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Research Article

### ASSESSMENT OF AVOIDABLE RISK FACTORS IN FEMALES WITH PAST HISTORY OF SURGICAL INTERVENTION FOR STRESS URINARY INCONTINENCE AND PELVIC ORGAN RELAPSE

<sup>1</sup>Dr Amjad Nawaz, <sup>2</sup>Dr Rimsha Mohsin, <sup>3</sup>Dr Muhammad Shafiq Akbar

<sup>1</sup>Sheikh Zayed Medical College, Rahim Yar Khan

<sup>2</sup>Sharif Medical and Dental College Lahore

<sup>3</sup>Sheikh Zayed Medical College, Rahim Yar Khan

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**Abstract:**

**Objective:** The aim of this research paper is to assess the avoidable risk factors in the females with past history of surgical intervention for treatment of SUI (Stress Urinary Incontinence) or/and POP (Pelvic Organ Relapse).

**Methodology:** We divided 401 females who underwent surgeries into 2 groups as; females who underwent surgery for Pelvic Organ Relapse (n: 325) and females who underwent surgery for Stress Urinary Incontinence (n: 76). There were total 233 persons in the group of controls with BMI and age match and they underwent surgery for some other benign gynecologic causes. All these controls were present without stress urinary incontinence or pelvic organ relapse. The comparison of all these groups carried out regarding age, body mass index, and status of smoking, delivery mode, gravida, menopause status, chronic disease and parity number.

**Results:** Grandmulti-parity (Parity  $\geq 5$ ) enhanced the danger of pelvic organ relapse or stress urinary incontinence operation and pelvic organ relapse operation as 2.710 and stress urinary incontinence surgeries as 2.94 times ( $P=0.00030$  &  $P=0.00010$ , correspondingly). Delivery through vagina also enhanced the danger of stress urinary incontinence or pelvic organ relapse surgery 2.330 times ( $P=0.030$ ).

**Conclusion:** Grandmulti-parity enhanced the danger of pelvic organ relapse or stress urinary incontinence surgery and delivery through vagina also increased the risk of surgeries for pelvic organ relapse/stress urinary incontinence. Among various risk factors, especially, grand multi-parity is the only avoidable risk factor.

**KEYWORDS:** Stress Urinary Incontinence, Pelvic Organ Relapse, Risk Factor, Gynecologic.

**Corresponding author:**

**Dr. Amjad Nawaz,**

Sheikh Zayed Medical College, Rahim Yar Khan

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**INTRODUCTION:**

Disorders of pelvic floor are serious issue of health in young females and these disorders can lead to surgeries for pelvic organ relapse or stress urinary incontinence with an estimation of 11.10%, 12.10% and 19.0% in USA [1], in UK [2] and Australia [3], correspondingly. Reoperation danger of stress urinary incontinence or pelvic organ relapse varied from 19.0% to 29.0% [1, 2]. One research work conducted in Australia stated the rates of prevalence of 8.80% for the pelvic organ relapse and 20.80% for stress urinary incontinence in female patients [4]. One other research work conducted in Europe stated 8.30% prevalence of pelvic organ relapse and 8.90% prevalence for stress urinary incontinence [5]. A research work performed in Turkey also stated an incidence of 7.90% for stress urinary incontinence [6]. previously elaborated risk factors for the development of the stress urinary incontinence and pelvic organ relapse are elder age, race, delivery through vagina, obesity, smoking status, enhanced intra-abdominal pressure, disorder of connective tissues, past history of hysterectomy and symptoms of pelvic organ relapse in period of pregnancy [7, 8]. Different research works used well-organized questionnaires to find out the risk factors for development of pelvic organ relapse in both symptomatic & asymptomatic females; however, only few patients in those research works had to undergo surgeries for stress urinary incontinence or pelvic organ relapse for exact grading of pelvic organ relapse [4, 8-10].

Some other research work has interrogated the different risk factors that prompt females who had experienced the surgical intervention for urinary incontinence and pelvic organ relapse [1, 2, 11]. This current research work aimed to elaborate different risk factors of disorders of pelvic floor particularly, in the symptomatic females with past surgical history for stress urinary incontinence and/or pelvic organ relapse on the basis of the records of the patients with a comparison of the records of the patients with past history of surgeries due to some benign gynecologic causes.

**MATERIAL AND METHODS:**

In this research work, the investigation of the records of patients present with history of gynecologic surgeries from 2018 to 2019 carried out. We also investigated the records of the females who were present with past surgeries of stress urinary incontinence or/and pelvic organ relapse were also analyzed retrospectively in the duration of this research work. The selection of the age and BMI-matched group of controls also carried out. These females were present with surgeries of some other benign gynecologic reasons. These females were present without any evidence of stress urinary

incontinence or pelvic organ relapse. All these patients completed the forms related with the PFDI-20 (Pelvic Floor Distress Inventory-20) and PFIQ (Pelvic Floor Impact Questionnaire-7) [12]. Ethical committee of the Hospital gave the approval for this questionnaire. The division of study group carried out into 2 groups; Group-1 comprised the females with pelvic organ relapse and Group-2 comprised the females present with stress urinary incontinence. The assessment of the both study and control groups carried out in terms of their age, body mass index, parity number, gravidity, delivery mode, status of smoking, and different chronic diseases. The collection of this data carried out in accordance with the recommendation of previously published data [13]. In current research work, multi-parity is described as parity from 2 to 4 and grand multi-parity described as parity of equal or greater than 5. We performed the staging of pelvic organ relapse in accordance with the Baden-Walker halfway system [14].

Pelvic organ relapse included the anterior prolapse of vagina, apical or uterine prolapse and posterior prolapse of vagina. Females with the diagnosis surgical intervention were also included in this research work. We used the standard definition of ICS (International Continence Society) for stress urinary incontinence [15]. One previous research work showed the requirement of minimum sample size of 233. ANOVA was in use for the statistical analysis of numerical data. We used the Kruskal-Wallis test for the comparison of variable across all groups. Qualitative variables were analyzed with the use of chi-square tests. OR (Odds Ratios) and 95.0% Clappeder for various factors related with past history of surgery for stress urinary incontinence and/or pelvic organ relapse. P-value of less than 0.050 was considered as significant significantly. SPSS V. 20 was in use for the statistical analysis of collected information.

**RESULTS:**

There were total 401 patients in the study groups. There were 325 patients in pelvic organ relapse group and 76 patients in stress urinary incontinence group. The amount of the females who faced the symptoms of both pelvic organ relapse and stress urinary incontinence were 40. There were 233 BMI and age matched females who underwent gynecologic surgeries for some benign causes. There were total 634 participants in this research work. Females in the study group were present with pelvic organ relapse Grade-2 or higher grade, whereas the females of control group were present with pelvic organ relapse Grade-0 or Grade-1 in accordance with the BadenWalker Halfway System. We found no significant disparity between both groups regarding body mass index, age,

average gravidity and average parity as described in Table-1.

**Table-I: Comparison of the Baseline Characteristics of the Groups**

	Study (Pelvic Organ Relapse/Stress Urinary Incontinence) Group (n= 401)	Pelvic Organ Relapse Group (n= 325)	Stress Urinary Incontinence Group (n= 76)	Control group P	P-value; 95% CI
Age (years)	54.7±11.6 (35-83)	56.2±11.5 (35-83)	48.6±11 (37-80)	54.3±7.3 (35-68)	p<0.001; 3.74-11 a
BMI	27.6±3.5 (18-40)	27.92±3.8 (18-40)	26.12±3.9 (19-37)	27.72±2.92 (23-38)	p=0.033; 0.12-3.48 a
Gravidity	4.9±2.6 (0-15)	4.94±2.6 (0-14)	4.59±2.6 (1-15)	4.5±2.1 (2-12)	N. S
Parity	3.84±2.1 (0-12)	3.89±2.1 (0-12)	3.62±1.9 (0-11)	3.32±1.7 (2-9)	N. S

a, b: between Pelvic Organ Relapse and Stress Urinary Incontinence groups.

The group of pelvic organ relapse was older as compared to group of stress urinary incontinence in terms of average age (P <0.0010). General traits of every group are present in Table-2.

**Table-II: Comparison of General Characteristics Between Groups**

	Study (Pelvic Organ Relapse/Stress Urinary Incontinence) Group (n= 401)	Pelvic Organ Relapse Group (n= 325)	Stress Urinary Incontinence Group P (n=76)	Control group P	P- value 'a'
Nulliparity	5 (1.2%)	4 (1.3%)	1 (1.8%)	2 (0.8%)	NS
Primiparity	11 (2.7%)	10 (3.3%)	1 (1.8%)	3 (1.2%)	NS
Multiparity	279 (69.5%)	222 (68.3%)	57 (75%)	200 (85.8%)	0.0001
Grand multiparity	106 (26.4%)	90 (27.6%)	16 (21%)	28 (12%)	0.0003
Vaginal birth	378 (94.2%)	310 (95.3%)	68 (89.4%)	209 (89.6%)	0.03
Caesarean section	4 (0.9%)	3 (0.9%)	1 (1.3%)	8 (3.4 %)	NS
Caesarean Section + Vaginal Birth 'b'	19 (4.73%)	14 (4.3%)	5 (6.5%)	16 (6.8%)	NS
Menopausal status	277 (69%)	241 (74.1%)	36 (47.3%)	96 (41%)	<0.0001
Hypertension	127 (31.6%)	108 (33.2%)	19 (25%)	66 (28.3 %)	<0.0001
Diabetes mellitus	43 (10.7%)	36 (11%)	7 (9.2%)	21 (9%)	NS
Pulmonary disease	17 (4.2%)	12 (3.6%)	5 (7%)	8 (3.4%)	NS
Neurological disease	12 (2.9%)	11 (3.3%)	1 (1.8%)	3 (1.2 %)	NS
Chronic Diseases 'c'	175 (43.6%)	157 (48.3%)	28 (36.8%)	77 (33%)	0.01
Smoking	35 (8.7%)	26 (8%)	9 (11.8%)	19 (8.1%)	NS

NS: Not significant, a: P-Value between study and control groups, b: vaginal birth were given, c: chronic diseases included hypertension, diabetes mellitus, pulmonary disease and neurologic disease.

Multi-parity, grand multi-parity, delivery through vagina, HTN (Hypertension) and different chronic diseases are more frequent in the study group as compared to the group of controls. Different risk factors that had association with the previous stress urinary incontinence and/or pelvic organ relapse surgical interventions are present in Table-3. Grandmulti-parity and delivery through vagina are the main risk factors having association with the surgeries for stress urinary incontinence or pelvic organ relapse.

**Table-III: Risk Factors Associated with Previous Pelvic Organ Relapse And/or Stress Urinary Incontinence Surgery**

	Univariate Analysis	Multivariate Analysis
	OR (95% CI)	
Age >50	2.63 (1.86-3.72) a	
BMI >25	0.57 (0.40-0.88) a	
Multiparity	0.38 (0.24-0.59) a	
	0.36 (0.22-0.57) b	
Grand multiparity	2.63 (1.64- 4.25) a	2.71 (1.61-4.45) a
	2.83 (2.73-4.64) b	2.94 (2.5-5.24) b
Vaginal births including instrumental deliveries	2.58 (1.23-5.49) b	2.33 (1.1-4.36) a
	Caesarean section	0.28 (0.07-1.05) a
Menopause	3.19 (2.25-4.53) a	2.62 (1.43-4.57) a
	3.85 (2.62-5.67) b	3.13 (2.14-4.91) b
Hypertension	2.54 (1.65-3.92) a	
	2.63 (1.68- 4.13) b	
Chronic diseases c	1.57 (1.10-2.23) a	
	1.65 (1.14-2.39) b	

**DISCUSSION:**

The current research work stated that grandmultiparity and delivery through vagina were the most important risk factors for surgery of stress urinary incontinence and pelvic organ relapse in future. There is always investigation on parity as risk factor for these complications. A research work conducted in past stated that the risk of dysfunction of pelvic floor is not further enhanced by parity number of greater than 3 [17]. MacArthur [18] stated that parity of  $\geq$  four enhances the risk of UTI and Abdel-Fattah [2] stated that parity from 2 to 4 is an important risk factor for surgery of pelvic organ relapse and/or stress urinary incontinence. Current research work discovered that delivery through vagina was other important riskfactor for surgeries of UI and pelvic organ relapse in future. These findings are also similar with various other studies [16]. Some other research works stated that abdominal deliveries are much protective against the dysfunction of pelvic floor but we were not able to discover this point in current research work [19]. One other study demonstrated that menopause condition predisposes females for pelvic organ relapse. in this research work, we did not find any association between status of menopause and surgery of stress urinary incontinence and/or pelvic organ relapse.

Two other research works conducted in the past on the basis of questionnaire stated no association between the enhanced age and pelvic organ relapse and these research work only reported one association between stress urinary incontinence and enhanced age [17]. In one other research work, the finding showed an association between the enhanced age and stress urinary incontinence and/or pelvic organ relapse. One other research

work conducted on the patients of pelvic organ relapse and provided a comparison of those patients with their healthy controls and found that the age of the patients of pelvic organ relapse was much higher as compared to their controls [18]. Some other research works conducted in past stated that enhanced body mass index was also an important risk factor for undergoing surgeries of pelvic organ relapse and/or stress urinary incontinence. However, some other research woks were present with opposite findings [19]. In this research work, females who had undergone surgeries for stress urinary incontinence or pelvic organ relapse were more hypertensive and present with chronic disease but these conclusions were not similar according to various other research works. Studies conducted in past did not state these associations but only two research studies stated the association between chronic disease of lungs and surgeries of pelvic organ relapse and stress urinary incontinence.

**CONCLUSION:**

The findings of this research work concluded that grandmulti-parity and delivery through vagina are the most important risk factors for surgeries of pelvic organ relapse and/or stress urinary incontinence. Among these described risk factors, only grandmulti-parity seems to be the avoidable risk factor.

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