

EVALUATION OF INTRA-OPERATIVE COMPLICATIONS DURING LAPAROSCOPIC STERILIZATION

By

RAMA MITRA, AMITA GUPTA, NISHA RASTOGI,
N. N. AWASTHI AND B. D. MATHUR

SUMMARY

In the present study 1000 cases were selected. 910 interval cases were operated upon in camps while 90 cases including 42 MTP cases were operated upon in hospital. Complication rate was higher in rural population, older age groups, multiparity, low socio-economic group, Laparoscopic sterilization in combination with MTP, lactational cases in comparison to post menstrual cases. Complications did occur (in camps 3.5% while in hospital 5.5%) but they were of minor nature, easily tackled, showed a decline with experience of Surgeon. Variety of Complications (3.62% in camps, 1.11% in hospital) and other operative difficulties leading to failed laparoscopy (1.42% in camps while 1.1% in hospital) and many other minor problems were less frequently encountered in hospital due to better operative and anaesthetic facilities. Target oriented and time limited programmes increased the risk of complications.

No major complications requiring surgical intervention occurred in present study.

No life threatening complications like cardiac arrest, gas embolism and injury to major blood vessels were seen in our study.

Introduction

In the control of world population in general and that of India in particular, laparoscopic female sterilization plays a very important role. Laparoscopy, the so called "Band-Aid" surgery is considered as a safe and simple procedure. However, as increasing large number of patients are undergoing laparoscopy, a proportionately large number and variety of complications are being

observed. In view of this, it was our aim to evaluate the incidence and severity of intra-operative complications during laparoscopic ligation. Further, they were classified and a comparison was made between rural and urban camp settings for better management.

Material and Methods

The study was carried out in hospital theatre setting at M.L.B. Medical College Hospital, Jhansi, as well as in rural camps during July 1983 to June 1984. Nine

*From: Department of Obst. and Gynaecology,
M.L.B. Medical College, Jhansi-284 128 (U.P.).*

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hundred ten cases were operated upon in rural camp setting and those were all interval cases. Ninety cases were operated upon in post partum theatre attached with M.L.B. Medical College Hospital, Jhansi. These cases included 48 interval cases and 42 M.T.P. Laparoscopic sterilizations. Laparoscopy with MTP was not performed in camps because of lack of other required operative facilities. The selection of cases consisted of elaboration of obstetric and menstrual history and exclusion of any adverse conditions e.g. fixity of uterus, pelvic pathology, previous abdominal surgery, chronic general and systemic disorders. Before procedure, thorough general examination and investigations were performed. K.L.I. Laparocator with accessories were used for procedures. Silastic rings were applied in all cases.

The patients were kept starving for at least 8 hours pre-operatively. An enema was given early morning about 4 hours in advance of operation. Just before procedure they were made to void urine.

Owing to hazards and requirements of time and complicated apparatus for general anaesthesia and nonsuitability of conduction anaesthesia, neuroleptanalgesia along with infiltration of local is the anaesthetic technique of choice and was used in this study. Incidence of various complications were studied and they were classified accordingly. Complications were compared in rural and urban camp settings. Severity of complications were studied and they were managed accordingly. Cases were noted in whom we failed to do laparoscopy due to other difficulties. Other operative problems were also noted.

Observations

Maximum number of complications occurred in age group of 35-39 years, 2 cases

in camps (4.76%) and one case in hospital (20%) while minimum number of complications were observed in age group of 20-24 years 2 cases in camps (2%) and none occurred in hospital. Complication rate was found to be highest with 5 or more parity i.e. 22 cases in camps (7.9%) and 3 cases in hospital (13%). Complications were nil with parity two. In hospital, complications occurred in 5 cases (5.50%) while it occurred in 32 cases (3.51%) in camps including all internal cases (910 cases) all belonging to rural group. In all, rural population showed complication rate of 3.67% while urban cases had 5% complication rate.

Complication rate was higher when laparoscopic ligation was combined with medical termination of pregnancy. It was found in 4 cases (9.52%) as compared to 1 case of interval ligation (2%). Lactational cases had higher percentage of complications i.e. 5% in camps and 3.84% in hospital as compared to post-menstrual cases (2.71%).

Many patients complained of immediate post-operative pain. They did not require any treatment for it. No patient complained of shoulder pain in our study.

No mortality occurred in our series. No major complications requiring major surgical intervention (Laparotomy) were noted.

Discussion

In the present study total 1000 women were subjected to laparoscopic sterilization. On comparing complication rate in hospital (2%) and camps (3.51%) differed very much. The reason behind this was that usually we did not have very good operating facilities in camps and they were mainly target oriented and time limited programmes.

It was found that these complications were common in rural population, with

TABLE I
Showing Distribution of Cases (Having Complications) in Two Different Settings According to
Different Complications

| S. No. | Complications | CAMPS | | HOSPITAL | | TOTAL | |
|--------|---|------------------|------------------------|---------------------|-----------------------|--------------------|--------------------------|
| | | No. of cases (a) | Percentage (910 cases) | No. of cases (b) | Percentage (90 cases) | No. of cases (a+b) | Percentage in 1000 cases |
| 1. | Subcutaneous or extra peritoneal emphysema | 3 | 0.32 | — | — | 3 | 3.30 |
| 2. | Retained pneumo-peritoneum | 4 | 0.43 | — | — | 4 | 0.40 |
| 3. | Pneumo-omentum | 6 | 0.65 | — | — | 6 | 0.60 |
| 4. | Pneumo-bladder | 1 | 0.10 | — | — | 1 | 0.10 |
| 5. | Pneumo-uterus | — | — | 1 (Lap with MTP) | 1.11 | 1 | 0.10 |
| 6. | Mesosalpingeal bleeding | 5 | 0.54 | — | — | 5 | 0.50 |
| 7. | Tubal tear | 2 | 0.21 | 1 (Lap with MTP) | 1.11 | 3 | 0.30 |
| 8. | Bleeding from other ligamentary tears | 2 | 0.21 | — | — | 2 | 0.20 |
| 9. | Omental prolapse | 1 | 0.10 | — | — | 1 | 0.10 |
| 10. | Collapse due to trocar insertion | — | — | 1 | 1.11 | 1 | 0.10 |
| 11. | Convulsions | 1 | 0.10 | — | — | 1 | 0.10 |
| 12. | Uterine perforation | 6 | 0.65 | 2 (Lap with MTP) | 2.22 | 8 | 0.80 |
| 13. | Extraperitoneal insertion of trocar leading to bleeding | 1 | 0.10 | — | — | 1 | 0.10 |
| Total | | 32 | 3.51 | 5 | 5.50 | 37 | 3.70 |

TABLE II
Showing Difficulties Encountered During Procedure Leading to Failed Laparoscopy in Two Settings

| S. No. | Difficulties encountered | CAMPS | | HOSPITAL | | TOTAL | |
|--------|--|------------------|------------------------|------------------|-----------------------|--------------------|--------------------------|
| | | No. of cases (a) | Percentage (910 cases) | No. of cases (b) | Percentage (90 cases) | No. of cases (a+b) | Percentage in 1000 cases |
| 1. | Improper visualization of tube one sided or both | 2 | 0.21 | — | — | 2 | 0.20 |
| 2. | Adhesions of pelvic organs | 6 | 0.65 | — | — | 6 | 0.60 |
| 3. | Coverage of tube with omentum | 1 | 0.10 | — | — | 1 | 0.10 |
| 4. | Failed instrument | 1 | 0.10 | — | — | 1 | 0.10 |
| 5. | Inadequate anaesthesia and analgesia and lack of proper facilities | 1 | 0.10 | — | — | 1 | 0.10 |
| 6. | Extensive pneumo-omentum | 1 | 0.10 | — | — | 1 | 0.10 |
| 7. | Convulsions | 1 | 0.10 | — | — | 1 | 0.10 |
| 8. | Collapse due to trocaration | — | — | 1 | 1.10 | 1 | 0.10 |
| Total | | 13 | 1.42 | 1 | 1.10 | 14 | 1.40 |

TABLE III
Showing Other Problems During Procedure in Two Settings

| S. No. | Problem | CAMPS | | HOSPITAL | | TOTAL | |
|--------|---|------------------|------------------------|------------------|-----------------------|----------------------|--------------------------|
| | | No. of cases (a) | Percentage (910 cases) | No. of cases (b) | Percentage (90 cases) | No. of cases (a + b) | Percentage in 1000 cases |
| 1. | Slight more bleeding from wound | 5 | 0.54 | — | — | 5 | 0.50 |
| 2. | Cornual bleeding | 1 | 0.10 | — | — | 1 | 0.10 |
| 3. | Misapplication of ring to other ligamentary structures | 9 | 0.98 | — | — | 9 | 0.90 |
| 4. | Dropping of ring into peritoneal cavity | 4 | 0.43 | — | — | 4 | 0.40 |
| 5. | Two or more attempts to correctly place needle | 6 | 0.65 | — | — | 6 | 0.60 |
| 6. | Two or more attempts to correctly place trocar canula | 4 | 0.43 | — | — | 4 | 0.40 |
| 7. | Unsatisfactory application of ring in 1st attempt and additional ring application | 4 | 0.43 | 1 | 1.11 | 5 | 0.50 |
| Total | | 33 | 3.62 | 1 | 1.11 | 34 | 3.40 |

advancing age group (35-39), multiparity (>5 children) and with low socio-economic status. The reason behind this was that women having these factors were usually of poor personal hygiene, malnourished, underweight often had laxity of abdomen, diverticulation of recti and skin infections. All these multiplied the risk factors.

Complications were seen to be more common in patients with MTP (9.52%) than with interval cases (2%). Underlying cause was softness of uterus in pregnancy leading to uterine perforation in some cases. Tubes of pregnant uterus are hyperaemic, soft and oedematous so they get torn during procedure. This study was in accordance with Cunanum and Courey (1974). Baggish *et al* (1979).

Complications were found to be more common in lactational cases in comparison with post-menstrual cases. It is attributed to the fact that lactational uterus was found to be small, soft with more risk of perforation and tubes were usually soft, more prone to get torn by prongs. This study is consistent with the study of Chir *et al* (1981).

Table I shows higher complication rate in hospital cases (5.5%) in comparison to camp cases (3.51%). The higher rate in hospital can be explained by the fact that about half of the cases in hospital were with M.T.P. which enhances the complication rate. In our study uterine perforation rate was 2.22%. This study was in consistence with the study of Shashi Gulati *et al* (1981) 5% and I.C.M.R. (1982) 6.3%. Fifth complication (1.11%) in hospital was incidental. Patient collapsed during trocara-tion. This might have occurred due to peritoneal irritation by trocar. Procedure was discontinued and patient was managed. Complications like subcutaneous emphy-

sema (0.30%), retained pneumoperitoneum (0.40%), pneumo-omentum (0.60%) pneumo bladder (0.10%) occurred as in most of the cases pneumo was created by junior staff which was less experienced. Complication rate of above mentioned complications were in accordance with other workers (Sethi *et al*, 1978; Shinde and Krishna, 1981).

A case of omental prolapse (0.10%) was noted in present study because trocar with sleeve was withdrawn during inspiration and patient was not very co-operative. Similar complication were also reported by Yoon and King (1977) in 0.07% and Suchdeva *et al* (1981) in 1% cases.

In our study no cases of trocar injury to bowel occurred as it was reported by Roopnarine Singh *et al* (1976). Similarly injury to stomach and bladder by trocar was reported by Peterson *et al* (1976) in 0.59%. One case (0.10%) of extra-peritoneal insertion of trocar leading to bleeding occurred in our study. This occurred because patient was having peritoneal adhesions, so we could not feel release of pressure as we reached abdominal cavity. Mesosalpingeal bleeding occurred in 0.50% cases in our study. This occurred because sometimes prong held a lot of mesosalpinx along with tube leading to mesosalpingeal bleeding.

In our study tubal transection was observed in 0.21% case while Sachdeva *et al* (1981) recorded in 1.5% cases. Bleeding from other ligamentary tear noted in 0.20% cases, because they confused there ligaments with fallopean tube and excessive pulling caused their tear.

Uterine perforation occurred in 0.65% cases. This was in consistence with study of Clifford *et al* (1973) 0.25%, Sethi *et al*

(1978) 0.72%, Sachdeva *et al* (1981) 1.9% and I.C.M.R. (1982) 0.51% of cases.

One patient (0.10%) had convulsion on table. Patient was having previous history of epileptic fits which was hidden by her relatives previously.

Multicentric, multinational randomized study by W.H.O. (1982) has reported minor complication rate of 6% while in our series it occurred in 3.7% which is very low rate. The reason is that most of procedures were done by Specialist.

No anaesthetic complications were reported in our series. This study is in accordance with Sethi *et al* (1978). Life threatening complications like gas embolism, injury to major vessels were not noticed in our study as they were reported by Chamberlain *et al* (1976). No mortality occurred in present study as reported by Shinde and Krishna (1981) in 0.026% and Chamberlain *et al* (1976) in 0.008-0.01% of cases.

As Table II shows, we had failed to visualize one side tube properly. This might have occurred due to congenital absence of that side tube or there might be tubal anatomical abnormality. In one patient every attempt to occlude this tube failed as patient was very unco-operative. This might be due to inadequate anaesthesia and analgesia. On one occasion, extensive pneumo-omentum led to inadequate visibility of tubes and uterus, inspite of all possible efforts. Similar complication was reported by Hertz (1980), where he performed laparotomy. We also did minilap ligation in that case. We had to postpone the procedure in other 2 women also. One had convulsions and other collapsed during trocaration. All these difficulties were unavoidable, still we had a very low incidence of 1.40%.

As shown in Table III, 5 cases had slight more bleeding from wound which might be due to injury to small vessels. It stopped spontaneously or by application of deep catgut stitch. One patient had (0.10%) cervical bleeding by vulsellum, because of cervical erosion. Misapplication of rings (0.90%) occurred in significantly more cases, probably because of the fact that training was an integral part of these camps. Same incidence was reported by Levinson *et al* (1976) in 0.7%. In 0.50% cases ring was not satisfactorily applied in first attempt. A higher incidence was reported by Sachdeva *et al* (1981) in 2% cases.

No case of shoulder pain was observed in our study as reported by Sachdeva *et al* (1981) in 1% cases. Immediate post-operative abdominal pain was frequently reported, probably caused by ischaemic necrosis of ligated part of tube.

On closer scrutiny on observations and results of this work we can conclude that laparoscopic falope ring sterilization is safe, simple and effective procedure. It should be carried out with full awareness of possible complications and making all efforts to minimise them.

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