

Effect of Deep Injections of Local Anesthetics and Basal Dilatation of Cervix in Management of Pain During Legal Abortions

A Randomized, Controlled Study

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The present study was designed to investigate whether deep injections of local anesthetics provide better pain control than regular injections of local anesthetics, and to evaluate the influence of basal cervical dilatation and dilatation increase obtained on the painfulness of abortion procedure during legal abortions. A total of 66 women undergoing legal abortion were randomly allocated to treatment with deep injection (n = 31) or regular injection (n = 35) group. Subjects in the deep injection group had paracervical block involving four injections approximately 3 cm deep. Subjects assigned to the regular injection group had paracervical block involving four injections approximately 1.5 cm deep. A pain scale was administered at the end of the dilatation and end of curettage. Both groups were found to be similar with respect to age, parity, previous legal abortion, gestational age, anxiety score, procedure time, basal cervical dilatation, and dilatation increase obtained. The mean pain score during cervical dilatation was less for the deep injection versus the regular injection group (3.3 ± 1.5 versus 4.0 ± 1.6 , $p < 0.05$). The mean pain score during curettage was significantly less for the deep injection versus the regular injection group (3.0 ± 1.2 versus 3.9 ± 1.4 , $p < 0.05$). In conclusion, deep injection of local anesthetics is a safe adjunct in the management of legal abortion. Irrespective of injection technique, dilatation pain is correlated negatively with basal cervical dilatation and correlated positively with dilatation increase obtained. CONTRACEPTION 1997;56:85-87 © 1997 Elsevier Science Inc. All rights reserved.

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Introduction

Legal abortion is a common procedure that is performed under various forms of local or general anesthesia. The choice of anesthesia technique is a very important factor that affects the risk associated with abortion at ≤ 12 weeks' gestation. Paracervical anesthesia used during abortion procedures is a local anesthesia technique that is used with or without administration of sedative or analgesic medications.¹⁻³ Abortion procedures are generally performed under paracervical anesthesia in our family planning clinic. There are several variations in technique for paracervical anesthesia. In the past, submucosal injection of local anesthetics (regular injection technique) was used. Stubblefield described his technique of deep injections with 20 mL 1% lidocaine.⁴ Wiebe confirmed that deep injection technique is superior to regular injection.¹

Smith et al have evaluated the relationship between pain of abortion and several factors, such as patient's age, gestational age, amount of dilatation, preprocedure fearfulness, and administration of oral diazepam.² Basal cervical dilatation was not a variable in this study. The need for greater mechanical dilatation of the cervix carries an increased risk of complications, such as cervical laceration, uterine perforation, and possible long-term side effects on fertility.

This study was designed to compare the efficacy and safety of deep injections of local anesthetics rather than regular injections of local anesthetics in management of pain during legal abortion, and to evaluate whether basal cervical dilatation and dilatation increase obtained are important factors that affect the pain of first trimester abortion.

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Materials and Methods

Sixty-six women admitted to our family planning unit between May 1996 and November 1996 in the 6th through 11th week of gestation who requested a legal abortion were included in a prospective study. Patients were assigned to receive either deep injection or regular injection of local anesthetics on the basis of computerized, random number generation carried out outside our family planning unit; the assignment was therefore independent of both physicians' and patients' biases. The indications for abortion were for psychosocial reasons in 93% and for medical reasons in 7%. The gestational age was determined from the first day of the last menstrual period. All were required to be normal, singleton intrauterine pregnancy with transvaginal ultrasonographic examination. All women gave their written informed consent to participate.

All abortion procedures were performed by an experienced operator. A second physician rated preprocedure anxiety of patients using a scale of 0-10, with 0 representing no anxiety and 10 representing severe anxiety. When anxiety score was 6 or more, 5 mg of oral diazepam is administered as premedication 60 min before the procedure. Paracervical anesthesia was applied to the cervix using 1% lidocaine without vasoconstrictor with a 22-gauge spinal needle, and care was taken to aspirate before each injection. In the deep injection group, the cervix was infiltrated superficially with 1 mL local anesthetics and the needle was then advanced in order to administer 3 mL of local anesthetics approximately 3 cm deep to four sites (4, 6, 8, and 10 o'clock positions). In regular the injection group, 10 mL of local anesthetics were injected in four sites (4, 6, 8, and 10 o'clock positions) approximately 1.5 cm deep. After a wait of 2 min, cervical dilatations were performed with French size 13 to 33 Pratt dilators. The basal cervical dilatation was defined as the size of largest Pratt dilator that could be inserted into the cervical canal with no force. Dilatation required was defined as the largest Pratt dilator used depending on gestational age; for example, a French size 27 dilator would typically be used for a 9 weeks' gestation. After aspiration was completed with a uterine aspirator, a sharp curette was used to confirm that curettage was completed. Patients rated the pain associated with dilatation and curettage after the procedures on a scale of 0-10, with 0 representing no pain and 10 representing severe pain.

Anxiety score, procedure time (minutes), basal cervical dilatation (French size), dilatation increase obtained (dilatation required [French size] minus basal cervical dilatation), dilatation pain score, and curet-

Table 1. Selected reproductive data of women in deep and regular injection groups

	Deep Injection (n = 31)	Regular Injection (n = 35)
Age (years)	30.90 ± 5.30	29.26 ± 5.89
Parity	2.84 ± 1.13	2.77 ± 1.37
Previous legal abortion	0.90 ± 1.35	0.86 ± 1.06
Gestational age (weeks)	8.03 ± 1.35	7.91 ± 1.12

tage pain score were recorded. A single follow-up visit was arranged about 4-6 weeks later, when a gynecologic examination was performed and the women were questioned about possible late complications.

The sample size was calculated on the basis of previous experiences of our group (unpublished data). We considered a decrease of 1 in. dilatation pain score with a standard deviation of 1.42 as clinically relevant with deep injections of local anesthetics. To have an 80% chance of detecting such a difference at an overall significance level of 5%, 33 patients/group are required.⁵ All data are expressed as mean ± SD. Data were analyzed using independent samples *t* test and Spearman's rank correlation test when appropriate. Significance was defined as $p < 0.05$.

Results

Selected reproductive characteristics of the deep injection group (n = 31) and regular injection group (n = 35) are presented in Table 1. There were no differences in any of the periprocedure data of the groups, apart from the dilatation pain and curettage pain scores. Figure 1 shows the flow diagram of study population. The mean pain score during cervical dilatation was significantly less for the deep injection group (3.2 ± 1.5) versus the regular injection group (4.0 ± 1.6). The mean pain score during curettage was significantly less for the deep injection group (3.0 ± 1.2) versus the regular injection group (3.9 ± 1.4).

When the dilatation pain score was correlated with basal cervical dilatation in deep and regular injection groups, irrespective of technique of local anesthesia, a significant negative correlation was found ($r = -0.77$, $r = -0.71$, respectively). Irrespective of technique of local anesthesia, a significant positive correlation ratio ($r = 0.69$, $r = 0.70$, respectively) was found between the dilatation pain score and dilatation increase obtained in the deep and regular injection groups.

No adverse effects were noted in the 1-h observation period after local anesthetics administration. No major complications were encountered during paracervical anesthesia, cervical dilatation, and curettage

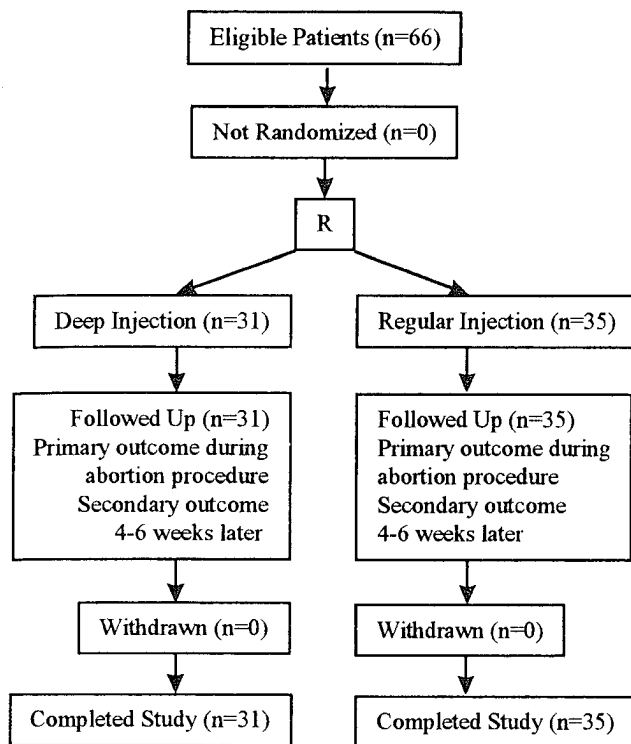


Figure 1. Flow diagram of study population.

procedures during the abortion procedure or at the follow-up examination approximately 4-6 weeks later.

Discussion

The type of anesthesia used for performing legal abortions depends on several reasons, such as medical, social, and economic factors. Studies by several groups have demonstrated convincingly that the use of local or general anesthesia was not significantly different, but each was associated with different kinds of complications.^{3,6-8}

In our department, paracervical anesthesia is the most frequently used technique for legal abortions. The present study reports our experience with the deep injection of local anesthetics during legal abortions. We employed a slightly smaller dose of local anesthetics (16 mL versus 20 mL) in the deep injection group than that used in the study by Wiebe.¹

Previous workers have recorded the impression that deep injection of local anesthetics during legal

abortions is a useful technique.¹ We have confirmed this objectively and have also shown that, irrespective of administration technique for local anesthetics, there was a significant negative correlation with basal cervical dilatation and dilatation pain scores, and a positive correlation with dilatation increase obtained and dilatation pain score. The larger the basal cervical dilatation, the less pain experienced during cervical dilatation. The larger the dilatation increase obtained, the more pain experienced during cervical dilatation. Smith et al. have shown that a curvilinear relationship was present between dilatation and pain, whereas patients in extreme categories experienced more pain than those in intermediate categories.²

In conclusion, our findings of the decreased pain with deep injections of local anesthetics within the range of doses studied indicate that deep injection of local anesthetics is a safe and practical technique during legal abortions. Our study also showed that, irrespective of local anesthesia technique, a significant correlation between basal cervical dilatation and dilatation increase obtained influences the painfulness of abortion procedure for legal abortion through first trimester.

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