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## IMPACT ON SEXUAL FUNCTIONING: TOTAL VERSUS SUBTOTAL HYSTERECTOMY

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### Abstract

**Objective** To evaluate and compare postoperative sexual functioning following total (TH) versus subtotal hysterectomy (STH).

**Design** A longitudinal, prospective and comparative study in women undergoing hysterectomy for benign diseases in Ibn El Jazzar Hospital, Kairouan in Tunisia.

**Sample** Sixty women undergoing hysterectomy for benign disease.

**Main outcome measures** Sexual functioning evaluation using the Arizona Sexual Experiences Scale (ASEX) and *Female Sexual Function Index (FSFI)* before the operation and after 6 months.

**Results** Following surgery, significant improvement in sexual functioning according to both scales. In fact, the mean total score of the ASEX scale went from 25.14 to 21.15 and from 11,99 to 19,31 for the FSFI. The average time to resume sexuality postoperatively was 50 days. No significant difference was found in these results between total and subtotal hysterectomy.

**Conclusion** Hysterectomy, whether total or subtotal, has a positive impact on the overall sexual satisfaction of the patients especially in those with an impaired sexuality before surgery. There were no statistically significant differences in sexual function between the two groups TH versus STH. Therefore, cervix preservation for the purpose of improving overall sexual satisfaction cannot be recommended.

**Key words:** Hysterectomy, Sexual dysfunction, Supracervical hysterectomy, Cervix.

### INTRODUCTION:

Hysterectomy is the most commonly performed gynecological operation in the world and in Tunisia. Around 65,000 hysterectomies are performed in France each year [1]. Their incidence is much higher in other countries such as the United States and Germany [2-3-4].

Hysterectomies are divided into two categories: hysterectomies for carcinological purposes and those for benign pathologies, which are by far the most common. They represent 70% of the hysterectomies performed in France each year, according to HAS data published in 2022 [1]. The pathologies involved

are uterine fibroids, abnormal uterine bleeding resisting medical treatment, endometriosis, adenomyosis and uterine prolapsed [5-6].

As with any surgical procedure, several complications can arise during the hysterectomy. They are dominated by hemorrhagic complications, which occur in about 4.7% of cases regardless of the surgical approach [7], followed by vesicoureteral wounds [8-9], digestive complications [8] and pelvic static disorders [10].

A negative impact of hysterectomy on sexual function is also a complication that has been described in the literature [11-12]. Other studies report improved sexual functioning after this surgical procedure [13-14-15-16-17-18].

Above all, the role of the uterus and cervix in the female sexual response remains a matter of controversy because of the differences between the cervix and clitoris in terms of innervation and brain projections.

Some authors consider that the cervix is involved in female orgasm. In fact, Lopès evoked in the manual of Sexology the mechanisms that could explain the involvement of the uterine cervix in the orgasmic response [19]. He explained that the uterus probably intervenes in the female sexual response through the round ligaments that end at the labia majora and the pubic mount. Mobilization of the cervix during penetration is thought to cause stretching of the round ligaments and consequently vulval stimulation.

Komisaruk [20], in turn, suggests the presence of three distinct entities involved in female orgasm: cervical, vaginal and clitoral orgasm.

These findings suggest that removal of the cervix during hysterectomies may be responsible for attenuation of deep orgasms [21].

On the other hand, recent research has evoked the primordial role of the brain in the orgasmic response thanks to the development of functional imaging techniques [22-23]. They have shown that orgasm is not reduced to a reflex reaction, and that the brain can be considered as the centre of desire and female pleasure instead of the cervix, the vagina and the clitoris [22].

On the other hand, Any kind of major pelvic surgery or injury has the potential for damaging the nerves and blood vessels leading to the vagina and clitoris which could affect the sex life after surgery.

Therefore, it seems interesting to us to carry out a prospective study among hysterectomized women with the objective to evaluate the sexual impact according to the surgical technique used: total hysterectomy (TH) or subtotal hysterectomy (STH).

## **MATERIAL AND METHODS:**

**Study design.** This is a prospective, longitudinal and comparative study. It took place in the obstetrics gynecology department of the Ibn Jazzar University Hospital of Kairouan in the country of Tunisia over a period of two years from January 2, 2020 to December 31, 2021.

**Setting.** Data collection was done through direct interviews with the patients, during which they answered two validated questionnaires translated into Tunisian dialect. An initial evaluation interview is performed preoperatively and a second interview is performed 6 months after hysterectomy. Questions are asked by the same speaker, in Tunisian dialect, in a calm atmosphere that respects the privacy of the patients. Both groups were followed in the same way during the study period.

**Participants.** The total number of participants is 60 patients. We included all women for whom hysterectomy was indicated and who met the following inclusion and non-inclusion criteria:

### *INCLUSION CRITERIA*

Hysterectomy indicated for benign or functional pathologies; age between 40 and 65 years; an active sexual life.

### *NON-INCLUSION CRITERIA*

Hysterectomies for hemostasis; Hysterectomies performed for carcinological purposes; Incidental finding of histological signs of malignancy postoperatively on the hysterectomy specimen; Loss of sexual partner

during the study period; Refusal to participate in the survey.

Total number of participants was divided in two groups: with 30 patients each. The first group underwent HT while the second underwent STH.

### Assessment methods

#### Socio-demographic and Clinical Data:

Medical and obstetrical records were used to collect data on the socio-demographic and clinical characteristics of the patients. For the data related to the operation, we consulted the operating reports and the monitoring sheets.

*Arizona Sexual Experiences Scale (ASEX)* is a simple, brief questionnaire that can be used to quickly identify possible sexual dysfunction. It consists of five items. Each item is rated on six levels ranging from hyper functioning (rated 1) to hypo functioning (rated 6). The components of sexuality assessed are sexual drive, sexual arousal, vaginal lubrication, achieving orgasm and satisfaction. The cut-off point is a total ASEX score greater than or equal to 18. This measurement tool has a high specificity of 95.52% and a sensitivity of 70%. Its positive predictive value (PPV) is 89.66% and its negative predictive value (NPV) is 85.33% [24]. This scale also has a low degree of intrusiveness causing little discomfort compared to other scores used for sexuality assessment. All of these characteristics make ASEX a reliable and well-accepted measurement tool for patients, making it easier to assess changes in sexual function over time.

*Female Sexual Function Index (FSFI)* [25-26-27] is the most widely used measurement instrument in sexual medicine. It consists of 19 questions addressing six components: desire (Q1, Q2), sexual arousal (Q3-Q6), vaginal lubrication (Q7-Q10), orgasm (Q11-Q13), sexual satisfaction (Q14-Q16) and pain (Q17-Q19). Each item is scored from 0 to 5 or from 1 to 5. A score of 0 means that the respondent has not been sexually active. The score for each domain is obtained by multiplying by a corresponding factor for each item. The maximum score is 6 for all domains assessed. A total score of 26.55

is the cut-off value for the diagnosis of sexual dysfunction.

### STATISTICAL METHODS:

Data entry and analysis were performed using the Statistical Package for Social Sciences (SPSS) software in its 26th version. The description of the qualitative variables was done by the observed numbers and frequencies (%).

For quantitative variables, the study of the distribution of the data was done by the skewness and kurtosis coefficients and by the normality tests. The description of these variables was done by means and standard deviations in case of normal distribution. The use of medians and interquartile ranges was necessary in the opposite case.

For the analysis of the association between two categorical variables, we used the Pearson's CHI2 test for the comparison of percentages. In cases where the conditions for the application of the CHI 2 test are not validated, the Fischer test was used.

For the analysis of the association between a qualitative variable and a quantitative variable, the tests used are: the Student test for the comparison of means, and the non-parametric Mann Witney test in the opposite case.

The significance level (p) is 0.05.

### RESULTS

The total number of selected participants was 60 patients, the mean age was 52.1±7.3 years. *Table I* shows sociodemographic characteristics of the patients as well as their clinical characteristics.

All patients were married at the time of data collection with an average marriage duration equal to 23.58 years. 70% of patients were in the menopausal period.

The most frequent indications for hysterectomy are: uterine leiomyomas, which represent 43.3% of all indications, followed by urogenital prolapse and adenomyosis, each representing 20%.

In our study sample, some sociodemographic and clinical characteristics varied according to the type of surgery (*Table II*). In

**Table I. Sociodemographic and clinical characteristics of patients (n = 60)**

		Frequency (n)	Percentage (%)
<b>Age (Mean = 52.1±7.3)</b> 50-59 years old 60-69 years old	40-49 years old	24	0.4
	22	0.37	
	14	0.23	
<b>Length of marriage (Average 23.58 years)</b> < 20 years	> 20 years	31	51,7
	29	48.3	
<b>School level</b> Primary Secondary Superior	Illiterate	15	25
	17	28	
	16	27	
	12	20	
<b>Socio-economic level</b> Good	Bad	27	45
	33	55	
<b>Lifestyle habits</b> Regular physical activity Alcohol	Tobacco	4	6,7
	5	8,3	
	0	0	
<b>Body Mass Index</b> Normal Overweight Moderate obesity	Skinny	1	1.7
	31	51.7	
	11	18.3	
	17	28.3	
<b>Nulligravid</b>		5	8,3
<b>Nulliparous</b>		5	8,3
<b>History of childbirth</b>		55	91,7
<b>Cesarean section</b>		8	14,5
<b>Vaginal delivery</b>		47	85,5
<b>With instrumental extraction</b>		3	6,4
<b>Without instrumental extraction</b>		44	93,6
<b>Postpartum complications</b>		0	0
<b>Menopause</b> No	Yes	42	70
	18	30	
<b>Time to resume sexual activity (days)</b> 35 40 45 50 60 70	30	3	5
	2	3.3	
	3	5	
	21	35	
	7	11.7	
	23	38.3	
	1	1.7	
<b>Preoperative clinical signs</b> Abnormal uterine bleeding Sensation of a ball in the vagina	Chronic pelvic pain	30	50
	18	30	
	12	20	
<b>Surgical indications</b> Urogenital prolapses Adenomyosis Abnormal uterine bleeding	Uterine leiomyomas	26	43,3
	12	20	
	12	20	
	10	16.7	

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		Frequency (n)	Percentage (%)
Type of surgery Subtotal hysterectomy	Total hysterectomy	30	50
	30	50	
Surgical approach	Total hysterectomy	Vaginal route	14 46,66
		Laparotomy	16 53,33
	Subtotal hysterectomy	Laparotomy	30 100
Bilateral annexectomy		43	71,7
Post-operative complications Postoperative peritonitis Surgery site infection	Bladder wounds	3	5
	1	1.7	
	2	3.4	

Table II Sociodemographic and clinical factors associated with type of intervention (n = 60)

		TH (n=30)	STH (n=30)	p
Age		55,87±6,857	48,3±5,646	<0,001
Duration of marriage		26,5 [19,75-32]	20 [15-23,25]	0,003
Diabetes		12 (40%)	2 (6,7%)	0,002
Tobacco		1 (3,3%)	3 (10%)	0,612
Economic difficulties		14 (46,7%)	13 (43,3%)	0,795
School level	Illiterate-Primary	21 (70%)	11 (36,7%)	0,01
	Secondary-University	9 (30%)	19 (63,3%)	
Physical activity	Absent	29 (96,7%)	26 (86,7%)	0,353
	Regular	1 (3,3%)	4 (13,3%)	
BMI	Lean-Normal	19 (63,3%)	13 (43,3%)	0,121
	Overweight-Obesity	11 (36,7%)	17 (56,7%)	
Gravidity	Mean	6 [3-8]	3 [3-4]	0,031
	Nulligravid	3 (10%)	2 (6,7%)	0,999
Parity	Mean	5 [3-8]	3 [3-4]	0,021
	Nulliparous	3 (10%)	2 (6,7%)	0,999
Number of deliveries per Vaginal delivery		5 [3-8]	3 [0-3]	0,001
History of instrumental extraction		1 (3,3%)	2 (6,7%)	0,999
Menopausal status	Menopause	25 (83,3%)	17 (56,7%)	0,024
	Age at menopause	46,88±3,551	46,71±3,601	0,174
Symptoms	Pelvic pain	10 (33,3%)	20 (66,7%)	0,01
	Uterine bleeding	8 (26,7%)	10 (33,3%)	0,573
	Vaginal ball sensation	12 (40%)	0 (0%)	<0,001
Indications	Treatment-resistant abnormal uterine bleeding	5 (16,7%)	5 (16,7%)	0,999
	Uterine fibroids	10 (33,3%)	16 (53,3%)	0,118
	Adenomyosis	3 (10%)	9 (30%)	0,053
	Urogenital prolapse	12 (40%)	0 (0%)	<0,001
Surgical approach	Laparotomy	16 (53,3%)	30 (100%)	<0,001
	Vaginal Route	14 (46,7%)	0 (0%)	
Annexectomy		25 (83,3%)	18 (60%)	0,045

the case of total hysterectomy, age was significantly higher ( $p < 0.001$ ). The same was true for marriage duration ( $p = 0.003$ ). Diabetes was significantly more observed in patients of the TH group (40% vs 6.7% with  $p = 0.002$ ). It was also found that the type of surgery varied significantly according to the school level ( $p = 0.01$ ).

The same was true for gestational age ( $p = 0.031$ ), parity ( $p = 0.021$ ), the number of vaginal deliveries ( $p = 0.001$ ) and menopausal status, where menopause was more frequent in patients in the TH group (83.3% vs 56.7%;  $p = 0.024$ ).

Postoperative complications were noted in 6 cases (10%). Bladder injuries were the most frequent. They occurred in three patients. A postoperative peritonitis complicated one of the hysterectomies. Two cases of surgical site infection were noted.

The most common surgical approach in our study was laparotomy (76.7%). In fact, all subtotal hysterectomies were done by laparotomy. For total hysterectomies, vaginal route was used in 46.66% of patients in this group ( $n = 14$ ). 53.33% of TH cases were performed by laparotomy ( $n = 16$ ). In fact, no statistically significant difference was found between the two surgical approaches (laparotomy VS vaginal route) (*Table V*).

Bilateral annexectomy was performed in 71.7% of all cases ( $n = 43$ ). Annexectomy was more frequent in patients in the TH group (83.3% vs 60%;  $p = 0.045$ ).

On the other hand, the time to resumption of sexuality did not vary according to the type of surgery. The delay was equal to 50 [45-60] for TH and 47.5 [45-60] for STH with  $p = 0.919$ .

*Table III* shows the mean ASEX and FSFI scores pre and post operatively in both groups of patients. Before surgery, the mean ASEX score was 25.14 which means an impaired score while remembering that the cut-off value for the ASEX score is  $\geq 18$ . The domains of orgasm and satisfaction were the most impaired. A significant decrease in mean ASEX sexuality scores was observed postoperatively in each of the TH and STH groups. The mean total score scale went from 25.14 to 21.15.

Preoperatively, the mean score on the FSFI scale was 11.998. This is a very impaired score which means significant sexual dysfunction in both groups preoperatively. The score was more impaired in the TH group compared to the STH group but the difference was not statistically significant. A normal threshold above 26.55 was observed only in 6.7% of cases in both groups ( $n = 2$ ).

After surgery, there was an improvement in the mean FSFI total score postoperatively to  $19.316 \pm 6.7529$  which means an improvement in sexual function. A normal score of 26.55 and above was observed in 3 patients in the "TH" group (10%) and 8 patients in the "STH" group (26.7%).

No difference in the variation of ASEX and FSFI sexuality scores before and after surgery was observed between the two groups of patients (total versus subtotal hysterectomy).

## DISCUSSION

According to our results, no statistically significant difference was found between the two groups (TH and STH) in terms of preoperative sexual dysfunctions. Postoperatively, a clear improvement in sexual satisfaction was observed in both groups. The mean total score of the ASEX scale went from 25.14 to 21.15 after surgery. The variation in the two mean total scores was statistically significant in both groups. It should be remembered that ASEX scores and overall sexual

satisfaction are inversely proportional. As for the FSFI scale, the improvement in sexual function is confirmed by the increase in the mean total score postoperatively for both groups from 11,998 to 19,316. It increased from 10.79 to 17.66 for the TH group and from 13.20 to 21.06 postoperatively for the supra-cervical hysterectomy group. The average time to resume sexuality postoperatively was 50 days. No statistically significant difference was found between the two groups.

Our study has some limitations. First, the sample size is relatively small. The limited number of included patients is explained, on the one hand, by the refusal of participation of

Table III. Average ASEX and FSFI scores of the 2 groups pre and postoperatively (n=60)

		TH (n=30)	STH (n=30)	Total (n=60)	
ASEX	Preoperative evaluation	Sexual drive	5,03±1,033	4,9±0,845	4,97±0,938
		Arousal	5±0,947	4,87±0,629	4,93±0,8
		Lubrication	5,03±0,928	4,9±0,548	4,97±0,758
		Orgasm	5,2±0,847	5±0,643	5,1±0,752
		Satisfaction	5,3±0,915	5,03±0,89	5,17±0,905
		ASEX (total)	25.6	24.7	25.14
	Postoperative evaluation	Sexual drive	4,23±0,935	4,03±0,765	4,13±0,853
		Arousal	4,4±0,932	4,03±0,89	4,22±0,922
		Lubrication	4,37±0,85	3,9±0,885	4,13±0,892
		Orgasm	4,5±0,82	4,13±0,9	4,32±0,873
		Satisfaction	4,57±0,898	4,13±1,008	4,35±0,971
		ASEX (total)	22.07	20.22	21.15
FSFI	Preoperative evaluation	Desire	2,18±1,0149	2,3±0,9595	2,24±0,981
		Arousal	1,6±1,5141	2,15±1,4095	1,875±1,4766
		Lubrication	1,71±1,7584	2,07±1,4232	1,89±1,5964
		Orgasm	1,64±1,6753	2,107±1,5184	1,873±1,6025
		Satisfaction	1,947±1,2897	2,267±1,3343	2,107±1,311
		Pain	1,707±1,729	2,32±1,6185	2,013±1,689
		FSFI (total)	10,79±8,726	13,207±7,6927	11,998±8,2461
	Postoperative evaluation	Desire	3±0,9965	3,18±1,0588	3,09±1,0234
		Arousal	2,79±1,0864	3,28±1,021	3,035±1,074
		Lubrication	2,883±1,3963	3,66±1,1775	3,272±1,3391
		Orgasm	2,867±1,3332	3,567±1,1719	3,217±1,2936
		Satisfaction	2,96±1,2187	3,4±1,0904	3,18±1,1678
Pain		3,067±1,2399	3,907±1,4391	3,487±1,3975	
FSFI (total)	17,569±6,7904	21,063±6,3523	19,316±6,7529		

some women, and on the other hand, by the COVID 19 pandemic that the world experienced during the study period. The seriousness of the health situation in the years 2020 and 2021 made it necessary to limit interventional activities to urgent procedures. A multicentric study would be very interesting.

Although different surgeons performed the operations, only one center was involved, which could limit the external validity of the study

From a methodological point of view, the prospective nature of the study allowed us to better evaluate the sexual impact of hysterectomy by comparing the scores of the scales used before and after the surgery.

In fact, the prognosis of sexuality in hysterectomised patients has been of interest to many authors, as it is a major concern for patients and surgeons. The results published in the literature are controversial. Early studies have shown impaired sexual function after hysterectomy [10-28- 29]. More recent publications agree on the improvement of sexuality after surgery [13-14-15-16 -17-18]. Resolution of the disabling preoperative symptomatology would be the most plausible explanation. It would be associated with a return to usual sexual activity and an improvement in overall sexual satisfaction [30-31].

Other authors also noted that hysterectomy could primarily improve sexuality in

**Table IV Changes in mean ASEX and FSFI sexuality scores in each of the TH and HS groups T (n=60)**

		TH (n=30)		P	STH (n=30)		P
		Preoperative	Postoperative		Preoperative	Postoperative	
ASEX	Sexual drive	5,03±1,033	4,23±0,935	<b>0,005</b>	4,9±0,845	4,03±0,765	<b>&lt;0,001</b>
	Arousal	5±0,947	4,4±0,932	<b>0,024</b>	4,87±0,629	4,03±0,89	<b>&lt;0,001</b>
	Lubrication	5,03±0,928	4,37±0,85	<b>0,007</b>	4,9±0,548	3,9±0,885	<b>&lt;0,001</b>
	Orgasm	5,2±0,847	4,5±0,82	<b>0,002</b>	5±0,643	4,13±0,9	<b>&lt;0,001</b>
	Satisfaction	5,3±0,915	4,57±0,898	<b>0,005</b>	5,03±0,89	4,13±1,008	<b>0,001</b>
FSFI	Desire	2,18±1,0149	3±0,9965	<b>0,004</b>	2,3±0,9595	3,18±1,0588	<b>0,003</b>
	Arousal	1,6±1,5141	2,79±1,0864	<b>0,001</b>	2,15±1,4095	3,28±1,021	<b>0,001</b>
	Lubrication	1,71±1,7584	2,883±1,3963	<b>0,007</b>	2,07±1,4232	3,66±1,1775	<b>&lt;0,001</b>
	Orgasm	1,64±1,6753	2,867±1,3332	<b>0,003</b>	2,107±1,5184	3,567±1,1719	<b>0,001</b>
	Satisfaction	1,947±1,2897	2,96±1,2187	<b>0,005</b>	2,267±1,3343	3,4±1,0904	<b>0,004</b>
	Pain	1,707±1,729	3,067±1,2399	<b>0,004</b>	2,32±1,6185	3,907±1,4391	<b>0,002</b>
	FSFI (total)	10,79±8,726	17,569±6,7904	<b>0,003</b>	13,207±7,6927	21,063±6,3523	<b>0,001</b>

**Table V Comparison of the variation in median ASEX and FSFI scores in the TH group between the two surgical approaches (n=30)**

		Laparotomy (n=16)	Vaginal Route (n=14)	P
ASEX	Sexual drive	-1 [-1;0]	-1 [-2,25;0]	0,321
	Arousal	-1 [-1;0]	-1 [-2;0]	0,863
	Lubrication	-1 [-1,75;-1]	-1 [-1;0]	0,211
	Orgasm	-1 [-1;-1]	-1 [-1;0]	0,277
	Satisfaction	-1 [-1;-0,25]	-1 [-2;0]	0,965
	ASEX (total)	-4 [-7,25;-2,5]	-5 [-7,5;-0,75]	0,95
FSFI	Desire	1,2 [0,6;1,8]	1,2 [-1,2;1,8]	0,299
	Arousal	1,35 [1,2;2,325]	1,35 [-0,975;2,475]	0,587
	Lubrication	1,8 [1,2;3,625]	1,5 [-1,05;1,8]	0,154
	Orgasm	1,8 [1,2;3,2]	1,2 [-1,2;2,1]	0,207
	Satisfaction	1,4 [0,6;2,7]	0,6 [-0,6;1,6]	0,069
	Pain	2 [1,2;3,6]	1,2 [-0,9;2,4]	0,173
	FSFI (total)	9,75 [8,075;17,6]	7,75 [-6,95;10,975]	0,228

patients with impaired sexual function [32-33-34]. This interpretation is consistent with our findings, as the level of preoperative sexual function was related to postoperative changes: the lower the preoperative sexual function, the greater the improvement.

We should note that there were no statistically significant differences between the two groups of TH el TSH postoperatively. In fact, our results are consistent with those of the Cochrane literature review published in 2012

[14] which analyzed the results of six randomized studies regarding postoperative sexuality and concluded that there was an improvement in sexual function after hysterectomy without a difference between the two groups of TH and STH. Furthermore, the American College of Obstetricians and Gynecologists published a consensus opinion published concluding that supra cervical hysterectomy should not be recommended as superior to total hysterectomy for benign diseases [40].



Moreover, a more recent systematic review published in 2019 [35] also showed comparable results between the TH and STH groups in terms of sexual satisfaction and quality of life. It included eleven studies involving 1523 patients from 1970 to November 2017.

On the other hand, it should be noted that the percentages of patients with a normal ASEX or FSFI score were low. Most of the patients had sexual problems before and after the surgery, apart from the improvement of these problems postoperatively.

Before surgery, sexual problems can be explained by the gynecological pathology involved, which can have a major impact on sexuality. In the postoperative period, even if the pathological condition is treated. Patients undergo several psychological as well as physical changes which may explain these results. These changes are the consequence of the hysterectomy and the surgical act in general.

In fact, this operation can be considered as an “organ amputation”, which makes it difficult to accept. In addition to the symbolic value of the uterus. Indeed, its loss would be synonymous with the loss of femininity and reproductive capacity, which would have a heavy psychological impact [36]. On the other hand, the disappearance of menstruation after surgery can be experienced as a loss of sexual identity.

Physical changes (5) described are dyspareunia, disorders of vaginal lubrication and anorgasmia. Indeed, dyspareunia is frequently observed postoperatively. It can affect up to 39% of hysterectomized patients 12 to 15 months after surgery [37].

Vaginal lubrication is also an component of sexuality that may be impaired postoperatively [5]. Vaginal dryness is frequently described in hysterectomized patients. It is explained by oestrogen deficiency and by iatrogenic lesions of the autonomic innervation pathways responsible for innervation of the vagina [5-36]. Its frequency is much greater in postmenopausal patients or those who have had bilateral annexectomy [22-28]. Hormonal decline is incriminated in this case. Orgasm disorders may also complicate hysterectomies performed for benign pathologies [5].

Bilateral annexectomy has a negative impact on the sexual function by affecting two parameters: sexual desire and vaginal lubrication [38]. This is explained by a significant drop in androgen and oestrogen levels [5-39-38]. It is important to know that even if the ovaries are preserved, disorders of ovarian vascularization have been described. The onset of post-menopausal symptoms would be accelerated [39].

The comparison of sexual functioning was also made between two subgroups of TH according to the surgical approach: TH by laparotomy and TH by vaginal route. This comparison was motivated by the differences in postoperative vaginal length between the different surgical approaches to TH. Indeed, Kiremetli et al. [28] conducted a prospective study on 136 patients to assess vaginal length after TH and its correlation with postoperative sexuality, depending on the surgical approach used. They showed that the vaginal route is associated with the least vaginal length after surgery, compared to the abdominal and laparoscopic routes. On the other hand, abdominal hysterectomy is associated with the greatest vaginal shortening when preoperative vaginal length is taken into account [28]. Evaluation of sexual function did not find any significant differences between the subgroups: total vaginal and abdominal hysterectomies, which is consistent with our results.

In addition, Any kind of major pelvic surgery or injury has the potential for damaging the nerves and blood vessels leading to the vagina and clitoris. If this happens, the blood flow throughout the arteries may be diminished or cut off entirely, leading to a loss of sexual sensation and a reduced ability to become sexually aroused. At present, surgeons simply do not know enough about the location of the nerves and blood vessels in the female pelvis that are vital to normal sexual function to avoid severing or damaging them during surgery. In order to perform such surgeries in women, we must identify precisely where the nerves are located.

Our study results and most published studies on the subject show that a hysterectomy has no negative effect on a woman’s sexuality and improves it in most cases. Cervix

preservation shows no benefit in improving sexual function after surgery. In fact, total and subtotal hysterectomy bring a comparable improvement in sexual function. In addition, psychological factors and patients' expectations in this regard seem to have an impact on the post-operative outcome.

Therefore, these factors should be taken into account and seem to be essential in future studies by finding out the possible implications of the psychological outcomes in sexuality after surgery.

## CONCLUSION:

Hysterectomy has a positive impact on the overall sexual satisfaction of the patients and depends essentially on preoperative satisfaction, hence the interest in systematically screening for sexual dysfunctions during the preoperative consultation in order to identify them as soon as possible. Furthermore, there were no statistically significant differences in sexual quality of life between the two groups TH versus STH. Therefore, cervical preservation to improve overall sexual satisfaction cannot be recommended and Women requiring hysterectomy need to be informed based on the results found in previously mentioned studies so that they can make aware and knowledgeable decisions.

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### Compliance with ethical standards

**Conflict of interest.** The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**Ethical approval.** All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent.** Informed consent was obtained from all individual participants included in the study.

**Ethical Considerations.** Data collection was carried out with respect for the anonymity of patients and the confidentiality of their information.

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