

## OBSERVATIONS ON LAPAROSCOPIC CAUTERY FOR FEMALE STERILISATION

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### *Introduction*

Laparoscopic examination was first used in 1903 by Von Ott for viewing the pelvic viscera through vaginal vault (Bronstein, 1973). Anderson from America performed laparoscopic coagulation sterilisation in 1937, using special electrode and endothermic coagulation (Horowitz 1972). In 1967, Steptoe of England described cauterisation of tubes at two points and then dividing the tube midway between the cauterised area. In the same year he published the first book on Laparoscopy. Wheeler used single puncture technique for laparoscopy and cautery, and published his article in 1972. In 1970, Cohen popularised laparoscopy in U.S.A. and brought out a monogram. Since then it is being widely used as a diagnostic procedure and for female sterilisation. Laparoscopic female sterilisation is being increasingly performed in several centres in India. There is a need for its widespread use as the procedure does not require hospital stay, is convenient and safe. This paper deals with our observations on 212 cases of laparoscopic sterilisation.

### *Material and Methods*

The study was undertaken at V.R.M.H.

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Byculla, Bombay. Two hundred and twelve patients were subjected to laparoscopic sterilisation since October 1975. The patients in immediate post-partum period and patients with previous history of abdominal operation when we suspected peritoneal adhesions were not subjected to laparoscopic sterilisation.

Realising that with electrocautery a sizeable length of the tube is destroyed making future repair virtually impossible, patients with very young children and only one son were kept out of this series and were subjected to mini-laparotomy and vaginal sterilisation. Laparoscopic cautery was used for cutting the tubes. Patients requiring medical termination of pregnancy (MTP) were simultaneously subjected to MTP by suction evacuation procedure.

In the majority, local anaesthesia (1 per cent Lignocaine) was used for the procedure. The premedication used consisted of 100 mgm. of pethidine and 10 mgm. of Siquil. Half of it was given intramuscularly 10 minutes before the procedure. The remaining half was given intravenously (after diluting it 10 times with distilled water) immediately before the procedure. If the patient was not adequately sedated, additional 10 mgm. of diazepam was given intravenously.

In 4 patients general anaesthesia

was given as a planned procedure as the patients were apprehensive. After the procedure, abdominal wound was closed with a single subcutaneous catgut stitch. The patients were observed for next 3 hours and were subsequently discharged with short term prophylactic antibiotics. They were either given injection of long acting Penicillin or a 3 day course of tetracyclines.

The patients were reviewed after 1 week and were told to report earlier in case of any complaints. Detailed enquiry was done to gather information about gastrointestinal symptoms and vaginal bleeding. They were examined for wound healing and an abdominal-cum-gynaecological examination was done to detect any abdominal or pelvic complication.

#### Observations

Table I gives the age incidence, Table II gives the parity and Table III gives the breakdown of cases requiring laparoscopic sterilisation with or without MTP.

It may be noted that in 208 cases (98.1 per cent laparoscopic sterilisation was done under local anaesthesia and in only

TABLE I  
Age Incidence

Age	No. of cases	Percentage
Below 25 years	24 cases	11.32%
26-35 years	158 cases	74.53%
Over 35 years	30 cases	14.15%

TABLE II

#### Parity

Parity	No. of cases	Percentage
Upto 3	58	27.36%
4-6	118	55.66%
7 and over	36	16.98%

TABLE III  
Observations

Total Cases	212	Percentage
MTP with Laparoscopic Sterilisation	77	36.3%
Laparoscopic Sterilisation	135	63.7%

4 cases (1.9 per cent) general anaesthesia was used.

Amongst the patients included in the series was one patient who had previously undegone abdominal sterilisation but had returned with pregnancy. An MTP with laparoscopic sterilisation was performed.

During laparoscopy, there were unexpected findings in 4 patients, namely, hydrosalpinx (1 patient), ovarian cyst (1 patient), fibroid (1 patient) and congenital absence of one tube and ovary (1 patient).

Table IV gives the incidence of complications. There was one case of electrocoagulation of bowel and a resection had to be done. During follow-up, two patients complained of amenorrhoea. One was found to have lactation amenorrhoea. The other had pregnancy. In this case the laparoscopic sterilisation was done late in the menstrual period and the patient seems to have already conceived in that cycle, hence MTP was done. No patient returned with pelvic inflammation.

TABLE IV

No Complication	190 cases
Vaginal bleeding	11 cases
Local wound sepsis	9 cases
Small bowel electrocoagulation	1 case
Superficial skin burn	1 case

#### Discussion

Laparoscopic sterilisation is generally a safe procedure although occasional com-

plications can occur even in experienced hands. Thompson (1974), reported an overall complication rate of 8 per cent, of which 1.5 per cent were major. The most important complications pertain to the gastrointestinal system. Thompson *et al* (1973) reported an incidence of 0.3 per cent of gastrointestinal complications (11 in 3,600 cases). Of these, one patient had bowel trauma during the insertion of the trocar. In 5 cases, a small area of bowel was electrocoagulated but it was detected on the table. Four cases recovered spontaneously but one case required bowel resection. Another 5 patients returned with gastrointestinal symptoms. On laparotomy they were found to have perforated bowel segment and a bowel resection was done. Serment *et al* (1972), reported 0.04 per cent incidence of injury to ileum. They also reported 0.04 per cent incidence of sigmoid insufflation. In our series there was one major complication involving electrocoagulation of ileum. This was suspected when the patient developed gastrointestinal symptoms, in the post-operative period. In this case a bowel resection had to be done.

To avoid the visceral complications (such as injury to the bowel or bladder) the patient should be made to void urine before being taking up for the procedure and sufficient pneumoperitoneum should be given with head-low position. Care should be taken that the electrocoagulation forceps is not touching any viscera and at least 2.5 cms. of insulated part of the forceps should be seen in the field before cauterisation is done. The second important complication is intra-abdominal bleeding. Bleeding due to piercing of parietal blood vessels is reported by Serment *et al* (1972), in 0.2 per cent of his cases. He had to do laparotomy in 0.04

per cent of cases due to bleeding from subtubal arch. Edgerton (1973), in his series of 1,135 cases reported 1 case of bleeding from umbilical wound which required laparotomy. In his series there were 4 cases of bleeding from tubal cautery site which needed laparotomy. We did not encounter any serious bleeding in our cases. The bleeding spot at the cautery site was carefully coagulated. The site was again inspected for any bleeding before taking out the laparoscope.

Occasionally hypotension, shock and even cardiac arrest have been reported but these relate to general anaesthesia and intraperitoneal insufflation. We used local anaesthesia in the majority. The patients co-operated well and there were no such complications. Martin Motew *et al* (1973), did a special study on changes in blood pressure, cardiac output, blood pH and blood gases during laparoscopic electrocoagulation under general anaesthesia. They concluded that there is remarkable stability of cardiovascular system during laparoscopy if the intra-abdominal pressure is kept upto 20 mm of mercury. If the pressure exceeds 20 mm., there is undue strain on cardiovascular system and it should be avoided. It may result in bradycardia, hypotension and even cardiac arrest from vasovagal reflex.

Apart from local wound sepsis there are instances of pelvic inflammation after laparoscopic sterilisation. Serment *et al* (1972), reported an incidence of 0.08 per cent of pelvic inflammation. In our series there was local wound sepsis in 9 patients. We did not encounter any cases of pelvic inflammation.

The other complications reported include subcutaneous emphysema and extraperitoneal insufflation which were not seen in this series. In our series, minor vaginal bleeding was complained of

by 11 patients. In 1 case there was superficial accidental burn on the abdominal wall. The plug of the cautery wire had fallen off from the socket of cautery forceps. It was lying on the abdominal wall and caused the burn on pressing the foot switch. This burn was immediately detected. It healed in due course.

The laparoscopic procedure is simple and can be performed with ease. Occasional difficulties are encountered in producing the pneumoperitoneum, especially in patients with thick abdominal wall or in those having lax abdominal wall. In such cases when lifting up the abdominal wall, the clips lift up only the superficial layers of abdominal wall away from muscle and peritoneum, and the needle tip fails to reach the peritoneal cavity. In such cases if the patient distends the abdomen, needle can be inserted with greater ease.

*Summary*

Two hundred and twelve cases of laparoscopic cautery sterilisation are reported. Local anaesthesia was used in the majority. There was one major complication, involving electrocoagulation of ileum which needed bowel resection. Minor vaginal bleeding was complained by 11 patients and in 9 cases there was local wound infection. There were no instances of intraabdominal bleeding. Laparoscopic

sterilisation is considered to be a safe procedure. It is simple and can be performed with ease.

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