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International Journal of Current Research
Vol. 10, Issue, 05, pp.69521-69525, May, 2018

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

CAUDAL EPIDURAL BLOCK FOR PERINEAL AND ABDOMINAL SURGERIES A REVIEW

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ARTICLE INFO

Article History:
Received 20th February, 2018
Received in revised form
20th March, 2018
Accepted 12th April, 2018
Published online 30th May, 2018

Key words:
Maldi-tof MS,
Application in Clinical Microbiology Laboratory,
Identification of Microorganism,
Limitations.

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ABSTRACT

Background: The patients who were in need of perineal and abdominal surgery were selected for this present study. **Objective:** Pain relief to patients who were to undergo abdominal and perineal surgeries. **Methods:** A Review was performed on 32 perineal and 18 abdominal surgeries. Haemodyanamic, duration of anaesthesia, sensory and motor block was observed. **Results:** 87.5 per cent of the perineal cases developed analgesia in 5 to 6 minutes while patients requiring abdominal surgery took 15 to 21 minutes to develop analgesia. The systolic blood pressure remained above 100 mm Hg in 96.9 per cent of patients requiring perineal sugery while in 77.8 per cent of the abdominal cases systolic blood pressure remained. Complete an aesthesia developed in 90.6 per cent of patients of perineal series while 55.6 per cent patients of abdominal surgery. Complete muscular relaxation was obtained in 90.6 per cent of the perineal cases and 55.5 per cent patients of abdominal series. **Conclusion:** The present series concludes that caudal epidural block in an easy procedure and safe for operative procedure on limbs and perineal operations like fistula, piles, posterior colporrhaphy, normal painless deliveries, and etc. but as far as abdominal surgery is concerned, lower abdominal cases can be taken up for this procedure provided the cannula is already in the sacral apace. Upper abdminal surgery is not tried looking to the face that it requires larger does which may be toxic and fatal to the patients.

Citation: Dr. Chandra Deo Ram and Dr. Piyush Kumar Sengar. 2018. "Caudal epidural block for perineal and abdominal surgeries a review", *International Journal of Current Research*, 10, (05), 69521-69525.

INTRODUCTION

Extradural block was introduced by Fernand Cathel in and Jean Athanese Sicard in 1901 and by Fidel pages in 1921 and achlle Mario Dogliolle in 1931. Arthur Lowen in 1910 was the First to show that Extradural analgesia was safe and practical form of pain relief in pelvic and abdominal sugery. Caudal epidural anaesthesia once the most popular form of continous regional anaesthesia for obstetrics has been replaced in many institution with lumber epidural anaesthesia.

MATERIALS AND METHODS

The patients who were in need of perineal and abdominal surgery were selected for this present study. Patients known to be hypersensitive to local anaesthetic drugs or having epilepsy or cardiorespiratory disease or any disease leading to raised intracranial pressure or abnormal sacral bone were excluded out of the series. The study did not include unwilling patients, on anticoagulant therapy or having hypovolumeia, haemorrhage, shock, preexisting neurological diseases, local infection of skin.

Prepared with strict sterilization. Patients were carefully prone positioned with the thigh over a bolster (10 inches in diameter) legs wide a part and toes turned in, face on a pillow and elbow above her head. In some patients lateral position was also preferred. The caudal anaesthesia tray was opened. After aspiration test for blood or cerebrospinal fluid had been proved negative, a test dose of 5 ml of 1 percent lignocains was injected. 5 minutes after the test injection, the patient was asked to moved his/her toes to ensure that a subarachnoid block had not resulted and needle point was not in the theca. Then full dose i.e. 20 ml of 1 per cent lignocaine solution was administered. After confirmation that the catheter is in position, 15 to 20 ml of 2 percent lignocaine was given at the spread of 1 cc/second through the catheter which was fixed in the same position. Blood pressure, pulse rate, of respiration were noted immediately after injection and at 5 minutes interval for the 30 minutes and at 15 minutes interval there after 5 minutes after injection.

RESULTS

The above table shows that in perineal series 20 per cent of the cases were for posterior colporrhaphy, 18 per cent for vaginal

Caudal block

Table 1. Showing the type of operation performed under

Perineal cases.			Abdominal cases		
Type of operation	**No. of case**	**percentage**	**Type of operation**	**No. of case**	**percentage**
Haemorrhoidectomy	7	14.00	Hermiorrhaphy	5	10.00
Posterior colporrhaphy	10	20.00	Tube ligation	8	16.00
Anal fisfulectomy	6	12.00	Caesarian section	3	6.00
Vaginal delivery with episiotomy repair	9	18.00	Bladder stone removal	2	4.00

Showing the age group of patients

Age range in years	Perineal cases		Abdominal cases	
	No. of cases	**Percentage**	**No. of cases**	**Percentage**
15 – 25	9	18.00	5	10.00
26 – 35	13	26.00	8	16.00
36 – 45	10	20.00	5	10.00
46 – 55	-	-	-	-
Above 55	-	-	-	-
Total	32	64.00	18	36.00

Showing time of onset of analgesia

Time taken in minutes		Perineal cases		Abdominal cases	
		No. of cases	**percentage**	**No. of cases**	**percentage**
5 – 6	. .	28	87.5	-	-
6 – 7	. .	3	9.4	-	-
7 – 8	. .	1	3.1	-	-
8 – 14	. .	-	-	-	-
15 – 18	. .	-	-	11	61.1
19 – 21	. .	-	-	7	38.9
Total	. .	32	100.00	18	100.00

Showing average change in pulse rate

Average pulse rate per Minutes	Perineal cases	Abdominal cases
Before caudal block	90	92
5 minutes after block	84	85
10 minutes after block	78	85
15 minutes after block	75	78
20 minutes after block	72	71
30 minutes after block	72	68

Showing average change in the rate of respiration

Average rate of respiration per minutes	Perineal cases	Abdominal cases
Before caudal block	24	26
5 minutes after block	22	24
10 minutes after block	20	22
15 minutes after block	18	20
20 minutes after block	16	18
30 minutes after block	16	17

Showing the average change in blood pressure

Range of blood pressure	Perineal cases		Abdominal cases	
	No. of cases	**Percentage**	**No. of cases**	**Percentage**
Insignificant change to 10 mm hg	28	87.5	2	11.1
Fall in blood pressure 10-20 mm hg	3	9.4	12	66.7
Fall in blood pressure over 20 mm hg	1	3.1	4	22.2

Showing quality of sensory block

Quality of sensory block	Perineal cases		Abdominal cases	
	No. of cases	**Percentage**	**No. of cases**	**Percentage**
Complete anaesthesia	19	90.6	10	55.6
Complete Analgesia	2	6.3	7	38.9
Inadequate analgesia	1	3.1	1	5.5

Showing quality of muscular block

Quality of muscular block	Perineal cases		Abdominal cases	
	No. of cases	Percentages	No. of cases	Percentages
Complete anaesthesia	29	90.6	10	55.6
Incomplete Analgesia	2	6.3	7	38.9
No obvious relaxation	1	3.1	1	5.5

Showing grading of Anaesthesia

Quality of Anaesthesia	Perineal cases		Abdominal cases	
	No. of cases	Percenta-ges	No. of cases	Percenta-ges
Grade I (Complete anaesthesia and complete muscular relaxation).	29	90.6	10	55.6
Grade II (Complete analgesia and complete muscular relaxation).	2	6.3	7	38.9
Grade III (Complete analgesia and No obvious relaxation).	1	3.1	1	5.5

Showing grading of Anaesthesia

Quality of Anaesthesia	Perineal cases		Abdominal cases	
	No. of cases	Percenta-ges	No. of cases	Percenta-ges
Grade I (Complete anaesthesia and complete muscular relaxation).	29	90.6	10	55.6
Grade II (Complete analgesia and complete muscular relaxation).	2	6.3	7	38.9
Grade III (Complete analgesia and No obvious relaxation).	1	3.1	1	5.5

Showing the volume and dose of one percent lignocaine

Volume in ml.	Perineal cases		Total does in mg.
	No. of cases	Percentages	
15 to 20 ml.	3	9.4	150 to 200 mg
20 to 25 ml.	29	90.6	200 to 250 mg

Showing the volume and dose of of 2 per cent lignocain

Volume in ml.	Abdominal cases		Total does in mg.
	No. of cases	Percentages	
15 to 20 ml.	15	83.3	300 to 400 mg
20 to 25 ml.	3	16.7	400 to 500 mg

Showing amount of bleeding

Amount of bleeding in ml.	No. of cases	Percentage
20 – 15	-	-
51 – 80	2	4.00
81 – 110	6	12.00
111 – 140	38	76.00
141 – 170	4	8.00
171 – 200	-	-
201 – 230	-	-
231 – 260	-	-

Showing complications of caudal epidural block

Complications	Perineal cases		Abdominal cases	
	No. of cases	Percentages	No. of cases	Percentages
Hypotension	1	3.1	4	22.2
Nausea of Vomitting	2	6.2	8	44.00
Backache	2	6.2	2	11.11
Urinary Retention	5	15.6	7	38.9

delivery with episiotomy repair, 14 per cent for haemorrhoidectomy and 12 per cent for anal fistulectomy. In abdominal series 16 per cent of the cases were for tube ligation, 10 per cent cases for herniorrhaphy, 6 per cent cases for caesarean section and 4 per cent cases for bladder stone removal. Above table shows that majority of the patients were perineal cases in the age group 26 – 35 years (13 cases, 26%). Maximum number of abdominal cases (belonged to the age group of 26 to 35 years (8 cases 16%). Minimum number of perineal cases were in the age group of 15 – 25 years while minimum number of abdominal cases were in the age group of 36 to 45 years. Above table shows that majority of perineal cases (87.5%) developed analgesia within 5 to 6 minutes after administration where as (9.4%) in 6 to 7 minutes and 3.1 per cent in 7 to 8 minutes. Maximum number of abdominal cases (61.1%) developed analgesia within 15 to 18 minutes. Above table shows that the average pulse rate before the block for perineal cases was 90 per minutes which

gradually settled down to 72. Whereas in the abdominal cases the average pulse rate before block was 92per minutes, which dropped down to 68 per minutes, after 20 minutes of the block. Above table shows that the average rate of respiration before 10 block for perineal cases was 24 per minutes which gradually lowered down to 16 per minutes. Whereas in the abdominal cases the average rate of respiration before block was 26 per minutes which fell down to 17 minutes after block. The above table shows that in 28 perineal cases (87.5%), there was no significant drop in blood pressure. While in one case (3.1%), the fasll was over 20 mm hg. On the contrary, 4 abdominal cases (22.2%) suffered significant fall in blood pressure while in 14 cases (77.8%) the fall in blood pressure was less than 20 mm hg. The above table shows that 90.6 per cent of perineal cases exhibited complete anaesthesia while 6.3 per cent of the cases showed complete analgesia and 3.1 per cent of the cases there was inadequate analgesia. In abdominal cases, 55.6 per cent of the cases showed complete anaesthesia whereas in one case there was inadequate analgesia. The above table shows that 90.6 per cent of the perineal cases there was complete muscular paralysis. While only one case (3.1%) shows no obvious relaxation. In abdominal cases, 55.6 per cent showed complete muscular paralysis while 38.9% of the cases exhibited incomplete muscular relaxation. In only one case (5.5%), the relaxation was not obvious.

The above table shows that the Grade I anaesthesia was persentin 90.6 per cent of the perineal cases while Grade III was present in 3.1 per cent of the cases. In abdominal cases, 55.6 per cent developed Grade I anaesthesia, while in 5.5 per cent of the cases it was Grade III anaesthesia. The above table shows that in the majority of perineal cases (13 cases) the duration was upto 2 hours. In 10 cases it lasted only upto one hour. Similarly majority of the abdominal cases (10 cases) showed anaesthesia upto two hours. In two cases the anaesthesia did not last beyond one hour. The above table shows that majority of perineal cases (29 cases) needed 20 to 25 ml of 1 per cent lignocaine operation. The above table shows that majority of abdominal cases required 15 to 20 ml of 2 per cent lignocaine. The above table shows that majority of cases (76%) bled between 111 to 140 ml of blood. The above table shows that hypotension was found more in abdominal cases (22.2%) than in perineal cases (3.1%). Nausea or vomiting occurred in significant number of abdominal cases (44.0%) than in perineal cases (6.2%). Regarding backache, there was no remarkable difference between perineal and abdominal cases. Urinary retention was observed in 38.9 per cent of abdominal cases and 15.6 per cent of the perineal cases.

DISCUSSION

The present work “caudal epidural block “for perineal and abdominal surgery “was carried out on 50 patients o which 32 patients were parineal surgical cases and the remainder abdominal surgical cases. The patients were both males and female between 15to 60 years of age requiring abdominal and perineal surgery. The whole series consisted of 32 perineal and 18 abdominal cases. In perineal series 20 per cent cases were for posterior colporrhaphy, 18 per cent for vaginal delivery with episiotomy repair, 14 per cent for haemorrhoidectomy and 12 per cent for anal fistulectomy. In abdominal series 16 per cent of the cases were for tubeligation, 10 per cent cases for herniorrhaphy, 6 per cent cases for caesarean sections and 4 per cent cases for bladder stone removal.

In abdominal series 38 per cent patients were female and 26 per cent patients were male. In abdominal series 22 per cent of the patients were female and the rest were male. After administration of the caudal block 1 or 2 per cent of lignocain, time of onset of analgesia was found to be 5 to 6 minutes in the majority of perineal cases (87.5%) whereas 9.4 per cent in 6 to 7 minutes and 3.1 per in 7 to 8 minutes of caudal block. Average pulse rate before caudal epidural block for perineal cases was 90 per minutes which gradually settled down to 72 per minutes during the whole lengths of operation. In abdominal cases the average pulse rate before block was 92 per minutes which dropped down to 68 per minutes after 20 minutes of the block. In perineal and abdominal cases there was no significant change in the rate of respiration. It was slightly higher before caudal block, which settled down to normal after 20 minutes of the block. Change in blood pressure before and after caudal epidural block was taken into consideration in both the series of patients. Quality of sensory block was studied in three scales. Complete anaesthesia, complete analgesia and inadequate analgesia. Incidence of complications reported by various authors is:-

Hypotension

Crawford (1972) and aronski (1973)	:1.4 to 13%
Noble et al (1970), wingate et al (1974)	:18 to 39%
Hollman & colleagues (1977)	:6.6 to 15.5%

Depending on preventive steps

Massey dowkind (1969)	:6.3%
Thorburn & moir (1981)	:3.8%
A.C. Norton et al (1988)	:30%

Nausea or Vomitting:

Duthie et al (1968)	:40%
Ostheimer (1981)	:39.7%

Baekache

Crawford (1972)	:45%
Massey Dawkins (1969)	:7.6%
Moir & Davidson (1972)	:22%
Grove (1973)	:37.5%
Moir et al (1976)	:15%

87.5 per cent of the perineal cases developed analgesia in 5 to 6 minutes while patients requiring abdominal surgery took 15 to 21 minutes to develop analgesia. There was no significant alteration in the pulse rate and the rate of respiration before and after caudal epidural block in both series. The systolic blood pressure remained above 100 mm Hg in 96.9 per cent of patients requiring perineal sugery while in 77.8 per cent of the abdominal cases systolic blood pressure remained. Complete anaesthesia developed in 90.6 per cent of patients of perineal series while 55.6 per cent patients of abdominal surgery. Complete muscular relaxation was obtained in 90.6 per cent of the perineal cases and 55.5 per cent patients of abdominal series. 20 to 25 ml of 1 per cent lignocain (200 to 250 mg) was the requirement in 90.6 per cent of the perineal cases while 83.3 per cent of the abdominal cases needed 15 to 20 ml 2 per cent lignocain (300 to 400 mg). The complications such as hypotension, nausea or vomiting backache and urinary retention were more frequent in abdominal cases in comparision perineal cases.

Conclusion

The present series concludes that caudal epidural block in an easy procedure and safe for operative procedure on limbs and perineal operations like fistula, piles, posterior colporrhaphy, normal painless deliveries, and etc. but as far as abdominal surgery is concerned, lower abdominal cases can be taken up for this procedure provided the cannula is already in the sacral apace. Upper abdominal surgery is not tried looking to the face that it requires larger does which may be toxic and fatal to the patients.

Source of funding: Nothing

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