

## Ruptured Corpus Luteum with Hemoperitoneum

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**OBJECTIVES** – To study and analyze the cases of ruptured corpus luteum retrospectively. **METHODS** – All women of reproductive age group who presented with severe pain in abdomen and hemoperitoneum, to the gynecological emergency over a period of 5½ years (September 1997 – February 2003) were included in the study. All patients with a diagnosis of ruptured corpus luteum were analyzed retrospectively with regards to presenting complaints, examination findings, investigations and mode of treatment. **RESULTS**– Twenty-six patients were diagnosed as ruptured corpus luteum with hemoperitoneum. Most ruptures occurred between 15<sup>th</sup> and 28<sup>th</sup> day of menstrual cycle. There was an association between coitus and corpus luteum rupture. Ruptured corpus luteum was more common on the right side. A sensitive urine pregnancy test was important in differentiating ruptured corpus luteum with hemoperitoneum from ectopic pregnancy. All the patients who had positive pregnancy test with ruptured corpus luteum were pregnant – three had ectopic pregnancy with ruptured corpus luteum and two had intrauterine pregnancy. **CONCLUSION** – A diagnosis of ruptured corpus luteum can be made with reasonable certainty with negative urine pregnancy test in women of child bearing age group presenting in secretory phase of menstrual cycle with abdominal pain and hemoperitoneum. Patients with positive urine pregnancy test with associated ruptured corpus luteum should be looked into for the evidence of pregnancy and managed at the same sitting.

**Key words** : corpus luteum, hemoperitoneum, ectopic pregnancy.

### Introduction

Ovarian hemorrhage from the corpus luteum of menstruation or pregnancy can be a life threatening surgical condition at all stages of a woman's reproductive life<sup>1,2,3,4</sup>. Hemoperitoneum causes sudden severe abdominal pain and systemic symptoms and it is usually regarded as being an acute surgical emergency. An increased awareness of this problem in women of reproductive age group and a correct diagnosis will allow a more conservative approach to be adopted in patients with minimal bleeding due to ruptured corpus luteum<sup>1,2,3</sup>.

### Material and Methods

A retrospective analysis of all women presenting from September 1997 to February 2004 to the gynecological emergency with acute pain in abdomen and hemoperitoneum and suspected to be having ruptured corpus luteum was made.

A detailed history including the age, parity and presenting features viz., pain in abdomen, nausea, vomiting, day of menstrual cycle and relation of pain

with coitus was recorded. A urine pregnancy test (Elisa method), ultrasonography findings of any evidence of adnexal mass, amount of free fluid, and any evidence of pregnancy were also recorded. Conservative management was reserved for patients who were in the secretory phase of the menstrual cycle and had stable vitals, and for those, in whom the sensitive urine pregnancy test was negative and there was minimal amount of free fluid in the pouch of Douglas. Strict monitoring of vitals was done in these patients and daily ultrasonography was carried out for the amount of free fluid. The patients whose vitals were not stable or those who had massive hemoperitoneum were managed surgically. Patients with positive urine pregnancy test with a ruptured corpus luteum were looked into for the evidence of pregnancy and were managed at the same sitting.

### Results

Twenty-six patients out of 220 presenting with severe pain in abdomen in gynecological emergency were diagnosed to have ruptured corpus luteum with hemoperitoneum during the 5½ years of study. The age range was 16 to 37 years and most of the patients were in the age group of 20 to 30 years (Table I). Half of the patients were multiparous.

All 26 patients presented with severe pain in abdomen and the duration of pain was less than 24 hours in 65% of the patients. About a third of the patients had history of crampy intermittent pain for 1

Paper received on 31/03/03 ; accepted on 24/08/04

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to 2 weeks prior to the diagnosis of ruptured corpus luteum. Nausea and vomiting were seen in 50% of the patients. A significant correlation was seen between coitus and ruptured corpus luteum. In 16 patients (61%), acute abdominal pain followed coitus.

Table II shows the relationship of ruptured corpus luteum with menstrual cycle and urine pregnancy test. Maximum ruptures (18 cases, 69%) occurred between day 15 and 28 of the menstrual cycle. One patient presented on day 13 of the cycle but she had a menstrual cycle of 21 days. Seven patients presented between day 29 and 60. Out of these, three had positive urine pregnancy test. Two patients with negative urine pregnancy test had history of irregular cycles of 30 to 60 days. All patients who had positive urine pregnancy test were pregnant. Out of 5 patients who had positive urine pregnancy test along with ruptured corpus luteum with hemoperitoneum, three had ectopic pregnancy and two had intrauterine pregnancy.

All 26 patients had corpus luteum cyst or heterogenous

adnexal mass on ultrasonography. Uterine cavity was empty in 24 cases. In two cases, endometrial thickness was 12 mm and 14 mm and on follow up they were detected to have intrauterine pregnancy. Minimal free fluid was seen in pouch of Douglas in 10 patients and free fluid in abdomen was seen in rest of the 16 cases.

Sixteen patients were managed by emergency laparotomy and ten were managed conservatively. In only four cases wedge section was done while in the remaining cases the bleeding edges were sutured. These 10 patients were in the secretory phase of menstrual cycle, their urine pregnancy test was negative and they had minimal amount of free fluid in the pouch of Douglas. All five patients with positive urine pregnancy test required laparotomy as they were hemodynamically unstable. Out of these 5 patients, three had ruptured corpus luteum and ectopic pregnancy while two had hemorrhage in the corpus luteum and later showed intrauterine pregnancy on follow up. One of these two opted for voluntary termination of pregnancy (MTP) and the other delivered a live baby at term.

**Table I. Age range and parity of patients with ruptured corpus luteum (n=26)**

Age (years)	Number
< 20	02
20 – 30	18
31 – 40	06
Parity	
Nulliparas	13
Multiparas	13

**Table II. Relationship with menstrual cycle and urine pregnancy test**

Days from last menstrual period to diagnosis	Urine pregnancy test		
	Negative	Positive	Total
< 14	01	00	01
15 – 28	18	00	18
29 – 60	02	03	05
> 60	00	02	02

**Table III. Management**

	Number		Number
Rutured corpus luterum		Surgical Management	
Right sided	20	Wedge resection	4
Left sided	06	Suturing of bleeding edges	12
		Conservative mangement	10

## Discussion

Bleeding from a ruptured corpus luteum can vary from mild hemorrhage to massive hemoperitoneum leading to shock necessitating urgent laparotomy. This condition covers the entire life span of a woman's reproductive life. In our study group the age range was 16 to 37 years and 50% of patients were multiparous. The sudden severe pain in abdomen was the presenting feature in 65% of patients. Thirty-five percent of the patients had history of crampy intermittent pain due to excessive physiologic bleeding into the central cavity of the corpus interm and subsequent ovarian distension<sup>1</sup>. These patients also had associated nausea and vomiting which are due to systemic response to chemical peritoneal irritation by the hemoperitoneum<sup>1</sup>. Maximum corpus luteum ruptures (72%) occurred between day 15 and 28 of the menstrual cycle. A significant correlation (16 out of 27 cases) was seen between coitus and ruptured corpus luteum. Out of the 26 cases, 20 ruptures were on the right side and six on the left side, as is the experience with other centers. The explanation is thought to be anatomic with the rectosigmoid cushioning the left ovary from trauma and the difference in the ovarian venous architecture that causes a higher intraluminal pressure in the right corpus luteum resulting in the dextroponderance of ruptures<sup>5-7</sup>.

Pregnancy test was positive in five patients and all of them were pregnant. Two patients had intrauterine pregnancy and three had tubal ectopic pregnancy-isthmic in two and ampullary in one - along with ruptured corpus luteum with hemoperitoneum. Urine pregnancy test (ELISA) is very helpful for differential diagnosis of ectopic pregnancy from ruptured corpus luteum. Ideal in this setting is serum  $\beta$ HCG assay. However, in developing countries, routine facilities for this assay may not be available.

Culdocentesis with measurement of hematocrit has been suggested to be very important in the diagnosis and management of corpus luteum with hemoperitoneum. The presence of a serosanguinous fluid on culdocentesis with a hematocrit of less than 12% is almost pathognomic of a ruptured corpus luteum cyst with minimal bleeding and these patients can be safely observed without surgical intervention<sup>1</sup>. We did not do culdocentesis in any of our patients. The occurrence of ruptured or unruptured ectopic pregnancy along with ruptured corpus luteum with hemoperitoneum should be diagnosed at laparotomy and managed in a single sitting.

A tissue diagnosis was possible in only four cases. Histopathology revealed corpus luteum composed of

large polygonal cells with abundant pale eosinophilic cytoplasm with some cells showing cytoplasmic vacuolation and special nuclei containing occasional nucleoli. Tissue diagnosis is thought to be highly desirable in all cases of ovarian neoplasms including bleeding corpus lutea. Cystectomy, lutectomy or wedge excision is a simple, safe procedure, which gives a tissue for diagnosis and does not compromise future ovarian functions.

There have been case reports of ruptured corpus luteum with haemoperitoneum in cases of blood dyscrasias and patients on anti-coagulant therapy<sup>8-9</sup>. Our study did not have any such case.

An increase in awareness of this problem in women of reproductive age group having these symptoms and findings especially in the secretory phase of menstrual cycle is necessary. Those with minimal amount of free fluid, stable vitals, and a hematocrit of < 12% on culdocentesis can be managed conservatively.

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