



The incidence of primary ovarian pregnancy in a tertiary care hospital in central Kerala, India: a 10 years study

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Abstract

Background: Primary ovarian pregnancy was a very rare event in previous years. Its incidence has increased recently and is attributed to the increase in treatment of infertility by advanced techniques. Hence the authors decided to look into the incidence of primary ovarian pregnancy in this centre and the cause if any for it.

Methods: Specimens of Ovarian resection with a suspected clinical diagnosis of Primary ovarian pregnancy were analysed in the study for a period of 10 yrs from 2005 March to 2015 February.

Result: A total of 28708 live-births occurred during this period. 261 ectopic pregnancies were operated by laparotomy; out of which 6 were primary ovarian pregnancies and 255 were tubal pregnancies.

Conclusion: The incidence of primary ovarian pregnancies in this centre is 2.3% falling in the range of other studies. No history of infertility treatment was elicited for these cases. Majority of the patients were multigravidas with history of abortion.

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Introduction

Pregnancy is said to be ectopic when the developing blastocyst implants at a site other than the endometrium of the fundus or lower uterine segment.^[1] Incidence of Ectopic pregnancy in reproductive age group accounts for 1–2% of clinically known pregnancies.^[2, 3] With the advent of newer assisted reproductive technologies the incidence has increased.^[4] 95% of the ectopic pregnancies occur in the fallopian tubes. It can occur in any part of the fallopian tube.

Other rare sites are ovary, uterine cornu, abdominal cavity, cervix, retroperitoneum. Occurrence of ectopic pregnancy in ovary is a very rare event which can be primary or secondary. Secondary ovarian pregnancy can happen when a tubal pregnancy ruptures and is implanted in the ovary. In primary ovarian pregnancy, the blastocyst is implanted directly in the ovarian tissue. Up to 1–3% of all ectopic pregnancies are ovarian.^[5, 6]

The diagnostic criteria for primary ovarian pregnancy described by Spiegelberg^[7] in 1878 is still being followed :- (1) the fallopian tube on the affected side must be intact; (2) the gestational sac must occupy the same position as the ovary; (3) the ovary must be connected to the uterus by the utero-ovarian ligament; and (4) ovarian tissue must be located in the gestational sac wall .

The common presenting symptoms are lower abdominal pain and vaginal bleeding. More than half the patients in one series had a history of previous reproductive tract disease or infertility.^[8] Most commonly, the ovarian pregnancy ends up in rupture with massive bleeding, hemoperitoneum, shock and death if not managed properly. Serial serum beta-human chorionic gonadotropin (HCG) measurements and transvaginal ultrasonography are important parts of the clinical evaluation in a case of suspected ectopic pregnancy. But ruptured ectopic pregnancy cases have been reported even with low levels of serum beta HCG.^[9] Imaging studies sometimes may not be able to differentiate ovarian pregnancy from a tubal pregnancy. In Ultrasonogram, majority is seen as an adenexal mass.

Grossly the ovarian pregnancy may be seen as a hemorrhagic mass with the gestational sac embedded in it or it may be a focal area with other identifiable ovarian tissue like corpus luteum or cystic follicles. Microscopically the chorionic villi, trophoblastic cells and adjacent ovarian tissue can be demonstrated. Sometimes pathologic documentation of ovarian tissue within the pregnancy may be difficult or impossible if treatment consists of conservative resection or if the pregnancy has extensively replaced the ovarian tissue.^[1]

Materials and Methods

We analysed all the ectopic pregnancy cases treated in this tertiary care and Teaching hospital in Central Kerala, India and the surgical specimen received in the department of Pathology during the period of 10 years from 2005 March to 2015 February. The recently received tissue were sampled, processed and stained with routine Haematoxyline & Eosin (H&E) stains. H&E slides and Paraffin wax blocks of the previous cases were retrieved from the filing, sectioned and stained. All clinical data were taken from the case records of these patients from the record library. Analysis was done for the parameters of age, symptoms, parity, contraception, last child birth, week of gestation, laterality, infertility treatment and others using Epi info software-Version 7.0. Case details are given in Table -1.

Year	No. Of Ovarian pregnancy	Age	Parity	LCB	Contraception	Gestation wk	Symptom	Side
2008	1	26	G4P1L1A2 1FTND	5yr	Nil	6 wks	Lower Abd Pain Vomiting	Left
2009	1	25	G3P1L1A1 1FTND	5yr	Nil	3 wks	Lower Abd Pain	Left
2013	1	21	G2P1L1 1FTND	9/12 yr	Cu T in situ	2 wks	Lower Abd Pain	Right
2014	1	26	G4P3L3 3FTND	3 ½ yr	Nil	6 wks	Lower Abd Pain Bleeding PV	Left
2015	2	21	G2L1 PREV- LSCS	3 Yrs	NIL	6 Wks	Lower Abd Pain LAP	Right
		29	G3P1L1A1 1FTND	1 1/4	Cu T in situ	2Wks	Lower Abd Pain Bleeding PV	Right

Result

A total of 28708 live-births had occurred in the obstetric department of this centre during this 10 year period. Emergency laparotomy had been done for 261 ectopic pregnancies-0.91% of live births (Chart-1). Out of this 6 were primary ovarian pregnancies (2.3%). Remaining 255 were tubal pregnancies (97.7 %) (Chart-2). The first case was diagnosed in 2008. In 2015 February, two patients were operated on the same day for primary ovarian pregnancy (Chart-3). The mean age group in this study is 24.6 years; with a range of 21 to 29 years. Four of the patients presented with Lower abdominal pain (LAP) & vaginal bleeding (Chart-4). Two patients presented with abdominal pain without bleeding. Two patients had contraceptive device (Cu T) in situ (Chart-5). 50% of the cases had history of abortion. All cases had undergone pre operative sonography examination. In all cases, the uterine cavity was empty and the other ovary and both fallopian tubes were normal. The mean gestational age was 4 weeks and the range was 2-6 weeks (Chart-6). The right and left ovary was equally affected (Chart-7).

Grossly four of the cases were hemorrhagic mass in the ovary (Figure 1). In two cases the gestational sac was seen towards the periphery and adjacent ovarian structures were visible (Figure 2, 3). Histologically all showed chorionic villi and trophoblastic cells (Figure 4). Two cases showed corpus luteum of pregnancy/follicular cyst in the adjacent area (Figure 5, 6).

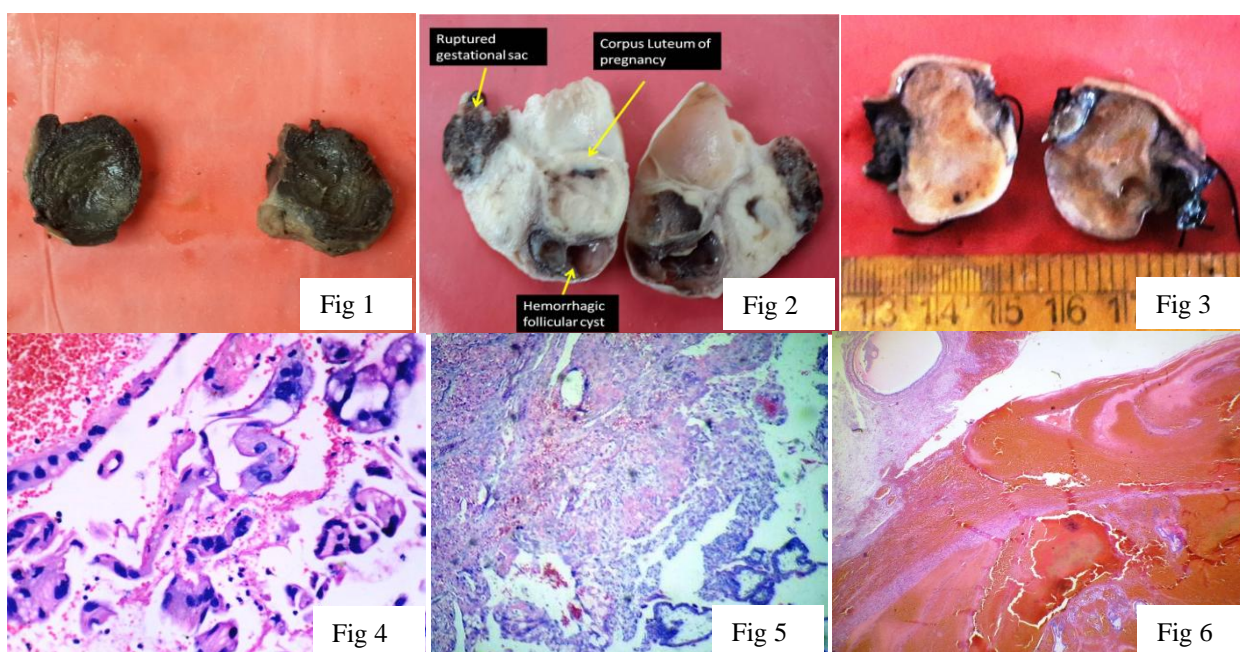


Figure 1:- Photograph of gross specimen of right ovarian pregnancy with hemorrhagic appearance (case-3)

Figure 2:- Photograph of gross specimen of right ovarian pregnancy with adjacent corpus luteum (case-4)

Figure 3:- Photograph of gross specimen of right ovarian pregnancy (case-5)

Figure 4:- Histology showing trophoblastic cells in ovary (Case-3)(H&E x400)

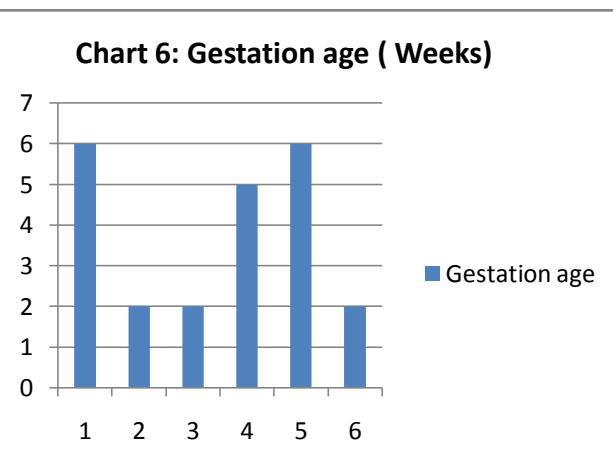
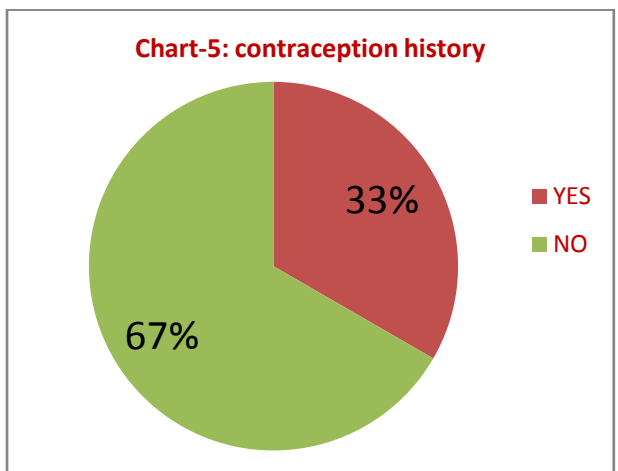
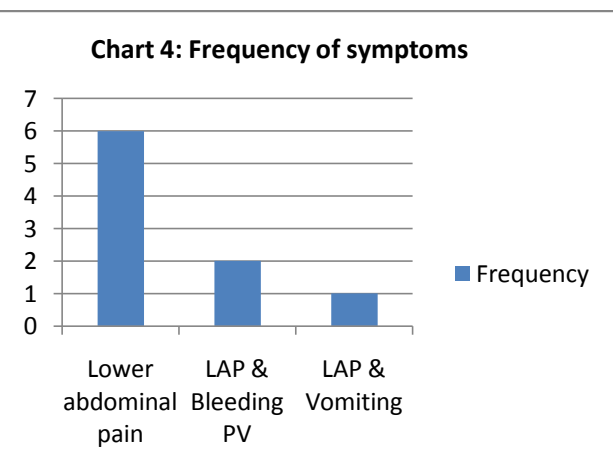
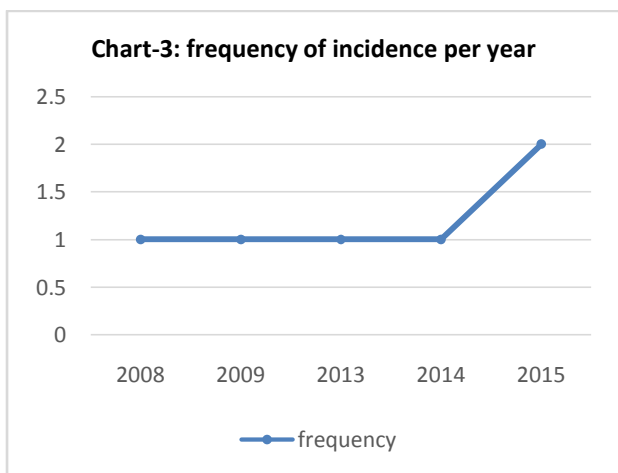
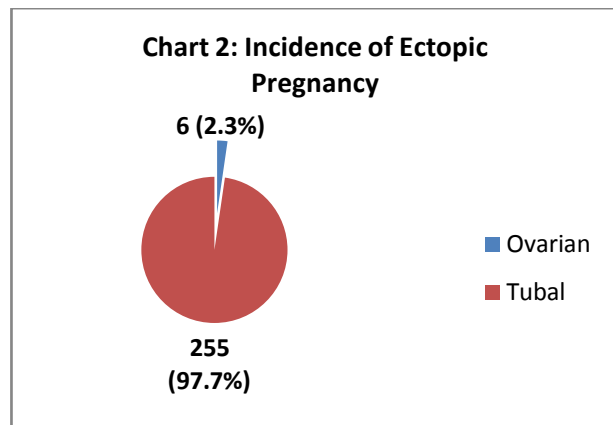
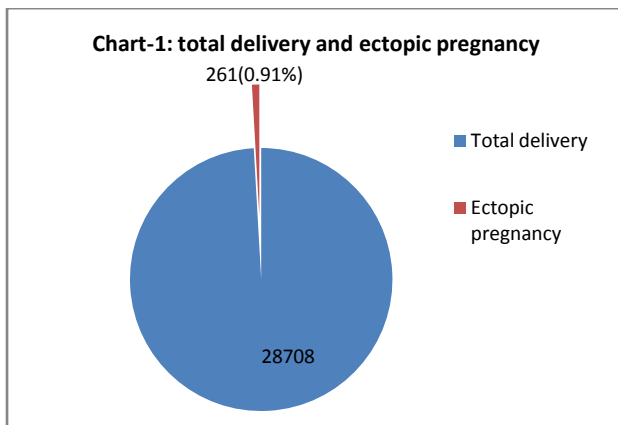
Figure 5:- Histology showing chorionic villi with adjacent corpus luteum (Case-4) (H&E x100)

Figure 6:- Histology showing chorionic villi with adjacent follicular cyst (Case-5) (H&E x40)

Discussion

The cause of implantation of the blastocyst in the ovarian tissue is not clear. Proposed theory is that pathogenetically, the development of an ovarian pregnancy is the result of the retention of the ovum in the ovarian operculum and its entrapment within the ruptured ovarian follicle. A sperm entering the peritoneal cavity fertilizes this entrapped ovum, and implantation occurs within the ovary.^[10] More than half the patients in one series had a history of previous reproductive tract disease or infertility.^[8] In the present study, majority of our patients were multigravida without a history of infertility treatment. In these cases, the possibility of a previous reproductive tract disease may be the cause even though the patients did not give a specific history. Some patients had a history of intra uterine contraceptive device. When an ovarian pregnancy was diagnosed, intrauterine device was present in 68% of the patients in a study by Raziel A et al.^[11] In our cases, two patients had an intra uterine device (33.3%). A case of bilateral ovarian pregnancy during infertility treatment has been reported [10]. All our cases were unilateral only. The right and left ovary was equally involved unlike tubal pregnancy where there is a slightly increased incidence on the right side.^[12]

All our cases were multigravida, admitted in the casualty with suspected ectopic pregnancy and laparotomy and ovariectomy were done in all cases. In patients on infertility treatment preservation of ovarian tissue is needed; hence laparoscopic approach with conservation of ovarian tissue as far as possible is advised.



Conclusion

Primary ovarian pregnancy is very rare with an incidence of 1–3% of all ectopic pregnancies. In this study from our centre it was 2.3 %. The patient will be presenting with acute abdominal pain with or without vaginal bleeding. Ectopic pregnancy should be suspected in females of reproductive age group as one of the causes for acute abdominal pain. Ovarian tissue is highly vascular; rupture will cause circulatory collapse and shock. Prompt diagnosis and timely surgical intervention will save the patient’s life.

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Competing Interests

None declared.

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