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## Full Length Research Article

### THE RELATIONSHIP OF UTERINE PROLAPSE AND EPIDEMIOLOGICAL FACTORS IN A PART OF TROPICAL AFRICA

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#### ABSTRACT

**Background:** We aimed to investigate the relationship between the severity of uterine prolapse and epidemiological factors behind the uterine prolapse.

**Material and Methods:** 4230 patients were analyzed in this study. All the patients were admitted to Nyala Sudan-Turkish Training and Research Hospital. 97 of the all patients had total uterine prolapse and 432 of the all patients had uterine prolapse with the stages other than stage 4. We used the 432 patients as the control group and 97 patients as the study group. We stratified data according to age, parity, history of pelvic surgery, history of cesarean section, reproductive time duration, history of female genital mutilation, and smoking. We compared each groups with the analysis of variance and chi-square test.

**Results:** Reproductive time period was not statistically different between the study group and the control group (36.63 years and 35.95 years, respectively). The mean parity number was not statistically different among two groups. We observed no statistically difference for pelvic surgery and for caesarian history ( $P > 0.05$ ). We observed significant statistically difference between two groups, when we compared them according to female genital mutilation history ( $P < 0.05$ ).

**Conclusions:** We found that advanced age, grand-multiparity and female genital mutilation history are predisposing factors for total uterine prolapse. There are more researches with larger patient populations needed in this field to have a more precise decision and to compare each of the all uterine prolapse stages differently.

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#### INTRODUCTION

Pelvic organ prolapse is the sagging of the pelvic organs (bladder, uterus, rectum) to the vagina. There are many classifications to determine the extent of the prolapse; but the most valid classification is POP-Q (pelvic organ quantification system) (Bump *et al.*, 1996; Hall *et al.*, 1996). The prevalence of pelvic organ prolapse was reported as 37 %, but it was reported as higher values such as 64.8 % with the increasing of age (Gerten *et al.*, 2008; Scherf *et al.*, 2002). The risk factors for pelvic organ prolapse were reported as age, race, smoking,

working at heavy jobs, previous pelvic prolapse operations, family history of prolapse, parity and collagen diseases (Bump *et al.*, 1996; Olsen *et al.*, 1997; Chiaffarino *et al.*, 1999). With the increased life expectancy in the last decades, pelvic organ prolapse has become an important health problem for women. More than 250.000 operations have been performed for the pelvic organ prolapse in United States, and approximately 30% of all these patients need to have been reoperated (DeLancey, 2005). The need for medical assistance to pelvic organ prolapse may increase rapidly in the following years. In this study, we aimed to investigate the relationship between the severity of uterine prolapse and epidemiological factors in a part of Tropical Africa. The region we did this study, is a third world country.

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## MATERIALS AND METHODS

We analyzed the data of the all 4230 patients who were admitted to gynecology and obstetrics outpatient between April 1st and November 30th of the year 2014. 529 patients were diagnosed as different stages of uterine prolapse. 97 patients had total uterine prolapse and 432 patients had uterine prolapse with the stages other than stage 4. We used the 432 patients as the control group and the 97 patients as the study group. We stratified data according to age, parity, history of pelvic surgery, history of cesarean section, reproductive time duration, history of female genital mutilation, and smoking. We compared the groups with analysis of variance and chi-square test. We used SPSS 13.0 for statistical analyses.  $P < 0.05$  was considered as statistically significant.

## RESULTS

529 (12.2%) of the all patients had uterine prolapse. Our study group consisted of the 97 (2.24% of the all) patients, who had total uterine prolapse. And our control group consisted of 432 (10% of the all) patients, who had different stages other than stage 4. The ages of the patients in the study group were between 28 and 96 years. And the mean age of the study group was 63.75 years.

numbers ( $P < 0.05$ ) (Table 1). 24 (24.7% of the study group) patients in the study group had grand multiparity, and 37 (8.54% of the control group) patients in the control group had grand multiparity. We did not find any statistically meaningful difference between the two groups according to cesarean section history. Any of the patients in the study group had cesarean section history. On the other side, 12 (2.77% of the control group) patients in the control group had cesarean section history. We also did not find any statistically meaningful difference between the two groups according to pelvic operation history. 27 (27.8% of the study group) patients in the study group had pelvic operation history, and 52 (26% of the control group) patients in the control group had pelvic operation history. There were only 2 (5.6% of the control group) patients with smoking history in the study group. On the other side, 22 (5.09% of the control group) patients in the control group had smoking history. It was not found any statistically significant difference between the two groups according to smoking history. Lastly, we found statistically significant difference between the two groups according to female genital mutilation history ( $P < 0.05$ ) (Table 1). 80 (82.4 % of the study group) patients in the study group had female genital mutilation history, and 182 (42.1% of the control group) patients in the control group had female genital mutilation history.

**Table 1. Demographic features of the all uterine prolapse cases in the research**

	Study group 97(%2,24)	Control group 432(%10)	Total 529(%12,2)
The mean age	63,75 (28-96)*	58,84 (31-88)	61,29 (28-96)
Parity	5 (2-12)	4 (0-8)	12 (%2,26)
Cesarean history	0	12 (%2,77)	24 (%45,3)
Reproductive time period(year)	36,63	35,95	61 (%11,5)
Smoking history	2 (%5,6)	22 (%5,09)	79 (%14,9)
Grandmultiparity	24 (%25)*	37 (%8,54)	262 (%49,5)
Pelvic operation history	27 (%27,8)	52 (%26)	
Female genital mutilation	80 (%82,4)*	182 (%42,1)	

\* $P < 0.05$

On the other side, the ages of the patients in the control group were between 31 and 88 years. And the mean age of the control group was 58.84 years. Older age was found as statistically significant risk factor for total uterine prolapse ( $P < 0.05$ ) (Table 1). Reproductive time periods were indicators of the effect of the estrogenic stimulus on the tissues. We subtracted the time of first menstrual cyclus from the time of last menstrual cyclus or from the operation time to find the reproductive time period. Reproductive time period was found 36.63 years in the study group and 35.95 years in the control group.

There was not a statistically significant difference between the two groups according to reproductive time periods. The mean parity number in the study group was found 5, and the mean parity number in the control group was found 4. None of the patients in the study group were nullipar, and all the patients in this group had at least two parity. On the other side, 4 (1% of all) patients in the control group were nullipar. We did not find a statistically significant difference between the two groups according to parity number, but nulliparity was more common in the control group.

In addition to this, we found statistically significant difference between the two groups according to grand multiparity

## DISCUSSION

Prevalance of pelvic organ prolapse was reported as 37 %, but prevalance could increase up to the 64.8 % in the older aged women (Gerten *et al.*, 2008; Scherf *et al.*, 2002). We found the prevalance of pelvic organ prolapse as 12.2 % among the patients who were examined in our hospital. This was a small rate, because all the patients of all ages were analyzed. Eleje *et al.*, 2014 reported the prevalance of the all stages of pelvic organ prolapse as 6.5% (Eleje *et al.*, 2014). We found that the prevalance of the all stages of pelvic organ prolapse was 12.2%, and 2.24 % of these had total pelvic organ prolapse. The prevalance of the total pelvic organ prolapse in different parts of the Nigeria had been reported between 2-3 % (Eleje *et al.*, 2014; Okonkwo *et al.*, 2003; Onowhakpor *et al.*, 2009). The rate of the varying stages of pelvic organ prolapse in the USA was reported as such a high value of 24 % (Nygaard *et al.*, 2008). Glazener C *et al.* reported the prevalance of pelvic organ prolapse as 24 % in their study done in England, and they showed a very low association between spontaneous vaginal birth, challenging forceps delivery, caesarean section and pelvic organ prolapse (Glazener *et al.*, 2013).

Awwad *et al.*, 2012 reported the prevalance of the pelvic organ prolapse in western Lebanon as 49.8% (Awwad *et al.*,

2012). The differences in the prevalences of the pelvic organ prolapse might be due to the different populations covered by the studies. Different populations have different health seeking behaviours, different education levels, different ethnicity and different attitudes to the diseases. Awwad *J et al.* also showed that the stage of the pelvic organ prolapse increase with the age till the menopause, and the degree of the stage makes a plateau after the menopause (Awwad *et al.*, 2012). It was also showed a relation between the pelvic organ prolapse and the number of spontaneous vaginal births with the body mass index of the patients (Awwad *et al.*, 2012). Prolapse cases were reported more commonly in older ages, and increased prevalence was also reported with the aging (Jelovsek *et al.*, 2007; McLennan *et al.*, 2008). There were also some researches showing the spontaneous regression of pelvic organ prolapsed (Handa *et al.*, 2004; Baessler *et al.*, 2006). Dietz *et al.*, 2008 reported that prolapse would be worse with the increasing of age (Dietz *et al.*, 2008). Dietz *et al.* also suggested that spontaneously regressed cases reported in the literature by other authors, might have been falsely positive diagnosed at the beginning, or might have been falsely negative diagnosed at the later evaluations (Dietz *et al.*, 2008). We found that prolapse stage was increasing in the older ages. And our results comply with the literature (Dietz *et al.*, 2008).

There are researches showing the effect of estrogen on pelvic organ prolapse (Norton, 1993; Luber *et al.*, 2001). There are also researches showing the effect of genetic mutations of estrogen and progesteron receptors on the prolapse etiology (Chen *et al.*, 2009; Chen *et al.*, 2008). Reproductive time period can be accepted as estrogenic effect duration on tissues. We used reproductive time period to search for estrogenic effect on the prolapse. But, we did not find any statistically significant effect of reproductive time period on total uterine prolapse. This might be due to the non-homogenous distribution of the control group patients.

There are researches showing a positive relation between the stage of uterine prolapse and parity (Olsen *et al.*, 1997; DeLancey, 2005; Mant *et al.*, 1997). Pelvic base failure was reported as a predisposant factor for pelvic organ prolapse, and pelvic base failure was also reported as the result of the birth traumas (Gill, 1998). And difficult births were strongly suggested as reasons for prolapse (Gill, 1998). Hendrix *et al.*, 2002 reported that pelvic base failure occur mostly in the first birth and become worse with the subsequent births (Hendrix *et al.*, 2002). On the other side, Sze *et al.*, 2006 evaluated the vaginal birth effect on the prolapse stage, and they reported that vaginal births increase mostly moderate prolapse stages instead of severe prolapse stages (Sze *et al.*, 2006). But their research did not contain many numbers of severe prolapse stages (Sze *et al.*, 2006). Unlikely, we did not find a statistically significant effect of the parity number on the stage of pelvic organ prolapse, but nulliparity prevalence was found as 0 % in the patients with the advanced prolapse stage. On the other side, we found statistically significant effect of grand multiparity on the stage of pelvic organ prolapse. Our results showed that subsequent births might cause pelvic organ prolapse, not first births.

None of the our study group patients had cesarean section history, and a small percent such as 2.77 % of the control

group patients had cesarean section history. Some researches in the literature reported that uterine prolapses were less seen in cesarean section births (Rodrigues *et al.*, 2009; Larsson *et al.*, 2009). That could be because of that cesarean section births did not destroy the pelvic base as normal vaginal births (Rodrigues *et al.*, 2009; Larsson *et al.*, 2009). We think that the subsequent difficult births cause an increase in the stages of uterine prolapse in the patients with grand multiparity. Elective cesarean section might have a protective effect for developing of pelvic organ prolapse (Groutz *et al.*, 2009). But some reports also showed that the timing of the cesarean section was important, cesarean section during active labor was reported as no protective effect on the pelvic organ prolapse (Sze, 2002; Liebling *et al.*, 2004). Luber *et al.*, 2001 reported that family history might be a predisposing factor for prolapse, and they suggested that elective cesarean section could be advised to the patients with family history of pelvic organ prolapse (Luber *et al.*, 2001).

We did not find any statistically significant difference between the two groups according to cesarean section history. But, any of the patients in the study group, who had total uterine prolapse, did not have cesarean section history. Besides, when we think about the difficult birth conditions in this region, cesarean sections should be made only in active labor instead of elective cesarean sections. There were many reports showing that prolapse prevalences were more common in smoking women (Woodman *et al.*, 2006; Baessler *et al.*, 2006; Dietz, 2008). This correlation might be due to COAH (Chronic obstructive pulmonary disease). COAH make patients cough, and it might cause relaxation in pelvic floor. And smoking causes COAH. Woodman PJ *et al.* also showed a negative correlation between the amount of economic income and the prevalence of prolapse (Woodman *et al.*, 2006). They also reported that smoking prevalence was also common in patients who had lower income (Woodman *et al.*, 2006). Unlikely, we did not find any statistically significant difference between the smoking history and the severity of prolapse.

We also found that smoking was more common in patients who had mild stages of prolapse. Our results did not comply with the literature (Rodrigues *et al.*, 2009; Larsson *et al.*, 2009). Smoking was not common in the women of Darfur, especially in the older aged women. We think that this is the reason why our results showed no statistically significant difference. According to our knowledge, our study was the first study, which showed the relation between the female genital mutilation and the pelvic organ prolapse. We observed that pelvic organ prolapse prevalence increased in the patients with female genital mutilation, especially in the patients who had type 3 female genital mutilation in the younger ages. Besides, many further researches evaluating the relation between female genital mutilation and pelvic organ prolapse prevalence are needed to have an exact opinion about this issue.

Lastly, we compare the totally prolapsed group with the other mild and moderate prolapsed patients. This caused a non-homogenous distribution of the control group. On the other side, we had the chance to compare the severe stages of prolapse with the milder stages of prolapse.

## Conclusion

In conclusion, we evaluated a great number of patients in our gynecology and obstetrics out patients service in a short time, and we found that older age, grand multiparity and female genital mutilation might predispose to uterine prolapse. Pelvic organ prolapse prevalence could be decreased with the appropriate precautions such as decreasing the number of grand multiparity and decreasing female genital mutilations. Besides, the duration of our study is short and it is a retrospective study. Because of these reasons, wide prospective studies are needed to make more accurate evaluations and to have an exact opinion about this issue.

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