

TRANSABDOMINAL ULTRASOUND-GUIDED INTRA-GESTATIONAL SAC SINGLE DOSE MTX INJECTION IN A TUBAL PREGNANCY

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A 32-year-old woman, G3P0, was referred to our emergency department from a local medical clinic. She had missed her period for 4 weeks, and did not have any vaginal bleeding. She had mild lower abdominal tenderness on the right side. Transabdominal ultrasound showed an adnexal mass with fetal heart activity. The crown-rump length of the embryo was 1.73 cm (Figures 1A and 1B) and there was no intrauterine sac. The endometrium was 1.05 cm with an anteverted uterus (Figure 1C). There was no fluid in the cul-de-sac or pelvic cavity. The serum β -hCG level was 84,304 mIU/mL. The hemoglobin level was 12.9 g/dL and vital signs were stable.

The patient was given different management options for ectopic pregnancy including surgical and medical treatment, and possible related risk factors. She expected to receive medical treatment for her fertility plan. Under transabdominal ultrasound with a puncturing device, a 22-gauge needle was inserted into the ectopic gestational sac, and a 50 mg (2 mL) methotrexate (MTX) solution was injected into the fetal thorax (Figure 2). Cardiac activity of the embryo immediately ceased. There was no internal bleeding or lower abdominal cramping pain after the injection. The patient was admitted to our ward for monitoring of vital signs and was discharged 2 days later uneventfully.

In the outpatient clinic follow-up, her serum β -hCG levels declined to 71,755 mIU/mL on the fourth day after injection, and dropped to half the initial levels on the 10th day of treatment, and then became negative on the 53rd day after injection.

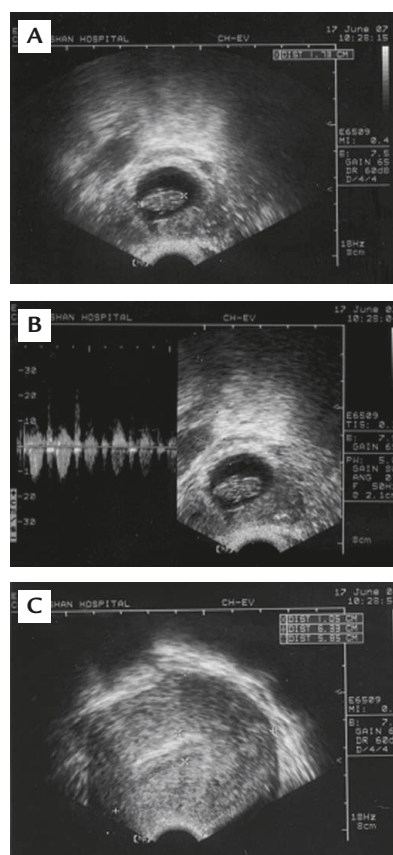


Figure 1. (A) A tubal gestational sac with an embryo crown-rump length of 1.73 cm and (B) with fetal cardiac activity. (C) The intrauterine sac was not seen and the endometrium was 1.05 cm.

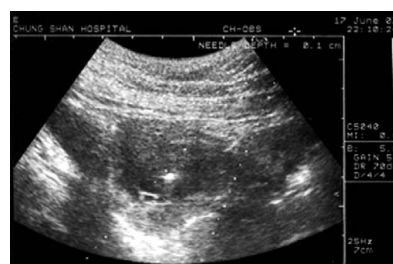


Figure 2. Transabdominal ultrasound with a puncturing device. A 22-gauge needle was inserted into the ectopic gestational sac.



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Table. Case reports of successful treatment by transabdominal potassium chloride or methotrexate injection

Author (year)	Mode of conception	Gestational weeks at diagnosis	Gestational weeks at treatment	Location	Findings at diagnosis	Treatment type	hCG level at treatment (mIU/mL)	Time to negative hCG
Kaplan et al [8] (1990)	AI	7 ⁺⁴		Cervical	CRL 6 mm	TA local MTX after of systemic MTX IM one course	17,000	40 d
Ghazeeri et al [9] (2002)	IVF	6 ⁺³	39 d after embryos transferred	Heterotopic, cornual and intrauterine		TA local KCL	NA	NA
Hartung and Meekies [10] (2003)	NA	7 ⁺²	7 ⁺²	Cesarean scar	CRL 12 mm	TA local KCL	55,600	12 wk
Doublet et al [4] (2004)								
1	IVF	8.6		Cornual	GS with FHB	TA-KCL	119,164	5 mo
2	Unknown	10.3		Cornual	GS with FHB	TA-KCL	NA	NA
3	Natural	7.0		Concomitant cornual and intrauterine	GS with FHB	TA-KCL	40,832	NA
Seow et al [6] (2004)								
1	NA	6		Cesarean scar	GS with FHB	TA local MTX	16,628	56 d
2	NA	6 ⁺⁴		Cesarean scar	GS with FHB	TA local MTX	19,086	75 d
Monteagudo et al [11] (2005)	NA	7 ⁺³		Cornual	CRL 12 mm	TA local MTX	62,000	NA
Anderson et al [12] (2009)	Natural	7 ⁺⁴		Abdomen		TA local MTX after failure of systemic MTX	44,637	NA
Present case	Natural		8	Tubal	CRL 17.3 mm	TA local MTX	84,304	53 d

hCG = human chorionic gonadotropin; AI = artificial insemination; CRL = crown-rump length; TA = transabdominal; MTX = methotrexate; IM = intramuscular; KCL = potassium chloride; IVF = in vitro fertilization; NA = not available; FHB = fetal heart beat; GS = gestational sac.

Medical treatment in ectopic pregnancy is effective in selective patients [1]. Systemic MTX treatment yields a good success rate, particularly in early, unruptured tubal pregnancies [2]. Kirk and Bourne reviewed the nonsurgical management of ectopic pregnancies, especially systemic MTX treatment, and concluded that nonsurgical management can be safe and effective [3]. Local injection of MTX or potassium chloride with sonographic guidance is an alternative therapy, and is particularly effective in advanced ectopic pregnancies. Doubilet et al reported that in ultrasound-guided treatment of unusual ectopic pregnancies, treatment was successful in 25 of 27 patients [4].

Local medical injected treatment of tubal pregnancy is usually managed during laparoscopic surgery. Transvaginal injection is another common non-surgical method [6]. Transabdominal injection treatment is commonly used in cesarean scar pregnancy or cornual pregnancy [6], but less often in tubal pregnancy. Mesogitis et al reported 26 tubal pregnancies treated with percutaneous local injections of MTX under abdominal sonographic control, and all these ectopic gestational sacs were resolved completely [7]. Several case reports have described successful treatment by transabdominal potassium chloride or MTX injection. We have analyzed these cases and our present case (Table).

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