

Quinacrine: non surgical female sterilization

Atlaf Bashir

Mother and Child Welfare Association, 18-Gulzar Colony, Near Passport Office Faisalabad (38000) Pakistan

Abstract

Non surgical sterilization was performed on 2100 women in Faisalabad by a single insertion of 7 pellets (252 mg) of quinacrine hydrochloride through IUCD inserter. During one year follow-up only 85 pregnancies (4%) were recorded. No serious complications or side-effects were reported, **Although the study is of a short duration and of limited follow-up, it clearly shows that quinacrine tubal occlusion is a highly acceptable (84.1%) effective (96%) and an inexpensive method of contraception which has very few side effects (6.8%) and negligible chances of ectopic pregnancy.**

Introduction

Over the last two decades, couples undergoing sterilization has increased dramatically from 15 million to over 100 million, Voluntary sterilization is the most prevalent and effective method of fertility control in the world.

Pakistan Demographic and Health Survey 1990-91 (PDHS) demonstrates that 69.6% of married women knew about female sterilization as an effective method of contraception. Sixty-two percentage knew about **the pills**, IUD (51.6%), injectable (62.1%) and male sterilization (22.2%). **The same survey** shows that 4.2% of currently married non-pregnant woman had undergone sterilization, while only 0.8% were using pills, 1.5% IUD and 0.9% injectable. When asked about the preferred method of contraception for future use, the following responses were given: 18.9% of currently married non-contracepting women showed desire to undergo sterilization within the next 12 months **14.5%** opted for pills, 8.7% for IUD and 17.5% for injectables. These data indicate that female sterilization can be promoted as an acceptable and effective method of family planning in our country.

Pakistan is the ninthmost populous country in the world with official growth rate of 3.2%. There is an increase in the demand for sterilization; preference being for female sterilization, This demand far exceeds the facilities to provide services, especially in the rural areas where 70% of our population lives. 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 abortions. The author and many researchers are citing TBAs as the main source of providing important information about the procedure. The fact that many women are afraid of operative procedure led to the popularity of quinacrine non-surgical tubal occlusion. Female sterilization using conventional techniques are always a major surgical procedure. Injuries to the abdominal viscera, blood vessel and morbidity is difficult to avoid during surgical manipulation. Surgical sterilization cannot be

offered on large scales because most procedures require highly trained manpower. During recent years, tubal occlusion emerged as an important option for women who want to permanently limit their ability to reproduce. The promising approach is trans-cervical insertion of pharmacologically active agents to produce tubal occlusion, as majority of women are afraid of surgery. Non-surgical procedure helps to avoid criticism from the extended family as most women do not want to tell their relatives about sterilization. Many chemical agents, strong caustics, sclerosing agents, granuloma producing agents, cytotoxic agents and tissue adhesives have been tested and tried for tubal occlusion. The most promising results have been shown by quinacrine.

Historical Background

Initially (1973) 2-4 ml of 30% aqueous suspension of Quinacrine was used transvaginally in proliferative phase of 2 consecutive cycles which induced tubal occlusion in 95% of 134 women. Zipper and his colleagues later used 3 instillation, which resulted in pregnancy rate of almost 10%. These findings were substantiated by other investigators, Zipper suggested that quinacrine Hcl pellets should be used as they prolong the contact of drug with tubal ostia and thus increase the probability of occlusion. The drug in pellet form will not exert **pressure** in the uterine cavity to risk rapid intravascular absorption causing toxic psychosis. Two insertion of quinacrine pellets with a gap of one month has been reported with life time failure of 5 % No operative mortality or serious morbidity has been reported.

Quinacrine pellets are cylindrical in shape with 0.35 cm diameter and 0.5 cm in length, Seven pellets containing a total dose of 252 mg are introduced into uterine **cavity**. Quinacrine diffuses in fallopian tube and causes damage and fibrosis limited to cornual area of the uterus and interstitial portion of fallopian tube. It has been demonstrated that, quinacrine causes subepithelial hyalinization and scarring with involvement of both the lamina propria and muscularis of the tubes, Non-surgical female sterilization using quinacrine was started in Faisalabad in 1990. This report is based on our experience with 2100 cases in one year using single insertion,

Material / Method

The women of reproductive age were motivated by the author, TBAs, LHVs and doctors, through street camps in rural and urban areas, The women were thoroughly examined to rule out any medical problems and pelvic pathology (e.g., PID adnexal masses, tumor of reproductive organs and uterine anomalies). They were explained the minor side effects and possible failure of the method, After screening, the women were advised to come during proliferative phase of menstrual cycle. At this time quinacrine 7 pellets were inserted into uterine cavity with the help of sterilized Copper-T IUD inserter. She was advised to come back if she had any problem like severe pain, bleeding P/V or missed period. TBA/LHVs were also instructed to have regular contact with their clients and to immediately report in case of complication.

Table 1. Comparison of women regarding surgical and non-surgical sterilization

Month (1990)	Quinacrine	Trans-abdominal tubal ligation	Trans-vaginal tubal ligation
January	47	8	6
February	40	15	18
March	177	5	18
April	173	6	16
May	291	9	2
June	260	11	9
July	306	9	13
August	292	12	7
September	276	11	37
October	80	19	38
November	33	45	23
December	117	14	48
TOTAL	2100	167	235

Table 2. Minor side effects observed in women

Complaints	No. of cases	Percentage
Pain in lower abdomen	10	2.22
Amenorrhoea for 2-3 months	5	1.11
Menorrhagia	4	0.88
Backache	3	0.66
Secondary amenorrhoea	2	0.44
Feeling of heaviness	2	0.44
Irregularity of menses	2	0.44
Bleeding P/V for one month	1	0.22
Dyspareunia	1	0.22
Itching	1	0.22
TOTAL	31	6.85

Results

During 12 months (January to December 1990), 2100 women residing in rural and urban areas of Faisalabad got quinacrine insertion. The number of quinacrine acceptors and those opting for trans-abdominal and trans-vaginal tubal ligation is shown in Table 1, which indicates high acceptance of quinacrine' (84%), trans-vaginal (9.4%) and trans-abdominal (6.6%)

About 7% of women showed minor side effects in a sample study of 450 women given in Table 2. Vaginal discharge for 5-10 days was reported by all women. The next major complaint was pain in lower abdomen for 1-6 days, amenorrhoea for 2-3 months, irregular menstruation, menorrhagia, backache, feeling of heaviness, dyspareunia and itching. Presently, 85 women (4%) have reported pregnancy after varying period of quinacrine insertion as shown in Table 3. Maximum number of cases are reported six months after insertion. Table 4 shows the fate of these pregnancies resulting after quinacrine insertion.

Discussion / Conclusion

The high acceptance of female sterilization (84%) particularly by younger age group is very encouraging. The fact that only a few women come for second insertion of quinacrine pellets encouraged us to start trial on single dose insertion of quinacrine. Another reason for single dose quinacrine insertion, is inflammation, fibrosis and consequent damage to fallopian tube that had occurred with single dose is probably not affected by the second dose. Clinically, the need for multiple insertions of quinacrine pellets for the achievement of acceptable efficacy has not been demonstrated. A single insertion trial is a high priority for fertility research.

In comparing the risk of ectopic pregnancy after surgical versus quinacrine sterilization, it is estimated that at the end of the first year, surgical methods have an ectopic pregnancy rate of approximately 0.75 per thousand procedures, This rises to approximately 2.15 per thousand procedures at the end of the second year. The ectopic pregnancy rate is approximately 0.24/1000 with quinacrine sterilization at the end of the first year and 0.34 per thousand at the end of the second year. These rates are one-third to one-sixth of those seen with 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 quinacrine sterilization an acceptable method. The failure rate quoted by various workers is 0.5 % for surgical sterilization and 5% for quinacrine sterilization. In our studies, failure rate was 4%.

Zipper, the developer of the method has found that Antiprostaglandin potentiate the effect of quinacrine possibly by relaxation of sphincter action of muscle at Ostia. A trial by giving 400mg Brufen 1/2 hour before insertion may help to enhance the effect and reduce the failure rate. Recently, brufen pellet (50mg) has been developed which is placed in uterus through the same inserter as quinacrine and reported failure rate is less than 1%. We are now using brufen tablet before inserting quinacrine. No serious complications or side effects have been reported to-date in over 1000 insertions of quinacrine pellets. Earlier studies with a liquid slurry of 1500 mg of quinacrine did produce a 2% rate of transient toxic psychosis shortly after quinacrine instillation, but this has not been reported with the use of quinacrine pellet. Although our study is of short duration and follow up, it has shown a high acceptance (84 %), very few side effects

Table 3. Interval of between quinacrine insertion and pregnancy

Pregnancy reported	No. of cases
After 2 month quinacrine insertion	12
After 4 month quinacrine insertion	14
After 6 month quinacrine insertion	23
After 8 month quinacrine insertion	21
After 10 month quinacrine insertion	8
After 12 month quinacrine insertion	6
Unknown quinacrine insertion	1
TOTAL	85

Table 4. Fate of pregnancy resulting after quinacrine insertion

Fate of pregnancy	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

(7%), high efficacy (96%) and less chances of ectopic pregnancy (0%).

Women have always risked their lives to avoid unwanted pregnancy. Birth rate, fertility rate, maternity mortality, infant mortality, family planning and contraception are all taboo topics in Pakistani society and politics. Since the country's independence, 45 years ago, only a half hearted attempt has been made to introduce family planning. No success has been made in reducing birth rate. The family size is 6-7 children and is highest in Southern Asia. Population is said to double in 22 years from 100 million to 200 million, Pakistan has very poor family record in Asia (i.e., only 1/5 of the country is covered by family planning services).

In our joint family system, most women do not like their relatives and friends to know that they are using family planning method. There is a great need for the government to approve a method of non-surgical sterilization and to offer family planning to masses at a very low cost, with minimum complications.