Journal of Natural Sciences Research www.iiste.org
ISSN 2224-3186 (Paper) ISSN 2225-0921 (Online)
Vol.6, No.2, 2016

Uterine Fibroid on Women's Fertility and Pregnancy Outcome in Delta State, Nigeria

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Abstract
The effect of Uterine fibroid on women's fertility and pregnancy outcome was discussed in this paper. Secondary data sourced from the records units of five hospitals in delta state was used. Cross tabulation, Chi-square test for association, phi and crammer's V were applied on the four year study, from which a moderate significant association was found to exist between fibroid size and fertility outcome and between fibroid size and pregnancy outcome ($\chi^2 = 10.725$, p-value = 0.001, $\phi = 0.327$), ($\chi^2 = 7.724$, p-value = 0.005, $\phi = 0.278$) respectively. Also, Fibroid location (Intramural, Submucosal, Subserosal) did not contribute significantly to women's fertility and pregnancy outcome.
Keywords: uterine fibroid, infertility, pregnancy outcome, hysteroscopy, laparoscopy, intramural, subserosal, submucosal.

Introduction

Uterine fibroids are the most common tumors of the female genital tract, depending on their number, location and size, they might distort uterine anatomy and can adversely affect uterine physiology. They are benign (non-cancerous) growths of the muscular wall of the uterus. The growths, which may appear singly or in groups, range from the size of a pea to the size of a grapefruit. They may either be confined to the uterine wall or grow outward on thin stalks. The exact cause of uterine fibroid is not known, but it is thought that hormones (such as estrogen and progesterone) and a person's gene play a role in their development. According to the United States Department of Health and Human Service Office on Women's Health, their growth is thought to be influenced by hormone since fibroids rarely occur before a woman starts menstruating and they usually grow during pregnancy and shrinks after menopause. According to a 2010 World Health Organization report, fibroid affects between 20-25% of women, and close to 235 million women which represents 6.6% of global women population. Generally, uterine fibroids do not have any adverse effect on the fertility of a woman. However, 3% of women find conceiving troublesome due to the presence of large, multiple or pedunculated fibroids. Women with large subserosal fibroids, which develop on the outer covering of the uterus, may develop compressed fallopian tubes. This can cause a blockage to form in the fallopian tube, thereby blocking the passage of sperm and eggs. Subserosal fibroids can also distort the pelvic anatomy to such an extent that it becomes difficult for the fallopian tube to capture an egg at the time of ovulation. Sperm may also be prevented from reaching its intended destination when intramural fibroid are located in the cervical region, which can prevent the entry of sperm into the uterus. Submucosal fibroids, which develop just beneath the inner lining of the uterus, may block the fallopian tube. As a result, sperm is not able to enter the fallopian tube in order to fertilize an egg. Both intramural and submucosal fibroids may increase the size of the uterus cavity, forcing sperm to travel a greater distance. Additionally, both types of fibroid tumors can interfere with the uterus ability to contract. As a result, sperm and egg transport may be hindered. The uterine cavity can also be distorted by multiple and large submucosal as well as intramural fibroid tumors. These fibroids can all impair the blood supply to the endometrium and disturb the structure of the endometrium, thereby altering uterus anatomy and reducing the chances of implantation. Therefore in this work, we intend to; Highlight the effect of Uterine Fibroids on Pregnancy and also examine if the size and location of fibroid attributes to infertility and pregnancy outcome

Methodology

To achieve the set objectives, data pertaining the subject matter was obtained from the records unit of five hospitals in different local government areas of delta state, these hospitals include; Federal Medical Centre Asaba, Federal Medical Centre Agbor, Ekpan Government Hospital Warri, Baptist Medical Centre Eku, and Mariere Memorial Central Hospital Ughelli. Cross tabulation, Chi-square test for association, Phi and Crammer's V were applied on the data so as to determine whether or not a relationship exists between the variables under study, and the extent to which a relationship does exists.

Data Analysis and Result

Table 1: Cross Tabulation of fibroid size and fertility outcome.

Size of the Fibroid		Fertility Outcome		
		Conceived	Did not conceive	Total
Large	Count	32	34	66
	% within location of fibroid	55%	45%	100%
	% within fertility Outcome	53%	85%	
	% of Total	32%	34%	66%
Small	Count	28	6	34
	% within location of fibroid	82%	18%	100%
	% within fertility Outcome	47%	15%	
	% of Total	28%	6%	34%
Total	Count	60	40	100
	% of Total	60%	40%	

Table 2: Cross Tabulation of fibroid location and fertility outcome

Location of fibroid		Fertility Outcome		
		Conceived	Did not conceive	Total
IM	Count	30	13	43
	% within location of fibroid	70%	30%	100%
	% within fertility Outcome	50%	33%	
	% of Total	30%	13%	43%
SS	Count	17	9	26
	% within location of fibroid	65%	35%	100%
	% within fertility Outcome	28%	15%	
	% of Total	17%	9%	26%
SM	Count	6	10	16
	% within location of fibroid	38%	62%	100%
	% within fertility Outcome	10%	25%	
	% of Total	6%	10%	16%
IM,SS	Count	4	2	6
	% within location of fibroid	67%	33%	100%
	% within fertility Outcome	7%	5%	
	% of Total	4%	2%	6%
IM,SM	Count	0	1	1
	% within location of fibroid	0%	100%	100%
	% within fertility Outcome	0%	3%	
	% of Total	0%	1%	1%
SS,SM	Count	2	2	4
	% within location of fibroid	50%	50%	100%
	% within fertility Outcome	3%	5%	
	% of Total	2%	2%	
IM,SS,SM	Count	1	3	4
	% within location of fibroid	25%	75%	100%
	% within fertility Outcome	2%	8%	
	% of Total	1%	3%	4%
TOTAL COUNT		60	40	100
		60%	40%	

IM = Intramural fibroid, SS = Subserosal fibroid, SM = Submucosal fibroid.

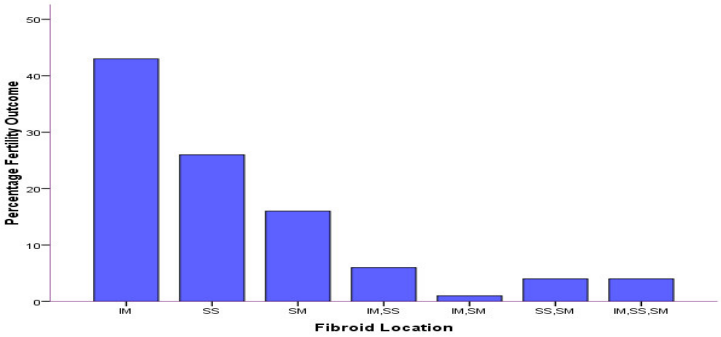

Fig 1: Bar chart of Fibroid Location on fertility outcome

Table 3: Cross Tabulation of fibroid size and pregnancy outcome.

Size of the Fibroid		Fertility Outcome		
		Conceived	Did not conceive	Total
Large	Count	17	29	46
	% within location of fibroid	37%	63%	100%
	% within fertility Outcome	33%	60%	
	% of Total	17%	29%	46%
Small	Count	35	19	54
	% within location of fibroid	65%	35%	100%
	% within fertility Outcome	67%	40%	
	% of Total	35%	19%	54%
Total	Count	52	48	100
	% of Total	52%	48%	

Table 4: Cross Tabulation of fibroid location and pregnancy outcome.

Location of fibroid		Pregnancy Outcome		
		Conceived	Did not conceive	Total
IM	Count	20	12	32
	% within location of fibroid	63%	37%	100%
	% within fertility Outcome	38%	25%	
	% of Total	20%	12%	32%
SS	Count	14	10	24
	% within location of fibroid	58%	42%	100%
	% within fertility Outcome	27%	21%	
	% of Total	14%	10%	24%
SM	Count	7	10	17
	% within location of fibroid	41%	59%	100%
	% within fertility Outcome	13%	21%	
	% of Total	7%	10%	17%
IM,SS	Count	5	8	13
	% within location of fibroid	38%	62%	100%
	% within fertility Outcome	10%	17%	
	% of Total	5%	8%	136%
IM,SM	Count	4	4	8
	% within location of fibroid	50%	50%	100%
	% within fertility Outcome	8%	8%	
	% of Total	4%	4%	8%
SS,SM	Count	2	4	6
	% within location of fibroid	33%	67%	100%
	% within fertility Outcome	4%	8%	
	% of Total	2%	4%	6%
TOTAL COUNT		52	48	100
		52%	48%	

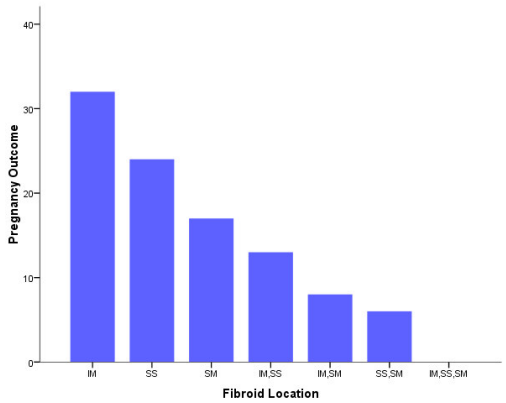

Fig 2: Bar chart of Fibroid Location on pregnancy outcome

Test of Association between Fibroid size and Fertility Outcome.

Table 5.0: Observed and Expected Count of Fertility Outcome by Fibroid Size.

			Fertility Outcome		Total
			Conceived	Did not conceive	
Fibroid Size	Small	Count	28	6	34
		Expected Count	20.4	13.6	34.0
	Large	Count	32	34	66
		Expected Count	39.6	26.4	66.0
Total		Count	60	40	100
		Expected Count	60.0	40.0	100.0

Table 5.1: Chi-Square Test

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.725	1	.001
Continuity Correction(a)	9.360	1	.002
Likelihood Ratio	11.480	1	.001
Fisher's Exact Test			
Linear-by-Linear Association	10.618	1	
N of Valid Cases	100		

Table 5.2: Symmetric Measure

		Value	Approx. Sig.
Nominal by Nominal	Phi	.327	.001
	Cramer's V	.327	.001
N of Valid Cases		100	

The null hypothesis that fertility outcome is independent on fibroid size was rejected at 5% level of significance ($\chi^2 = 10.725 > '\chi^2_{0.05,1} = 3.841'$, $\phi = 0.327$). This result implies that the degree to which fibroid size attributes to infertility in women is significantly moderate.

Test of Association between Fibroid location and Fertility Outcome.

Table 6.0: Observed and Expected Count of Fertility Outcome by Fibroid Size.

			Fertility Outcome		Total
			Conceived	Did not conceive	
Fibroid Location	IM	Count	30	13	43
		Expected Count	25.8	17.2	43.0
	SS	Count	17	9	26
		Expected Count	15.6	10.4	26.0
	SM	Count	6	10	16
		Expected Count	9.6	6.4	16.0
	Others	Count	7	8	15
		Expected Count	9.0	6.0	15.0
Total		Count	60	40	100
		Expected Count	60.0	40.0	100.0

Table 6.1: Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.510	3	.089
Likelihood Ratio	6.460	3	.091
Linear-by-Linear Association	4.830	1	.028
N of Valid Cases	100		

The null hypothesis that fertility outcome is independent on fibroid location was accepted at 5% level of significance ($\chi^2 = 6.510 < '\chi^2_{0.05,3} = 7.815'$). This result implies that the fibroid location does not attribute to infertility in women.

Test of Association between Fibroid size and Pregnancy Outcome.

Table 7.0: Observed and Expected Count of Pregnancy Outcome by Fibroid Size.

			Pregnancy Outcome		Total
			Conceived	Did not conceive	
Fibroid Size	Small	Count	17	29	46
		Expected Count	23.9	22.1	46.0
	Large	Count	35	19	54
		Expected Count	28.1	25.9	54.0
Total		Count	52	48	100
		Expected Count	52.0	48.0	100.0

Table 7.1: Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	7.724	1	.005	
Continuity Correction(a)	6.648	1	.010	
Likelihood Ratio	7.820	1	.005	
Fisher's Exact Test				.009
Linear-by-Linear Association	7.646	1	.006	
N of Valid Cases	100			

Table 7.2: Symmetric Measure

		Value	Approx. Sig.
Nominal by Nominal	Phi	.278	.005
	Cramer's V	.278	.005
N of Valid Cases		100	

The null hypothesis that pregnancy outcome is independent on fibroid size was rejected at 5% level of significance ($\chi^2 = 7.724 > '\chi^2_{0.05,1} = 3.841'$, $\phi = 0.278$). This result implies that the degree to which fibroid size attributes to influences pregnancy outcome is significantly moderate

Test of Association between Fibroid location and Pregnancy Outcome.

Table 8.0: Observed and Expected Count of Pregnancy Outcome by Fibroid Location.

			Pregnancy Outcome		Total
			Delivered	Not Delivered	
Fibroid Location	IM	Count	20	12	32
		Expected Count	16.6	15.4	32.0
	SS	Count	14	10	24
		Expected Count	12.5	11.5	24.0
	SM	Count	7	10	17
		Expected Count	8.8	8.2	17.0
	IM,SS	Count	5	8	13
		Expected Count	6.8	6.2	13.0
	Others	Count	6	8	14
		Expected Count	7.3	6.7	14.0
Total		Count	52	48	100
		Expected Count	52.0	48.0	100.0

Table 8.1: Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.021	4	.403
Likelihood Ratio	4.049	4	.399
Linear-by-Linear Association	3.146	1	.076
N of Valid Cases	100		

The null hypothesis that pregnancy outcome is independent on fibroid location was accepted at 5% level of significance ($\chi^2 = 4.021 < '\chi^2_{0.05,4} = 9.488'$). This result implies that the fibroid location does not attribute to pregnancy outcome.

Conclusion

Based on findings from this study, we hereby conclude that the size of Uterine fibroid has a moderate significant impact on women's fertility and pregnancy outcome. while the location does not attribute significantly to women's fertility and pregnancy outcome. Therefore, women with uterine fibroid should visit a physician periodically for adequate examination and administration of corrective measures in order to preserve their fertility.

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