

قسم الجراحة
كلية الطب البيطرى - ادفينا
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دراسات عن بعض التعديلات فى عملية استئصال الرحم
والمبايض فى الكلاب ومضاعفاتها

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أجريت عملية استئصال الرحم والمبايض لعدد ٥١ كلبة من السلالة البلدية
(تتراوح أعمارها من ٦ شهور الى ٥ سنوات وأوزانها من ٨ الى ٢٠ كيلو جرام)
وذلك عقب الشيوخ الأول أو أثناء فترة الحمل أو عقب الولادة .
وقد استخدمت فى العملية عدة طرق للتخدير - وكذلك استخدمت أنواع
مختلفة من الخيوط الجراحية (حرير - نايلون - خيط أمعاء القط) ، كما أجريت
العملية بطرق مختلفة (مع عدم استئصال عنق الرحم أو مع استئصال عنق الرحم)
كما درست ونوقشت المضاعفات المختلفة الناتجة عن كل هذه الطرق . وقد
توصل الباحثون الى أن أفضل الطرق لاجراء هذه العملية الجراحية تلك التى
تجرى تحت تأثير التخدير العام باستخدام النزد ونال مسبقا بالكوميلين فى منطقة
الخط الوسطى والتى يستبقى فيها عنق الرحم مع استخدام الخيوط الجراحية من
أمعاء القط فى ربط الأوعية الدموية للمبايض وكذلك بقايا الرحم مع تغطيتها بالثرب
وهذه الوسيلة تقل مضاعفات الى اقل حد ممكن فى هذه العملية الجراحية .

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**STUDIES ON SOME MODIFICATIONS OF OVARIOHYSTERECTOMY
IN BITCHES AND ITS COMPLICATIONS**
(With 2 Tables & 9 Figs.)

By
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SUMMARY

Ovariohysterectomy was performed on 51 native breed healthy bitches (6 months-5 years age, 8-20 kg. weight) after first heat, during pregnancy or after parturition. The operations were done under different types of anaesthesia, suture materials and different techniques to determine the best surgical approach for such operation. The various complications of each technique were recorded and discussed. It was concluded that the best surgical technique was that performed at the midline (linea-alba) under the effect of general anaesthesia using thiopental-sodium (Nesdonal) proceeded by combelen. The use of catgut for ligature of the uterine stump and the ovarian blood vessels together with enveloping the uterine stump with the great omentum gave the best results.

INTRODUCTION

Ovariohysterectomy is the most commonly performed major operation in small animal practice (RUBIN and MAPLESDEN, 1978). The operation is indicated as a treatment for many genital and reproductive disorders including: ovarian tumours and ovarian cysts (LACROIX, 1959), pyometra in bitches (BADAWI *et al.* 1970; DORN and SWIST, 1979 and O'CONNOR, 1982), postpartum metritis (BURKE, 1977), mucometra and chronic cervicitis in cat (BURKE, 1976), subinvolution of placental sites with necrosis of uterine wall (ARTHUR *et al.* 1979), degenerative changes affecting the uterus (LACROIX, 1959), bilateral torsion of the uterine horns in non-gravid bitch (SHULL *et al.* 1978), vaginal tumours resulting from ovarian dysfunction (WEIGER, 1979), perivulvar dermatitis (NELSON, 1975), nymphomania in bitches (ARTHUR *et al.* 1979) and mammary tumours, neglected dystocia and congenital abnormalities as well as epilepsy (O'CONNOR, 1982).

A wide variety of complications to ovariohysterectomy have been reported by many workers due to anaesthesia, suturing material and/or surgical technique (LACROIX, 1959; ARCHIBALD, 1965; JOSHUA, 1965; PEARSON, 1973; DORN and SWIST, 1977; RUCKSTUHL, 1978; KUNIN and TERRY, 1980).

The aim of the present work is to assess the sequelae of two types of anaesthesia namely, epidural with local infiltration and general anaesthesia. In addition, a comparison between the postcervical and the precervical technique together with the possible complications following the various methods of treating uterine and ovarian stumps with catgut, nylon or silk.

MATERIAL and METHODS

Ovariohysterectomy was performed on 51, native breed, bitches (6 months - 5 years age, 8 - 20 kg. weight). Operations were carried out under strict aseptic precautions (clipping, shaving, washing with soap and water and disinfecting the site of operation with 2% Tr. of iodine) after first heat, during pregnancy or after parturition. Propionyl promazine (Combelen) was used as a preanaesthetic in a dose of 0.5 ml/10 kg. body weight (intramuscularly). Besides, two types of anaesthetics were used as follows:

- 1 - Epidural anaesthesia (1% procaine HCl in a dose of 3 ml/10 kg. body weight, after KRAKWOKA *et al.* (1981), accompanied by local infiltration anaesthesia (1% procaine HCl) from the umbilicus to the xiphoid cartilage.
- 2 - General anaesthesia (thiopental sodium- Nesdonal- Specia- Paris) administered intravenously until the palpebral, anal and pedal reflexes were abolished.

The right ovary was removed before the left one (after ligation of ovarian blood vessels), silk, nylon or catgut were used as suture materials.

Removal of the uterine horns was done after application of two ligatures either in front or behind the cervix (precervical or postcervical technique). The laparotomy wound was closed in usual manner using catgut for the peritonium and muscles, and silk for the skin, the skin stitches were removed 8 - 10 days post-operation.

Operated animals were killed at intervals of 1.5, 5, 7 and 12 months post-operation and the post-mortum findings were recorded in each technique.

The techniques used can be classified as follows:

A - Precervical technique (33 bitches).

- 1 - The uterine stump was ligated with catgut No. 1 and touched with 2% Tr. of iodine (6 bitches), or ligated with nylon (3 bitches).
- 2 - The uterine stump was ligated with catgut No. 1 and then sutured with double raw serosal inverting suture (Lembert suture) using catgut No. 2/0 (6 bitches).
- 3 - The uterine stump was covered with part of the omentum in 18 bitches: in 6 bitches of them was sutured with catgut No. 2/0, another 6 with nylon and the last 6 with silk.

B - Postcervical technique (18 bitches).

- 1 - The vaginal stump was ligated and sutured with catgut No. 2/0 double raw of serosal inverting suture (6 bitches).
- 2 - The vaginal stump was ligated only with catgut No. 2/0 (6 bitches).
- 3 - The vaginal stump was ligated and was covered by part of the omentum (6 bitches).

RESULTS and DISCUSSION

Tables (1 & 2) and figures (from 1 to 9) summarize the obtained results through out the present study. Table (1) presents the complications following ovariohysterectomy, while table (2) represents the complications which was revealed by post-mortum, and the figures represent some of the complications metwith during post-mortum.

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The results revealed that all animals withstood the operation well except six animals (12%) which died on third and fourth day post operation from peritonitis (table 1) due to infection through a postcervical technique. Previous reports recorded peritonitis as a common complication to ovariohysterectomy (LACROIX, 1959; PEARSON, 1973; KRAKOWKA, *et al.* 1981). The way of infection was opened after removal of the cervix, according to the postcervical technique. During the operation, since the cervix acts as a sphincter for the genital tract which prevents any infection passing through. Four from the dead subjects were infiltrated by a local anaesthetic showing partial wound dehiscence which may be attributed to lower the resistance of the tissues infiltrated leading to infection and peritonitis.

The obtained results following epidural anaesthesia were not satisfactory since its action did not extend to the xiphoid cartilage and needed further injection or at least swabbing the mesovarian with a local anaesthetic to cover the area of operation, in addition the muscular relation was not complete. This is in agreement with the reports of LETTOW (1955) and BADAWI *et al.* (1970).

On the other hand, thiopental sodium preceded by Combelen gave best results in our operations as it led to complete muscle relaxation and abolition of the anal, pedal, ear and palpebral reflexes. In accordance with the present results, LACROIX (1959) and ARCHIBALD (1965) considered barbiturates as the best method of general anaesthesia for ovariohysterectomy in bitches.

In the present study we agree with BADAWI *et al.* (1970) and RUBIN and MAPLESDEN (1978) in exteriorization of the right ovary at first, because it has a shorter attachment and difficult to manipulate than the left ovary.

Wound dehiscence was reported as a complication to ovariohysterectomy and led to visceroperitonitis, omental and intestinal herniae (JOSHUA, 1965; PEARSON, 1970; DORN and SWIST, 1977 and KRAKOWKA *et al.* 1981). In the present study four cases (8%) were complicated by wound dehiscence which may be attributed to hypersensitivity of some bitches to the suture material or to contamination of the wound in fat subjects.

In the present study haemorrhage was observed in two bitches (4%) and bleeding was arrested by re-application of the artery forceps on the bleeding vessels and re-ligation. Nearly similar findings were formerly reported by other workers (PEARSON, 1973; DORN and SWIST, 1977; RUBIN and MAPLESDEN, 1978).

The results of the present study (table 1) agreed with that of JOSHUA (1965) and DORN and SWIST (1977) who reported some suture abscesses as complication to ovariohysterectomy, three abscesses were observed in 3 cases (6%) in the present work, which may be attributed to either contamination or reaction to suture material.

In the present work one case of flank fistula was observed (table 1), where silk sutures were applied around the ovarian pedicle. Such findings agreed with the reports of other workers using non absorbable suture material (KULLER and RECHNBERG, 1969; TURNER, 1972).

The present investigations also revealed an increase in the body weight as a sequelae to the operation in 10% of the cases (table 1), this is in agreement with previous reports in this respect (JOSHUA, 1965 and NELSON, 1975).

Concerning the use of different suture material for ligation of uterine and ovarian stumps the present results are in favour of catgut over nylon and silk, a result which coincides with the findings of many other workers (BADAWI *et al.* 1970; PEARSON *et al.* 1977; GEROSA, 1979; KNECHT, 1981; O'CONNOR, 1982). However, PEARSON (1970) did not recommend the use of catgut

for closure of the abdominal wall due to incisional hernia following its use. Furthermore, PEARSON (1970) observed some cases of ligature granulomata resulting from tissue reactions to irritant suture material (silk and nylon), his findings are in accordance with the present results (figures 6 & 7 and table 2) which revealed different forms of adhesions resulting from silk suturing for ligation of the ovarian stump, also adhesions between the ovarian pedicle and the small intestine as well as the right kidney and spleen were recorded in the present study (fig. 9 & table 2), similar adhesions were previously reported by JOSHUA (1965) and PEARSON (1973). During post mortem, one of our cases was found complicated by an organized haematoma (fig. 8), unfortunately there is no available literature to discuss it with; anyhow this haematoma may be due to neglect of ligation of the ramus tubularis of the ovarian artery.

Results of the present study (table 2, fig. 1) are in agreement with that of KUNIN and TERRY (1980) who reported adhesions between the uterine stump and the urinary bladder. PEARSON (1973) reported adhesions between the uterine stump, urinary bladder, and colon, the same findings were detected in our results (fig. 3 & table 2). A fibrous cord was recognized in the present result (fig. 4, table 2) between the uterine stump and small intestine, similar reports recorded adhesions between the uterine stump and small intestine (JOSHUA, 1965; KULLER and RECHENBERG, 1969 and PEARSON, 1970 & 1973).

According to the preceding results, it can be concluded that the best surgical technique for ovariohysterectomy in the bitches, is that performed at midline (linea alba) under the effect of general anaesthesia using Nesdonal preceded by Combelen. Precervical approach gave optimum results especially when the uterine stump was ligated and covered with part of the omentum, using catgut, this leads only to adhesion between the uterine stump and omentum (fig. 5).

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LEGENDS TO FIGURES

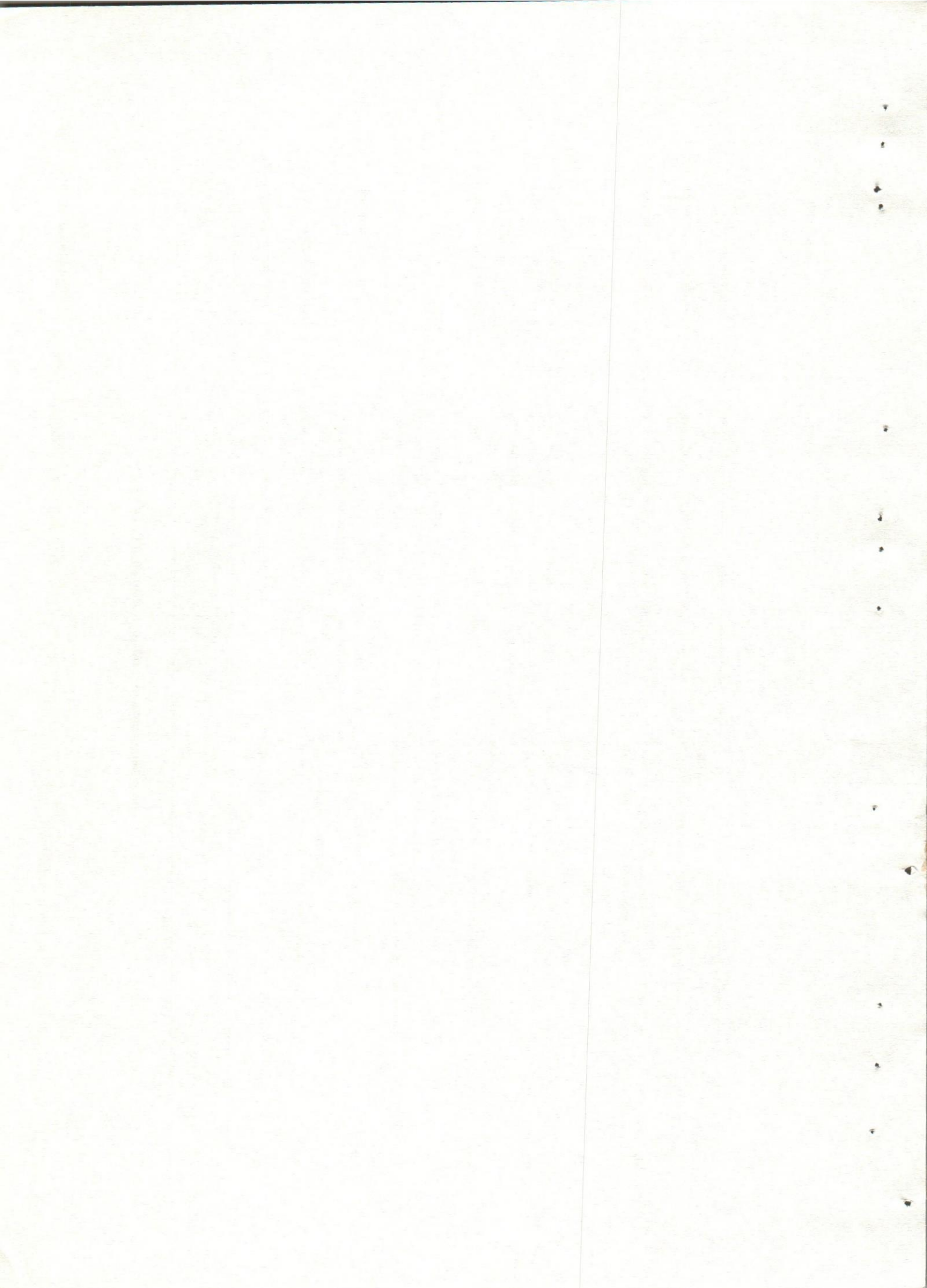
- Fig. (1):** Adhesion between the uterine stump and the urinary bladder distended with urine; precervical technique.
(45 days post-mortum)
- Fig. (2):** Adhesions between the uterine stump and colon, in a cord-like manner; precervical technique.
(45 days post-mortum)
- Fig. (3):** Adhesion between the uterine stump, colon and urinary bladder; precervical technique.
(7 months post-mortum)
- Fig. (4):** Adhesion between the uterine stump and intestine in the form of cord-like fibrous tissue; precervical technique.
(5 months post-mortum)
- Fig. (5):** Adhesion between the uterine stump and omentum as a thick cord of fibrous tissue; precervical technique.
(5 months post-mortum)
- Fig. (6):** Inflammation of the urinary bladder; precervical technique.
(45 days post-mortum)
- Fig. (7):** Adhesions between the last part of the small intestine and the seat of the ovarian stump. Precervical technique - Ovarian ligation with nylon.
(7 months post-mortum)
- Fig. (8):** Circumscribed haematoma in the right ovarian stump. Precervical technique - Ovarian stump ligation with catgut.
(5 months post-mortum)
- Fig. (9):** Adhesion between the ovarian stump and kidney. Precervical technique.
(12 months post-mortum)

Table (1)
Percentage of complications following ovariohysterectomy

Complication	Number	%
Wound dehescence.	4	8%
Haemorrhage during operation.	2	4%
Suture absces.	3	6%
Fistula in the flank.	1	2%
Death.	6	12%
Obesity.	5	10%

Table (2): Incidence of post-mortum complications

Type of operation	Treatment of the uterine stump ovarian stump and vaginal stump	Complications	Number of bitches	%
1) Post-cervical operation	ligation and suturing with lembert sutures using cat gut.	Peritonitis	6	12%
2) Pre-cervical operation	1) ligation without suturing of the stump (Nylon) 2) ligation and omentization of the stump (Silk)	Adhesions between the uterine stump and urinary bladder	3	6%
3) Pre-cervical operation	1) ligation and omentization of the stump (Silk) 2) ligation only with cat gut.	Adhesions between the uterine stump	2	4%
4) Pre-cervical operation	1) ligation only with cat gut. 2) ligation and omentization (Nylon)	Adhesions between the uterine stump urinary bladder and colon	2	4%
5) Pre-cervical operation	ligation and suturing with lembert suture stump using cat gut.	Adhesions between the uterine and small intestine	1	2%
6) Pre-cervical operation	1) ligation of the stump and suturing with lembert 2) ligation and omentization with cat gut	Adhesions between the uterine stump and omentum	8	16%
7) Pre-cervical operation	ligation of the uterine stump with cat gut	Inflammation of the urinary	1	2%
8) Pre-cervical operation	ligation of the ovarian stump with nylon	Adhesions between the seat of the ovarian stump and small intestine	1	2%
9) Pre-cervical operation	ligation of the ovarian stump with silk	Adhesions between the seat of the ovarian stump, omentum, spleen and abdominal wall from inside	1	2%
10) Pre-cervical operation	ligation of the ovarian stump with cat gut	Circumscribed haematoma at the right ovarian stump	1	2%
11) Pre-cervical operation	ligation of the ovarian stump with cat gut	Adhesions between the seat of ovarian stump and kidney	1	2%



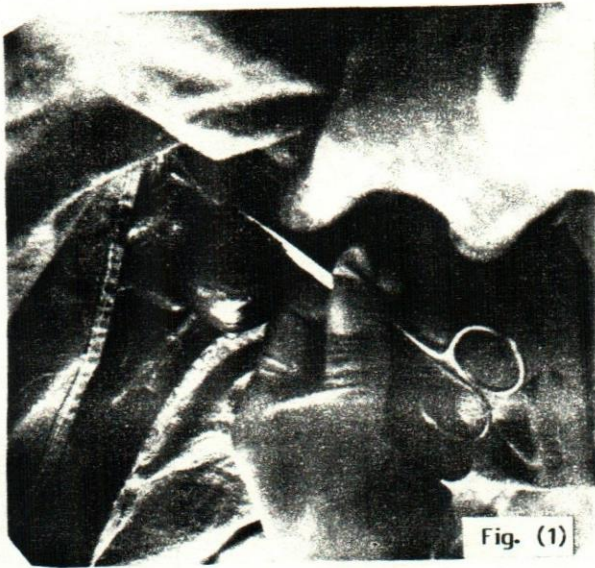


Fig. (1)

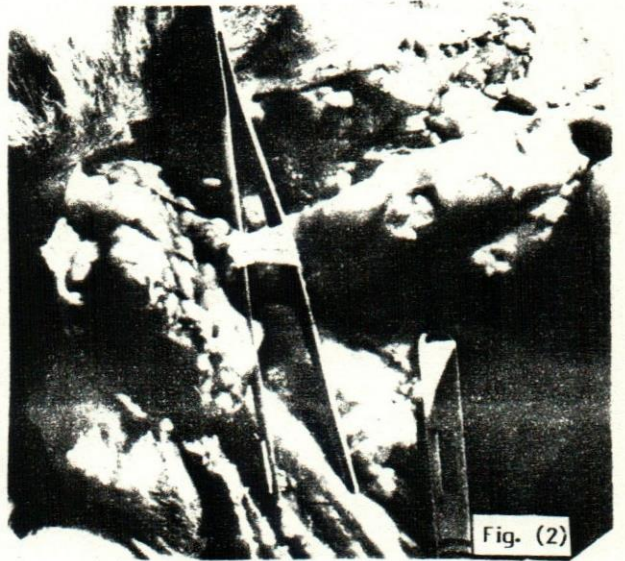


Fig. (2)

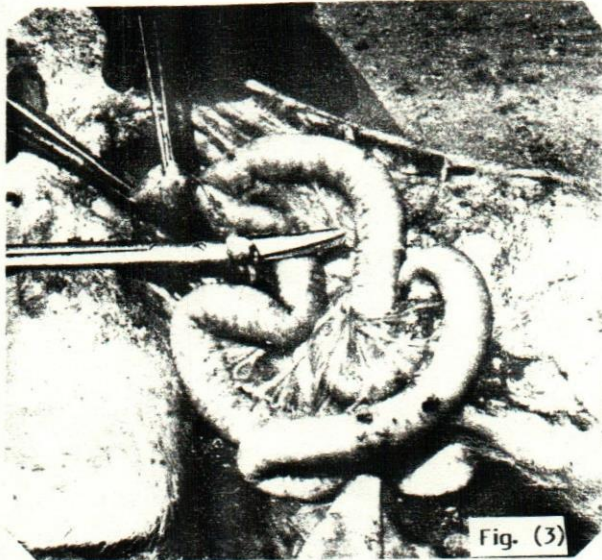


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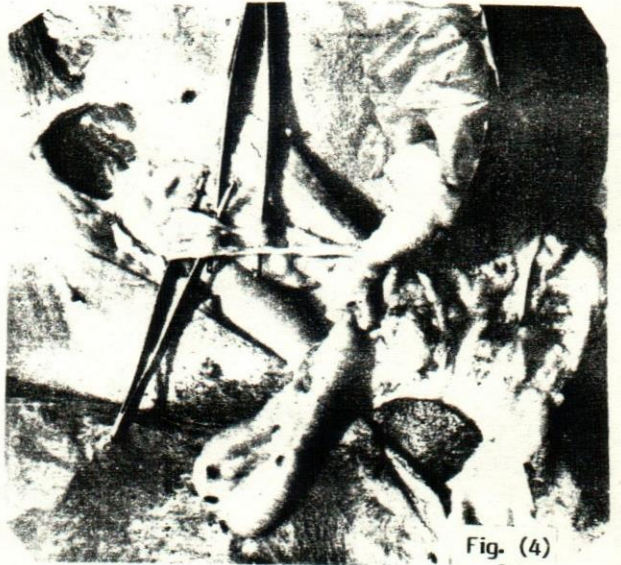


Fig. (4)

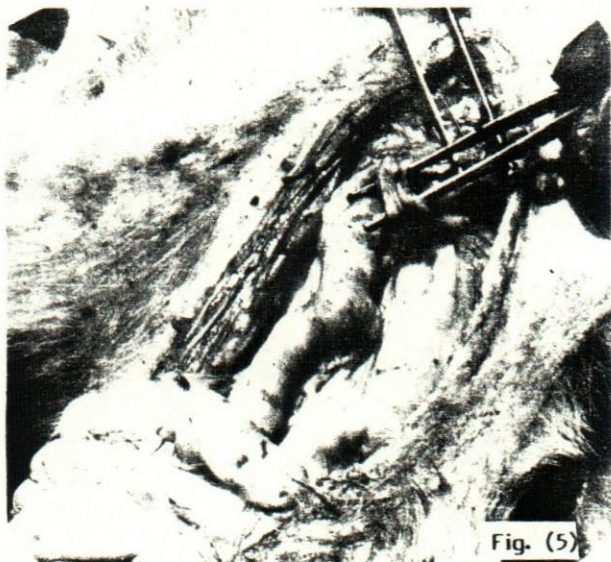


Fig. (5)



Fig. (6)

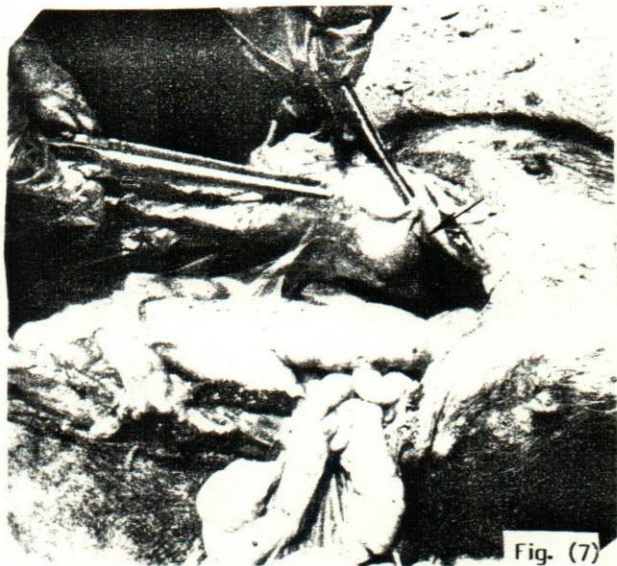


Fig. (7)



Fig. (8)

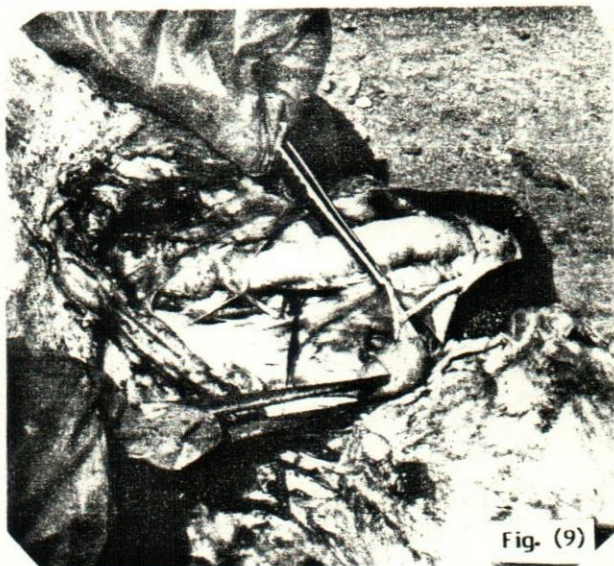


Fig. (9)

