INTERSTITIAL PREGNANCY FOLLOWING HOMOLATERAL SALPINGECTOMY

(Review of Literature and Presentation of an interesting case)

by

M. M. KAPAS,* M.B.B.S., D.G.O., M.O. (Cal.), M.R.C.O.G.

Introduction

The occurrence of interstitial ectopic pregnancy at the site of a previous salpingectomy is a very rare entity and often produces a dramatic phenomenon. It may follow any known type of salpingectomy including cornual resection. Fulsher (1959) and Simpson *et al* (1961) have reviewed the literature and described ten cases of their own. In 1922, McIntyre Donald described one case of interstitial pregnancy after salpingo-oophorectomy on the same side (right). Unfortunately, there is no reference of this rare type of ectopic in the recent British journals.

Review of literature

Incidence

The incidence of this rare gynaecological entity is very meagre and the literature gives no frequency of such cases. Mention has been made in some previous reports of similar cases which have never been the object of individual reports or which were insufficiently documented. During the last ten years, 71 cases of this variety of ectopic have been reported in the world literature. Werth, (reported at the Glasgow Obstetrical and Gynaecological Society, in 1922, 26th April) in 120 operations for ectopic, did not meet with a single example. Martin recorded one case in 77 operations for tubal gestation, and Munro Kerr, one in a series of 80 (quoted by Donald). The original condition for which the first operation was performed in Donald's case was one of inflammatory origin and it is not unreasonable to suppose that the inflammation of the tube resulted in obliteration of the uterine ostium. Fulsher reviewed the literature in 1959 which enabled him to find a total of only 67 cases of ectopic pregnancy following homolateral salpingectomy. All these cases were between the ages of 22 and 36 years, with the exception of one who was 41. In only 20 cases was the pathological finding at the original salpingectomy listed as other than ectopic pregnancy, which is in accord with the oft repeated statement that ectopic pregnancy has a tendancy to recur. The interval between the original salpingectomy and the second ectopic varied from two months to

*Registrar, Dept. of Obst. & Gynec. Bethnal Green Hospital, London E. 2.

*Present Address: Dept of Obst. & Gynec. Institute of Post-graduate Medical Education and Research, Calcutta, 20.

Received for publication on 13-12-1968.

eleven years. Simpson *et al* reviewed the literature in 1961 and collected 40 cases. Hofmeier first reported this entity in 1905. Morfit's earlier cases (1900) occurred after partial salpingectomy. There were 36 cases in the literature following partial salpingectomy. These, in the opinion of Simpson *et al,* represent a somewhat different situation since recanalisation of the tubal stump is a well recognised consequence and an incidence of 2-4% interstitial implantation would be anticipated in any subsequent ectopic pregnancy, whether the tube was partially excised or ligated or an operation of tuboplasty performed. It is generally held that a carefully performed wide cornual resection will prevent subsequent homolateral ectopic pregnancy. However, this concept requires further scrutiny.

Aetiology

Hasselblatt became convinced in 1926 that in each case of ectopic following homolateral salpingectomy. recanalisation of a tubal remnant had occurred. This observation was later on substantiated by many gynaecologists and is the view upheld by most at present. Even in the few cases where an attempt had been made to remove the interstitial portion of the tube by cornual resection during the primary salpingectomy, it was later found that cornual excision had not been complete and there was always a remnant of tubal epithelium at the site of the uterine cornu. It proves. therefore, that Hasselblatt's theory of external migration of ovum and implantation of the fertilised egg in the interstitial remnants of the excised tube holds good. This theory has been further strengthened by the observation of pregnancy in an imperforate rudimentary horn. Now. the ovum may gain access to these recanalised tubes via the peritoneal cavity, either from the homolateral ovary or in its absence, from the opposite ovary by transmigration. There is the rare possibility of a fistulous opening in the area of the cornual scar as described by Buerger (1948).

Clinical features

None of Simpson's six cases gave a history of vaginal bleeding. Ordinarily, vaginal bleeding should be anticipated in 75% cases of typical ruptured ectopic. Amenorrhoea, varying from 6 to 26 weeks, is a common symptom. Amenorrhoea followed by an acute abdomen with all clinical features of ectopic pregnancy should guide one to the diagnosis of tubal mischief, but it is very difficult to diagnose interstitial pregnancy as such before a laparotomy. History of a previous salpingectomy, either for ectopic or for nonspecific inflammatory reasons, should raise the suspicion of the diagnosis of interstitial pregnancy.

Management

A review of literature shows that surgical treatment of a ruptured ectopic pregnancy in an interstitial remnant has been varied. Roughly, the whole subject of management was divided into three categories, namely—

1. Simple closure of tubal wound with haemostatic sutures.

2. Excision of defects and reconstruction of the uterine wall.

3. Hysterectomy — Total/subtotal, with or without adnexal surgery.

In some cases, consideration of conservative surgery involving complete excision of the haemorrhagic tissue in the cornual end of the uterus, followed by repair of the uterine wall should be given, especially in a young woman who has not got a living child. Occasionally, hysterectomy may have to be resorted to when the uterine defect is beyond repair. This is the treatment of choice in about 28% of cases. Mortality is about 5% in the condition under discussion. This is twice that of ectopic pregnancy in general.

Prophylaxis

There is a difference of opinion regarding the primary management of the diseased tube (either ectopic or inflammatory). The most common indication for prior salpingectomy was an earlier ectopic pregnancy, in 60% of the total number reported. Ectopic pregnancy recurs in about 5% of women who are capable of conceiving. The interval between primary salpingectomy and subsequent homolateral interstitial pregnancy varied from six months to 13 years. It would appear from the study that further childbearing in this group of cases is hazardous. Fulsher is of the opinion that cornual resection should be done in all cases where the condition of the patient renders it safe, but there are in the literature 10 cases of homolateral interstitial pregnancy following salpingectomy with cornual resection. To these, Simpson *et al* added another three cases and concluded that simple salpingectomy with peritonisation was almost equally effective prophylactically. For cornual resection to be truly effective prophylaxis, all such nests of tubal epithelium would have to be included in the excised tissue and even the creation of a large hole in the uterine wall at the cornual end would not be a guarantee against recanalisation.

Case Report

Mrs. B. R., aged 28 years, was admitted to the Gynaecological Department of Bethnal Green Hospital, London, at 8.30 a.m. on 28th May, 1967, as an emergency with the complaints of:

1. Pain in the left iliac fossa — on and off — for last three weeks which was aggravated since last night.

2. History of one fainting attack-previous night.

3. Amenorrhoea for last ten weeks. She never gave a history of vaginal bleeding any time during the last ten weeks.

Obstetric history: Married for 12 years. Para 1 + 0. Full term, normal delivery, 11 years ago. No history of puerperal sepsis. There was no history of use of any contraceptive measures any time.

Menstrual history: Menarche 12 years. Cycle 28 days, regular, duration 6 days. Flow average, painless. Last menstrual period 13-3-67.

Past medical and surgical history: Left sided salpingo-oophorectomy done in November 1966, in another hospital in London. Laparotomy findings — There was evidence of chronic inflammatory disease of left adnexa which was removed. Right tube, right ovary and the uterus were otherwise healthy. **Pathological report:** Nonspecific inflammation, left tube and peri-oophoritis.

On examination:

(a) **General:** Build — average; nutrition, — fair. Rather anxious look. Pallor + +. Pulse 102 per minute; respirations 26 per minute. Blood pressure 80/50 mm Hg. Temperature 97.6°F. Heart, lungs—

no abnormality detected. Breasts—enlarged, slightly tender.

(b) **Per abdomen:** There was a definite muscle guard and tenderness present in lower abdomen. No definite mass palpated. Cullen's sign — negative; flanks — rather full. No obvious shifting dullness could be demonstrated. Intestinal peristalsis +.

(c) **Per speculum:** Vagina — quite pale. Cervix — looked healthy. External os closed. No bleeding seen.

(d) **Per vaginam:** Uterus anteverted, bulky — about 6 weeks' size, mobile. Movement of the cervix caused great pain in both iliac fossae. Left fornix and pouch of Douglas full and very tender. Right fornix — free.

A provisional diagnosis of ruptured ectopic was made.

Haemoglobin was 56 per cent. Group A, Rh. D + ve. Four pints of blood were asked for. Immediate resuscitation of the patient was done with:

Inj. Omnopon 20 mgm. intramuscularly, and infusion of 5% dextrose saline after an opening in the right long saphenous vein was established, as the superficial veins were not available.

Exploratory laparotomy was done at 10 a.m. Abdomen was opened by an infra-umbilical midline incision. On exploration there was haemoperitoneum. There was an interstitial pregnancy on the left side which had ruptured and was bleeding heavily. A foetus of about the size of eight weeks' gestation was adherent to the remnant of left tube. The left broad ligament was already opened up and was filled up with blood clots. The right tube and ovary were healthy, the right ovary containing a recent corpus luteum. The left ovary was missing and also the left tube with the exception of a small stump which had ruptured. The uterus was just bulky. A decision to perform a total hysterectomy was immediately made. There was no difficulty in performing a quick total hysterectomy. Haemostasis was properly maintained, pelvic peritonisation was completed and toileting of the peritoneal cavity was done. The abdomen was closed in layers.

She was given three pints of blood — transfused with positive pressure — during the operation. The fourth pint of blood was transfused after she was taken to the ward. She made an uneventful recovery Sutures were removed on the eighth day. The union was perfect. Haemoglobin level was 70 per cent at the time of her discharge on 13th June 1967. She was advised to attend the gynaecological clinic after six weeks.

Description of the specimen: Uterus was enlarged to six weeks' gestation, the left cornu of which was filled up with blood clots. The foetus had escaped from the remnant tubal wall on the left. (Fig. 1).

Histology: Section showed chorionic villi, necrotic tissue with blood clots adherent to the tubal wall. Uterus showed no pathology excepting myohyperplasia and decidual change.

She was seen again after six weeks on 30th July 1967. She had no complaint. She adjusted herself pretty well to the truth that she would not be able to conceive any more. Anyway, she was proceeding to Australia for her holidays very soon.

Discussion

The interesting case under discussion presented with a typical picture of ruptured ectopic pregnancy. She had a long period of relative infertility which suggested some sort of pelvic inflammatory condition, but she did not present herself for any investigation for this. As she was having a dull aching pain sometime in September and October the previous year, she was admitted to a hospital in London where an exploratory laparotomy followed by left sided salpingo-oophorectomy was performed in November 1966. According to the description, the right tube and ovary were healthy. Following this primary operation she was feeling fine without any gynaecological trouble, but within six months she was readmitted in this hospital with the diagnosis of ruptured ectopic. The pos-

sibility of right sided mischief was very high in this case and although macroscopically the right adnexa looked quite healthy, the possibility of endosalpingitis was not excluded by any means.

Interstitial pregnancy following a homolateral salpingectomy is a rare entity and each case deserves publishing. McIntyre (1922) described a case after right sided salpingo-oophorectomy. Werth (1922) did not meet with a single example in 120 operations for ectopic. Morfit's (1900-quoted by Fulsher) early case occurred after partial salpingectomy. Fulsher (1959) and Simpson *et al* (1961) reviewed the literature and discussed the interesting nature of the condition. The case notes of ectopic pregnancies operated on in this hospital during the last 10 years were scrutinised. There were 88 cases altogether. In 1966, there were 736 gynaecological operations of which 9 were ectopic. In no case notes was any suggestion of interstitial pregnancy mentioned. Moreover, no case was discussed when an ectopic pregnancy was diagnosed after homolateral salpingectomy. This proves the rarity of this clinical entity.

The commonest indication for prior salpingectomy in world literature was an earlier ectopic pregnancy, this being noted in 60% of cases (Simpson *et al* 1961). The other causes were hydrosalpinx, pyosalpinx, tubo-ovarian abscess, endometriosis, chronic pelvic inflammatory diseases and sterilisation. This particular case had salpingo-oophorectomy done for chronic pelvic inflammation involving the left adnexa.

The interval between salpingectomy and subsequent homolateral interstitial pregnancy varied from six months to 13 years. From that point, this particular case under discussion had the primary operation just six months before the catastrophe. Child-bearing is almost a hazardous procedure and pregnancy as a rule does not reach the period of maturity.

One most interesting feature in relation to the history of these types of cases is that there is almost always no history of vaginal bleeding. None of the 6 cases of Simpson *et al* (1961) gave a history of vaginal bleeding. Ordinarily, vaginal bleeding would be anticipated in 75% cases of ruptured ectopic. The patient under discussion did not give a history of vaginal bleeding any time following her last menstrual period.

Hasselblatt (1926) suggested that in every case of ectopic pregnancy following homolateral salpingectomy, recanalisation of a tubal remnant must have occurred. External transmigration of the ovum was first suggested by Dujarrier in 1923 who reported a pregnancy in a patient who had had a tube removed on one side and the ovary on the other. This is, of course, the only way of having pregnancy in an imperforate rudimentary horn. Although the rare possibility of internal transmigration has been thought of, the point against this theory is that it seems quite illogical that the fertilised ovum might travel in a retrograde fashion from the uterine cavity back into the cornual stump. The presence of ei-

lia in the endosalpinx along with peristaltic contractions directed towards the uterine cavity makes this quite unlikely. Perhaps a more logical and quite acceptable theory would have the sperms make their way through the healthy tube and fertilise the ovum directly in the abdominal cavity. This route of external transmigration is a simple way of explaining the cases of interstitial pregnancy following salpingectomy where homolateral implantation has taken place, as is borne out by the fact that the corpus luteum is on the side of the pregnancy. Recently, the presence of sperms in the peritoneal fluid and their transmigration have indeed been verified.

Such diversity of opinion in relation to management of interstitial pregnancy encouraged Bret (1947) to express—"One should not have a rigid attitude, but should be elastic and adopt the type of treatment applicable to the individual case". Keenan (1944) of course, advised that subtotal hysterectomy should be the treatment of choice in ruptured interstitial pregnancy as it is a safer and a more quickly performed operation.

The case under discussion had a total hysterectomy done as conservative surgery was out of the question. The broad ligament was opened up on the left and she was bleeding so profusely that clamping of uterine vessels were needed in order to save her life. Total hysterectomy should not take a longer time than subtotal hysterectomy without, of course, jeopardising the life of the patient so that the remote possibility of stump carcinoma is thus avoided.

Mortality is almost always twice that of ectopic pregnancy in general.

Summary

A review of literature on the subject of homolateral interstitial pregnancy following salpingectomy has been made. An interesting case has been described. Discussion in relation to incidence, aetiology, mechanism of canalisation of the remnant tube, transmigration of the fertilised ovum, clinical features, and management including prophylaxis, has been covered. Each case is an interesting one and should be published.

Acknowledgement

I would like to express my sincere thanks to Mr. J. J. O'Sullivan, M.R.C.O.G. and Miss V. M. Husband, Ch. B., M.R.C.O.G., Consultant Gynaecologists of Bethnal Green Hospital, for their criticism and encouragement, to Mr. A. Foster, Hospital Secretary, for allowing me to publish the hospital records, to the Royal Society of Medicine for taking the photograph and and Mrs. D. Clunie for her secretarial help.

References

1. Andrews, H. R.: Proc. Roy. Soc. Med. **6**: 52, 1912-1913.
2. Bickerstaff, H.: Obst. & Gynec. **10**: 422, 1957.
3. Bret, J.: Obst. & Gynec. **46**: 591, 1947.
4. Buerger, C. L. and Weinstein, B. B.: West J. Surg. **56**: 596, 1948.
5. Dujarrier, J. (1923): Quoted by Fulsher (1959).
6. Fulsher, R. W.: Am. J. Obst. & Gynec. **78**: 355, 1959.

7. Hasselblatt, R. (1926): Quoted by Fulsher (1959).
8. Hofmeier, M.: Berlin Klin Wchnschr. **42**: 847, 1905.
9. Keenan, J. J.: Am. J. Surg. **65**: 112, 1944.
10. Martin, I. (1920): Quoted by McIntyre (1922).
11. McIntyre, D.: J. Obst. & Gynec. Brit. Emp. **58**: 388, 1922.
12. Morfit, J. C. (1900): Quoted by Fulsher (1959).
13. Munro Kerr: Operative Obstetrics. Edited by J. Chassar Moir, ed. 6, London, 1956, Balliere, Tindall & Cox., p. 752.
14. Simpson, J. W., Charles, D. and Alexander, C. M. Am. J. Obst. & Gynec. **82**: 1173, 1961.

See Fig. on Art Paper I