The Gynaecologist 1993; 3:129-36. - (CREATED FROM SCANNED DOCUMENT, PLEASE REFER TO ORIGINAL)

QUINACRINE

Non Surgical Female Sterilization

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Abstract : An experience with 2100 Quinacrinc Nonsurgical tubal occlusion in women at a sterilization centre in Faisalabad over a period of 1 year (January to December, 1990) is presented. A trial of single insertion of 7 pellets (250 mg quinacrine HCl) through IUCD inserter has been carried out. 85 pregnancies have been recorded so far. No serious complications or side-effects were reported.

Although the study is of short duration and of limited follow up, the fact that it is highly acceptable, simple, safe. effective, inexpensive and can be performed by a paramedical personnel needs to be widely known and practiced in developing countries.

Introduction

Voluntary sterilization is the most prevalent and popular method of fertility control ail over the world today. An estimated number of couples using it has increased dramatically over last two dccadcs, from 15 million to over 100 millon(1,2).

Pakistan is the ninth most populous

country in the world, with officially quoted growth rate of 3.1% has considerable unmet need. There is an increased demand of sterilization preference being for female sterilization. This demand far exceeds the facilities to provide services especially in rural areas where 70% of our population lives. During recent years tubal occlusion emerged as an important option for women who want to permanently limit their ability to reproduce.

TBAs are cited by many researchers, including the author, as the main source of providing important information about the proccdurc, and in fact more than 90% of the cases from urban and rural areas are brought by them (14). The fact that many women are afraid of operative procedure led to the popularity of quinacrine non-surgical tubal occlusion.

Nonsurgical procedure helps to avoid criticism from the extended family as most women do not want to tell their relatives about sterilization. Similar trend was seen 12 years ago when vaginal tubectomy was introduced in Faisalabad. This procedure was favoured by many women compared to abdominal tubectomy, as no abdominal operation was done and consequently no scar could be seen (15).

With the introduction of quinacrine non-surgical tubal occlusion, the acceptance rate has greatly increased over a period of one year, i.e. 1990. Information about family planning is given at community level through street camps in rural and urban areas. The fact that services can be offered at door steps i.e., the health centres, the IUCD camps and the street camps during community education, has facilitated wide acceptance of the proccd ure.

The case for family planning. especially when it comes to maternal and child health is very convincing as most maternal deaths are potentially preventable by reducing high risk pregnancy and unsafe abortion.

Many chemical agents have been tested and tried for tubal occlusion which are strong caustic agents, strong acids, sclerosing agents, granuloma producing agents, cytoxic agents and tissue adhesives.

Sterilization is a highly effective means of fertility regulation and is the most popular method world wide. Female sterilization using conventional techniques is always a major surgical procedure. Injuries to the abdominal viscera, blood vessels and morbidity is difficult to avoid during the surgical manipulation. Surgical sterilization cannot be offered on large scale, because most procedures require considerable training possessed by a Gynecologist or a trained Medical Officer. The most promising approach is the transcervical insertion of pharmacology active agents to produce tubal occlusion as majority of women are scared of surgery (3). According to per advances in methods of fertility regulation WHO 1973, Quinacrine 2-4 ml of 30% aqueous suspension was used transvaginal in proliferative phase of 2 consecutive cycles to induce tubal occlusion in 93% of 134 women (4).

Zipper and his association later used 3 instillation which resulted in pregnancy rate of almost 10 percent. Other investigators substantiated the findings (5). Later, Zipper suggested that quinacrine HCl pellets should be

used as they prolong the contact of drug with tubal ostia and thus increasing the probability of occlusion. Furthermore the drug in pellet form will not exert pressure in the uterine cavity to risk rapid intravascular absorption causing toxic psychosis (5).

Two insertion of quinacrine pellets, with a gap of one month has been reported to-date, with life time failure of 5% No. operative mortality or serious morbidity has been reported (6).

Field experience with non-surgical methods shows that very few women return for a second insertion. In case of quinacrinc pellet method, which has no increased risk of ectopic pregnancy among failures. Women receiving a single insertion will have a permanent method of fertility control as effective as barrier methods without the inconvenicnce (7).

The combined experience of Zipper and Guzman-Serani and their co-workers show that among 454 women entering their quinacrine pellet studies of three monthly insertions, five women became pregnant between insertion and l-year pregnancy rate after the third insertion ranged from 0.7 per hundred women to 4.3 per hundred women. It appears that pregnancy failures between quinacrine pellet insertions would only marginally affect the efficacy of the method. The question remain as to what contribution the second and third quinacrine pellet insertion make to the efficacy of this method. This question has not been studied. Only a prospective study of one insertion of quinacrinc pellet can provide the answer (16, 19).

In comparing the risk of cctopic pregnancy after surgical versus quinacrinc pellet methods of sterilization, the following estimates can serve as a guide. At the end of the first year, surgical methods have an ectopic pregnancy rate of approximately 0.75 per thousand procedures, which raises to approximately to 2.15 per thousand procedures at the end of the second year (10). The cctopic pregnancy rate is approximately 0.24/1000 with quinacrine sterilization, at the end of the first year and .34 per thousand at the end of the second year. These rates are one-third and one-sixth those of surgical procedures. The lower ectopic pregnancy rate of the quinacrine pellet method and the virtual absence of reported serious complications of the method to-date would make the quinacrine pellet method favourable except that experience with the method is, yet so limited. Failure rate is 0.5 percent for surgical sterilization and 5 percent for quinacrine sterilization (9).

Zipper, the dcvclopcr of quinacrinc method of non-surgical tubal occlusion has found that anti-prostaglandins potentiate the effect of quinacrine, possibly by relaxation of sphincter action of muscles at ostia. A trial by giving 400 mg of Ibuprofen orally half an hour before insertion may help to enhance the effect.

Quinacrine (Mecaprine Hydro Chloride)

Quinacrine is bright yellow odorless crystalline powder with a bitter taste. Chemically it is 3-chloro-9-(4-diethylamino- 1-metyhlutylamino)-7-methoxyacridine dihyrochloride dihydratc.

Uses

Quinacrinc can be used for the suppression and treatment of Malaria, treatment of giardiasis expulsion of tape worms and with antibacterials to delay the development of resistance. Quinacrine instillation have been used in the symptomatic treatment of neoplastic effusions of the pleura and peritoneum (11).

Complications

No serious complications or side effects have been reported to date in over 100 insertions of quinacrine pellets (16,17). Earlier studies with a liquid slurry of 1500 mg of quinacrinc did produce a 2 percent rate of transient toxic psychosis shortly after quinacrine instillation, but this has not appeared with the 250 mg quinacrinc pellet method (5).

Quinacrine Pellets

Quinacrine pellet is cylindrical in shape with 0.35cm diameter and 0.5cm in length. 7 pcllcts containing a total dose of 250mg are introduced into uterine cavity. Recently quinacrine is applied on the tip of a T shaped or V shaped IUCD like vector (8).

Quinacrine Causing non-Surgical Sterilization

It has also been shown that quinacrine diffuses to fallopian tube and causes damage & fibrosis limited to comual area of the uterus and interstitial portion of fallopian tube (12).

Perhysterectomy studies of quinacrinc method showed that quinacrinc produces inflammation & fibrosis that is confined primarily to the intramural portion of fallopian tube (13).

It has been demonstrated that quinacrinc causes subcpithclial hyalinization and scarring with involvement of both the lamina propria and the muscularis of the tubes (8).

Material and Methods

Non surgical tubal occlusion of women using 7 quinacrine pellets was started in Faisalabad in January, 1990. The women of reproductive age group were motivated by the author through street camps in rural and urban areas, and by TBAs, LHVs and Doctors.

The women were thoroughly examined to rule out any medical problem & pelvic pathology i.e., PID adncxal masses, tumour of reproductive organs and uterine anomalies. They were explained about the minor side effects and possible failure of the method and subsequent free termination and surgical ligation.

After that screening, the women were advised to visit Mother & Child Health centre/private clinic in proliferative phase of menstrual cycle. At this time quinacrinc 7 pcllcts (total dose 250mg) were inserted into uterine cavity with the help of sterilized Copper (Cu) T IUCD inserter as follows

Vaginal speculum was introduced to expose the cervix and uterine length was measured with the help of a uterine sound in doubtful cases. If the uterine length was 8cm or less insertion of quinacrine pellets was done and if uterine length was more than 8cm pregnancy test was performed to rule out pregnancy. The Cu T IUD inserter containing the quinacrinc pcllcts was gently introduced into uterine cavity.

The plunger was fixes and slccvc gradually withdrawn to release the pellets in the uterine cavity. The inserter was then gently withdrawn from the uterus.

The woman was advised to visit MCH centre/clinic if she has any problem like severe pain, bleeding P/V or missing of period.

TBAs/LHVs were also instructed to have regular contact with their clients and to immediately report in case of complication. The fact that only few women come for second insertion of quinacrine pellets made us to start trial on single dose insertion of quinacrinc. Another reason for single dose quinacrine insertion is that inflammation, fibrosis & consequent damage to fallopian tube that has occurred with single dose is probably not affected by second dose of quinacrinc. Wc could not perform the test to check the occlusion of fallopian tube either by insufflation or hystcrosalpingography due to lack of facilities and heavy work load.

Results and Discussion

In 12 month duration 2100 women got quinacrinc insertion residing in rural and urban areas of Faisalabad. The month-wise distribution of women is shown in Table-l. A comparison of quinacrinc cases with trans abdominal tubal ligation cases and transvaginal tubal ligation cases is also shown in the Table II. The table indicates a high acceptance of quinacrinc by the women.

About 7 percent of women showed minor side cffccts in a sample study of 450 women given in Table-II. Vaginal discharge for 5- 10 days was reported by all women. The next major complaint was pain in lower abdomen for l-6 days. The other complaints were amenorrhoea for 2-3 months irregular menstruation, mcnonhagia, backache, feeling of heaviness, dysparcunia & itching.

Table III shows the parity of women receiving quinacrinc insertion. It is found that women with parity 6 & 7 are highest in number. The maximum number of women who bcncfittcd quinacrinc insertion fell between 3 1-35 years as shown in table IV.

Up till now 85 women (4.05%) have been rcportcd pregnant after varying period of quinacrinc insertion as shown in table V. Maximum number of cases are reported between 6 to 8 months after insertion as shown in table V. Table VI. shoes the fate of these pregnancies resulting after quinacrine insertion.

31 women desired to continue the pregnancy, 52 women got D & C with vaginal tubcctomy and 1 woman got D & C elscwhcrc and one unknown.

Although our study on quinacrinc is of short duration and follow up, it has high acccptancc, very few side cffccts (7%), high efficacy (95.95%) and less chances of ectopic pregnancy in failure (0%).

We have used a single dose of quinacrinc because the need for multiple insertions of quinacrinc pellets for the achievement of acceptable efficacy has not been demonstrated clinically. A single insertion trial is a high priority for fertility research.

Table - I
Comparison of women regarding surgical and nonsurgical Sterilization

Sr. No.	Month	Quinacrine Tubal Ligation	Trans-abdominal Tubal Ligation	Trans-vaginal
1.	January 1990	47	8	6
2.	February	40	15	18
3.	March	177	5	18
4.	Apri 1	173	6	16
5.	May	291	9	2
6.	June	260	11	9
7.	July	306	9	13
8.	August	292	12	7
9.	September	276	11	37
10.	October	80	19	38
11.	Novcm bcr	33	45	23
12.	Decembcr	117	14	48
	Total	2100	167	235

Table - II
Minor side effects observed in women after quinacrine insertion

S. No.	Complaints	No. of cases	Percentage
1	Pain in lower abdomen	10	2.22
2.	Amcnorrhoea for 2-3 months	5	1.11
3.	Mcnorrhagia	4	0.88
4.	Backache	3	0.66
5.	Secondary amcnorrhoca	2	0.44
6.	Feeling of heaviness	2	0.44
7.	Irregularity of menses	2	0.44
8.	Bleeding P/V for one month	1	0.22
9.	Dyspareunia	1	0.22
10.	Itching	1	0.22
		31	6.80

Table - III
Quinacrine insertions according to parity

Parity	No. of cases	Percentage
2	15	0.73
3	58	2.77
4	175	8.32
5	256	12.20
6	283	18.24
7	365	17.38
8	334	15.90
9	194	9.24
10	163	7.76
11	75	3.51
12	37	1.78
13	25	1.17
14	14	0.67
15	5	0.24
Total	2100	100.00

Table - XV
Women age groups and Quinacrine insertions

Age groups (Years)	No. of cases	Percentage
20-25	**27**	**1.28**
26-30	**370**	**17.62**
31-35	958	45.62
36-40	706	33.63
41-45	35	1.66
46-above	4	0.19
Total	2100	100.00

Conclusion

Women have always risked their lives to avoid unwanted child bearing. Birth rate, fertility rate, family planning and contraception arc all taboo topics in Pakistani socicty and politics. In 43

Table - V
Interval between quinacrine insertion and pregnancy

Pregnancy reported after quinacrine insertion	No. of cases
2 months	12
4 months	14
6 months	23
8 months	21
10 months	8
12 months	6
Unknown	1
Total	85

Table - VI
Fate of pregnancy resulting after quinacrine insertion

Fate of pregnancy	No. of cases	Percentage
Pregnancy continued	31	36.47
D & C with vaginal tubectomy	52	61.17
D & C	1	1.18
Unknown	1	1.18
Total	85	100.00

years since independence the country has made only half hearted attempts to introduce family planning and has made absolutely no success in reducing the birth rate, 43 to 45 per thousand population. The average family size is 6-7 children and is the highest in Southern Asia. Population is said to double in 22 years from 100 millions to 200 millions. Pakistan has very poor family planning records in Asia i.e. on!y one-fifth of the country is covered by family planning services (18). In

our joint family system most women do not like their relatives and friends to know that they are using family planning methods.

There is crying need for the government to approve a non surgical sterilization method and to offer family planning to masses at a very low cost, with minimum complications and at their door steps.

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