lung cancer (0.7 million). Cervical cancer was the leading cause of cancer-related deaths in women in eastern, western, middle, and southern Africa [17].

Until now, hysterectomy is the first in terms of the procedure for gynaecological surgeries, and the most common and most practiced operation among women, whether elective or emergent, not only in Jordan, but

also globally, regardless of the justification for the surgery or the necessary preparation steps [2, 18, 19]. Technical changes may have occurred to this surgery through its historical sequence. Historically, there has been an unjustified bias towards STH and leaving the cervix in the body of the woman, in comparison to total abdominal hysterectomy, for unconvincing reasons or future goals. In the study group, as seen in Table 2, the main indication was heavy uterine bleeding, which is the same for hysterectomy [2]. So, most scientific studies did not prove the existence of multiple claimed benefits that justify partial eradication, including stabilization of the vaginal and pelvic floor and assistance in marital practice, as the most important pillar when making the surgical decision. There is no scientific evidence of the importance of the abstract cervix to increase or maintain sexual desire. Despite the presence of many benefits of keeping it during the surgical procedure in favour of the surgeon per se including the reduced amount of surgical bleeding, shortening of surgery time, less need for surgical skills than total hysterectomy, and maintaining the physiological characteristics of the vagina. The most important topic for complications of this type of hysterectomy is the opportunity for an ominous future cancerous tumour of the cervical region or the presence of a carcinoma in situ of this type of tumour at the time of the original surgery, and in both cases, many factors govern the treatment plan, with variable chances of success, without hazardous health complications. This point is well engaged with the young age of patients who underwent STH, as illustrated in Table 3, which was the direct reason to expose them to another phase of the disease, which is more difficult than the first one, within different periods, extending from days in 3 patients up to a few years in 19 patients (average 1–9 years), as illustrated in Table 4 in our study. In our society, the incidence of cervical malignancy is snowballing, and cervical cancer has been categorized as the third most common among women in the country [16, 20]. Unfortunately, we do not have clear national screening protocols for detecting early cervical malignancy [16, 21]. We are aware that this malignancy in its preliminary status, if treated by a proper type of surgery and other modalities, carries a cure rate reaching up to meet our expectations. In 2 studies carried out at our hospital, there was a marked improvement in sexual function, urinary function, and psychosocial status in patients who underwent total hysterectomy for similar indications to the studied group [2, 18]. Dealing with cervical stump malignancy carried the risk of massive morbidity and was mostly not applauded by experienced personnel, who faltered in carrying out surgery in these cases. In our study, we found that the presenting symptom was mainly an abnormal histopathological report, abnormal vaginal bleeding, and postcoital bleeding. Surgery was applicable for only 18 patients (54.54%) in the study group, who fulfilled the

criteria for surgery, while the remaining were treated by the other available modalities instead (9 patients (27.27%) went for chemoradiation, 5 patients (15.15%) for palliative therapy, and one patient was lost to follow-up after diagnosis) mostly associated with other medical disorders, and were advised for palliative therapy. In our study, we found that the main reason for seeking medical advice late in the study group was a false deep-rooted belief with a degree of confidence that cervical cancer was not likely, which may be explained by improper counselling before surgery, and a failure to estimate the degree of future risk, and accordingly, negligence in periodic follow-up, especially in performing timely vault smears, particularly in high-risk patients or patients who were found to have this cancerous proliferation after examining the endometrial tissue and confirming the presence of endometrial cancer as the primary site of the tumour, which is clarified in Table 6. Fortunately, 3 cancer cases were diagnosed within 2 weeks of STH, a reality that required immediate return to the surgical theatre to complete the surgical steps duly, while the cancerous tumour of the cervix appeared during an abundance of one to 11 months in 11 patients, and up to 9 years in 19 patients; the longer the time interval, the fewer curative solutions compared to the second group. Also, we cannot exonerate the medical care providers because they did not warn patients of such complications. In the second group, the outcome was much better because those patients were diagnosed and treated at our hospital with a sustained expertise team for surgery after proper counselling. In modern practice, there should be a very limited place for STH, as mostly performed either due to weak surgical skills reflected in the poor training programs or the surgeon was in a hurry as none of the mentioned studies concluded the superiority of this surgery over total hysterectomy. People who are considered the godfathers of STH for benign conditions defend their opinion because it may be easier to perform – excising the uterine cervix at total abdominal hysterectomy is anatomically the most disruptive part of the operation. Subtotal hysterectomy requires less mobilization of the bladder and less risk of injury to the ureters, and perhaps is associated with less confrontational possessions than total hysterectomy. Studies comparing total and subtotal abdominal hysterectomy found that the operation time and perioperative bleeding were expressively subordinate in STH [18, 22]. Stump cancer cases show a worse stage profile compared with cancer cases in intact uteruses. Our data, and previous publications, reported sexual function to be comparable in both; subtotal and total hysterectomy. The same conclusions apply to pelvic-floor support and urinary continence [23]. Reoperation rates for symptoms related to the retained cervical malignancy are a lot more significant, more difficult and as a procedure carries utmost morbidity, provided cases are suitable for surgery

to start with [24, 25]. Because amputation of the radical cervical stump is considered challenging following STH, the majority of patients were subject to concurrent chemoradiotherapy. This situation is an avoidable one, provided the cases are handled properly, with at least an endometrial biopsy before the procedure, which is mandatory [26]. This fact reflects our status in this study, with all cases being addressed. Delay in reaching medical advice and follow-up, absence of a national screening program for cervical malignancy, and hesitation of the surgeons to re-operate on these cases, exacerbate the problem with narrow margins of palliative therapy by radiation and chemotherapy. It should be mentioned that there are familial and social reasons for not performing hysteroscopy and endometrial biopsies for single women due to the dilemma of breaching virginity. The hymen carries personal and social dimensions, and it is taboo to be approached or discussed if the patient is single. Bearing in mind the increased incidence of cervical cancer, the absence of any health benefits that are reflected in the future life of women, and the increased opportunity for them to undergo another major and more complex surgery to remove the cervix through the vagina or abdominally, it is necessary to inform women when deciding on the surgical approach for hysterectomy, accompanied by a thorough explanation of all the expected possibilities, because it needs complete preparation before surgery, with marked improvement of the gained surgical skills upon this practice [27, 28]. Subtotal hysterectomy is easier, does not need distinct skills that lead to experience and follow-up, and must be limited to the narrowest limits of practice, provided that the woman knows the phrase stating there are no health benefits for keeping the cervix in place, and there is a clear red flashlight related to future medical hazards, including the development of a cancerous tumour of the cervix. Personal preferences should be made by women once informed with the correct information by her service provider, including the occurrence of a future cancerous tumour or its presence during the first surgery, the difficulty and complexity of a second surgery if needed, the presence of health complications including present and future, especially that of late diagnosis, the type of tumour, the degree of its distinctiveness, the health condition of the woman, and the difficulty in classifying the disease stage to develop the appropriate ideal treatment plan, which would deprive her of the ideal plan for her condition. Perhaps, the existence of therapeutic alternatives gives this category of patient treatment opportunities, such as radiotherapy and chemotherapy, or both [29, 30]. The high percentage of health problems of the cervix is a warning bell and a warning signal that ought to be respected and taken into account, and the priorities of the surgical decision to treat uterine problems must be reviewed and rehabil-

itated within the surgical skills, provided that the speed factor does not involve conducting the operation, so posing the health problems of the future makes it more difficult, and adherence to the surgical and therapeutic foundations, line facilitate its way of healing and open a path to a renewed confidence. Reviewing the performance and developments to improve the surgical skills for practicing hysterectomy with medical justification for this indicates some performance obstacles, because the beginning was with STH, then the matter developed into a more difficult surgery and the need for renewed skills to remove the entire uterus, but the second half of the last century witnessed a cautious return to STH, despite reservations about this operation, after it was proven to be ineffective and the medical staff placed in the grey area for a surgical decision. It is worth mentioning the impact of morcellation in patients with uterine sarcoma enduring surgery for ostensible benign disease. Our objection to STH and leaving the cervix, in cases of uterine fibroids, has future health dimensions that go beyond the limits of imminent surgical and health complications. One of the challenges is represented by the difficulty of distinguishing between benign and cancerous fibres, before conducting the necessary histological examination [31], and the hoarded proof in scientific research indicates that excision leads to impairment of the survival outcome for patients affected by sarcoma confined to the uterus, because patients with dispersal are more likely to develop distant rather than local recurrence, possibly because tumour manipulation may cause the disease to spread into the upper abdomen and through the blood and lymphatic vessels [32]. It is necessary to develop an accurate visualization and a diagnostic plan based on the shape, signs and symptoms, laboratory tests, and modern imaging methods, due to the difficulty of taking a direct biopsy from the fibroid to determine the nature of its behaviours, which enhances our vision and our conservative stance in the way of extracting the partial uterus and leaving its neck for fear of annoying surprises. This is one of them, which brings us back to the starting point about the questionable benefits of leaving the cervix for the woman. It is worth mentioning that the estimated incidence of uterine sarcomas in apparent benign uterine sarcoma is low, ranging 0.014–0.45% across different series and meta-analyses, but in reality, some studies reported the prevalence of uterine sarcomas is higher, being 2–3% of all patients [33]. Not surprisingly, surgical exploration procedures after morcellation of uterine smooth-muscle tumours of uncertain malignant potential or endometrial stromal sarcoma have a high likelihood of detecting peritoneal implants, which can be benign or malignant [34]. Here comes the role and importance of experience and surgical skills that are used in the assessment and to be employed in a timely manner [35].

## Conclusions

Stump cancer cases show a shoddier stage silhouette compared with cancer cases in intact uteruses. Sexual function is not improved with subtotal than total hysterectomy, nor is the pelvic floor upkeep and urinary continence. Reoperation rates for symptoms related to the retained cervix are significant – over 20% in the hands of highly skilled surgeons. We conclude that the total effect of stump cancers following subtotal hysterectomies is not to be neglected. The vigilance of health care providers frames the ideal treatment plan by knowing the borders and limitations of their knowledge and skills. We have to admit surgeons' reluctance to surgically deal with this type of disease due to the expected complications, because it needs advanced surgical skills. Staying away from this type of surgery represents wisdom and a sign of farsightedness by following scientific developments and applying them on the ground, and it is wisdom for those looking for distinction. They pave the way to glory and success with their actions and results.

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The authors report no conflict of interest.

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