RELATIONSHIP BETWEEN PELVIC INFLAMMATORY DISEASE AND INTRAUTERINE CONTRACEPTIVE DEVICE; A CASE CONTROL STUDY FROM PAKISTAN

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ABSTRACT

Background: Pelvic inflammatory disease (PID) is an important problem affecting the health and well-being of women globally. Other than the chronicity of lower abdominal pain which affects the women's well-being, infertility and its related problems compounds the need to study this issue in developing countries. Though few studies suggest that 9% women in Pakistan suffer from PID, but we do not have adequate information on magnitude, distribution and determinants of PID.

Objective: To determine the association of pelvic inflammatory disease and Intra uterine contraceptive device (IUCD) and secondary objective was to identify the causes of discontinuation of IUCD.

Study Design: Case control study.

Place and Duration of Study: Gynae OPD of Holy family hospital and Benazir Bhutto Hospital Rawalpindi, from Jan to Dec 2016.

Material and Methods: Total 175 diagnosed cases of PID were selected from OPD of tertiary care hospitals. Same number of controls was selected from the same OPD with other problems. A pre-tested questionnaire was filled by the researcher herself by interviewing the respondents. The results analyzed by SPSS version 20.

Results: The odds ratio for PID with IUCD as a risk factor was 2.36 with 95%confidence interval being 1.46 to 3.82. Among 157 cases IUCD was present in 42 cases (26.75%) while in 157 controls it was in 21 cases (13.38%). The difference was statistically significant (p=0.005).

Conclusion: IUCD is an associated risk factor for PID.

Keywords: Pelvic Inflammatory Disease, Intrauterine contraceptive device, Infertility.

INTRODUCTION

IUCD is considered the best among the long term contraceptive methods. IUCDs have many advantages over other commonly used methods of contraception[1]. It has longer continuation rates than the hormonal pills and injections, so the overall effectiveness of IUCDs is more in Family planning program[2]. It is cheap, as once inserted, the client does not have to come again and again to service provider, can be inserted any time of the month provided female is not pregnant, during breast feeding, soon after delivery, after miscarriage or abortion and even as an emergency contraception[3]. Hence the IUCDs are such long acting contraceptives which have an edge over other contraceptives because they start their contraceptive effect as soon as they are inserted, inexpensive, no interference with intercourse and there is no problem with the fertility once they are removed, no hormonal side effects, and no supplies needed by clients, safe even after immediate postpartum[4,5]. However, their use is limited, largely as a result of perceptions that IUCDs cause PID[6-8].

Pelvic Inflammatory disease (PID) is an important gynecological problem and is amongst the serious infections facing women today[9], It is caused by the infection from the cervix and vagina which ascends and cause inflammation of ovaries, fallopian tubes and uterus and might lead to infertility[10,11].

The main cause of PID is infection mainly bacterial such as gonorrhea and chlamydia through sexual transmission[12]. PID can also be

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caused after delivery or abortion, and according to some, insertion of IUCD[13] can also lead to pelvic inflammatory disease. The relationship of IUCD insertion and PID is a matter of serious concern[14].

IUCD has been linked with PID and its use is showing a declining trend[15]. Keeping in view the effectiveness of the device our study will help us to have an insight into the ground realities in the background of available literature. City of Rawalpindi has been chosen for the research, which has urban settings and well developed health infrastructure and health statistics comparable to national figures[16].

Objectives

The objectives of the study were:

1. To determine the association of Pelvic inflammatory Disease (PID) and Intra Uterine Contraceptive Device (IUCD) in women coming to the Out Patient departments of tertiary care settings in Rawalpindi.
2. To determine the causes of discontinuation of IUCD.

MATERIAL AND METHODS

It was a CASE Control Study, was carried in Gynecology Outpatient Department of Holy Family and Benazir Bhutto Hospital Rawalpindi in one year duration i.e. from Jan to Dec 2016. A total of 314 subjects (157 each group) were included in the study, using non probability consecutive sampling technique. Sample size was calculated by using WHO calculator with assumptions of anticipated Odds ratio as 2.19, anticipated probability of exposure (IUCD) in cases as 20% and in controls 10%[17], alpha as 95%, power of the study at 80%. Ratio of cases and controls was 1:1.

Cases

Table-I: Demographic profile of cases and controls (n=314).

Age Categories	Cases n(%)	Controls n(%)	Total n(%)
15-25 years	27(17.2%)	23(14.6%)	50 (15.9%)
26-36 years	94(59.9%)	83(52.9%)	177(56.4%)
37-49 years	36(22.9%)	51(32.5%)	87(27.7%)
Total	157(100%)	157(100%)	314(100%)
Socio Economic Status			
5000 or less	10(6.4%)	11(7%)	21(6.64%)
6000 - 10,000	44(28%)	102(65%)	146(46.5%)
11,000 - 15,000	32(20.4%)	13(8.3%)	45(18.3%)
16,000 or above	71(45.2%)	31(19.7%)	102(32.5%)
Total	157(100%)	157(100%)	314(100%)
Educational Status			
Illiterate	44 (28%)	62(39.5%)	106(33.75%)
Less than matric	59 (37.6%)	75 (47.7%)	134(42.67%)
Matric	11 (7%)	8 (5.1%)	19(12.1%)
Intermediate or above	43 (27.0%)	12 (7.6%)	55(17.52%)
Total	157(100%)	157(100%)	314(100%)
Preference of FP Method			
Condoms	21(13.4%)	6(3.6%)	27(8.6%)
Hormonal	15(9.7%)	27(17.2%)	42(13.36%)
IUCD	41(25.5%)	21(13.4%)	61(19.5%)
Ligation	7(4.5%)	0(0%)	7(2.2%)
Traditional	8(5.1%)	15(9.6%)	23(7.32%)
None	65(42%)	88(56%)	154(49%)
Total	157(100%)	157(100%)	314(100%)

Subjects diagnosed with PID by the Gynecologist on the basis of presence of positive rocking/chandlier sign and presence of foul smelling vaginal discharge. Once diagnosed as a PID case by a consultant gynaecologist the patient was examined by another gynaecologist, which was blinded of the findings of first diagnosis. The women who were diagnosed as having PID by both the consultants were taken as cases.

Controls

Recruited from the same hospitals as cases, reporting for other gynecological problems. Controls also got examined in the similar manner as cases and only the ones found negative by both were included in the study. All the factors which could confound the result were excluded from the study.

Married Women of reproductive age having at least one child (as this is the generally taken criterion of IUCD insertion) were included in the study ,while women having abortion or delivery (poses a women to risk of PID) in less than three months and pregnant females were excluded. The females whose husbands had multiple partners (whether married or extra marital) were also excluded from the study.

The data was collected done with the help of a structured, pretested questionnaire through interviews conducted by the researcher herself.

Data was analyzed by using SPSS version 20.0. Mean and standard deviations were used for quantitative variables like age and duration of marriage, while frequencies and percentages were used for categorical variables like use of family planning method and place of insertion of IUD. Chi square test was applied to determine the association between PID and IUCD. The association between PID and IUCD was shown as odds ratio with 95% confidence interval. There are no known confounders of such an association therefore odd's ratio was calculated directly. A *p*-value<0.05 was taken as significant. Stratification was done at the time of data analysis to control the confounding effects of socioeconomic status and age, to avoid potential bias, though they are not known causes of disease.

Table-II: Association between PID and IUCD.

Use of FP	Cases (n=157)	Controls (n=157)	Association of PID with FP use
Yes N (%)	91 (58%)	69 (43.9%)	*p*=0.003
No N (%)	66 (42%)	88 (56.1%)	
Use of IUCD	Cases	Controls	Association of IUCD with PID
Users N (%)	42 (26.8%)	21 (13.4%)	*p*= 0.003 Odds Ratio = 2.365 CI = 1.463 – 3.823
Non Users N (%)	115 (73.2%)	136 (86.6%)	

RESULTS

Mean age of the cases was 32.31 ± 6.37 years while mean age in the control group was 32.92 ± 6.74 years. Both the groups were comparable with respect to age (*p*=0.41). It was noted that out of 157 cases 42 (26.8%) were IUCD users while the non-users were 115 (73.24%). Similarly, out of 157 controls 21 (13.4%) were IUCD users while 136 (86.62%) were not using IUCD. The association of IUCD with PID was found to be statistically significant (*p*=0.003). The odds ratio for PID with IUCD as a risk factor was 2.36 with 95% confidence interval being 1.46 to 3.82.

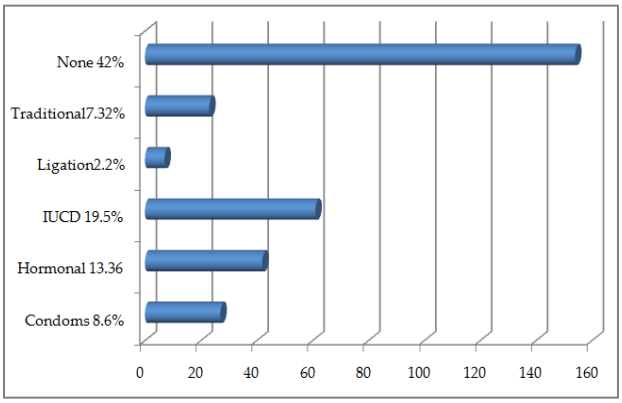

Figure-1: Use of family planning methods.

Out of 42 cases using IUCD 11 (26.19%) get it inserted from public hospitals, 11 (26.19%), from private hospitals and 18 (42.85%) from family planning centers. Out of 21 controls 14 (66.6%%) had insertion from public hospitals, 2 (9.52%) from private hospitals and 5 (23.8%) from family planning centers. The association of PID with place of IUCD insertion was found to be statistically significant (p=0.002).

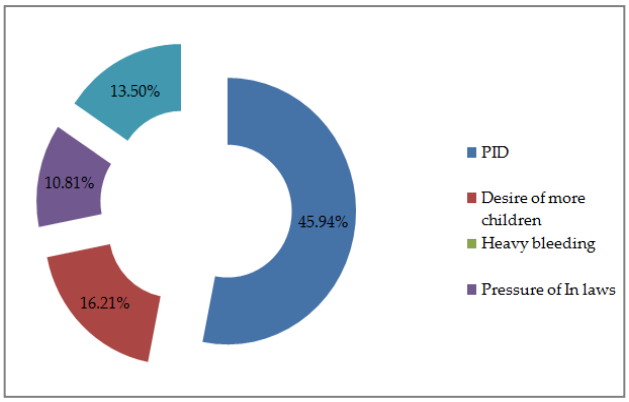

Figure-2: Causes of removal of IUCD.

No matter what was the place of insertion, the use of gloves is one of the most dominant factors in spread of infection. Out of the 61 IUCD users, either cases or controls, only 4 (6.55%) complained about not using gloves by the service provider and they were all the cases. Hence, we had 38 cases which had insertions with the use of gloves while 4 had it without the use of gloves. Out of 21 controls, all had insertion with the use of gloves. However the association of PID with use of gloves was statistically not significant (p=0.134).

The cases and controls (total 61) were compared regarding insertion period also, and out of 40 cases the insertion period of 21 days or less was zero, while respondents for 22 days to 6 months insertion period were 1 (2.5%), 7 months to 1 year were 23 (57.5%) and rest of 16 (40%) had insertion from 1 year to 5 years. Out of 21 controls, the respondents who had an insertion period of 21 days orless were 3 (14.29%), while having 22 days to 6 months were 0. For 7 months to1 year were 4 (19.05%) and the rest of 14 (67%) had the insertion period of 1 year to 5 years. The association of PID with duration of insertion was found to be statistically significant (p=0.005).

Second objective of this study was to investigate the most prevailing cause of the dis-continuation of the use of IUCD. Though the causes were miscellaneous in nature such as, weight gain, pressure from the in-laws, expulsion etc. but the most dominant cause was PID as per the study where 45.94% respondents told that they got the IUCD removed after being diagnosed for PID.

DISCUSSION

Our study displayed a significant positive relationship of IUCD with PID. The p-value was found to be 0.005 which is statistically significant. The odds ratio for PID with IUCD as risk factor was 2.36 with 95% confidence interval being 1.46 to 3.82. Similar odd ratio was calculated in a study conducted in India, where the odds ratio for PID with IUCD as risk factor was 2.19 with 95% confidence interval being 1.13 to 4.23[17]. The difference was statistically significant (p=0.027) showing IUCD as a risk factor for PID. The association of PID with IUCD has been a matter of much debate and there are number of studies which claim that no such association exists[18-20]. World Health Organization Medical Eligibility Criteria, and the United States Medical Eligibility Criteria[22], state that the benefits likely outweigh the risks, perhaps the reason for this disparity is that most of the research backing these guidelines has been conducted in developed countries with better aseptic techniques and hygiene in health care facilities.

In our study the association of PID with age categories was analyzed; the association of PID with age categories was statistically not significant (p=0.17). Hence, it can be stated that age isn't a significant variable regarding the incidence of PID. The most cases of PID were seen in the age categories of 26-36 years, results are similar to the study conducted in India by Dr Patel[17] which showed that most cases were from age category of 31-35 years.

The most common type of IUCD used in Pakistan is Copper T (Cu T) which is used by majority of service providers at family planning centers, private hospitals and at tertiary care hospitals. Although other types of IUCDs are also available but they are not frequently used. This study didn't attempt at correlating the type of IUCDs and incidence of PID.

Considering duration of IUCD insertion in our study PID was found from seven months to one year of insertion. The *p*-value for the association of duration of IUCD insertion with PID was 0.005 which is statistically significant. This is not in accordance with the previous studies as most studies support that after IUCD insertion acquiring PID are maximum within 20 days of insertion[23].

Strengths

During the data collection the adherence with the true selection of cases was kept in mind which otherwise can lead to the overestimation of the real PID cases.

LIMITATION OF STUDY

PID is directly related to sexually transmitted infections and prevalence of STDs in the community also play an important role in the spread of PID It is seen more in women with STIs. In our study there were no means to rule out STIs, and this is a limitation of the study, though we asked questions about spouses' having multiple sexual partners.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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