

VAGINAL LIGATION OF TUBES WITH TERMINATION OF PREGNANCY

by

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Duhrssen as early as 1895 was credited to have first described the technique of vaginal sterilization (Soonawalla. 1972). But so far the operation was being performed only with operations of genital prolapse. For the last five years, vaginal ligation of tubes has been accepted as a simple and easy method of sterilization which could even be done in mass tubectomy camps. Since the implementation of Medical Termination of Pregnancy Act (April 1972 in India), we have started vaginal ligation of tubes along with termination in suitable cases in the Department of Obstetrics and Gynaecology, N. R. S. Medical College and Hospital Calcutta. In the beginning, we used to perform this operation upto 12 weeks of pregnancy. Where the duration of pregnancy was more than 12 weeks, we used to perform abdominal hysterotomy, and ligation of tubes where sterilization was desired. But in a few months time the prolonged

hospital stay and high rate of morbidity after abdominal operation compelled us to abandon this procedure. Instead, we started termination by intra-amniotic hypertonic saline injection, and sterilization transvaginally after two to four days.

Methods and Material of Study.

Material was collected from in-patients of N. R. S. Medical College and Hospital between May 1972 and August 1973. During this period 616 mothers were admitted for termination of pregnancy. Of these 616 cases, sterilization was performed along with termination in 507 cases, while 109 cases had only termination of pregnancy. In 354 cases tubes were ligated per vaginum and in 153 cases per abdomen. All these cases were studied clinically. In addition in 108 cases high vaginal swab was taken for bacteriological study (culture and sensitivity test) pre-operatively and during the post-operative period.

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Analysis of the Cases

Vaginal ligation of tubes has been performed among two groups of termination cases.

Group 1—Upto 12 weeks of pregnancy—Evacuation of uterus and vaginal ligation of tubes were performed at the same sitting).

Total cases: 215.

Group II—From 12 weeks to 20 weeks. Termination performed by intra-amniotic injection of hypertonic saline followed by vaginal ligation of tubes 2-4 days later.

Total cases: 139.

Tables I and II show the distribution of cases among different age groups and in different parity. Maximum number of cases were performed in the age group 21 to 30 years and in parity 4.

TABLE I
Age Incidence

Below 20 yrs.	21-30 yrs.	31-40 yrs.	41 yrs. or more	Total
Nil	238	102	14	354

TABLE II
Parity Distribution

P2	P3	P4	P5	P6 or above	Total
24	78	96	64	92	354

Table III shows the size of the uterus when pregnancy was terminated. From this it is clear that maximum number of terminations and vaginal ligations were performed when the duration of pregnancy was 12 weeks or less (215 cases).

TABLE III
Size of Uterus

6 wks.	8 wks.	10 wks.	12 wks.	14 wks.	16 wks.	18 wks.	20 wks.
22	44	47	102	65	42	28	4

Operative Details

Anaesthesia—General anaesthesia with nitrous oxide, oxygen, ether, pentothal and flaxedil was used in all cases except in 28. In four cases with past history of pulmonary tuberculosis and bronchial asthma, paracervical block and local infiltration with one per cent Xylocaine was used. Ketalar (Ketamine hydrochloride) 10 to 15 ml. and flaxedil 20 to 40 mg. was

used without intubation in twenty-four cases among Group II. Out of 215 cases among Group I, in 58 cases where the uterine size was 8 weeks or less, evacuation by suction aspiration was performed and in the remaining 157 cases vaginal evacuation was performed in the conventional way. Out of 139 cases among group II, in 103 cases intra-amniotic hypertonic saline was injected through the abdominal

wall and in 36 cases through the cervix. When the size of the uterus was less than 16 weeks vaginal plugging was resorted to for lifting the fundus upward before trans-abdominal injection. Depending on the size of the uterus 50 to 200 ml. of 20

per cent saline was injected into the amniotic cavity after withdrawal of 50 to 100 ml. of liquor amnii. Inj. Syntocinon 5 units in 500 ml. of 5 per cent dextrose was started in drip, if painful uterine contractions did not start within 48 hours. In 102 cases (73.5 per cent) uterine contractions started within 12 hours and the process was completed within 48 hours, and in 31 cases (22 per cent), it was de-

layed upto 80 hours. In six cases (4.5 per cent) induction failed, but the membranes ruptured spontaneously in two cases and the uterus shrunk to 12 weeks size. Vaginal evacuation and ligation was performed in these two cases at the same sitting. In the remaining four, abdominal hysterotomy and ligation of tubes were performed. Depending on the size of the uterus sterilization was performed vaginally on 2nd day in 72 cases, 3rd day in 31 cases and 4th day in 30 cases.

Vaginal Ligation of Tubes—Technique followed is as described by Poddar (1972). With the patient in lithotomy position, a transverse incision is made just above the cervico vaginal junction. Peritoneum is also cut similarly. Landon's bladder retractor is introduced through the peritoneal opening to retract the posterior vaginal wall. With angled tonsil holding forceps directed laterally, backwards and slightly upwards the ovary is visible, and with slight traction on the ovarian ligament the tube can be seen. A loop of tube, usually at its middle third, is then excised in between two clamps and ligated on either sides with silk. Peritoneum and vaginal wall are sutured separately with catgut. Average time taken for the operation is 20-40 minutes when performed along with evacuation and 10-15 minutes without evacuation. Certain difficulties are encountered during vaginal ligation of tubes if performed along with termination of pregnancy.

These are:

(1) More bleeding from the vaginal wound as compared with simple vaginal sterilization.

(2) Trickling of blood from the cervical canal soils the operation field.

(3) Difficulty in bringing down the tubes due to big size of the uterus, specially so, if the uterus is anteverted and

anteflexed.

In order to cope with all these difficulties the following precautions are taken.

(1) Separate sets of instrument are used for evacuation and vaginal ligation of tubes and after evacuation a separate vaginal sheet is draped over.

(2) A piece of gauze is introduced into the cervical canal to prevent the trickling of blood and vagina is thoroughly swabbed with cetavlon just before starting vaginal ligation.

(3) To prevent excessive bleeding from the vaginal wound a small transverse incision is made in the midline which is enlarged by Hilton's method thus pushing the vertical vessels laterally. The incision is just sufficient to introduce a Landon's retractor.

(4) After evacuation, the hard retracted uterus is manipulated bimanually to make it retroverted. Slight Trendelenburg position and gentle traction on the posterior lip of cervix in a forward and upward direction help to maintain the position during operation. Sheth *et al* (1973) used uterine sound for tilting the uterus right and left and used Babcock's forceps to exert traction on posterior surface of uterus. Wallace (1973) also used a retroverter to keep the uterus retroverted during the operation. In no case did we apply any traction on posterior surface of the uterus. In two cases a Hawkin—Ambler's dilator was introduced through the cervix and by manipulation the uterus was kept retroverted.

Results

During the immediate postoperative period there was a rise of temperature (more than 100°F) in 14 cases among the first group and 8 cases in the second group. In two cases among the first group, the

patients were readmitted on eighth and thirteenth postoperative days respectively for tubo-ovarian mass. Secondary haemorrhage, pregnancy and rectal injury which have been found after ordinary vaginal sterilization (Rao 1972) have not occurred among patients in this series. During follow up examination four weeks after operation, induration and formation of granulation tissue along the line of the scar are usually found after ordinary vaginal ligation, but after termination and vaginal ligation the site of incision could rarely be identified. This might be due to excessive vascularity during pregnancy. Average hospital stay among first group of cases was three to four days and among second group six to ten days, including the time induction Table IV shows the results of operation.

the swab culture showed growth of *E. Coli* in both preoperative and postoperative periods. In another two cases though in preoperative swab culture *staphylococcus aureus* was isolated, no growth of any organism was noted in postoperative swab culture. This might be due to postoperative use of antibiotics and local antiseptic powder. In another 12 cases though preoperative swab showed no growth of organisms, *E. Coli* was isolated during the postoperative period. Among this, in one case of parametritis, *E. Coli* isolated was resistant to all antibiotics. Table V shows the results of vaginal swab culture in 108 cases.

Comments

Out of 616 cases of termination of pregnancy, sterilization was performed along

TABLE IV
Post-operative Complication in Various Types of Operation

Post-operative complications	D.E. Vaginal ligation	Ligation after termination by intraamniotic Injection
Fever 100-102°F	14 cases	8 cases
Parametritis	2 "	nil
T.O. mass (delayed)	2 "	nil
Pregnancy—	nil	nil
Secondary—		
haemorrhage	nil	nil
Rectal injury	nil	nil

Results of Bacteriological Study

Organisms most commonly isolated from the vaginal swab cultures during preoperative period were *staphylococcus aureus* (36 cases) and *E. Coli* (27 cases) and those during the postoperative period included *E. Coli* (61 cases) and *staphylococcus aureus* (33 cases). Clinical evidence of infection was observed in 26 cases, in the form of pyrexia (22 cases may be due to mild local infection), tubo-ovarian mass (2 cases) and parametritis (2 cases). Among these, in three cases

with termination in 507 cases (82 per cent) and in 109 cases (18 per cent) termination was performed alone. Of these 507 cases sterilization was performed trans-vaginally in 354 cases either along with vaginal evacuation (215 cases) or after abortion was induced by intra-amniotic injection of hypertonic saline (139 cases). Vaginal evacuation and ligation of tubes was performed upto 12 weeks of gestation without any difficulty. But difficulty was experienced with the patients carrying more than 12 weeks of pregnancy. Major-

TABLE V
Results of Bacteriological Study of High Vaginal Swab Cultures

	Organisms isolated	Number of cases
Pre-operative	No growth	12
	E. Coli	27
	Staphylo aureus	36
	Staphylo albus	21
	Monilia	12
	Total	108 cases
Post-operative	No growth	2
	E. Coli	61
	Staphylo aureus	33
	Klebsella	6
	E. Coli & Staphylo aureus	6
	Total	108 cases

rity of the patients who attend N. R. S. Medical College Hospital are from middle and poor socioeconomic groups. They do not usually come very early during pregnancy. Abdominal hysterotomy and ligation of tubes were previously performed in patients carrying more than 12 weeks of gestation. But unlike ordinary sterilization, abdominal hysterotomy and ligation is a major operation and has its own risks, specially when performed in poor surgical risk patients (average haemoglobin 8 gm. per cent). It was found that not only these patients needed prolonged hospitalisation but morbidity even after they left the hospital was high. Transvaginal sterilization 6-8 weeks after termination by hypertonic saline would only increase the chance of another pregnancy. Many patients fail to turn up for interval sterilization and they come back afterwards with a fresh pregnancy. To avoid these problems and the risk of an abdominal operation, vaginal ligation of tubes after 2-4 days of abortion was started. So far our results are quite encouraging. Among the postoperative complications

there was a risk of pyrexia of 100° to 102°F. Hospital stay was shortened and the patients could start their normal household work within a very short time (about 2-3 weeks).

Bacteriological study showed that there is no more chance of sepsis than with ordinary vaginal sterilization. But cases showing staphylococcus aureus in the preoperative swab culture should be treated with some appropriate antibiotics for a few days before vaginal sterilization to avoid postoperative complications.

Recently abdominal hysterotomy and ligation of tubes are performed only on those cases where induction by hypertonic saline has failed. It is too early to give any opinion about the delayed effects of vaginal operation. Routine interrogation has so far revealed no significant variation attributable to sterilization alone. We are continuing our routine follow up and hope to publish our further results in a few years time.

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References

1. Poddar, D. L.: J. of Ind. Med. Assocn., 59: 362, 1972.

2. Rao, K.: Proceedings, International Conference on Family Planning, New Delhi, March 12-16, 1972, F-17.
3. Sheth, S. S., Kothari, L. and Munshi, V.: J. Obst. & Gynec. Brit. Cwlth., 80: 274, 1973.
4. Wallace, B. S.: Amer. J. Obst. & Gynec., 115: 998, 1973.