

# OVARIAN PREGNANCY

A case report with review of literature

by

LAXMI I. ASHAR,\* M.D., F.C.P.S., D.G.O., D.F.P.

PARAG TRIVEDI,\*\* M.B.B.S., D.G.O.

SUSAN KAUR,\*\* M.B.B.S., D.G.O.

B. N. PURANDARE,\*\*\* M.D., F.R.C.S.E., F.C.P.S., F.I.C.S.,  
F.R.C.O.G., F.A.M.S.

Ovarian pregnancy is a rare type of ectopic gestation. It is difficult to diagnose this entity clinically. These cases are diagnosed either at the time of laparotomy or on histopathology. One such case was met with at the King Edward VII Memorial Hospital, Bombay.

## Case Report

Mrs. G. V., aged 26 years, married for the last 12 years, was admitted on 10-4-68 with a history of pain in the abdomen and bleeding per vaginam of one day's duration. There was no history of fever or attacks of giddiness.

Her first menstrual period was at the age of 14 years. She used to get periods at the interval of 14-16 days, lasting for about 3-4 days. Her last menstrual period was 7 days ago. The amount of blood loss was normal.

The patient was a case of primary sterility. On admission, her vital signs were within normal limits. Abdominal ex-

amination revealed tenderness on right side of the lower abdomen.

On vaginal examination, the uterus was anteverted and of normal size. There was a tender mass, about 2 inches in diameter, palpable in right fornix.

The following were the investigations carried out:

Hb. 9 gms. %; W.B.C. 11,000/cmm.; E.S.R. 20 mm. at the end of one hour. Urine showed 5-10 pus cells per high power field.

A diagnosis of tubo-ovarian mass was made and the patient was kept in the hospital for observation for 7 days.

About 14 days after the discharge, she was re-admitted with the complaint of severe pain in the lower abdomen.

Her blood pressure was 80/60 mm. Hg. and pulse rate 110 per minute.

On abdominal examination there was an ill-defined mass about 2 inches in diameter palpable on the right side of the lower abdomen. Vaginal examination revealed that the normal sized uterus was pushed on to the left side. The same mass which was palpable per abdomen could be palpated through the right fornix. There was marked tenderness in the right fornix.

Her haemoglobin now was 6 gms. %; W.B.C. count 7,700/cmm. and E.S.R. 15 mm. at the end of one hour.

A diagnosis of ectopic gestation was made and a colpopuncture carried out. No blood could be aspirated. In spite of a negative colpopuncture, an exploratory

\*Registrar.

\*\*House Surgeon.

\*\*\*Hon. Obstetrician & Gynaecologist and Director/Professor of Obst. and Gynec.

Dept. of Obst. and Gynec. K. E. M. Hospital, Parel, Bombay 12.

Received for publication on 26-6-1969.

laparotomy was carried out because of the clinical diagnosis of ectopic pregnancy.

#### Finding at operation

The uterus was markedly deviated to the left side. There were marked adhesions on the posterior surface of the uterus. Both tubes appeared oedematous. There was no evidence of any tubal pregnancy. There was a mass in the region of right ovary. The sac had ruptured. The ovarian tissue appeared to be forming the wall of the sac. The sac was attached to the uterus by utero-ovarian ligament on one side and was adherent to the broad ligament and intestines.

It was not possible to remove the entire sac as an attempt to do so caused oozing. Hence, a right salpingo-oophorectomy was carried out and gell-foam was put on the raw surface. Plication of the round ligaments was done. The patient was given transfusion of 3 units of blood during the operation.

But for the pyrexia on second and third post-operative days, the post-operative period was uneventful. The patient was discharged on 8th post-operative day.

She attended the out-patient department after 2 months and was found to be in good health then.

#### Histopathology

It confirmed the clinical diagnosis of ovarian pregnancy. The section through the fallopian tube showed the structure of a normal fallopian tube. The section through the sac wall showed compressed ovarian stroma.

#### Discussion

##### History

Mercerdus was the first person to describe this pregnancy in 1614. Saint Maurice of Pengord, France, in 1682, detected a case of ovarian pregnancy at autopsy. This case probably happens to be the first recorded case of ovarian pregnancy. Credit goes to Spiegelberg for critically describing the criteria to be satisfied by ovarian pregnancy (1878).

Many well-authenticated cases of ovarian pregnancy have been reported since Katherine Van Tussenbroek described Kramer's case in 1899. Thomson (1902) recorded the first case of ovarian pregnancy in the American literature. Novak (1940), Hertig (1951), Baden and Heins (1952), Taber and Crossett (1952), King (1954), Upadhyay *et al* (1955), Subhadradevi (1960), Rakshit (1964), Vaish (1965), Pinto Rosario (1967), Raja Ram (1967) and Shakuntaladevi *et al* (1967) have reported cases of ovarian pregnancy.

In 1956, Pewters could collect only 125 cases of primary ovarian pregnancy.

#### Incidence

Hertig (1951) gave an incidence of 0.77 to 1.07% of all ectopic pregnancies, or 1 in 25,000 to 40,000 pregnancies. Boronow *et al* (1965) gave an incidence of ovarian pregnancy as 1 in 9,229 pregnancies or 2.74% of ectopic pregnancies. Courtiss gave an incidence of 1 in 209 ectopic pregnancies, while Bacile and Nagler as 1 in 316. Baden and Helins (1952) gave an incidence of 1 in 117 ectopic pregnancies or 1 in 2,500 pregnancies.

Dowling *et al* (1960) reported a solitary case of ovarian pregnancy in 59,740 pregnancies. Shakuntaladevi *et al* (1967) gave an incidence of 1 in 7,878 pregnancies or 1.02% of ectopic pregnancies. That by Raja Ram (1967) is 1 in 27,013 pregnancies.

Thus the incidence given by various authors varies from 0.17% to 4.71% of all ectopic pregnancies.

### Diagnosis

Spiegelberg in 1878 laid down the following criteria for the diagnosis of ovarian pregnancy:

1. The tube on the affected side should be intact.

2. The foetal sac should occupy the position of the ovary.

3. The sac should be connected with the uterus by the ovarian ligament.

4. Definite ovarian tissue should be found in its wall.

Norris, in 1909, further modified the first criterion given by Spiegelberg by saying that the tube must show no microscopic evidence of pregnancy.

Stander, in 1941, modified the fourth criterion. According to him, ovarian tissue should be found in several places at some distance from each other in the wall of the sac. Baden and Heins (1952), however, had modified Spiegelberg's criteria stating that ovarian tissue should be present intervening between the foetal tissue and any adherent extraneous tissue which would be useful in dealing with the pregnancy if it continued. Vaish (1965) and Rakshit (1964) rule out the possibility of this fact stating that in order to accommodate the growing foetus, the ovarian stroma undergoes marked hypertrophy and the sac wall undergoes marked stretching.

### Mechanism

The mechanism of ovarian pregnancy is still an enigma.

Garry and Parsons (1957) quoted the theory postulated by Leopold in 1899. According to this theory the ovum finds difficulty in escaping out of the follicle and gets subsequently

fertilised in the follicle itself. This theory is no more accepted.

According to Curtis (1941), the ovum gets fertilised in the tube and then slides backwards and gets implanted on the ovary or near the recently ruptured follicle.

Novak (1962) supports the mechanism proposed by Meyers that the pregnancy occurs through cortical implantation of the ovum. This is due to the differentiating potency of the germinal epithelium. This theory is supported by the frequency with which ectopic endometrium is found in the ovary.

John and Gravin (1958) reported a case of ovarian pregnancy with endometriosis. This ectopic endometrium in the ovary favours the nidation.

While maturation of the ovum within the fallopian tube is not considered necessary, the follicular ovum does undergo mitosis as part of the reduction division process. The ovum is ready for fertilisation and a virile spermatozoon could penetrate such an intrafollicular ovum. According to some authors, pelvic inflammatory disease is the basis of all ectopic pregnancies.

Other aetiological factors supposed to be responsible for this condition, as enumerated by Shakuntaladevi *et al* (1967), are tenacious granulosa cells and discus proligerus, low intra-follicular pressure, ineffective tubal function (ciliary and/or peristaltic), favourable surface phenomena, parthenogenesis and chance.

### Classification

Baden and Heins (1952) classified ovarian pregnancy as follows:

## I. Primary ovarian pregnancy.

## A. Intra-follicular

## B. Extra-follicular;

(a) Juxta-follicular, (b) interstitial, (c) cortical, (d) superficial implantation.

## II. Combined ovarian pregnancy.

In this, the ovary forms a portion of the tissue lying adjacent to foetal tissues but not forming the entire wall.

In the intra-follicular type, the ovum gets fertilised in the follicle itself, whereas in the extra-follicular type, the fertilised ovum gets implanted on to the surface of the ovary. The majority of cases are extra-follicular in origin.

*Signs and symptoms* in a case of ovarian pregnancy may be like those in any case of tubal pregnancy, like amenorrhoea, attacks of giddiness, bleeding per vaginam, colicky abdominal pain and abdominal tumour. In later months, the patient may be diagnosed as a case of secondary abdominal pregnancy. Rarely, the patient may be misdiagnosed as a case of fibroid uterus as in the case of Subhadra Devi (1960). The diagnosis, thus, is almost always made at the time of laparotomy. According to Baden and Heins (1952), 75% terminate in the first trimester, 12½% in the second trimester and 12½% in the third trimester. Cases have been recorded in the literature where ovarian pregnancies have gone to term (Hubacker, 1963) or even beyond term, which are usually operated on as secondary abdominal pregnancy. Most of the infants are still-born.

An occasional case has been reported where there was simultaneous intra-uterine and ovarian preg-

nancy, twin ovarian pregnancy (Green and West, 1963), recurrent ovarian pregnancy and ovarian hydatidiform mole (Wittenberg and Ries, 1948).

The usual operation practised in these cases is salpingo-oophorectomy on the affected side. At times, the tube on the affected side is left behind and if possible, wedge resection of the affected ovary is done.

*Summary*

1. A case of ovarian pregnancy is presented.

2. The aetiology, pathology, clinical features and management are discussed.

3. A review of the English literature is also given.

*Acknowledgement*

We thank Dr. S. V. Joglekar, Dean, King Edward VII Memorial Hospital, for allowing us to present the hospital data.

*References*

1. Bacile, V. and Nagler, W.: As quoted by Boronow et al.
2. Baden, W. F. and Heins, O. H.: *Am. J. Obst. & Gynec.* 64: 353, 1952.
3. Boronow, C. R., McClintock, W. T., West, H. R. and Buckingham, C. J.: *Am. J. Obst. & Gynec.*, 91: 1095, 1965.
4. Courtiss, M.: As quoted by Boronow et al.
5. Curtis, A. H.: *Surg. Gynec. & Obst.* 72: 1039, 1941.
6. Dowling, E. A., Collier, F. C. and Bretschneider, A.: *Obst. & Gynec.* 15: 58, 1960.
7. Eastman, N. J. and Hellman, L.: *William's Obstetrics*, ed. 12, New

- York, (1961), Appleton Century Crofts.
8. Garry, J. and Parsons, L.: *Obst. & Gynec.* 9: 29, 1957.
  9. Green, G. H. and West, S. R.: *Obst. & Gynec.* 21: 126, 1963.
  10. Hertig, A. T.: *Am. J. Obst. & Gynec.* 62: 920, 1951.
  11. Hubacker, A. C.: *Western J. Surg.* 71: 259, 1963.
  12. John and Gravin (1958): as quoted by 23.
  13. King, G.: *Am. J. Obst. & Gynec.* 67: 712, 1954.
  14. Leopold: *Arch. Gynec.* 58: 525, 1899.
  15. Mercerdus: As quoted by 23.
  16. Meyers: As quoted by Novak.
  17. Mitford Barberton, G. D. E. B.: *J. Obst. & Gynec. Brit. Emp.* 70: 643, 1963.
  18. Norris, C. C.: *Surg. Gynec. & Obst.* 9: 123, 1909.
  19. Novak, E.: *Gynec. & Obst. Pathology*, (Philadelphia, 1962), W. B. Saunders.
  20. Pewters, J. T.: *Am. J. Obst. & Gynec.* 71: 895, 1956.
  21. Pinto do Rosario, Y. Heera, P. and Kawathekar; P.: *J. Obst. & Gynec. India*, 17: 61, 1967.
  22. Rakshit, B.: *J. Obst. & Gynec. India*, 12: 851, 1964.
  23. Rajaram, P.: *J. Obst. & Gynec. India*, 17: 585, 1967.
  24. Rubin, I. C.: *Am. J. Obst. & Gynec.* 62: 920, 1951.
  25. Saint Maurice of Pengord, France, as quoted by 23.
  26. Shakuntala Devi, I., Satyabhama Reddy, R. and Bhaskar Reddy, D.: *J. Obst. & Gynec. India*, 17: 314, 1967.
  27. Spiegelberg: *Arch. F. Gynec.* 13: 73, 1878.
  28. Stander, H. T.: *William's Obstetrics*, ed. 8, New York, 1941, Appleton-Century-Crofts, Inc.
  29. Subhadradevi, N.: *J. Obst. & Gynec. India*, 11: 400, 1960.
  30. Taber, R. E. and Crosssett, E. S.: *Am. J. Surg.* 83: 41, 1952.
  31. Thomson, J. F.: *Am. Gynec.* 1: 1, 1902.
  32. Upadhyay, S. N.: Bhattacharya G. R. and Prakash, B. J.: *J. Obst. & Gynec. India*, 6: 76, 1955.
  33. Van Tussenbroek Katherine: *Ann. Gynec.* 52: 573, 1899.
  34. Vaish, Rama J.: *J. Obst. & Gynec. India*, 15: 417, 1965.
  35. Williams, J. W.: *Obstetrics*, New York and London. 1903, Appleton & Co.
  36. Wittenberg, S. S. and Ries, R. G.: *Am. J. Surg.* 75: 618, 1948.