

## Safety of transvaginal pudendal block anesthesia in obstetrics

by

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Transvaginal pudendal block anesthesia constitutes a simple, effective and inexpensive method of inducing a satisfactory level of analgesia during delivery; no maternal damages occurred in the experience of the authors, nor are any reported in the literature.

However, there have been unpublished reports of isolated cases of immediate or late neonatal depression in the clinical use of this method. In spite of the fact that the observed depression was moderate and transient, this has driven us (stimulated also by the neonatology section of our clinic) to study the incidence and severity of neonatal depression in treated cases compared to untreated cases.

### MATERIAL AND METHODS

Eighty-seven cases, submitted at the end of the first stage to a transvaginal pudendal block accomplished by injecting 20 ml of a 0.25% solution of bupivacaine, and 2009 vaginal births not subjected to any analgesic treatment were retrospectively selected on the basis of:

1. absence of important maternal pathology (lipid and/or glucose dismetabolism, hypertension, reno-vascular syndrome, Rh incompatibility, etc.);
2. absence of alterations of the genital apparatus (uterine malformations, fibroids, previous operations on the uterus and/or Caesarean sections);
3. absence of history of infertility or of any therapy for ovulation induction;
4. absence in the actual pregnancy of threatened abortions or of any supportive therapy for pregnancy (progesterone, antispasmodic drugs, etc.);
5. absence of potentially dangerous pharmacological treatments during pregnancy;
6. absence of previously damaged children (physically or mentally);
7. socio-economic conditions of the mother above the poverty level;
8. sufficient intellectual and educational level of the mother.

Having made a preliminary selection according to the above criteria, for each one of the treated cases one or more perfectly similar untreated cases according to the following 10 characteristics were selected:

1. age of the mother, subdivided into two groups:  
Group I: from 20 to 30 years  
Group II: from 31 to 38 years
2. parity, subdivided also into two groups:  
Group I: primigravidas  
Group II: multigravidas
3. gestational age computed according to completed weeks of amenorrhea and controlled by means of clinical evaluation by the neonatologist;

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\* From the Institute of Clinical Obstetrics and Gynaecology, University of Genova.

4. administration (or not) of oxytocic drugs (intravenous infusion of 40 mU/min. of oxytocin);
5. administration (or not) of other drugs during labor (sub divided in: benzo-diazepines, antispasmodics, opiates and/or pethidine, local anesthetics, volatile anesthetics);
6. performance (or not) of obstetric operations;
7. presence (or not) of pathology of the cord (knots, absolute shortness, turns around the baby's body);
8. characteristics of the amniotic fluid;
9. sex of the neonate;
10. weight of the neonate subdivided into 4 groups:
  - Group I: weight inferior to the 10<sup>th</sup> percentile of Battaglia and Lubchenko (1967)
  - Group II: weight between the 10<sup>th</sup> and 50<sup>th</sup> percentile
  - Group III: weight between the 50<sup>th</sup> and 90<sup>th</sup> percentile
  - Group IV: weight superior to the 90<sup>th</sup> percentile

Following strictly the selective criteria stated above, it was possible to find out only 28 untreated cases perfectly similar to 16 treated cases (Table I); each treated case was then matched with the untreated case or cases by comparing:

1. Apgar score at 1 and 5 minutes;
2. neurological examination of the newborn made by the neonatologist within an hour after birth;
3. feeding behaviour of the newborn during the first five days of life;
4. clinical evaluation of the baby made by the neonatologist at the time of discharge from the hospital.

In the statistical evaluation of such nonparametric data, the sign test was used to compare the differences between treated and untreated cases.

## RESULTS

The Apgar score at 1 minute shows a slight but significant difference ( $P=0.5$ ) in favor of pudendal block case; on the other hand, the Apgar score at 5 minutes was slightly higher for the untreated cases ( $P=0.344$ ).

As it can be seen (Table II), there are no differences between treated and untreated cases with respect to the neurological examination, the feeding behaviour of the neonate and the clinical evaluation by the neonatologist.

These results show with reasonable assurance that there is no mechanism in pudendal block having an unfavorable effect on the fetus and thereby negatively influencing the condition and behaviour of the baby.

Incidentally, we would like to point out that in the treated cases there was an increased use of the vacuum extractor at the level of the pelvic floor (23.8% compared to an average of 4.3% in our clinic in the same years). In light of the results reported above, this fact does not seem to be related to a greater incidence of fetal distress; rather, it is frequently related to lack of cooperative efforts on the part of the parturient during the final expulsive phase of delivery. This is due to the lack of the sensations normally determined by the distension of the vagina and of the vulvar ring.

In conclusion, it seems to us that the validity of pudendal block can be reaffirmed as an elective anaesthetic treatment in the second stage of labor. This

Tab.

*Treated cases.*

Chart number	Age	Age group	Gestation weeks	Parity group	Oxytocics	Other drugs	Obstetric operations	Cord pathology	Amniotic fluid	Sex	Birthweight: in grams	Birthweight: Percentile groups	1 min Apgar score	5 min Apgar score	Neurological exam.	Feeding	Clinical evaluation
14/73	25	I	39	I	+	—	VE	—	C	M	3190	III	9	9	+	+	+
89/73	27	I	40	I	+	t	—	—	C	F	3330	III	9	9	+	+	+
206/73	26	I	41	I	+	—	—	—	C	M	3700	III	9	9	—	+	+
275/73	27	I	39	I	—	—	—	—	C	F	3525	III	9	9	+	+	+
277/73	23	I	40	I	+	n	VE	—	C	F	2950	II	8	8	+	+	+
317/73	27	I	40	I	—	—	—	—	C	M	3900	III	10	10	+	+	+
547/73	27	I	41	I	+	t	—	—	C	M	3050	II	9	9	+	—	+
758/73	23	I	40	I	+	—	—	—	C	M	3120	II	9	9	+	+	+
1583/73	20	I	40	I	—	—	—	—	C	F	3250	III	9	9	+	+	+
22/74	23	I	38	I	—	—	—	—	C	M	2900	II	9	9	+	+	+
135/74	26	I	39	I	+	—	—	—	C	M	3450	III	9	9	+	+	+
288/74	29	I	40	I	+	—	—	—	C	M	3600	III	9	9	+	+	+
341/74	29	I	38	I	+	—	—	—	C	F	2820	II	10	10	+	+	+
372/74	25	I	38	I	+	at	VE	—	C	M	2920	II	9	9	+	+	+
554/74	24	I	40	I	+	t	—	—	S	M	2890	II	9	9	+	+	+
1235/74	32	II	40	II	+	at	VE	—	C	M	3450	III	7	9	+	+	+

NOTES: a=antispasmodics; n=narcotics; t=tranquilizers; VE=vacuum extractor; C=clear; S=stained; M=male; F=female.

*Untreated cases.*

Chart number	Age	Age group	Gestation weeks	Parity group	Oxytocics	Other drugs	Obstetric operations	Cord pathology	Amniotic fluid	Sex	Birthweight: in grams	Birthweight: Percentile groups	1 min Apgar score	5 min Apgar score	Neurological exam.	Feeding	Clinical evaluation
1321/73	27	I	39	I	+	—	VE	—	C	M	3560	III	9	10	+	+	+
820/73	27	I	40	I	+	t	—	—	C	F	3580	III	9	9	+	+	+
827/73	26	I	40	I	+	t	—	—	C	F	3650	III	9	9	+	+	+
868/73	23	I	40	I	+	t	—	—	C	F	3380	III	9	9	+	+	+
627/73	25	I	41	I	+	—	—	—	C	M	3640	III	9	9	+	+	+
1018/73	29	I	41	I	+	—	—	—	C	M	3430	III	9	9	+	+	+
855/73	16	I	39	I	—	—	—	—	C	F	3180	III	9	9	+	+	+
872/73	23	I	39	I	—	—	—	—	C	F	3130	III	9	9	+	+	+
311/73	22	I	40	I	+	n	VE	—	C	F	3070	II	9	9	+	+	+
389/73	23	I	40	I	—	—	—	—	C	M	3650	III	9	9	+	+	+
866/73	20	I	40	I	—	—	—	—	C	M	3820	III	9	9	+	+	+
1001/73	21	I	40	I	—	—	—	—	C	M	3900	III	9	9	—	+	+
234/73	25	I	41	I	+	t	—	—	C	M	3260	II	9	9	+	+	+
819/73	22	I	40	I	+	—	—	—	C	M	3150	II	9	9	+	+	+
214/73	24	I	40	I	—	—	—	—	C	F	3140	III	9	9	+	+	+
1069/73	21	I	40	I	—	—	—	—	C	F	3350	III	9	9	+	+	+
375/73	23	I	38	I	—	—	—	—	C	M	2950	II	9	9	+	+	+
1452/73	21	I	38	I	—	—	—	—	C	M	3000	II	9	9	+	+	+
518/73	30	I	39	I	+	—	—	—	C	M	3570	III	8	10	+	+	+
663/73	29	I	39	I	+	—	—	—	C	M	3270	III	9	9	+	+	+
858/73	29	I	39	I	+	—	—	—	C	M	3220	III	9	9	+	+	+
366/73	28	I	40	I	+	—	—	—	C	M	3300	III	9	9	+	+	+
1093/73	30	I	40	I	+	—	—	—	C	M	3630	III	9	9	+	+	+
1027/73	28	I	38	I	+	—	—	—	C	M	2920	II	9	9	+	—	+
533/73	23	I	38	I	+	a	VE	—	C	M	2960	II	9	9	+	+	+
647/73	27	I	40	I	+	a	—	—	S	M	2940	II	9	10	+	+	+
1033/73	21	I	40	I	+	t	—	—	C	M	2740	II	9	9	+	+	+
662/73	37	II	40	II	+	a	—	—	C	M	3250	III	9	9	+	+	+

Table 2. Sign test comparing the differences between treated and untreated cases.

Evaluations	Results of treated cases *	Level of significance
Apgar score at 1 minute	3 better 2 worse 11 equal	P = 0.5
Apgar score at 5 minutes	2 better 4 worse 10 equal	P = 0.344
Neurological examination	1 better 1 worse 14 equal	-----
Feeding	1 better 1 worse 14 equal	-----
Clinical evaluation	16 equal	-----

\* Compared to untreated cases.

is true, above all, because of the absence in our study of any documented risk to the fetus; therefore, the isolated cases of neonatal depression occasionally seen after pudendal block are not in casual relationship with the anesthetic method.

### SUMMARY

The effects on the neonate of pudendal block using 20 ml of bupivacaine 0.25% were studied. The method of matched pairs was used to compare 87 treated cases with 2009 untreated cases.

No statistically significant differences were found between the conditions of the neonates of the two groups as evaluated by means of the Apgar score, the neurological examination at one hour after birth, the feeding behaviour of the infant during the first five days of life and the clinical evaluation by the neonatologist at the time of discharge from the hospital.

Therefore, the validity of this analgesic treatment has been confirmed, especially in view of the absence of any documented risk to the fetus.

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