A CRITICAL EVALUATION OF LAPAROSCOPIC FALOPE RING STERILIZATION FAILURE

by

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SUMMARY

1838 Laparoscopic Falope ring sterilization were carried out at Lady Hardinge Medical College and Smt. Sucheta Kripalani Hospital during January 1981 to June 1983; and 11 cases reported with failure of previous sterilization during the same period. Age of these 11 cases ranged from 25 to 36 years and parity from 3 to 4. The time interval between the previous sterilization and subsequent pregnancy varied between 3 months to 1½ years.

Undetected wrong application of the ring was the cause of failure in 7 cases (63.6%), while incomplete luminal occlusion resulted in failure of 3 cases, incomplete luminal occlusion in 3 cases of the present communication was due to superficial application of ring to the tube (inadequate technique). In our sudy no luteal phase pregnancy continued. All the 11 subsequent pregnancies, included in this series were intrauterine and no ectopic pregnancy was observed.

In our series of 11 failure, correct reapplication of Falope rings was possible in 8 cases, of the remaining 3 cases 2 underwent minilaparotomy and Pomeroy's ligation and in 1 case husband underwent vasectomy.

Introduction

Over the past 2 decades sterilization has gained popularity as a permanent method of limiting family size. With the introduction of laparoscope over a decade ago an increasing number of women are opting for laparoscopic sterilization because of its various advantages i.e. minimal discomfort, rapid return to full activity, minimal hospital stay of mother, no sexal restriction, a panoramic view of abdomen and cosmetically acceptable.

Furthermore with the development of Falope ring the disadvantages of electrocautery were obviated to a large extent viz. Inadvertant bowel burns and poor chances of recanalization with cautery

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because of inability to limit the injury to tubes and subsequent fibrosis.

Although sterilization is an irreversible and permanent method of contraception with a minimal failure rate yet some cases do report with subsequent pregnancy from time to time.

Material and Methods

At Lady Hardinge Medical College and S.K. Hospital, Laparoscopic sterilization is done by Falope ring application and is gradually replacing other methods of sterilization except for immediate post partum period or otherwise contraindicated.

A total number of 1838 lalparoscopic sterilizations were carried out between Jan. 1981 to June, 1983. During this period 11 cases, in whom ring sterilization had been carried out previously, reported to this hospital with failure of sterilization and subsequent pregnancy. The cases were evaluated in detail and the causes of failure were analysed. Out of these 11 cases, 7 had (Group I) previous sterilization at this hospital and 4 cases (Group II) elsewhere.

Observations

Age and Parity: Age of these patients ranged from 25 to 36 years and parity from 3 to 4 (Table I).

TABLE I
Age and Parity

Age groups (Years)	Parity			
	3	4	5	> 5
25-30	5	4	—	—
31-35	1	—	—	—
> 36	—	1	—	—

The time interval between the previous sterilization and subsequent pregnancy varied between 3 months to 1½ years. Most of the cases reported within 1 year (Table II).

TABLE II
Time Interval Between Previous Operation and Subsequent Pregnancy

Time interval in months	No. of cases	%
0- 3	Nil	0
3- 6	4	36.36
6- 9	4	36.36
9-12	1	9.09
> 12	2	18.19

Ten out of 11 cases reported back to us within 10 weeks of conception, whereas 1 had a full term normal delivery.

Management of failed cases

Ten patients with failure of sterilization had repeat sterilization, 8 had repeat ring application, 1 post partum sterilization by Pomeroy's Technique, 1 mini-laparotomy and last patient had only suction evacuation as her husband had undergone vasectomy.

The skin incision for repeat laparoscopic operation was made just lateral to previous infraumbilical scar. Special care was taken to see that proper pneumoperitoneum was created. Incidently, no difficulty was met during pneumoperitoneum. There were no adhesions between parieties and omentum or any viscera. Operative details of 11 cases is as given under (Table III).

Discussion

Majority of our cases have been followed for a variable period ranging from 3 months to 2 years. Failure rate of 4/1000 to 6/1000 has been reported by various workers from India and elsewhere (Kochar *et al*, and Larsen and Kaalund,

TABLE III
Summary of Cases

Cases	Observation	Size of ut	Operation
1.	Left ring on mesosalpinx. Right ring seen on tube, no adhesions	10 weeks	1. Suction evacuation 2. Application of Falope ring to left tube additional ring applied to right tube medial to the previous one
2.	Left ring on round ligament, right ring seen on right tube	10 weeks	-do-
3.	Both rings on round ligament, tubes and ovaries normal	6-8 weeks	1. Suction—evacuation 2. Application of Falope rings to both the tubes
4.	Left ring on mesosalpinx, right tube no ring	6-8 weeks	-do-
5.,	Both rings on superficial parts of tubes	6-8 weeks	1. Suction evacuation 2. Reapplication of Falope rings to both the tubes
6.	Left ring on round lig right side no ring	10 weeks	1. Suction evacuation 2. Application of Falope ring to both the tubes
7.	Left ring on mesosalpinx right ring on superficial part of tube	10 weeks	-do-
8.	Left ring on superficial part of the tube near cornua, right tube very thickened no ring seen. Fimbrial end closed, with inverted fimbria	6-8 weeks	Reapplication of left ring lateral to previous one. There was difficulty in picking up right thick tube and while doing so the tube bisected but two ring applied to both ends
9.	No finding	10 weeks	Suction evacuation with vasectomy
10.	Left ring seen in mesosalpinx fimbria of Right tube adherent	6-8 weeks with previous scar	Mini laparotomy with modified Pomeroy's technique.
11.	Left ring 5 mm from utero-tubal junction lying subserosal, Rt ring not seen (Fig. I)	FTND 2 days	Post partum tubectomy done with modified Pomeroy's technique. Loop of tubes did not include the ring as it was adjacent to the cornua

Post operative period was uneventful in all the 11 patients.

1983). In the present study the failure rate is almost identical to these studies.

In this study no lueal phase pregnancy continued as routine D & C was done in all interval sterilization cases.

Misidentification i.e. undetected wrong application of Falope ring was the principal cause of failure in majority of our cases (63.6%). Pelvic structures most commonly misidentified are round ligament, ovarian ligament, mesosalpinx and infundibulopelvic ligament. Inadequate

visualization is probably the main reason of misidentification. In the present study no instance of ovarian ligament or infundibulopelvic ligament being misidentified for the tubes was encountered. True technique failure can result because of 3 factors:

(a) inadequate technique
(b) recanalization
(c) fistula formation

Three cases in our series had incomplete luminal occlusion due to superficial application of ring to the tube in all probability due to inadequate technique. Also in cases where the ring has been loaded onto the Falope ring applicator much earlier before application to the tube, might prevent the ring regaining its original diameter (Table IV).

TABLE IV
Causes of Failure (Observed)

1.	Luteal phase pregnancy	Nil
2.	Undetected wrong application of ring — mesosalpinx	4
	Undetected wrong application of ring — round ligament	3
3.	Incomplete luminal occlusion	3

The type of pregnancy resulting from luteal phase timing and misidentification are similar and occur with the same frequency as pregnancy in the normal population (Loffer and Pent, 1980). Technique failure result in both intrauterine and ectopic pregnancies. However, there is definite increased rate of ectopic pregnancy, the reported rate being 25 to 90% (Loffer and Pent, 1975; Thompson *et al*, 1975 and Yoon and Vessey, 1974). All the 11 subsequent pregnancies included in this communication were intrauterine and no ectopic pregnancy was observed. It can be explained by less number of cases of technique failure in our study. Furthermore 9 out of 11 (83.8%) cases reported to the hospital within first year of serilization. It has been the observation of some workers (Hughes, 1977) that the ratio of intrauterine to ectopic pregnancies decreases as the interval between sterilization and subsequent pregnancy lengthens. 6 out of 7 cases (Group 1), sterilized previously at Smt. S.K. Hospital, were operated by rather inexperienced surgeons and it might have possibly contributed to the failure.

Comments

At present laparoscopic Falope ring sterilization is riding high in popularity. It has proved to be an effective, safe and simple procedure yet certain pertinent points are to be observed to minimize failure.

1. Surgeon should be adequately trained and should have vast experience of Laparoscopic sterilization.
2. An inspection of all pelvic organs should be done to determine the location, approachability and mobility of tubes. If the tubes show signs of acute or chronic inflammation then superficial application of ring or transection of tube is more likely.
3. Yoon *et al* recommended that tube should be picked up 3 cm from the utero tubal junction and the banded loop should not be more than 2 cm and should contain 2 lumens.
4. Rechecking of the rings should be done. This would avoid undetected wrong applications in most of the cases.

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See Fig. on Art Paper VII