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Research Article

Pelvic Organ Prolapse: A Comparative Study between Hospital and Home Childbirth in Women from the Brazilian Amazon

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Keywords

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Abstract

Pelvic Organ Prolapse (POP), is a condition associated with the descent of pelvic floor organs of complex and multifactorial etiology, which implies losses in social, sexual, and physical life.

Objective: To analyze the influence of parity, place (hospital or home), and type of childbirth with the degree of POP, through the Pelvic Organ Prolapse-Quantification (POP-Q), staging in women in Amapá State.

Methods: A cross-sectional and quantitative study was conducted in the Basic Health Unit - Polyclinic of the Federal University of Amapá, collecting epidemiological data and evaluating the POP-Q in 377 women. Data were collected from February to November 2013.

Results: 31.6% of women had no genital prolapse (POP 0), and only 7.4% with POP grade 3. The increase in the average number of children establishes a direct relationship with the worsening of prolapse, where POP 2 and 3 were present in 32% of multiparous women and only 2.9% of non-multiparous women. For patients who had only a cesarean childbirth, POP 3 was not observed, while 7% of patients with vaginal delivery presented POP grade 3. The history of home birth was more related to POP 2 and 3 than the history of hospital delivery.

Conclusion: Multiparity, Vaginal childbirth, and Home birth were directly related to the increased degree of genital prolapse.

INTRODUCTION

Pelvic Organ Prolapse (POP), is a condition associated with the descent of the anterior and/or posterior vaginal wall as well as the cervix or vaginal dome after hysterectomy [1,2].

Although the etiology of POP is considered complex and multifactorial, some risk factors classically predispose to its appearances, such as age, connective tissue disorders, multiparity, vaginal birth, menopause, genetic predisposition, obesity, or other factors linked to increased intra-abdominal pressure [2-4].

POP becomes increasingly more frequent as the demographic transition advances with the increase of the elderly population [5]. It is estimated that about 75% of women between 45 and 85 years of age have some degree of prolapse [6] and it is known that the incidence during the clinical examination can vary from 14 to 50% [7-9].

The prevalence of symptoms, however, is much lower (3 - 6%)[10]. When present, symptoms can be associated with the structures involved in the prolapse, such as seeing or feeling a vaginal bulge, or with pelvic floor dysfunction, such as urinary, defecatory, or sexual complaints[2], and impose a high negative impact on the quality of life of women [11].

The clinical evaluation of POP is performed by gynecological physical examination, using a standardized system, the *Pelvic Organ Prolapse- Quantification* (POP-Q), referenced by the *International Urogynecological Association* (IUGA), and the *International Continence Society* (ICS)[1,12]. The evaluation of genital prolapse is done from a fixed anatomic point, the hymenal caruncle (zero position). From this point, positions are given in centimeters, with negative numbers in locations above the hymen and positive numbers when distal to the hymen. Six dynamic points are evaluated, being identified by letters such as anterior vaginal wall (Aa/Ba), the posterior vaginal wall (Ap/

Bp), the uterine dome or cervix (C), and the posterior fornix of the vagina (D). Added to these are three static points: the genital hiatus (HG), perineal body (PC), and total vaginal length (CVT) [1,12] (Figure 1).

It is important to note that published studies comparing the place of childbirth and the presence and/or severity of POP are rare.

The objective of this study was to analyze the influence of parity, type of delivery, and place of labor (hospital or home), on the degree of pelvic organ prolapse in women living in the State of Amapá (Amazon region of Brazil).

METHODOLOGY

This is a quantitative cross-sectional study conducted on women from Amapá, at the Basic Health Unit- Polyclinic of the Federal University of Amapá (UNIFAP). Data collection was conducted between February and November 2013.

Women who came to the institution to undergo oncotic coloproctology and were aged ≥ 20 years were included, being excluded: pregnant women, women who had recently given birth up to 06 months, and women with anatomical restrictions. The sample consisted of 377 women. All volunteers signed the Informed Consent Form- ICF. The project was approved by the Research Ethics Committee (CEP), of the Federal University of Amapá - FR 347446/011.

The selected patients were evaluated through anamnesis to identify risk factors, such as parity, type of delivery (vaginal or cesarean), and place of delivery (home or hospital). They were also submitted to gynecological examination for anatomical evaluation of the pelvic organs by POP-Q classification.

In the POP-Q classification, two points on the anterior vaginal wall (Aa, Ba), two points on the apex of the vagina (C, D), and two points on the posterior wall of the vagina (Ap, Bp), were evaluated. Added to these six points were the total vaginal length (CVT), the genital hiatus (HG), and the perineal body length (CP). Point Aa is located in the midline of the anterior vaginal wall, 3 cm proximal to the external meatus of the urethra and point Ba, the most distal position from any part of the anterior vaginal wall, points Ap and Bp are similar to points Aa and Ba, with the difference that they are located in the posterior wall, while point C is the most distal part of the uterine cervix or the vaginal dome if the patient has undergone hysterectomy, and point D reflects the location of the posterior fornix in women who still have a cervix, this being omitted in the absence of a cervix.

In addition, the genital hiatus, defined as the midpoint of the external meatus of the urethra to the posterior midline at the height of the hymenal caruncles, the perineal body, which is the posterior margin of the genital hiatus to the midpoint of the anal orifice, and the total vaginal length, established as the distance from the caruncle of the hymenal to the deepest point of the vagina when points C or D are in their normal positions, were evaluated.

After the anatomical evaluations, the final staging of the genital prolapse of the women was performed based on the POP-Q staging. Grade 0 is associated with the absence of prolapse. Points Aa, Ap, Ba, and Bp are at- 3 cm, and points C and D are between CVT and CVT- 2 cm. In grade 1, the point of greatest prolapse is located up to 1cm above the hymen (-1cm). In grade 2, the point of greatest prolapse is located between -1cm and +1cm (between 1cm above and 1cm below the hymen). In grade 3, the point of greatest prolapse is more than 1cm below the hymen, but without total eversion. Finally, in grade 4, total eversion of the prolapsed organ occurs, in which the point of greatest prolapse is at least 2 cm less vaginal length (CVT-2) [1,12].

The results were analyzed using the Statistical Package for the Social Sciences software (SPSS), Version 22. For qualitative variables, the analysis was performed by Fisher's Exact Test and for the multiple comparative evaluations between the POP-Q groups and the quantitative variables, the Analysis of Variance (ANOVA), and Kruskal-Wallis test were used. The significance level used for the tests was 5%, or $p<0.05$.

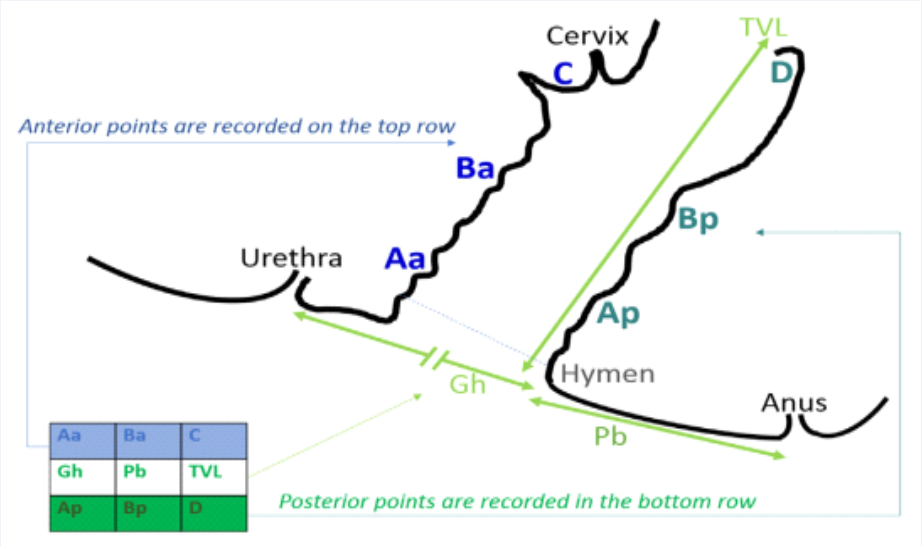


Figure 1 Pelvic Organ Prolapse Quantification System.

RESULTS & DISCUSSION

The study sample was composed of 377 women.

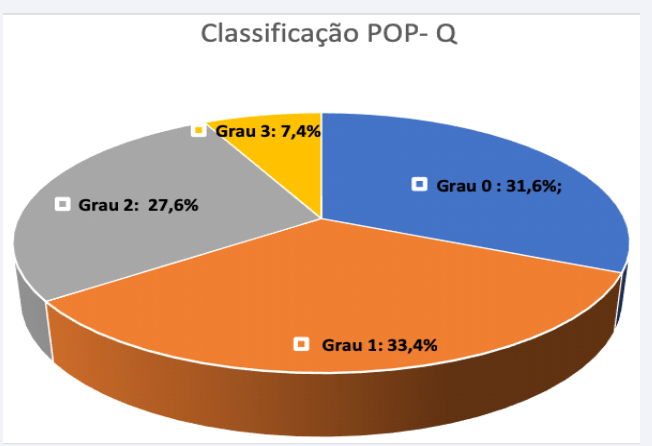
Regarding the classification of POP-Q: 119 women (31.6%), with POP grade 0 (zero), 126 (33.4%), with POP grade 1, 104 (27.6%), women with POP grade 2 and only 28 interviewees (7.4%), had POP grade 3. It was not evidenced in patients with POP Grade 4. Therefore, from the sample studied, it was observed that 68.4% of women presented some degree of genital prolapse. Moreover, regarding the presence of symptomatic POP, that is, grades 2 and 3, it was present in 35% of the sample (Graph 1).

In a study with Amazon riverside women [14], the absence of POP was 21.4% of the sample, while POP 2 and 3 were present in 27.4% and 12%, respectively. Among Korean women [15], the highest prevalence was POP 1 (and there were no patients with POP 4. In a multicenter study[16] with 3,730 Iranian women, most had POP 0 (47%). In another study [17] with 1004 women, the prevalence was 24% for POP 0, 38% POP 1, 35% POP 2 and only 2% with POP 3.

On the other hand, other studies have observed a predominance of higher grades in POP-Q, such as this randomized clinical trial [18] with 270 women, in which 62.9% had POP 2. In another study [19] with 477 women, 48.4% had POP 2, similar to what was found among indigenous peoples of the Xingu [20], where most had stage 2 (63.9%).

As for the characterization of the variables analyzed in the sample, regarding parity: 32 women were nulliparous (8.5%), 119 (31.6%), were non-multiparous (1 to 2 deliveries), and 226 (59.9%), women were multiparous (3 or more deliveries). As for the route of childbirth: 230 women had normal childbirth (66.7%), 39 with cesarean childbirth (11.3%), and 76 women (22.0% of the sample), with normal childbirth and cesarean childbirth. Therefore, 88.7% of the sample had a vaginal delivery. As for the place of labor, the majority (54.2%), had hospital childbirth and only 15% with exclusively home childbirth (Table 1).

In the Bivariate analysis of POP-Q association with parity



Graph 1 Characterization of the POP-Q classification of the women interviewed and submitted to gynecological physical examination at the Polyclinic of the Federal University of Amapá - UNIFAP. N:377.

Table 1: Characterization of women interviewed and submitted to gynecological physical examination at the Polyclinic of the Federal University of Amapá - UNIFAP. N:377.

	N (%)	Average ± Dp	Min-Max
Parity		3,9±3,1	0-17
Nulliparous	32(8,5)		
Non-Multiparous	119(31,6)		
Multiparous	226(59,9)		
Normal		4,25±2,99	1-17.
Cesaria		1,4±0,69	1-4.
Hospital		2,98±2,10	1-12.
Home		3,72±3,02	1-17.
Type of labor			
Normal	230(66,7)		
Cesaria	39(11,3)		
Normal/Cesare	76(22,0)		
Place of childbirth			
Hospital	166(54,2)		
Home	46(15,0)		
Hospital/Domestic	94(30,7)		

(Table 2), all nulliparous women in our study had POP 0, of the non-multiparous 54.62% did not present genital prolapse (POP 0), and among the multiparous only 9.73%. As for symptomatic POP (stages 2 and 3), it was present in 53.53% of multiparous women and only in 9.2% of non-multiparous women. Thus showing that multiparity is a risk factor for genital prolapse and that the increase in the average number of children establishes a direct relation with the worsening of prolapse. A case-control study with 316 patients in São Paulo [21] found that the presence of at least one normal labor is an independent risk factor for genital prolapse (p-value <0.005, OD=7.22, 95%CI=1.84- 28.27). Moreover, when the mean parity and vaginal deliveries between the control group (n=209), and the case group (n= 107), were observed, they were 2.01 and 4.5; and 1.03 and 4.01, respectively, with a p-value for both <0.0001. Therefore, because of this, a direct relationship occurs between parity and vaginal childbirth.

Associating POP-Q with the route of labor shows that cesarean childbirth was more related to the absence of POP than vaginal childbirth. The presence of POP was infrequent among patients with only surgical labor and severe POP (stage 3), was absent in this group. In addition, normal birth was a relevant risk factor for the presence of pelvic floor dysfunctions, including symptomatic POP (stages 2 and 3).

Although the C-section (Cesarean birth), presented the highest number of women with an absence of prolapse (84%), when we analyzed the symptomatic POP, it is infrequent, being absent in patients with stage 3. On the other hand, vaginal childbirth was more evident in the patients of this group (stage 3), representing 10% of them (Table 2).

This data is in accordance with that found in the study [22] with Turkish patients in which women who had four or more vaginal deliveries were 11.7 times more likely to suffer from

Table 2: Bivariate analysis of the association between POP-Q classification and parity classification, type of labor, and Place of labor of women interviewed and submitted to gynecological physical examination at the Polyclinic of the Federal University of Amapá - UNIFAP. N:377

	POP-Q				
	Stage 0	Stage 1	Stage 2	Stage 3	
	N(%)	N(%)	N(%)	N(%)	P-value
Parity					<0,001
Nulipara	32(8,5)	0(0,0)	0(0,0)	0(0,0)	
Not Multipara	65(17,2)	43(11,4)	9(2,4)	2(0,5)	
Multipara	22(5,8)	83(22,8)	95(26,8)	26(6,9)	
Type of labor					<0,001
Normal	44(12,8)	90(26,9)	72(20,9)	24(7,0)	
Cesaria	33(9,6)	5(1,5)	1(0,3)	0(0,0)	
Normal/Cesare	10(2,9)	31(9,3)	31(9,0)	4(1,2)	
Place of birth					<0,001
Hospital	44(14,4)	75(24,7)	41(13,4)	6(2,0)	
Home	4(1,3)	21(6,2)	15(4,9)	6(2,0)	
Hospital/Domestic	6(2,0)	25(8,2)	47(15,4)	16(5,2)	

pelvic floor disorders, such as prolapse or incontinence.

Concerning the place of labor, it was observed that hospital birth was the most common in grades 0 and 1, with 26.5% and 45.1%, respectively. However, the hospital/household represented 26.5% and 50% for stages 2 and 3. It was also found that the absence of POP was more frequent in the home birth group than in the other categories. In addition, patients delivered at home had a higher frequency of symptomatic prolapse than the group delivered at a hospital (stages 2 or 3). Therefore home childbirth was a risk factor for symptomatic POP (Table 2).

This result corroborates the one developed with indigenous women in the Xingu River Park [20] in which a considerable percentage of 90.6% of home births and 64.7% with stage II/II in the POP-Q was obtained. Similarly, the study with Amazon riverine women14 observed that the presence of POP 0 was 8.4% in multiparous patients delivered at home and 33.3% in multiparous patients delivered at a hospital, while this ratio was 4.7% and 16.3%, respectively.

FISHERS EXACT TEST

When analyzing the behavior of each variable according to the POP-Q, being scored the increase in the average number of children as the worsening of prolapse, so in Stage 0 the average is 1.7 children and in Stage 3 is 8.2 children per woman. Similarly, in a normal childbirth, the same increase occurs, with an average of 2.4 children in Stage 0 to 8.0 children in Stage 3 (Table 3).

These data are in agreement with the study carried out with women living in the Xingu Indigenous Park [20], where it was verified that most of them were multiparous or very multiparous (68.7%), and that 63.9% were in POP 2. Similarly, in the study carried out with women from the Amazon region [14], it was verified that 75.8% of the river-dwelling women were multiparous, presenting a mean of 5.1 normal deliveries, and this group presented a significant percentage of cases of POP-Q in stage 3 (p=0.02). Moreover, it is worth noting that this data differed in the group of women living in an urban center, associating lower average normal deliveries to the initial stage of POP-Q, so it was found that 53.4% were multiparous, with an average of 2.7 normal deliveries, of this 36.2% with POP 0 (p= 0.0004).

Moreover, in a study of 1,964 Turkish women [23], it was observed that additional vaginal deliveries increased the risk of prolapse ($p < 0.001$), and that each vaginal childbirth increased the probability of POP (OR 1.23; 95% CI 1.12-1.35), after controlling for other factors. Thus, evaluating women who had only vaginal deliveries (n = 1298), the relationship of parity with POP was 1, 2, 3, and >4 births with 4.7, 8.7, 12.0, and 23.0%, respectively. Similarly, a 20-year follow-up of 17,032 women from England and Scotland [24,25], showed that parity was strongly associated with pelvic floor dysfunction; thus, comparing nulliparous women with women who had 1 and 2 children, respectively, the probability of POP was 4 and 8.4 times higher.

Thus, the results of this study are in agreement with most publications that have demonstrated a strong correlation between parity, birth route, and POP. Thus, as observed in a case-control study with 316 patients in São Paulo [21], found that the presence of at least one normal birth is an independent risk factor for genital prolapse (p-value <0.005, OD=7.22, 95%CI=1.84-28.27). And, when observed the mean characteristics of parity and vaginal deliveries between the control group (n=209), and case group (n= 107), found 2.01 and 4.5; and 1.03 and 4.01, respectively, with a p-value for both <0.0001. Therefore, because of this, a direct relationship occurs between parity and vaginal birth.

Regarding the place of labor, hospital childbirth predominated with 166 cases (54.2%), followed by hospital and home childbirth with 94 (30.7%), and only home childbirth with 46 (15.0%). In a study conducted in the Amazon [14], POP 3 was present in 11.9% of riverbank women (75.8% delivered at home), and only 5.4% of urban women (20% delivered at home).

Table 3: Characterization of the variables of parity, type of labor and place of labor, and the POP-Q classification of women interviewed and submitted to gynecological physical examination at the Polyclinic of the Federal University of Amapá - UNIFAP. N:377.

		Mean ± SD	Me-Max
	Parity		
POP- Q	Stage 0	1,7±2,1	0-13
	Stage 1	3,5±1,8	1-10
	Stage 2	5,7±2,8	1-14
	Stage 3	8,2±3,7	2-17
	Normal		
POP- Q	Stage 0	2,4±2,6	1-13
	Stage 1	3,2±1,8	1-10
	Stage 2	5,4±2,8	1-13
	Stage 3	8,0±3,6	2-17
	Cesaria		
POP- Q	Stage 0	1,7±0,8	1-4
	Stage 1	1,3±0,5	1-3
	Stage 2	1,3±0,6	1-3
	Stage 3	1,0±0,0	1-1
	Hospital		
POP- Q	Stage 0	1,9±1,9	1-12
	Stage 1	2,5±1,4	1-7
	Stage 2	3,7±2,2	1-11
	Stage 3	4,7±2,8	1-11
	Home		
POP- Q	Stage 0	3,5±3,7	1-12
	Stage 1	3,1±1,9	1-8
	Stage 2	3,6±3,0	1-12
	Stage 3	5,5±4,0	1-17

Table 4: Multivariate analysis of the comparison between the POP-Q groups and the variables of parity, type of labor and place of labor, and the POP-Q classification of women interviewed and submitted to gynecological physical examination at the Polyclinic of the Federal University of Amapá - UNIFAP. N:377.

	POP- Q				
	Stage 0	**Stage 1**	**Stage 2**	**Stage 3**	**P-value**
PARITY	1,7±2,1	3,5±1,8	5,7±2,8	8,2±3,7	<0,001
Type of labor					
Normal	2,4±2,6	3,2±1,8	5,4±2,8	8,0±3,6	<0,001
Cesaria	1,7±0,8	1,3±0,5	1,3±0,6	1,0±0,0	0,024
Place of childbirth					
Hospital	1,9±1,9	2,5±1,4	3,7±2,2	4,7±2,8	<0,001
Home	3,5±3,7	3,1±1,9	3,6±3,0	5,5±4,0	0,037

Furthermore, regarding the variable place of labor, in patients with home childbirth and POP 0, the mean parity was higher than that of patients with hospital childbirth, 3.5 and 1.9, respectively, showing possible protection of the pelvic floor in home birth, confirmed by the data from POP 3, where mean birth was lower in the hospital group (4.7), than among women delivered at home (5.5) (Table 3).

In cesarean childbirth, there is a slight decrease in the mean according to the increase in POP-Q, with Stage 0 having a mean of 1.7 cesarean deliveries and in Stage 3 the mean is 1.0 childbirth per woman (Table 3).

In studying the behavior of the variables that make the comparison between each stage (0, 1, 2, and 3), of POP with the factors parity, type of labor, and place of labor, a difference was observed with the stages of POP-Q since p< 5% for all variables. In addition, cesarean childbirth had less impact on POP staging

when compared to the normal type in all stages of POP-Q. This result agrees with that presented in a study involving patients in São Paulo [21], which showed that cesarean childbirth is a protective factor for POP (OR=0.43; 95%CI=0.24-0.78). Especially, when comparing this type of labor between the two study groups, it was observed that in the control group the mean was 0.86, however, in the case group the mean number of cesarean sections was much lower (0.24), and the p-value was <0.0001 (Table 4).

CONCLUSION

Increased parity, normal childbirth, and home birth were statistically significant risk factors for the presence of symptomatic genital prolapse, in other words, POP 2 and 3 in Amapaense women.

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