COMPARATIVE STUDY—MARCAINE VERSUS LIGNOCAINE IN PAINLESS LABOUR WITH INTERMITTENT PARACERVICAL AND PUDENDAL BLOCK

(100 Cases Review)

by

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Introduction

Pain is one of Nature's defence mechanisms, a premonition of danger. A painless labour is as treacherous as a silent coronary thrombosis. However, once labour has been diagnosed and proper care instituted, pain has served its purpose; it then becomes appropriate to offer the women relief. In 1847, Sir James Young Simpson introduced anesthesia into obstetric practice. Intermittently inhaled ether and then chloroform were used to relieve the pains of the final stages of labour and delivery. Many new techniques have been evolved, but the perfect method of abolishing the pain of childbirth has not been achieved. Compromises are made, but safety must never take second place to efficiency.

Paracervical block is an effective, easily performed method of achieving relief of pain during the first stage of labour. Here the sensation of pain (caused by uterine contractions and cervical dilatation) passes by sensory and sympathetic pathways to the area of the uterosacral ligaments, through the pelvic and hypogastric plexuses, to the lower rami of the 11th and 12th thoracic vertebrae. For this type of pain paracervical block works well.

During the second stage of labor, pain (produced by distention of vagina and vulva) is transmitted via the sensory fibers of the pudendal nerves to the second, third and fourth sacral vertebrae. Paracervical block is ineffective in this area, and pudendal block is needed.

Material and Methods

The present study is a comparative study in which 100 cases were given intermittent paracervical block. In 50 cases, 0.5% Marcaine was the drug used and in 50 cases, 1% lignocaine was the drug used. Adrenaline was not used. The results obtained were compared.

Intermittent paracervical block was given till the patient was 9 cms. dilated or fully dilated and then pudendal block was given bilaterally, transvaginally. The drug

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used for pudental block in all cases was 1% lignocaine.

All cases included in the study were explained the procedure and their consent obtained. Cases were selected on the following criteria, (1) Patients were either primigravidae or second gravidae, (2) patients were full term. Premature and postdated beyond 10 days, were not included, (3) those who had no medical disorders or any complications in the antenatal period during, the present pregnancy, (4) patients in active labour with adequate pelvis and vertex presentation, (5) foetal heart sounds regular and within normal limits, (6) no other analgesic drugs, were administered prior to the paracervical block.

Technique—Paracervical block injection is given transvaginally into the posterolateral fornices, during the active phase of labour with the cervix atleast 3 to 4 cms dilated. All that is really needed are anaesthetic agents such as bupivacaine 0.5 per cent or lignocaine 1% and specially constructed guard tube with a bulbous end with which to probe the lateral vaginal fornices and a needle which protrudes no more than 7 mm beyond its tip. Both the guard tube and the needle must be of an adequate length, at least 14 cms in length. The site of an injection varies. Some workers inject the solution at 3 and 9 O'clock. In the present study, several injections at 4, 5, 7 and 8 O'clock were given with 2 c.c. to 5 c.c. of local anaesthetic after confirming that the blood vessel was not punctured.

Pudendal block was given by transvaginal route, after locating the Ischial spines and sacrospinous ligament. The guard was introduced in the vagina, the needle was then thrust 1 cm in the ligament close to the spine and posterior to it. After aspiration, 3 c.c. of 1% lignocaine was injected into the ligament and 2 c.c. posterior to the spine. The procedure was repeated on the other side.

After the paracervical block, the maternal pulse and B.P. were recorded at 5 minute intervals for the first 15 minutes and then every 15 minutes. Patient was asked to inform about any giddiness or tingling numbness in the lower extremities or any headache.

Foetal Heart rate was recorded continuously for 5 minutes after the block, then every 5 minutes for 15 minutes and later every 15 minutes.

Uterine contractions and the response of the patient to them was observed. A dose of paracervical block was given when the pains were re-established. There was no other interference in the form of an artificial rupture of membranes or an injection of oxytocies etc.

Pudendal block was given at 9 cms or full dilatation of cervix. At the end of the delivery, response of the patients to relief of pain was inquired and her reaction and experience were noted.

Results

Marcaine group — Group "A"
Lignocaine group — Group "B"

A MATERNAL FACTOR

Average duration of labour

This was calculated as the time from the time of drug injection till the completion of 3rd stage of labour (Table I).

There is a definite acceleration in the progress of labour in both primis and multis in both drugs.

B FOETAL FACTOR

1. *Foetal Heart Rate*

In 11 cases foetal bradycardia occurred which subsided by giving nasal oxygen

TABLE I

Parity	Injection to full dilating (hrs. & mins.)	Stage 2 (hrs. & mins.)	Stage 3 (hrs. & mins.)	Total (hrs. & mins.)
GROUP A				
Primi	4.12 (1.20-8.15)	1.01 (0.10-1.30)	0.14 (0.04-0.15)	5.27 (1.44-8.40)
Multi	3.12 (1.00-6.00)	0.52 (0.02-1.30)	0.15 (0.05-0.15)	4.19 (1.55-7.40)
GROUP B				
Primi	4.00 (1.20-6.30)	0.53 (0.10-1.15)	0.15 (0.03-0.15)	5.19 (1.55-7.05)
Multi	3.03 (1.00-6.00)	0.50 (0.10-1.00)	0.14 (0.02-0.20)	4.07 (1.16-7.00)

and left lateral position to the patient (Table II).

TABLE II

	Uneffected	Foetal Bradycardia
Group A	46	4
Group B	43	7

C ANAESTHESIA DETAILS

1. *Number of injections and Amount of drug used*

In 2 cases in Group A, the maximum recommended dose was crossed. But neither case developed fetal bradycardia. However, 1 case complained of giddiness after the 3rd dose (Table III).

TABLE III

No. of Injections	Cases	Primi	Multi	%	Quantity of Drug in c.c.	Amount of Drug in mg.	Maximum Recommended Dose in mg.
GROUP A							
1	31	18	13	62	10	50	
2	17	12	5	34	20	100	125
3	2	2	0	4	30	150	
GROUP B							
1	25	11	14	50	10	100	
2	19	16	3	38	20	200	500
3	6	5	1	12	30	300	

2. *Duration of Pain Relief*

Duration of action with 0.5% Marcaine was more than 1-½ times that when 1% lignocaine was used (Table IV).

TABLE IV

	GROUP A				GROUP B			
	AVG		RANGE		AVG		RANGE	
	hrs.	min.	hrs.	min.	hrs.	min.	hrs.	min.
Primi	1	27	0.50-1.30		.52		0.35-1.15	
Multi	1	25	1.05-1.35		.54		0.35-1.10	

3. *Pain Relief with Pudendal Block*

Pudendal block was given in 97 out of the 100 cases in the present series. All received 1% lignocaine (Table V).

TABLE V

Pain relief		No. of cases	Percentage
0	Poor	0	—
1	Fair	64	65.98
2	Good	32	32.99
3	Excellent	1	1.00

Discussion and Conclusion

The 100 cases studied in the present series prove beyond doubt the value of combined, intermittent paracervical block and pudendal block for relief of pain in labour. It is highlighted by a very high success rate with a minimal of maternal complications. Continuous paracervical block has been attempted, but the technique is rather complicated. The catheter used for the block, tends to become dislodged and the technique is used rarely Freedman *et al*, 1968 combined continuous paracervical and continuous pudendal block anaesthesia in labour.

Injection of local anaesthetics by using high velocity to penetrate tissues, instead of a needle point was performed successfully for paracervical blocks in gynaecologic operations. (Frymine and French, 1974).

TABLE VI

Comparison of Analgesic Effect With Paracervical Block as Reported By Different Workers

Authors		Total No. of cases	Results in percentage			
			Excellent	Good	Fair	Poor
1. Kobak et al	1961	100	71	24.5	4.5	nil
2. Freedman et al	1968	527	80	9	5	6
3. Present Series						
Marcaine		50	74	26	—	nil
Lignocaine		50	56	42	2	nil

The only complication of importance was fetal bradycardia. Here too, it did not reach alarming proportions, the incidence being about 11%, which goes to show that the recent modifications in technique help in minimising the side effects. There was, however no perinatal loss. However, it does result in a high blood concentration of local anaesthetics in both the mother and the fetus. The proximity of the uterine vessels, uterus, cervix and fetus has been blamed for the notable number of fetuses who developed post-paracervical block bradycardia. On very rare occasions intrauterine deaths may follow a prolonged episode of bradycardia (Dodson and Hillman 1975).

The paracervical block did not hinder the progress of labour and on the contrary, in the present series, there appeared to be an acceleration in the rate of cervical dilatation per hour in both, primis and multis.

Although the patient may be apprehensive at the time of the injection, if the procedure is explained properly to the patient she will definitely tolerate it well and may even desire the anaesthesia in subsequent labours.

The only drawback appears to be the multiple injections needed for pain relief. This is the main cause of complaint from the patient and is also one of the main reasons for the patient not being keen on anaesthesia in subsequent labours. As shown in this series, this problem can be solved by using a longer acting drug like 0.5% Marcaine which reduces the probability of multiple injections.

Also, because the procedure is so simple and safe and because the landmarks are so easily identified, it can be undertaken by any obstetrician after some practice.

One easily concludes that 0.5% Marcaine had definately an edge over 1% lignocaine.

(i) Duration of pain relief is nearly 1-½ times that of 1% lignocaine, (ii) less number of women require multiple doses, (iii) more patients have an excellent relief of pain, (iv) rate of cervical dilatation appears to be slightly faster, (v) maternal complications are low, (vi) incidence of fetal bradycardia is less, (vii) due to a lesser number of injections and the better relief of pain, patient acceptibility is heightened.

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