

# Study on the optimum period of the menstrual cycle for intrauterine device insertion

Lucian Serbanescu<sup>1</sup>, Daniel Ovidiu Costea<sup>2</sup>

1. Department of Obstetrics & Gynecology, Faculty of Medicine, "Ovidius" University from Constanta, Romania

2. Department of General Surgery, Faculty of Medicine, "Ovidius" University from Constanta, Romania

Correspondence: Dr. Lucian Serbanescu  
E-mail: lucian\_trocadero@yahoo.com

## Abstract

In the present article we examined the evidence of intrauterine device (IUD) insertion at different times during menstrual cycle with regard to bleeding, pain and ultrasound effectiveness. The study was performed on 100 patients with type TCu 380 IUD. The patients were further divided in 2 groups: the 1<sup>st</sup> group consisted of 50 of the patients (50%), in which the IUD was inserted on the 4<sup>th</sup>-6<sup>th</sup> day of the menstrual cycle, and the 2<sup>nd</sup> group, consisted on the other 50 patients (50%), in which the IUD was inserted in the 12<sup>th</sup>-14<sup>th</sup> day of the menstrual cycle. The following parameters were analyzed: bleeding during insertion, pain during insertion, pain after insertion, bleeding in the 1<sup>st</sup> week post-insertion, and ultrasound appearance after one week post-insertion. The results showed that the majority of women (72%) from the 1<sup>st</sup> group had a mean bleeding in comparison with the 2<sup>nd</sup> group in which most of the women (44%) had easily bleeding. Concerning the pain during assembly, it was showed that in the 1<sup>st</sup> group, the major of patients had mean pain (48%), comparing with the 2<sup>nd</sup> group in which the majority had mild pain (76%). Therefore, we sustain that the optimal period of IUD insertion could be the peri-ovulatory period, especially in patients who exclude the possibility of a pregnancy, until it is assembled.

**Keywords:** period, menstrual cycle, intrauterine device, peri-ovulatory period, contraception

## Introduction

The intrauterine device (IUD) showed to represent a better way of contraception, limiting both the egg contact with sperm and the implantation of the fertilized egg<sup>(1,2)</sup>.

The IUD insertion during menses can be very well accepted by some physicians, based on the assurance that the women is not pregnant. In the same context, the IUD insertion other times rather than menstrual cycle, could results into inconvenience or supplementary costs<sup>(3)</sup>. The better indication for the IUD insertion, especially during menstrual cycles are concerning the fact that women is not pregnant, and the contraceptive effect of the IUD insertion at different days from menstrual cycle<sup>(4)</sup>.

In the present article we examined the evidence of type TCu 380 intrauterine device (IUD) insertion at different times during menstrual cycle with regard to bleeding, pain and ultrasound effectiveness.

## Methods

The study was performed on 100 patients with type TCu 380 IUD. The patients were further divided in 2 groups: the 1<sup>st</sup> group consisted of 50 of the patients (50%), in which the IUD was mounted on the 4<sup>th</sup>-6<sup>th</sup> day of the menstrual cycle, and the 2<sup>nd</sup> group, consisted on the other 50 patients (50%), in which the IUD was applied at the 12<sup>th</sup>-14<sup>th</sup> day of the menstrual cycle (i.e. periovulatory period).

The following parameters were analyzed: bleeding during insertion, pain during insertion, pain after insertion, bleeding in the 1<sup>st</sup> week post-insertion, and ultrasound appearance after one week post-insertion.

In order to measure painful intensity a painful intensity scale was used as follows: 0= no pain; 1, 2, 3= mild pain; 4, 5, 6= mean pain; 7, 8, 9= severe pain, and 10= the strongest pain experienced.

## Results

Bleeding during IUD insertion of the patients can be seen in Table 1.

From the 1<sup>st</sup> Table, it can be shown that the majority of women (72%) from the 1<sup>st</sup> group had a mean bleeding in comparison with the 2<sup>nd</sup> group in which most of the women (44%) had easily bleeding. In this group there were also 2 cases of uterine cervical bleeding, and a bleeding that stopped after sterile compression with oxygenated water. In the 2<sup>nd</sup> group there were no cases of significant or bleeding. The pain seen during IUD insertion is represented in Table 2.

Concerning the pain during IUD insertion, it was showed that in the 1<sup>st</sup> group, the major of patients had mean pain (48%), comparing with the 2<sup>nd</sup> group in which the majority had mild pain (76%). The pain in the first week after IUD insertion is shown in Table 3.

Interestingly, the patients from the 1<sup>st</sup> group showed to have more a mild pain (60%) versus the patients from the 2<sup>nd</sup> group in which they did not had any pain (64%). Bleeding in the first week post-insertion can be seen in Table 4.

Regarding the bleeding scored in the first week post-insertion, the results were more similar, the major of the patients from the 1<sup>st</sup> group (48%) and the 2<sup>nd</sup> group (76%) did not present any bleeding. The ultrasound appearance at one week after IUD insertion is shown in Table 5.

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**Table 1** Bleeding during IUD insertion in both groups

	1 <sup>st</sup> Group (n=50)	2 <sup>nd</sup> Group (n=50)
Without any bleeding (%)	0	20 (40%)
Easily bleeding (%)	12 (24%)	22 (44%)
Mean Bleeding (%)	36 (72%)	8 (16%)
Strong bleeding (%)	2 (4%)	0

**Table 2** The pain recorded in the study during IUD insertion

	1 <sup>st</sup> Group (n=50)	2 <sup>nd</sup> Group (n=50)
Mild pain (%)	22 (44%)	38 (76%)
Mean pain (%)	24 (48%)	11 (22%)
Strong pain (%)	4 (8%)	1 (2%)

**Table 3** The pain manifestations after IUD insertion

	1 <sup>st</sup> Group (n=50)	2 <sup>nd</sup> Group (n=50)
Without any pain (%)	15 (30%)	32 (64%)
Mild pain (%)	30 (60%)	16 (32%)
Mean pain (%)	5 (10%)	2 (4%)

**Table 4** Bleeding in the first week post-insertion of the patients from both groups

	1 <sup>st</sup> Group (n=50)	2 <sup>nd</sup> Group (n=50)
Without any bleeding (%)	24 (48%)	38 (76%)
Easily bleeding (%)	21 (42%)	10 (20%)
Mean bleeding (%)	5 (10%)	2 (4%)

**Table 5** The ultrasound analysis in both groups

	1 <sup>st</sup> Group (n=50)	2 <sup>nd</sup> Group (n=50)
In a normal position (%)	48 (96%)	50 (100%)
Migrated (%)	2 (4%)	0

The ultrasound images showed that the major of the patients from both groups had the device located into a normal position (95% from the 1<sup>st</sup> group and 100% from the 2<sup>nd</sup> group). In the same context, we mention that all patients were seen ultrasound immediately after implantation of the UID and in all 100 cases, the device was correctly positioned.

## Discussion

Moderate bleeding occurred in the majority of patients from the 1<sup>st</sup> group comparing with the 2<sup>nd</sup> group. We consider that menstrual post coagulogram changes and the degree of local inflammation of the uterus are the main factors involved in post-montage IUD bleeding<sup>(5,6)</sup>.

The pain experienced during the assembly was higher in the patients from the 1<sup>st</sup> group versus the patients in the 2<sup>nd</sup> group. Thus, we consider postmenstrual local uterine inflammation (the number of leukotrienes and prostaglandins at the endometrial and myometrial level) to be the main factor in lowering the pain threshold<sup>(7,8,9)</sup>.

However, the threshold of painful intensity can be altered by psychological factors, including the fact that the patients from the 1<sup>st</sup> group experienced a higher intensity pain during the assembly in which they can psychologically associate the IUD with some other traumatic features<sup>(10,11)</sup>.

Some studies showed that the timing when the IUD should be inserted has little effect on short or long term (i.e. pain at insertion, bleeding or immediate expulsion)<sup>(12)</sup>. Other studies have studied the relationship between rate of expulsion and the timing of IUD insertion<sup>(13)</sup>. And only few have examined the timing of insertion versus pain or bleeding<sup>(14,15)</sup>. A study achieved on 29 nulliparous women based on a trial which used an analgesic agent showed that the pain and bleeding after 7 days post-insertion to be well correlated with the day of the cycle on which IUD was inserted<sup>(14)</sup>. Another study made on 84 nulliparous

sustain that the pain acquired after IUD insertion was not proportionally correlated with the timing of the insertion<sup>(15)</sup> and therefore the results showed to be contradictory. When an agent like ibuprofen was added at IUD insertion, the highest pain of the patients was collected at less than 6 days and more than 11 days and the lowest pain was recorded between 6 and 10 days since the start of the last menstrual cycle<sup>(16)</sup>.

Interestingly, it seems that until present many studies sustain the fact that the IUD insertion at different period of times during menstrual cycle has little or no effect on contraception.

## Conclusions

The IUD insertion in the peri-ovulatory period showed to be accompanied by fewer complications such as migraine, painful hemorrhages versus postmenstrual implantation. Therefore, we consider that the optimal period of installation of an IUD may be represented by the peri-ovulatory period, especially in patients who exclude the possibility of a pregnancy, until it is inserted. ■

**Conflict of interests:** The authors declare no conflict of interests.

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