

FREE USE OF LAPAROSCOPY IN THE MODERN MANAGEMENT OF ECTOPIC PREGNANCY

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ABSTRACT

Regarding the false negative results of culdocentesis, it is believed that the protocol of β -hCG, sonography, D&C and free use of laparoscopy gives more reliable information to the physician than the protocol of β -hCG, sonography and culdocentesis. We used the former protocol on 50 patients suspected of having ectopic pregnancy. The most common diagnoses were EP (48%) and PID (16%), respectively. It seems, in contrary to reports from abroad, among differential diagnosis of EP, ovarian cyst is not very common in Iranian patients. One of the objectives of our protocol was to determine if the use of laparoscopy with laparotomy causes an increase in the rate of postoperative infection and elongates the stay of the patient in hospital. Thus we compared our new protocol with the old protocol (gravindex, culdocentesis, laparotomy) of management of EP in our hospital from the point of: 1- the length of stay in hospital before and after laparotomy, and 2- the rate of laparotomy infection. There was no statistical difference between the two groups. The results of this comparison proved that laparoscopy when used with laparotomy does not cause increased morbidity for the patients. The most prominent feature of our special new protocol was the free use of laparoscopy. It is believed that the free use of laparoscopy has the following advantages:

- 1- Elimination of false negative results of culdocentesis and encourage the surgeon to perform essential laparotomies.
- 2- Identification of some cases of EP that can be managed conservatively.
- 3- Identification of the non-EP cases that should not be operated on.

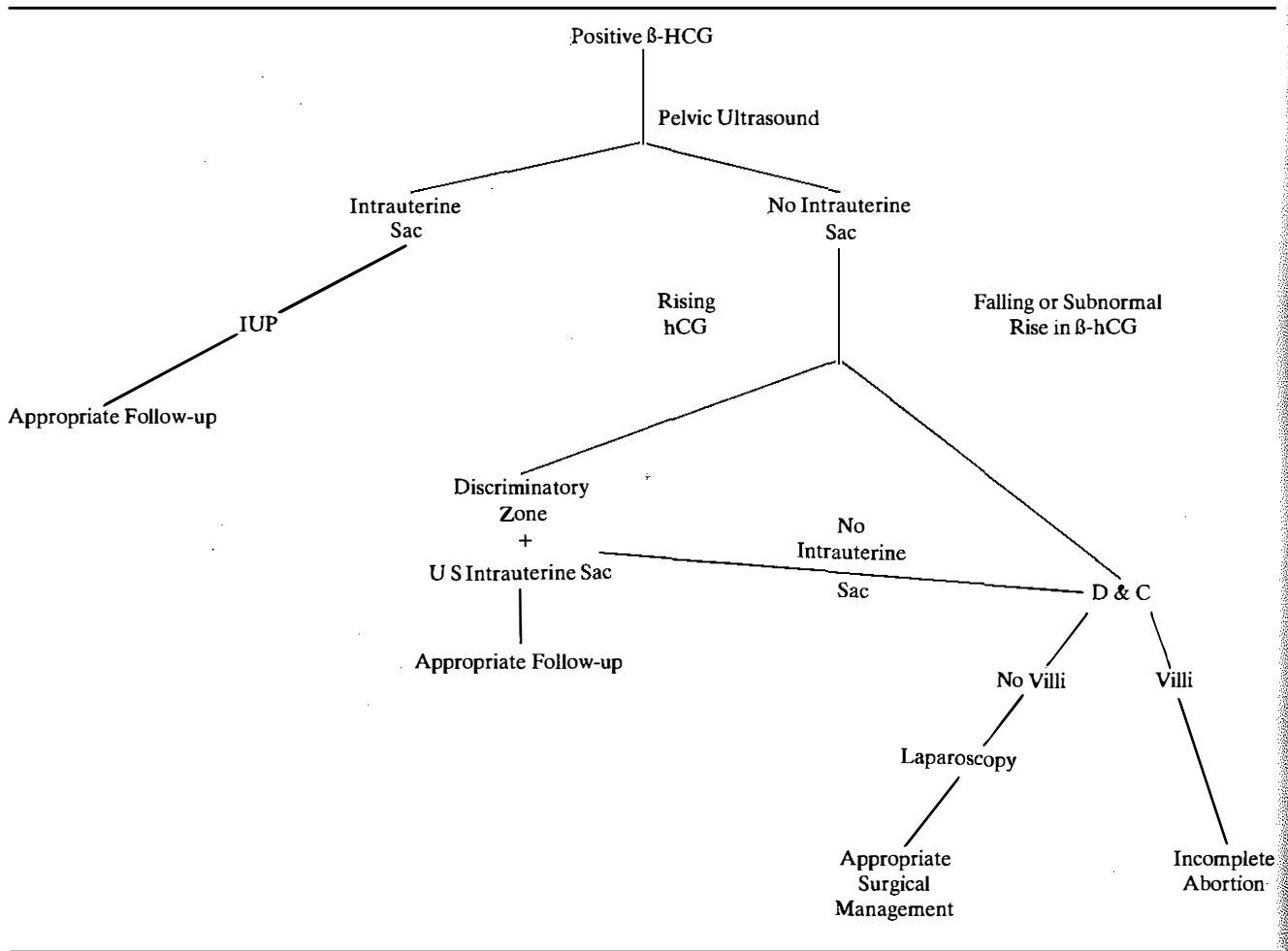
MJIRI, Vol.3, No1&2, 37-41, 1989

INTRODUCTION

Ectopic pregnancy is potentially a dangerous condition even at the present time.¹ Accurate diagnosis is essential because other conditions not requiring surgery may be confused with EP. Many papers have been written about the management of ectopic pregnancy using hCG measurement, sonography and culdocentesis.² However, it is known that culdocente-

sis gives false negative results of 11 to 14%.^{3,4} To overcome these problems a new protocol was designed. In this protocol in addition to the use of β -hCG test, sonography and D&C, the free use of laparoscopy was included and its benefit was evaluated. We endeavoured: 1-to avoid unnecessary laparotomy, 2- to avoid delay when an operation was necessary, 3-to identify a special group of patients who although suffering from ectopic pregnancy, did not require surgery and could be managed conservatively.

Table I. Diagram of the protocol used in this study.



MATERIALS AND METHODS

During the 14 months from April 4, 1987 until June 5, 1988, 55 patients complaining chiefly of pelvic pain and suspected of having ectopic pregnancy were admitted to the hospital. All seriously ill patients were excluded from this study. After the study was completed, five patients were eliminated because they did not fulfill all the necessary criteria of our protocol. Neither of the 50 patients showed signs of shock and all were in stable condition. After taking the history and performing physical examination on each patient, we next measured β -hCG (the results were usually ready within 8 hours by the use of RIA technique). Then, we examined the patient by sonography. Sonography was performed using a Combison 320 (Gray scale system-kertz technique-Austria). The next steps in the protocol are described in Table I. It is important to note that in our study we did not depend upon the results of culdocentesis at all for the diagnosis of our patients.

We describe two new categories of ectopic pregnan-

cy in this study: A-Tubal abortion (when the β -hCG is positive, there is no gestation sac at sonography, no trophoblastic tissue at D&C together with stable situation of the patient - with or without use of laparoscopy).

B- Neglected EP (when β -hCG is positive, the patient's situation is stable and there is no gestation sac at sonography and no trophoblastic tissue at D&C with existence of abdominal mass-with or without laparoscopy).

Our protocol had been criticized that the repeated β -hCG measurements and use of sonography and D&C prolonged the stay of the patients in hospital unnecessarily. Others conjectured that the use of laparoscopy with laparotomy would probably increase the rate of postoperative infection. To answer these two criticisms, we compared the ectopic pregnancy patients using the present protocol with a group of patients that were managed under our former method (history, physical examination, gravindex, culdocentesis, laparotomy).

To determine the diagnostic values of culdocente-

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sis, in eight patients where ectopic pregnancy was confirmed after laparoscopy, we carried out this examination. Performing culdocentesis was used only to expose the false negative results given by this test.

RESULTS

One patient with negative β -hCG later came back to the hospital with signs of shock and at laparotomy proved to have ectopic pregnancy. The final diagnoses of the patients are shown in Table II. The signs and symptoms and laboratory examination of the patients in the EP group (C) were compared with non-EP patients (Table III). This shows that for Hb and Hct there are significant differences between the two groups ($P < 0.001$). Also, when we considered all three signs of vaginal bleeding, painful cervical motion and adnexal mass, we found a statistically significant difference between the two groups ($P < 0.05$).

In four out of eight cases where culdocentesis was performed before laparoscopy, the results were negative although the final diagnosis was confirmed as EP in all of them.

In 18 patients with the diagnosis of EP (C), 17 were in the tube (12 in the left tube, 72%; and five in the right tube, 29%) and one an ovarian pregnancy.

The only patient with more than 6000 mIU/ml of β hCG was the ovarian pregnancy from group EP (C). Sonography was performed on only 15 patients in EP(C) group. In three patients [3/15 (20%)] sonography accurately diagnosed the disease.

The incidence of postoperative infection in the EP (C) patients was not statistically different from the incidence of infection in the patients treated by our former method (Table IV). Furthermore, the lengths of stay in the hospital (before and after operation) were

Table II. Final diagnosis of 50 participating patients.

Final	diagnosis	Frequency	
		No	%
EP patients	Tubal abortion(A)	3	6%
	Neglected EP(B)	3	6%
	Proved by laparotomy (C)	18	36%
Non-EP patients	PID	8	16%
	Ovarian cyst	6	12%
	Abortion	4	8%
	Unknown	3	6%
	Appendicitis	2	4%
	DUB	2	4%
	Oligomenorrhea	1	2%

not significantly different in these two groups. However, the number of days spent in the hospital in the EP group (C) patients showed a great variation in comparison to the group treated by our old method. The main reason for this greater variation was the very lengthy stay of two patients in the EP group (C) (25 and 32 days).

The most prominent feature of our special protocol used in this study was the free use of laparoscopy. 11/18 (61%) of EP patients (C) in our study had laparoscopy. This figure was 13/24 (54%) in all EP groups (A+B+C). 5/26 (19.2%) of non-EP patients also had laparoscopy. In 30% (15/50) of the patients we performed laparotomy after laparoscopy. laparoscopy immediately followed by Laparoscopy did not cause any problem in our patients. It only added 15 minutes to the total time of operation. 75% (18/24) of all the EP groups (A+B+C) and 19.2% (5/26) of non-E-P patients had laparotomy.

Table III. Statistical comparison of EP patients (group C) and non-EP patients.

Characteristics Compared	EP patients (group C)	Non-EP patients	Test criterion
Age	$\bar{X} = 26.22$ $S = 5.25$ $n = 18$	$\bar{X} = 27.69$ $S = 6.66$ $n = 26$	$t = 0.80$ N.S.
LCh	$\bar{X} = 1.33$ $S = 1.46$ $n = 18$	$\bar{X} = 2.24$ $S = 2.63$ $n = 25$	$t = 0.13$ N.S.
G	$\bar{X} = 2.67$ $S = 1.57$ $n = 18$	$\bar{X} = 3.96$ $S = 3.29$ $n = 24$	$t = 1.50$ N.S.
Delay of menstruation	$\bar{X} = 25.89$ $S = 24.46$ $n = 18$	$\bar{X} = 29.38$ $S = 30.76$ $n = 16$	$t = 0.36$ N.S.
WBC	$\bar{X} = 10850.00$ $S = 4166.53$ $n = 16$	$\bar{X} = 10485.71$ $S = 4045.16$ $n = 21$	$t = 0.27$ N.S.
Hb	$\bar{X} = 11.76$ $S = 1.39$ $n = 18$	$\bar{X} = 13.49$ $S = 1.37$ $n = 26$	$t = 4.22$ $P < .001$
Hct	$\bar{X} = 35.44$ $S = 4.23$ $n = 18$	$\bar{X} = 41.31$ $S = 3.56$ $n = 26$	$t = 5.10$ $P < .001$
The kind of pain (severe)	$\hat{P} = \frac{13}{18}$ $S = 0.10$	$\hat{P} = \frac{14}{25}$ $S = 0.10$	$t = 1.14$ N.S.
Vaginal bleeding + painful cervical motion + adnexal mass	$\hat{P} = \frac{6}{16}$ $S = 0.14$	$\hat{P} = \frac{1}{23}$ $S = 0$	$t = 2.36$ $P < .05$

Table IV. Statistical comparison of previous and present protocols.

Characteristics compared	EP patients treated by laparotomy (old method)	EP patients(group C) treated by laparoscopy and then laparotomy (new protocol)	Test criterion	Statistical conclusion
Length of stay before operation	$\bar{X} = 10.71$ S = 4.02 n = 14	$\bar{X} = 12.45$ S = 8.76 n = 11	t = 0.67	NS
Length of stay after operation	$\bar{X} = 7.64$ S = 1.28 n = 14	$\bar{X} = 7.27^f$ S = 4.27 n = 11	t = 0.31	NS
Postoperative infection	$\hat{P} = \frac{2}{14}$ S = 0.10	$\hat{P} = \frac{2}{11}$ S = 0.10	t = 0.29	NS

DISCUSSION

The most common diagnoses in our study were ectopic pregnancy and pelvic infection, respectively. In the studies of Bryson⁵ and Weckstein² the first and the second most common diagnoses were EP and ovarian cyst. It seems that in our patients ovarian cyst is less common than in patients in other studies. In this study we described two new categories of EP patients: tubal abortion (A) and neglected EP (B). In the past, patients in the first category were diagnosed as having menstrual disorders, and those in the second were subjected to unnecessary laparotomy for the incorrect diagnosis of pelvic mass. However, at the present time, the diagnosis of the first group gives an increase in the incidence of EP.⁶

Is it necessary to perform laparotomy on all EP patients? This issue is subject to debate at the present time.⁷ Especially, it is controversial in the case of patients with ruptured EP who are in stable conditions. It has been proved that β -hCG examination is a reliable and dependable laboratory test.⁸ Sometimes, we can observe patients in stable condition having pelvic mass, but falling β -hCG levels. With these EP patients, we could decide on a program of conservative management without performing laparotomy. But, with this conservative management a question arises. What is the effect of this conservative management on the signs and symptoms of the patient and also on her future reproductive prospect? In three patients of EP group (B), where we decided on conservative management, one had ruptured EP, proved by laparoscopy. It is interesting that after eight months of follow up of this patient, in pelvic examination there was no pelvic mass or any signs of adhesions, but the patient complained of mild pelvic pain on the same side.

It has been shown in a study⁹ that there are not any special clinical signs or laboratory tests that could be

used to separate the EP from the non-EP group. In another study⁵ it has been shown that we can find all three signs of pelvic pain, vaginal bleeding and pelvic mass in 30-40% of ectopic pregnancy patients. In our study when we compared EP group (C) with non-EP patients, the Hb and Hct were both significantly lower in the first group. Besides, when we looked for all three signs: vaginal bleeding, painful cervical motion and pelvic mass in the two groups, the frequency of these signs was significantly higher in EP group (C). Furthermore, EP is strongly suggested when any patient has all these three signs together with decreased Hb and Hct. In our 50 patients, seven had all these signs and in six in addition to these signs, decreased levels of Hb and Hct were also noted. Of course, the contrary is not the case and the absence of these signs does not preclude the existence of EP. Because the majority of our patients had not shown all these signs together, we feel there is a need for additional more sophisticated techniques. The use of β -hCG, sonography, and laparoscopy together improve significantly the correct rate of diagnosis.

Our study has shown that the free use of laparoscopy can increase significantly the rate of correct diagnosis of ectopic pregnancy. Also, with this new protocol we could identify many non-EP patients that did not need operation (as well as a few EP patients). When we examined the records of the patients who had laparoscopy in our study, we found that only in one patient (1/50) laparoscopy was not indicated. However, in 4 patients (4/50) the use of laparoscopy prevented an unnecessary laparotomy. When we compared this new protocol with our older method of management of EP (Table IV), the use of laparoscopy followed by laparotomy did not increase the rate of postoperative infection. Also, the duration of stay in hospital before and after operation is not extended with our new method when we compare it with the old one. But with respect

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to the lengthy stay of two patients in the hospital with our new protocol, we now suggest that more invasive action would have been preferable in these cases (for example D&C or laparoscopy).

Four false negative results with culdocentesis in eight patients who had been proved to have ectopic pregnancy show that we should not depend on the results of this examination at all. It is clear that if we depended on culdocentesis only, we would not have been able to decide how to manage these four patients.

Our study shows that any criticism that "the free use of laparoscopy causes operation to be performed more than it is needed" is unwarranted. The protocol of our study, β -hCG, sonography and D&C, prevents this happening and eliminates unnecessary laparoscopy. The indications of laparoscopy in our study show that in nearly all cases, laparoscopy guided the physician to perform only the laparotomies that were needed. Also, laparoscopy followed by laparotomy did not cause any special medical complications.

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