

Laparoscopic treatment of interstitial pregnancy using the harmonic scalpel

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Summary

Objective: To evaluate a laparoscopic technique of cornual resection using the harmonic scalpel.

Methods: Four patients with unruptured interstitial pregnancies were treated laparoscopically using the harmonic scalpel at Ioannina University Hospital.

Results: There were no failures in the technique in any of our patients.

Conclusion: Our study suggests that interstitial pregnancies of a maximum gestational age of 7-8 weeks and sac diameter less than 4-5 cm may be treated laparoscopically.

Key words: Laparoscopic treatment; Interstitial pregnancy; Harmonic scalpel.

Introduction

Cornual or interstitial pregnancy rarely occurs. The incidence is estimated to be 4% of all cases of ectopic pregnancy [1]. The traditional treatment of interstitial pregnancy has been cornual resection by laparotomy [2, 3]. Unruptured interstitial pregnancies, like other types of ectopic gestation, can be managed now with local methotrexate (MTX) administration under transvaginal ultrasound or during laparoscopy [4, 5]. The harmonic scalpel has been applied to laparoscopy surgery [6] and harmonic scissors were recently released for clinical use.

The purpose of this study is to report a laparoscopic technique of cornual resection using the harmonic scalpel with safe administration of MTX for the of treatment of interstitial pregnancy.

Materials and Methods

Four patients with unruptured interstitial pregnancies were treated laparoscopically using the harmonic scalpel at Ioannina University Hospital.

Initially, the uterine cornu wall where the ectopic pregnancy was located was infiltrated with 0.5 IU/ml dilute vasopressin solution. Then using the harmonic scalpel we coagulated and then we cut the oviduct and the mesosalpinx proximally to the cornu with the ectopic pregnancy – approximately 2 cm laterally – coagulating the ascending branch of the uterine artery. The ligation of the oviduct and mesosalpinx was achieved in one of the patients using a laparoscopic suture with needle and the tie was made extracorporally.

In another patient the oviduct and mesosalpinx were ligated together with endoloop PDS. Then the uterine cornu was longitudinally incised with the harmonic scalpel, immobilized with 11 mm grasping forceps and the products of conception were removed. Any bleeding point could be coagulated using the harmonic scalpel.

In the end, methotrexate infusion (12 mg) was performed in

the uterine cornu if residual trophoblastic tissue was considered to be present. The cut surfaces were approximated with endoloop PDS. In case of small traumatic surface and absence of bleeding points, we covered it with Interceed gauze of Surgicell. Finally, the patients were followed-up with serial β hCG determinations at 5-day intervals until β hCG reached normal levels.

Results

Characteristics of patients undergoing laparoscopic treatment are summarized in Table 1.

There were no failures in the technique in any of our patients. In patient no. 2 whose gestational age was longer and sac diameter larger, additional methotrexate administration was needed-twice the usual laparoscopically infused dose already administered. In two patients (no. 1 and no. 2) methotrexate was administered laparoscopically only because of the bigger sac diameter and the possible presence of residual trophoblastic tissue. In all of the patients who were treated laparoscopically, bleeding during the procedure was minimal and controllable and there were no postoperative complications.

Discussion

Interstitial pregnancy has been treated with methotrexate [5, 7]. The integrity of the cornu after conservative treatment remains unclear. Uterine rupture of an interstitial pregnancy following "expectant treatment" has been reported [8].

Rupture of an interstitial pregnancy is a serious complication [9, 10] and mortality risk may be twice that of ectopic pregnancy in general. It is important to note that rupture of ectopic pregnancy may occur despite low and declining serum β hCG levels [11].

In a previous study Tullandi *et al.* [4] suggested that interstitial pregnancy could be treated laparoscopically.

In our study we treated interstitial pregnancies laparoscopically using the harmonic scalpel.

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Table 1. — Characteristics of the 4 laparoscopically treated patients.

Patients (no.)	Gestational age (weeks)	β HCG titers (mIU/ml)	Sac Diameter (cm)
1	7	23,000	4
2	8	16,000	5
3	7	6,000	4
4	6	4,700	3.5

The ultrasonically activated harmonic scalpel is applied in various laparoscopic surgeries. In essence, electrical energy from a generator is converted to mechanical energy in a handpiece by a piezoelectric crystal that is transmitted to a blade. The blade vibrates at a frequency of 55,000 Hz, with a blade excursion that is undetectable over a distance of 80 m. Depending of the blade configuration it can coagulate and cut tissue. No fume is generated and thermal injury is minimal [6].

In 1993 the laparoscopic cutting scissors or harmonic scissors became available for clinical use. They coagulate or/and cut tissue when the surgeon rotates the blade within the handle on a blunt or sharp surface. The tissue is compressed against the blade by an articulated jaw or inert material. Thus the scissors can safely and simultaneously coagulate and cut surgical pedicle laparoscopically.

In our study four patients with interstitial pregnancies were treated laparoscopically using the harmonic scalpel. One of these patients (patient no. 1) is in the 24th week of gestation one year after laparoscopy.

Our study suggests that interstitial pregnancies of a maximum gestational age of 7-8 weeks and sac diameter less than 4-5 cm may be treated laparoscopically.

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