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ORIGINAL ARTICLE

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Operative spectrum of hysterectomy in a German university hospital.

Ajmera *Sachin K*, Mettler *L*, Jonat *W*

University Clinic of Schleswig Holstein, Campus Kiel, Kiel, Germany.

OBJECTIVE(S): To analyze the indications, factors influencing the choice of technic, complications, and health care utilization of different approaches to hysterectomy.

METHOD(S) : A retrospective analysis of all women who underwent hysterectomy over a period of 2 years from August 2002 to July 2004 was carried out.

RESULTS : Of the 373 hysterectomies 54.4% were abdominal, 38.9% vaginal and 6.7% laparoscopic. Sixty-eight percent (17/25) of women in the laparoscopic group were less than 50 years of age. Uterine leiomyoma was the commonest indication for abdominal and laparoscopic hysterectomies while uterovaginal prolapse was the commonest indication for vaginal hysterectomy. Adnexectomy was performed in 42.1% of women in the vaginal hysterectomy group. The mean operative time was 78.6 ± 6.4 minutes for vaginal hysterectomy, 102.7 ± 7.7 minutes for abdominal hysterectomy, and 133.4 ± 7.9 minutes for laparoscopic hysterectomy.

CONCLUSION(S) : Every technic for hysterectomy has its own set of indications, contraindications, advantages and disadvantages. The choice of an optimal surgical procedure depends on a complex assessment of preoperative findings, expertise and experience of the operating surgeon, and the technical possibilities of the setting.

Key words : hysterectomy, vaginal hysterectomy, abdominal hysterectomy, laparoscopic hysterectomy

Introduction

Until 20 years back, hysterectomy, one of the very frequent operations worldwide, was principally performed either vaginally or abdominally. Prof. Kurt Semm introduced the method of vaginal hysterectomy with pelviscopic assistance. In 1989, Reich [1] successfully improved the procedure by including ligation of the uterine artery and removal of uterus by colpotomy. Since then no other procedure in gynecology has generated the same degree of controversy and debate as laparoscopic approach to hysterectomy. 'Is laparoscopic hysterectomy a waste of time ?' was the academic gauntlet cast down in an article which occupied pages of The Lancet [2].

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Correspondence :
Dr. Sachin K Ajmera
204/5561 Udyan Darshan, Opp. Odeon Cinema
Ghatkopar East, Mumbai 400 075.
Tel. 022 25134426 Email : meetamisachin@hotmail.com

Vaginal hysterectomy is safer compared to abdominal hysterectomy and has considerable advantages for the woman. Why is it then, that the abdominal hysterectomies performed in the UK outnumber those accomplished by the vaginal route by a factor of four ? According to many vaginal surgeons what is required is better training in vaginal surgery and not the substitution of a safe and inexpensive technic by a high tech gimmick. Indeed it is their contention that laparoscopic hysterectomy has served but one useful purpose – to raise awareness of the paucity of good vaginal surgery.

We evaluate here the merits and demerits of different kinds of approaches to hysterectomy as experienced at our institution. The aim of our study was to analyze and gain an insight into the indications, factors influencing the choice of technic, complications, and health care utilization of different approaches to hysterectomy vis-a-vis vaginal hysterectomy, abdominal hysterectomy and the laparoscopic approach.

A retrospective analysis of all the women undergoing

hysterectomy for benign pathology over a period of 2 years from August 2002 to July 2004 was carried out.

The operative spectrum for hysterectomy included –
1. Vaginal hysterectomy (VH)
2. Abdominal hysterectomy (AH)
3. Laparoscopic approach (LH) which included
   a) Laparoscopic assisted vaginal hysterectomy (LAVH)
   b) Laparoscopic classical intrafascial supracervical hysterectomy (LCISH)
   c) Total laparoscopic hysterectomy (TLH).

The operation records of all the women who underwent hysterectomy were thoroughly scrutinized to obtain the data. All the women who had hysterectomy for non-benign conditions were excluded from our study.

The various parameters included in this study were –
1. Age of the woman
2. Indication for hysterectomy
3. Approach for surgery
4. Type of surgery performed
5. Operation time
6. Intraoperative complications, if any
7. Size of the uterus
8. Amount of intraoperative blood loss

Based on the approach for surgery, all the women were divided into three groups.

Vaginal hysterectomy group (VH group)
Abdominal hysterectomy group (AH group)
Laparoscopic hysterectomy group (LH group)

All the data were analyzed using mean, range, standard deviation and percentage. Chi square test was applied and $P < 0.05$ was considered statistically significant.

Results

The total number of hysterectomies performed for benign conditions over the study period was 373. Of these, 203 (54.4%) were performed by laparotomy, 145 (38.9%) vaginally and 24 (6.7%) by the laparoscopic approach. Among the hysterectomies performed by the laparoscopic approach, 13 were LAVH, 9 TLH and 3 LCISH.

While analyzing the age of the women, it was seen that the highest incidence of 29% belonged to the age group of 61-70 years in VH group, 38.9% to the age group of 41-50 years in all groups, and 68% to the age group of 31-50 years in LH group (Table 1).

Leiomyoma was the commonest indication for hysterectomy in AH group and VH group (87.6% and 22.8% respectively), while uterovaginal prolapse was the commonest indication (55.8%, 81/145) in VH group. Two cases in LH group had a hysterectomy for the purpose of sex change surgery (Table 2). 15.2% of women in VH group had stress urinary incontinence (SUI). Twenty-five (12.3%) women in AH group had atleast one previous laparotomy compared to 2.8% in VH group and 4% in LH group. Sixteen percent of women in LH group had endometriosis in addition to the existing pathology compared to 3.9% in AH group and none in VH group (Table 2).

Unilateral or bilateral adnexectomy was performed in 42.1% of women in VH group , as compared to 64.5% in AH group and 24% in LH group. Anterior colporrhaphy or posterior colpoperineorrhaphy or both were performed in 55.2% of women who underwent vaginal hysterectomy. Tension free vaginal tape was inserted in 10.3% of women in VH group. Adhesiolysis was performed in 18.7% of women who underwent AH and in 8% of women who underwent LH (Table 3).

Table 1: Age.

Age (years)	VH group n=145		AH group n= 203		LH group n = 25	
	Number	%	Number	%	Number	%
≤ 30	0	-	1	0.5	1	4
31 – 40	6	4.1	20	9.9	4	16
41 – 50	27	18.6	79	38.9	12	48
51 – 60	34	23.5	43	21.1	6	24
61 – 70	42	29	32	15.8	2	8
71 – 80	25	17.2	17	8.4	0	-
> - 81	11	7.6	11	5.4	0	-
Range	36 – 94		30 – 93		30 – 64	
Mean ± SD	611.4 ± 12.94		54,3 ± 13.4		47.1 ± 9.3	

Table 2. Indications for hysterectomy.

Indications	VH group N=145		AH group n=203		LH group n=25	
	Number	Percent	Number	Percent	Number	Percent
Fibroids	33	22.8	117	57.6	20	80
Adenomyosis	4	2.8	7	3.5	2	8
Endometrial hyperplasia	13	8.9	23	11.3	1	4
Prolapse	81	55.8	2	1	0	0
Adnexal tumor	0	0	38	18.7	0	0
CIN	11	7.6	6	3	0	0
Dysfunctional uterine bleeding	3	2.1	10	4.9	0	0
Sex change	0	0		0	2	8
Additional						
Previous one laparotomy	3	21	16	7.9	1	4
Previous two laparotomies	1	0.7	9	4.4	0	0
Adnexal tumor	0	0	8	3.9	1	4
Endometriosis	0	0	8	3.9	4	16
Stress urinary incontinence	22	15.2	1	0.5	0	0
Adhesions	2	1.4	38	18.7	2	8

Table 3. Type of surgery performed.

Type of surgery	UH group N=145		AH group n=203		LH group n=25	
	Number	%	Number	%	Number	%
Hysterectomy alone	84	57.9	72	35.5	17	68
Hysterectomy and unilateral adnexectomy	12	8.3	19	9.4	1	4
Hysterectomy and bilateral adnexectomy	49	33.8	112	55.1	4	16
Supracervical hysterectomy	0	-	0	-	2	8
Supracervical hysterectomy and bilateral adnexectomy	0	-	0	-	1	4
Additional procedures performed						
Anterior colporrhaphy	10	6.9	0	-	0	-
Posterior colpoperineorrhaphy	9	6.2	0	-	0	-
Anterior colporrophy and posterior colpoperineorrhaphy	61	42.1	0	-	0	-
Tension free vaginal tape	15	10.3	0	-	0	-
Colpocleisis	7	4.8	0	-	0	-
Morcellation	8	5.5	0	-	3	12
Adhesiolysis	4	2.8	38	18.7	3	12
Burch repair	0	-	1	0.5	0	-
Endometrial coagulation	0	-	5	2.5	2	8
Ovarian cyst enucleation	0	-	0	-	2	8

Table 4. Test of Significance

	Mean age (years) VH 61.4 AH 54.3 LH 47.1 (Unpaired t test)	Adnectomy VH 42.1% AH 64.5% LH 20.0% (Chi square test)	Operative Time (minutes) VH 78.6 AH 102.7 LH 133.4 (Unpaired t test)	Uterine weight (g) VH 107 AH 245 LH 179 (Unpaired t test)
VH vs AH	t < 0.001	P < 0.005	t < 0.001	t < 0.001
VH vs LH	t < 0.001	P < 0.005	t < 0.001	t < 0.001
AH vs LH	t < 0.001	P < 0.001	t < 0.001	t < 0.001

The mean operative time was 78.6 ± 6.4 minutes in VH group compared to 102.7 ± 7.7 minutes in AH group and 133.4 ± 7.9 minutes in LH group (Table 4).

There were two major complications, one each in VH and AH group and none in LH group. In one case in AH group, there was an ureteric injury which was recognized intraoperatively and uretero-ureteric anastomosis was performed. In one case in VH group, abdominal exploration had to be performed for hemorrhagic complication.

The mean weight of the uteri in VH group was 107 ± 17.2 g, in AH group 245 ± 28.3 g, and in LH group 179 ± 19.3 g. The mean operative blood loss was the least (182 ± 11.3 mL) in LH group compared to VH (373 ± 27.4 mL) and AH (492 ± 63.8 mL) groups.

Discussion

The incidence of hysterectomy has not changed much over the years. However with respect to the type of hysterectomy, the use of abdominal hysterectomy though still the highest, is on the decline. This can be attributed to the advent of laparoscopy and with it the revival of laparoscopic assisted vaginal hysterectomy. Laparoscopic hysterectomy rates are showing an increase with concomitant decline in abdominal hysterectomy rates [3]. The vaginal hysterectomy rates are also showing an upward trend. The ratio of abdominal to vaginal hysterectomy in our institution is 4:3 which is much better when compared to 3:1 in United States [4]. Several studies have now proved that more than 80% of hysterectomies can be performed by the vaginal route alone [5]. But such an approach does not hold true as expertise of every surgeon would be different and hence a more realistic approach should be applied. Performing every hysterectomy as vaginal or as laparoscopic may not be practical for most average gynecologic surgeons. All the technics should be known and practiced and every woman be individualized for a particular technic based on the surgeons experience and expertise.

The mean age of women in whom VH was performed was on a higher side. This can be explained by the increased frequency of uterovaginal prolapse with advancing age due to laxity of the supporting tissues and also the decrease in the uterine size after menopause which makes vaginal hysterectomy a more feasible approach. The mean age of the women undergoing LH being less can only be explained on the basis of women's preferences. These findings are similar to those of Shao and Wang [6] in Australia where they found that women aged 50 and more had greater propensity to undergo VH rather than LH.

Uterine leiomyoma is the commonest indication for performing hysterectomy contributing to 48.56% (170/373) of all hysterectomies in our study. Uterovaginal prolapse is the second commonest indication contributing to 22.25% (83/373) of all hysterectomies and 55.8% of vaginal hysterectomies. These findings are similar to those in a study reported by Tan et al [7] from China. The rate of hysterectomy for dysfunctional uterine bleeding was 2.1% (3/145) in VH group, 4.9% (10/203) in AH group, and none in LH group. This trend can be attributed to the availability of better diagnostic modalities and also the availability of newer methods for treatment. Yusuf and Siedlecky [8] in their study found that the combined rate of endometrial ablation and hysterectomy in cases of dysfunctional uterine bleeding had risen to a peak in 1992 – 1993 but has since declined and hysterectomy rate in 1999-2000 was lower than that in 1980.

Nearly 14% of women in AH group had previous one or more laparotomies compared to 2.8% in VH group and 4% in LH group indicating mainly the surgeon's preference for a safer route. There have been studies supporting vaginal hysterectomies in women with previous surgery but the rate of complications is always higher when compared with that in abdominal hysterectomy except in the hands of expert surgeons [9,10]. The surgeon must be particularly cautious while opening the anterior cul-de-sac.

Unilateral or bilateral adnexectomy was performed more

commonly in the AH group. However it was also performed in nearly 42% of women in the VH group without any associated increase in the complication rate. This shows that with reasonable training adnexectomy can be easily performed vaginally and it should not be a reason for abdominal surgery. This view is also supported by the study performed by Nwosu and Gupta [11]. In another study by Sheth [12], adnexectomy was successfully accomplished in 95% of women who were scheduled for vaginal hysterectomy with adnexectomy. The rate of adnexectomy in LH group being lower can only be explained by the fact that women in this group belonged to a relatively younger age group.

With regards the operative time, it has been more with the laparoscopic approach than that with AH and VH prompting several arguments such as 'Is laparoscopic hysterectomy a waste of time? [2]. However the advantages offered by laparoscopic surgery in terms of shorter period of hospitalization, quicker introduction of normal diet, avoidance of large wounds on the abdominal wall, lesser complications, and overall a better short term quality of life index are not debatable and have been proved time and again by various studies [13].

Major complications were seen in only one woman each in the AH and VH group.

The weight of the uterus was the highest in the AH group reinforcing the fact about surgeons' preference of an easier procedure. In eight women in VH group, morcellation (manual) had to be carried out to deliver a relatively large uterus vaginally. There were no extra injuries or complications due to this procedure. A study done by Taylor et al [14] supports the view that morcellation at the time of vaginal hysterectomy is safe.

Blood loss in the laparoscopic approach is the least because of the magnification offered by the modern devices which help achieve hemostasis meticulously. Ribiero et al [15] support this.

Conclusion

Various studies have been done to determine the best route for hysterectomy. Every technic has its own set of indications, contraindications, advantages, and disadvantages. However subscribing to a particular group of technics which should be performed almost exclusively and should be the first choice in all cases does not augur well for an average gynecologic surgeon. Any technic of hysterectomy should form only a part of the operative spectrum from which a surgeon has to select the most appropriate one for each individual case. The choice of an optimal surgical procedure depends on a complex assessment of preoperative findings, the technical possibilities of the setting, and the experience of the surgeon. The ultimate goal should be to choose the safest but at the same time least invasive surgical procedure.

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