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Research Article

PREVALENCE OF VAULT PROLAPSE AFTER HYSTERECTOMY

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Abstract:

Objective: To determine the frequency of vault prolapse after hysterectomy in patients presenting with incontinence and vaginal bleeding. To compare the frequency of vault, prolapse after abdominal vs vaginal hysterectomy.

Subject and Methods: The design of this study is Cross-Sectional Study. This study was conducted in the Department of Obstetrics and Gynecology at S.Z.W. Hospital, Larkana and this study was done in six months from April 15, 2016 to October 15, 2016. A total of 335 post-menopausal Women since 2 months presenting with incontinence and vaginal bleeding were included in this study. A standardized pelvic examination was performed to evaluate the site and degree of pelvic relaxation with a Pelvic Organ Prolapse Quantification. Vaginal vault prolapse was graded on a 0 to 4 scale. All information was entered into pre-designed proforma.

Results: - The average age of the women was 58.90 ± 5.44 years. Frequency of vault prolapse after hysterectomy in patients presenting with incontinence and vaginal bleeding was observed 19.4% (65/335). Rate of vault prolapsed was significantly high in those women who had abdominal hysterectomy as compare to those with vaginal hysterectomy ($p=0.026$).

Conclusion: Before doing surgery of patients who need abdominal or vaginal hysterectomy, we have to decide properly the route of the surgery specially in those patients with mild to moderate degree of prolapse. In patients having large size of uterus due to any cause and with prolapse of any degree TAH should be decided followed by proper tying of supporting ligaments by different methods, so that we can prevent the vault prolapse in those patients.

KEYWORDS: Vault Prolapsed, Hysterectomy, Vaginal Bleeding

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INTRODUCTION:

Pelvic organ prolapses (POP) is a common health problem affecting up to 40% of parous women over 50 years old. The life-time risk for women to undergo surgery for the management of POP is about 11% and 30% of these women will need additional surgery because of prolapse recurrence [1]. The risk of POP increases with the number of vaginal births and is higher in older and obese women. POP has significant negative effects on a woman's quality of life, ranging from physical discomfort [2], psychological and sexual complaints to occupational and social limitations. The prevalence of POP in Pakistan is 12.1% and the prevalence of POP with urinary incontinence (UI) is 12.5% [3].

Vaginal vault prolapse has been defined by the International Continence Society as descent of the vaginal cuff below a point that is 2 cm less than the total vaginal length above the plane of the hymen. It occurs when the upper vagina bulges into or outside the vagina [4]. In an attempt to improve the accuracy of prolapse assessment, the International Continence Society has devised the POP quantification (POP-Q) System with proven inter-observer and intra-observer reliability. It allows for a standardized, accurate objective description of physical findings, and provides a means of quantification of change in individual patients, and comparison between series of patients [5]. The staging depends on the position of the leading edge of the prolapse: the lowest or worst level of maximum protrusion is used [6]. Hysterectomy is among the most common major gynecological operation. Vault prolapsed after hysterectomy may occur if there was partial degrees of cystocele or rectocele or enterocele which was undiagnosed or otherwise unattended, which will generally progress. A poorly supported vault during hysterectomy may be pushed down later [7]. During hysterectomy, the vaginal angles are suspended to uterosacral ligaments for vault support. But if in case of procidentia, the uterosacral ligaments may become flimsy with poor tone providing no support to the vault [8]. The incidence of post-hysterectomy vaginal vault prolapse is approximately 11.6% when assessed at surgery for prolapse and 1.8% for other benign diseases [9]. These facts, coupled with increased life expectancy, imply a considerable increase in the incidence of vault prolapse going into the 21st century. Marchionni, Bracco and Checcucci *et al.* in their study assessed the true incidence of vaginal vault prolapse after hysterectomy [10]. In 328 patients, all the cases of vault prolapse developed after abdominal hysterectomy: the incidence was 2%; no case (0/20 patients) of vault prolapse

developed after vaginal hysterectomy that had been performed on patients without genital prolapse [11].

Vault prolapse is a common complication following hysterectomy with negative impact on women's quality of life due to associated urinary, anorectal and sexual dysfunction. A clear understanding of the supporting mechanism for the uterus and vagina is important in making the right choice of corrective procedure [12]. Therefore, the objective of this study is to determine the frequency of vault prolapse after abdominal hysterectomy and vaginal hysterectomy. The results of this study will help to make the right choice of the corrective procedure and that will lead to minimize the risk of post hysterectomy occurrence of vault prolapse.

MATERIAL & METHODS:

The study was conducted in Department of Obstetrics and Gynecology at S.Z.W. Hospital, Larkana in Six months from April 15, 2016 to October 15, 2016. The calculated sample size, using WHO sample size calculator by taking the proportion of 2%, precision level of 1.5%, and 95% confidence interval, is 335 patients. Women admitted in Department of Obstetrics and Gynecology at Shaikh Zaid Women Hospital, Larkana, presenting with incontinence and vaginal bleeding (as per operational definition) and had undergone Hysterectomy more than five years ago was included in this study after meeting the inclusion/exclusion criteria. An approval from institutional ethical review committee was taken. Patients were excluded that meet the exclusion criteria. All risk and benefits was discussed with patient and after explaining the purpose of the study a formal written and verbal informed consent was taken from them in both English and Urdu Languages. A standardized pelvic examination was performed by expert gynecologists with more than 5 years of experience to evaluate the site and degree of pelvic relaxation with a Pelvic Organ Prolapse Quantification.

Vaginal vault prolapse was graded on a 0 to 4 scale (0 is indicative of no prolapse; 1 is indicative of prolapse more than 1 cm above the hymen, 2 is indicative of prolapse within 1 cm proximal or distal to the plane of the hymen, 3 is indicative of prolapse more than 1 cm below the plane of the hymen but protrudes no further than 2 cm less than the total length of the vagina, while 4 is an indicative that there is complete eversion of the vagina). Demographic data regarding age, gravidity, parity, history of chronic cough and constipation was taken on a pre-designed proforma. Confounding factors and biasness was controlled by strictly following the inclusion and the

exclusion criteria. Data was entered and analyzed through Statistical Package for Social Sciences (V-21). Mean and standard deviation was computed for the quantitative variable i.e. age. Frequency and percentage was calculated for qualitative variables including parity, gravidity, hysterectomy, and vault prolapse, classification of vault prolapse, history of chronic cough and history of chronic cough constipation.

Effect modifiers was controlled by stratification of age, hysterectomy, gravidity, parity, history of chronic cough and history of chronic cough constipation to observe the effect of these modifiers on frequency of vault prolapse by using chi-square test of independence and p value <0.05 was considered as significant.

RESULTS:

A total of 335 post-menopausal Women since 2 months presenting with incontinence and vaginal bleeding were included in this study. Age distribution of the women is presented in figure 5. The average age of the women was 58.90 ± 5.44 years. There were 57.31% women with multiparity and 42.69% were grand multiparity (figure 6) similarly gravid status of the women is also shown in figure 7. Chronic cough and constipation was observed in 26.27% (88/335) and 34.63% (116/335) as shown in figure 8 and 9 respectively. Out of 335 women, 247(73.73%) had abdominal hysterectomy and 26.27% (88/335) vaginal hysterectomy as shown figure 10. After

hysterectomy, incontinence and vaginal bleeding was found in 88.96% and 42.63% women as shown in figure 11 and 12 respectively.

Frequency of vault prolapse after hysterectomy in patients presenting with incontinence and vaginal bleeding was observed 19.4% (65/335) as presented in figure 13. Classification of vault prolapsed is also presented in figure 14. Stage 0 (no vault prolapse) was observed in 80.6% women, 1.19% grade 1, 7.16% grade 2, 8.96% stage 3 and 2.09% stage 4 as shown in figure 10. Rate of vault prolapsed was significantly high in those women who had abdominal hysterectomy as compare to those with vaginal hysterectomy (p=0.026) as shown in table 2.

Stratification analysis was performed and observed that effect on rate of vault prolapse was not significant with age, parity and gravidity as shown in table 3. Rate of vault prolapsed was significantly high in patients with incontinence and bleeding after hysterectomy while it was not significant in those cases who had chronic cough. Compare the frequency of vault prolapse after abdominal verses vaginal hysterectomy with respect to age groups, parity, gravidity, chronic cough, constipation, incontinence and bleeding after hysterectomy is shown in table 5 to 10. Rate of vault prolapsed was statistically significant high in abdominal as compare to vaginal hysterectomy in women with 56-60 years of age (table 5) and in those cases with bleeding after hysterectomy (table 10)

Figure 1: Age Distribution of the Patients (n=335)

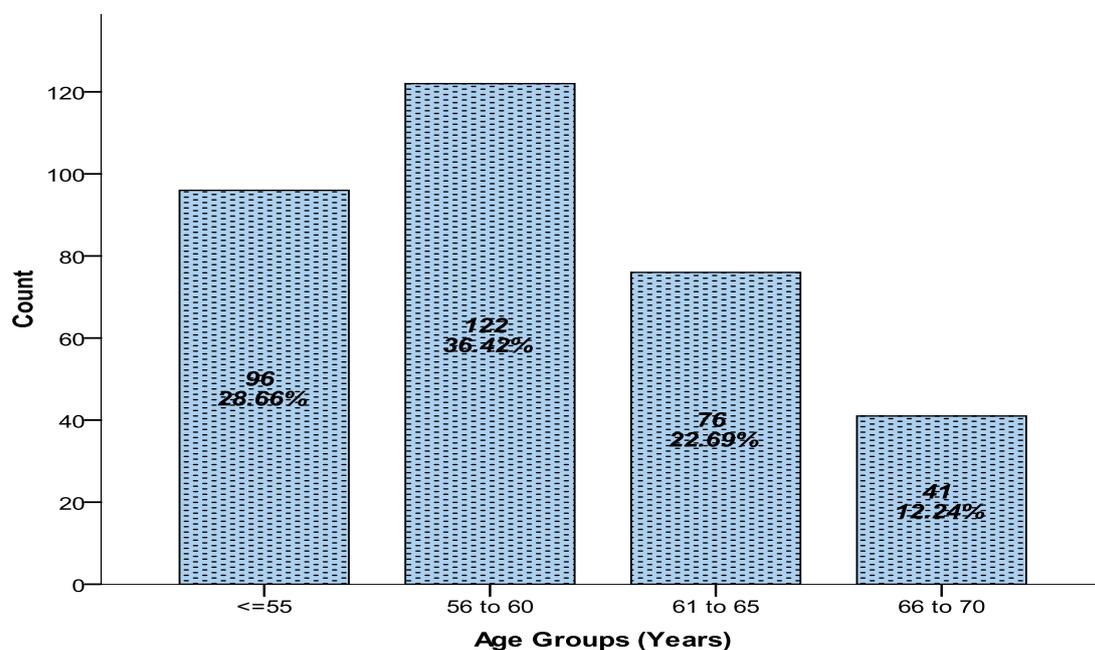


Table 1: Descriptive Statistics of Age of the Patients (n=335)

Descriptive Statistics		Age (Years)
Mean		58.90
Std. Deviation		5.44
95% Confidence Interval for Mean	Lower Bound	58.31
	Upper Bound	59.48
Median		58
Inter quartile Range		9
Minimum		50
Maximum		70

Figure 2: Parity Distribution of the Patients (n=335)

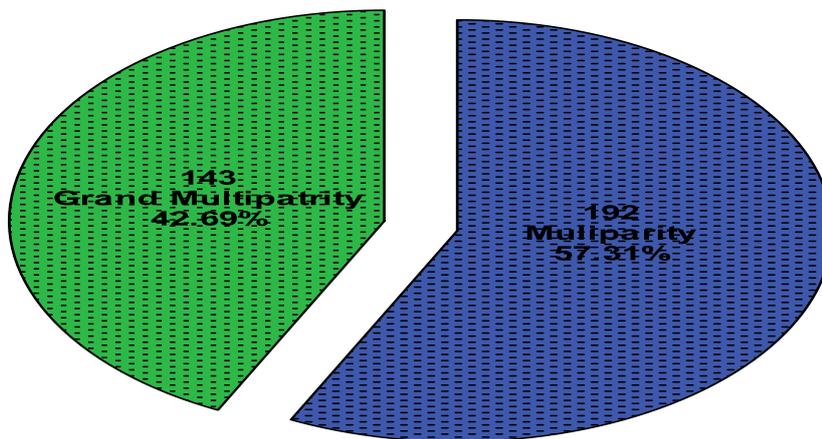


Figure 3: Gravidity of The Patients (n=335)

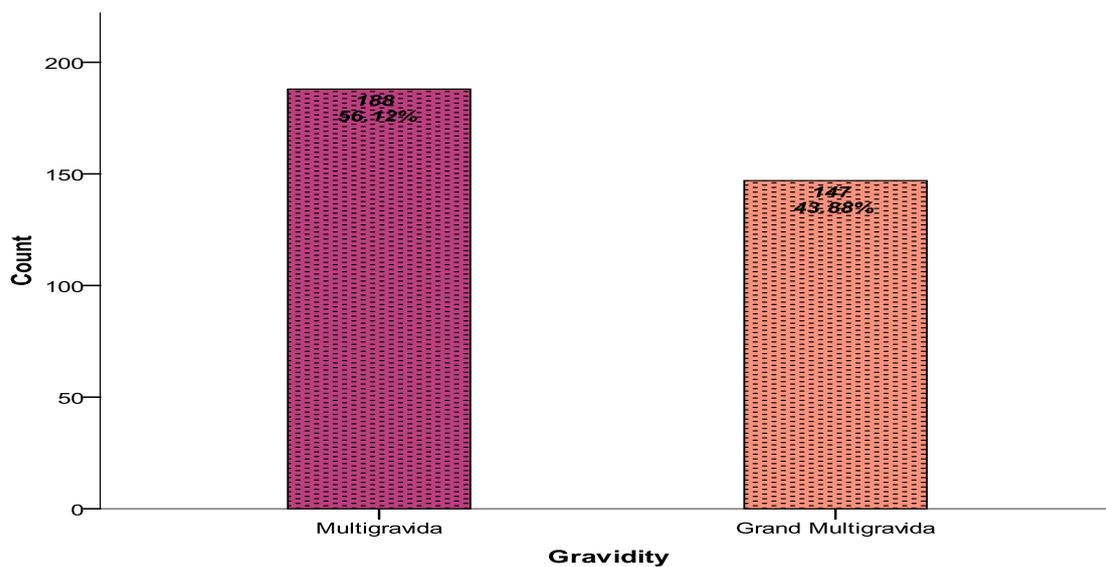


Figure 4: Chronic Cough of the Patients (n=335)

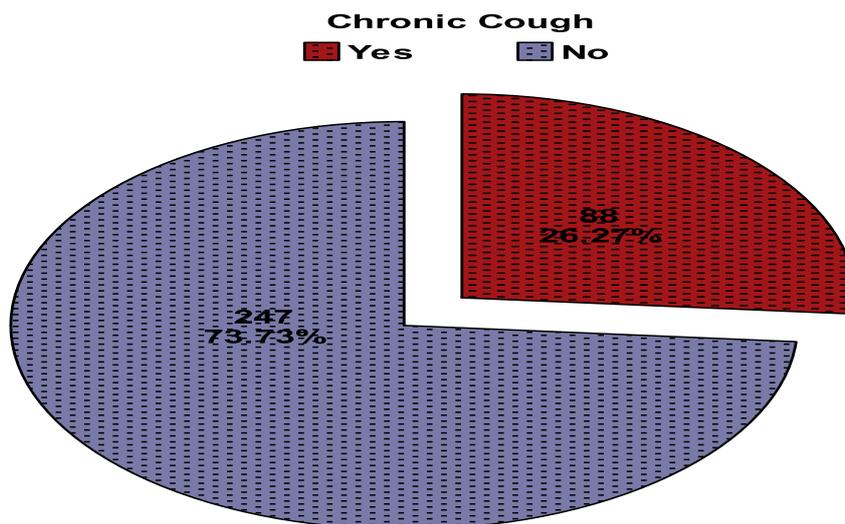


Figure 5: Chronic Constipation of the Patients (n=335)

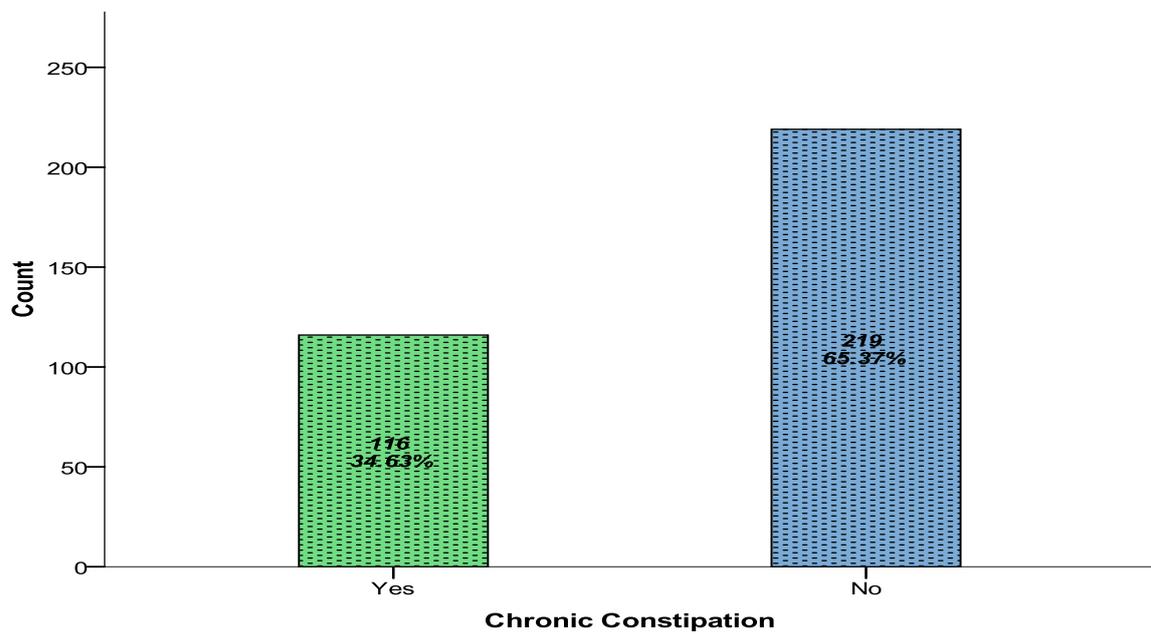


Figure 6: Hysterectomy Status of the Women (n=335)

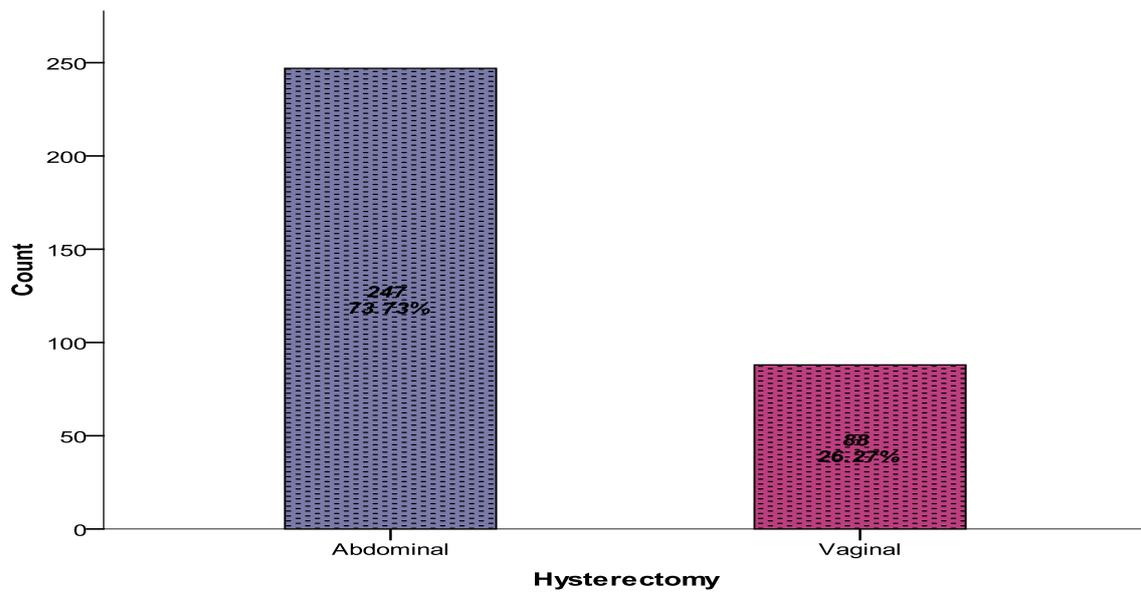


Figure 7: Incontinence After Hysterectomy (n=335)

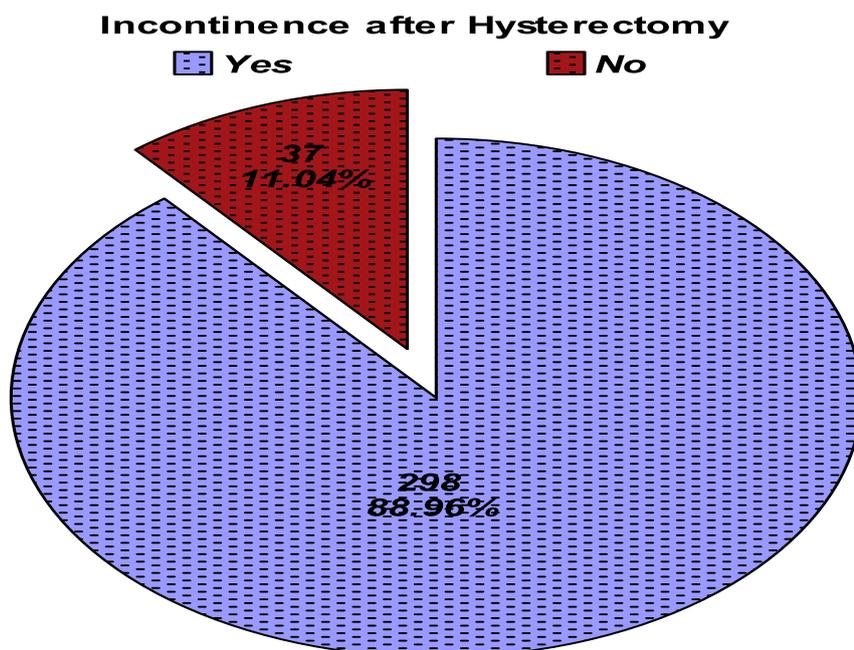


Figure 8: Vaginal Bleeding After Hysterectomy (n=335)

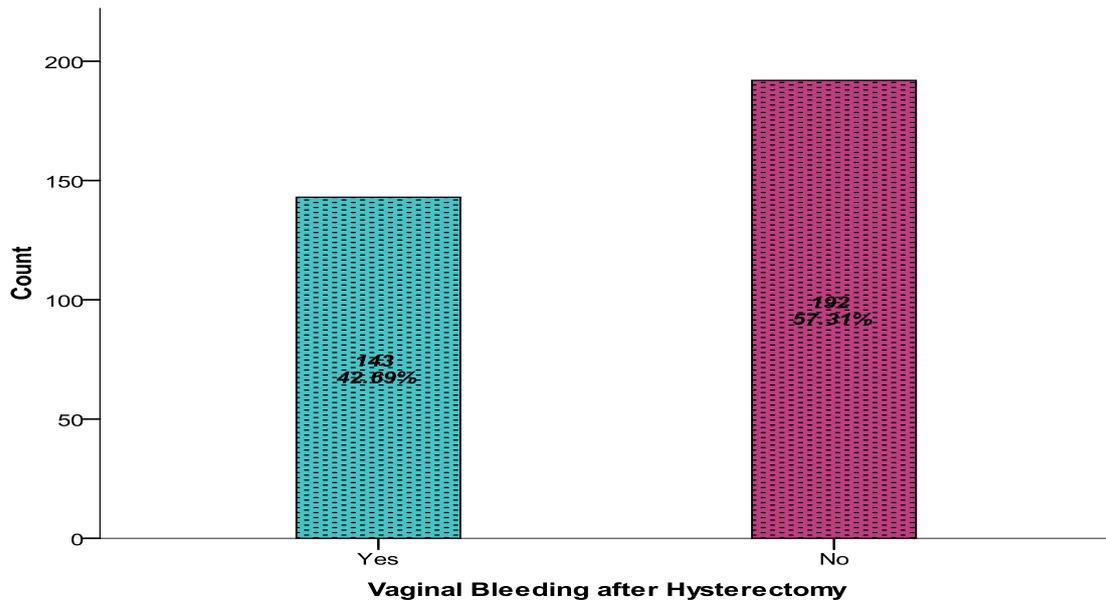


Figure 9: Frequency of Vault Prolapse After Hysterectomy in Patients Presenting with Incontinence and Vaginal Bleeding (n=335)

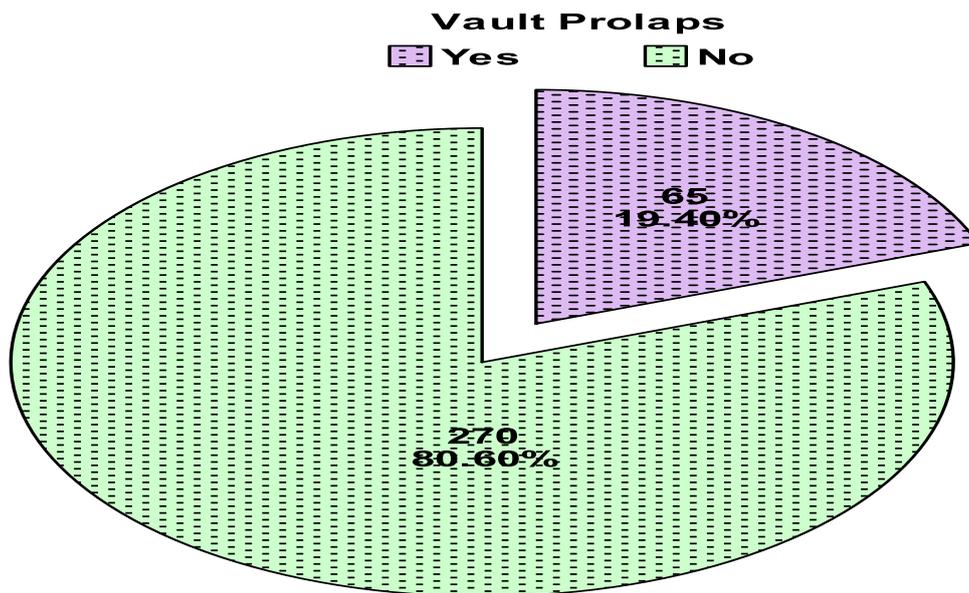
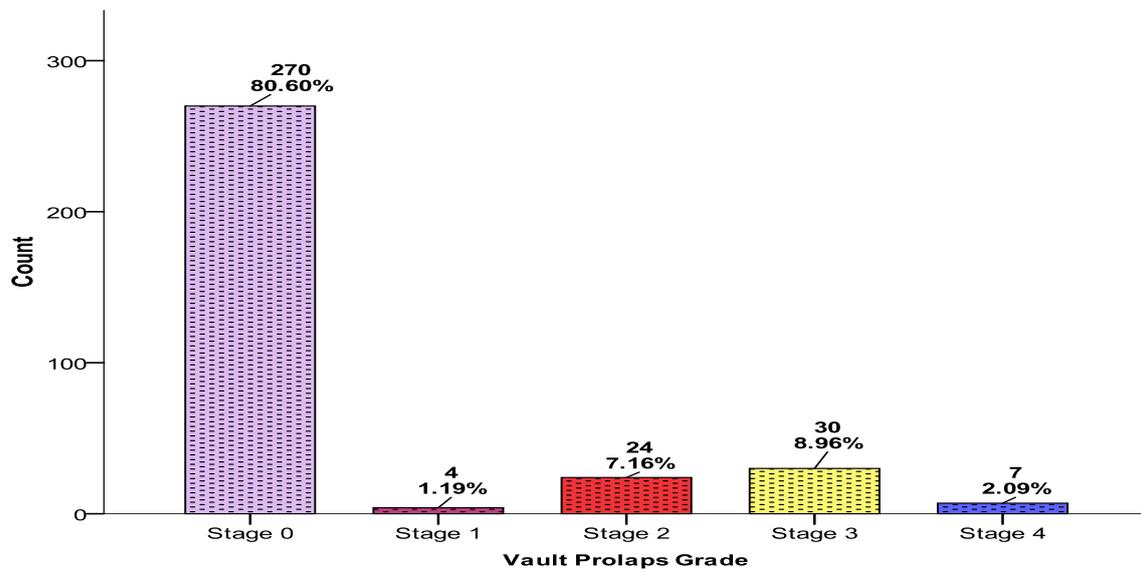


Figure 10: Frequency of Classification for Vault Prolapse After Hysterectomy (n=335)**Table 2: Compare The Frequency of Vault Prolapse After Abdominal Vs Vaginal Hysterectomy**

Vault Prolapse	Hysterectomy		P-Value
	Abdominal n=247	Vaginal n=88	
Yes	55(22.3%)	10(11.4%)	0.026
No	192(77.7%)	78(88.6%)	

Chi-Square=4.933

Table 3: Frequency of Vault Prolapse According to Age Groups, Parity and Gravida

Variables	VAULT PROLAPSE		Total	P-Value
	Yes (n=247)	No (n=88)		
Age Group (Years)				0.921
≤55	20(20.8%)	76(79.2%)	96	
56-60	22(18%)	100(82%)	122	
61-65	14(18.4%)	62(81.6%)	76	
66-70	9(22%)	32(78%)	41	
Parity				0.943
Multiparity	37(19.3%)	155(80.7%)	192	
Grand Multiparity	28(19.6%)	115(80.4%)	143	
Gravida				0.884
Multi Gravida	37(19.7%)	151(80.3%)	188	
Grand Multi Gravida	28(19%)	119(81%)	147	

Chi-Square test applied for each stratified variables

Table 4: Compare The Frequency of Vault Prolapse After Abdominal Vs Vaginal Hysterectomy

Variables	VAULT PROLAPSE		Total	P-Value
	Yes (n=247)	No (n=88)		
Chronic Cough				
Yes	17(19.3%)	71(80.7%)	88	0.981
No	48(19.4%)	199(80.6%)	247	
Chronic Constipation				
Yes	28(24.1%)	88(75.9%)	116	0.111
No	37(16.9%)	182(83.1%)	219	
Incontinence after Hysterectomy				
Yes	65(21.8%)	233(78.2%)	298	0.002
No	0(0%)	37(100%)	37	
Vaginal Bleeding after Hysterectomy				
Yes	39(27.3%)	104(72.7%)	143	0.002
No	26(13.5%)	166(86.5%)	192	
Hysterectomy				
Abdominal	55(22.3%)	192(77.7%)	247	0.026
Vaginal	10(11.4%)	78(88.6%)	88	

Chi-Square test applied for each stratified variables

Table 5: Compare The Frequency of Vault Prolapse After Abdominal Vs Vaginal Hysterectomy with Respect to Age Groups

Age Groups (Years)	Vault Prolapse	Hysterectomy		P-Value
		Abdominal n=247	Vaginal n=88	
≤ 55 Years	Yes	15(21.7%)	5(18.5%)	0.727
	No	54(78.3%)	22(81.5%)	
	Total	69	27	
56 -60 Years	Yes	21(22.6%)	1(3.4%)	0.0190
	No	72(77.4%)	28(96.6%)	
	Total	93	29	
61 to 65 Years	Yes	11(20%)	3(14.3%)	0.566
	No	44(80%)	18(85.7%)	
	Total	55	21	
66-70 Years	Yes	8(26.7%)	1(9.1%)	0.228
	No	22(73.3%)	10(90.9%)	
	Total	30	11	

Table 6: Compare The Frequency of Vault Prolapse After Abdominal Vs Vaginal Hysterectomy with Respect to Parity

Parity	Vault Prolapse	Hysterectomy		P-Value
		Abdominal n=247	Vaginal n=88	
Multi	Yes	29(22.1%)	8(13.1%)	0.140
	No	102(77.9%)	53(86.9%)	
	Total	131	61	
Grand Multi	Yes	26(22.4%)	2(7.4%)	0.106
	No	90(77.6%)	25(92.6%)	
	Total	116	27	

Table 7: Compare The Frequency of Vault Prolapse After Abdominal Vs Vaginal Hysterectomy with Respect to Gravida

GRAVIDA	Vault Prolapse	Hysterectomy		P-Value
		Abdominal n=247	Vaginal n=88	
Multi	Yes	29(22.5%)	8(13.6%)	0.153
	No	100(77.5%)	51(86.4%)	
	Total	129	59	
Grand Multi	Yes	26(22%)	2(6.9%)	0.063
	No	92(78%)	27(93.1%)	
	Total	118	29	

Table 8: Compare The Frequency of Vault Prolapse After Abdominal Vs Vaginal Hysterectomy with Respect to Chronic Cough

Chronic Cough	Vault Prolapse	Hysterectomy		P-Value
		Abdominal n=247	Vaginal n=88	
Yes	Yes	15(24.2%)	2(7.7%)	0.074
	No	47(75.8%)	24(92.3%)	
	Total	62	26	
No	Yes	40(21.6%)	8(12.9%)	0.133
	No	145(78.4%)	54(87.1%)	
	Total	185	62	

Table 9: Compare The Frequency of Vault Prolapse After Abdominal Vs Vaginal Hysterectomy with Respect to Chronic Constipation

Chronic Constipation	Vault Prolapse	Hysterectomy		P-Value
		Abdominal n=247	Vaginal n=88	
Yes	Yes	22(26.8%)	6(17.6%)	0.293
	No	60(73.2%)	28(82.4%)	
	Total	82	34	
No	Yes	33(20%)	4(7.4%)	0.032
	No	132(80%)	50(92.6%)	
	Total	165	54	

Table 10: Compare The Frequency of Vault Prolapse After Abdominal Vs Vaginal Hysterectomy with Respect to Incontinence and Bleeding After Hysterectomy

Incontinence and Bleeding After Hysterectomy	Vault Prolapse	Hysterectomy		P-Value
		Abdominal	Vaginal	
Incontinence after Hysterectomy	Yes	55(22.3%)	10(19.6%)	0.675
	No	192(77.7%)	41(80.4%)	
	Total	247	51	
Bleeding after Hysterectomy	Yes	29(36.3%)	10(15.9%)	0.007
	No	51(63.8%)	53(84.1%)	
	Total	80	63	

DISCUSSION:

For many women, deciding on having their uterus removed is an important and emotionally difficult decision [13]. Nevertheless, hysterectomy is the second most common major surgical procedure in women worldwide and almost one in three women in the USA have undergone a hysterectomy by the age of 60 years [14,15]. The vast majority of hysterectomies are performed on benign indications to improve quality of life, and the surgical procedure is generally associated with few complications [16]. In recent years, an increasing number of studies have shown adverse effects of hysterectomy on the pelvic floor and some studies describe unwanted effects also with regard to other health aspects. According to several studies, hysterectomy is a risk factor for pelvic organ prolapse and urinary incontinence [17]. The procedure has also been associated with bowel dysfunction, pelvic organ fistula disease and sexual dysfunction. To determine the frequency of vault prolapse after hysterectomy in our study a total of 335 post-menopausal Women, underwent Abdominal/ vaginal Hysterectomy more than five year ago having incontinence and vaginal bleeding since 2 months were included [18,19].

In our study out of 335 women, 73.73% had abdominal hysterectomy and 26.27% vaginal hysterectomy. After hysterectomy, incontinence and vaginal bleeding was found in 88.96% and 42.63% women [20]. In several observational studies, hysterectomy is associated with a deterioration of bladder function. In a nationwide study by Altman *et al.*, there was a doubled risk for surgically managed stress incontinence subsequent to hysterectomy [21]. The risk was highest in the first years after hysterectomy, but was sustained at 10-year follow-up. A case-control study of 117 women who underwent vaginal hysterectomy for menorrhagia reported no difference in symptoms of stress or urge urinary incontinence between the surgical and control groups at four years of follow-up [22]. Several authors have addressed the effect of hysterectomy on the occurrence of constipation. However, the theory of damage to the pelvic plexus [23] that innervates the left colon and the rectum was refuted by Prior and co-authors who found after hysterectomy evidence of increased rectal sensitivity, which, by definition, is the reverse of autonomic denervation [24]. In our study constipation was observed in 34.63%. In a study by Jan Paul *et al* constipation had developed 2% of

the 309 patients without constipation before surgery and Constipation persisted in 46% of the 35 patients with constipation before surgery [25]. Most clinicians would agree that hysterectomy is indeed a risk factor for pelvic organ prolapse, but only in recent years has robust epidemiological evidence to support this notion been presented. In a nested case-control study by Dällenbach et al [26]. The incidence of prolapse for which there was a surgical correction after hysterectomy was 1.3 per 1000 women-years. Frequency of vault prolapse after hysterectomy in our study population was observed in 19.4% (65/335) [27]. Stage 0 (no vault prolapse) was observed in 80.6% women, 1.19% grade 1, 7.16% grade 2, 8.96% stage 3 and 2.09% stage 4. Marchionni et al [28]. reviewed 2,670 hysterectomies performed between 1983 and 1987. They found 20 women having vault prolapse (4.4%) among a randomly selected subgroup of 448 women examined in 1996 [29]. Among the 20 women found to have vault prolapse in the selected follow-up subgroup, eight (40%) had grade 1 vault prolapse, and 12 (60%) had grade 2 or more vault prolapse. In the Oxford Family Planning Association Study, the corresponding risk of pelvic organ prolapse subsequent to hysterectomy was 3.6 per 1000 women-years [30].

It is widely believed that vault prolapse is more common after vaginal hysterectomy than after abdominal hysterectomy. But Morely and DeLancey state that vault prolapse results equally often after vaginal or abdominal hysterectomy [31]. In our study we found that the rate of vault prolapsed was significantly high in those women who had abdominal hysterectomy as compare to those with vaginal hysterectomy ($p=0.026$) Previous reports showing that vaginal vault prolapse after hysterectomy was related to preexisting defects in pelvic support and not to the route of hysterectomy [32].

The limitations of our study included we cannot comment on the presence of vault prolapse in women not seeking care. However, their vault prolapse is likely to be of a milder degree or produce fewer symptoms [33]. Due to the lack of long-term systematic follow-up in this population, the overall incidence of vault prolapses, including those not needing a repair, may have therefore been underestimated. We believe however that this does not modify the relation between risk factors and the outcome [34, 35, 36]. The strength of this Cross-Sectional Study was the availability of patient in person, which allowed us to identify cases and controls in the cohort. Strength was the preoperative standardized assessment of the genital prolapse according to the Pelvic Organ Prolapse Quantification (POPQ).

CONCLUSION:

Our study shows that vaginal vault prolapse which requires surgical correction after hysterectomy is relatively low. The frequency of vault prolapse after abdominal hysterectomy was significantly high than in vaginal hysterectomy A clear understanding of the supporting mechanism for the uterus and vagina is important in making the right choice of corrective procedure, that will lead to minimize the risk of post-hysterectomy occurrence of vault prolapse.

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