A CLINICAL STUDY OF EFFECT OF FIELD BLOCK ON INGUINAL HERNIORRHAPHY IN AN OUTPATIENT SURGERY

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ABSTRACT

Aim of the study is to evaluate effectiveness of lignocaine with adrenaline for field block as well as for day care surgery and its complications.

MATERIAL AND METHODS

One hundred patients aged between 18 to 60 years of ASA class I and II posted for elective inguinal herniorrhaphy, agreeing and co-operative for inguinal field block.

RESULTS

An 80% patients had excellent, 15% had good, 2% had fair, 3% had poor quality of analgesia. Using modified Aldrete score.[1] fit for discharge studied; 12 patients became fit for discharge in 60 mins; 64 patients fit for discharge in 90 mins; 86 patients fit for discharge in 120 mins and 97 patients became fit for discharge in 150 mins.

CONCLUSION

Field block is found safe and fulfils the requirement of surgical relaxation and also best method as far as recovery profile is concerned in ambulatory surgery.

KEYWORDS

Field Block, Inguinal Herniorrhaphy, Outpatient Surgery.

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INTRODUCTION

Herniorrhaphy is one of the most commonly performed surgery, the aim of day care anaesthesia with field block is early ambulation, cost effectiveness, to reduce polypharmacy, post-operative pain relief, to reduce morbidity and infective complications. The essential criteria for anaesthetic technique of choice for a given surgery is patient's safety and surgeons comfort. These are not provided by SAB or GA. Hence to meet above requirement, the present study was undertaken.[1,2]

MATERIAL AND METHODS

After ethics committee approval, ASA class I and II patients aged between 18-60 years, with an escort at home as well as at the hospital. Pre-anaesthetic evaluation done on prior day of surgery with routine investigations such as Hb%, bleeding time, clotting time, blood urea, serum creatinine, fasting blood sugar, urine routine examination, ECG and screening chest, advised to take Tab alprazolam 0.25mg and Tab pantoprazole 40mg on previous night. On the day of surgery Midazolam 1mg given IV just before instituting field block.

Patients were given field block using 1% lignocaine with adrenaline, 15ml of the solution was injected at 1.5cm medial and superior to anterior superior iliac spine, 5ml injected at mid inguinal point, 5ml at pubic tubercle, about 10ml injected along the line of incision. If patient complains of pain, then additional 2ml injected at the neck of the inguinal hernial sac. If patient still complains of pain then pethidine 50mg given. The following scale was adopted to grade relaxation and analgesia.

EXELLENT

Patient comfortable with good surgical relaxation and analgesia.

GOOD

Patients requiring supplemental local anaesthesia at the neck of sac FAIR: Patients requiring supplemental local plus narcotic supplementation.

POOR

Inadequate anaesthesia requires GA.[3]

Pulse, BP, ECG, SPO2 Monitored, then patients were shifted to post -surgical intensive care annexure where;

I. Recovery were assessed by using modified Aldrete post-anaesthetic recovery score.[1,2]
II. The postoperative pain relief and post-anaesthetic complications monitored. Using the following.

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Modified Aldrete Post-Anaesthetic Recovery (PAR) score for patients having ambulatory anaesthesia.[1,2]

		Score
Activity	Able to move 4 extremities voluntarily or on command	2
	Able to move 2 extremities voluntarily or on command	1
	Unable to move extremities voluntarily or on command	0
Respiration	Able to breathe deeply and cough freely	2
	Dyspnoea or limited breathing	1
	Apnoeic	0
Circulation	BP+/- 20% of pre-anaesthetic level	2
	BP+/- 20-49% of pre-anaesthetic level	1
	BP+/- 50% of pre-anaesthetic level	0
Consciousness	Fully awake	2
	Arousable on calling	1
	Not responding	0
Oxygenation	Able to maintain saturation > 92% on room air	2
	Needs oxygen to maintain saturation >90%	1
	Saturation <90% even with oxygen	0
Wound dressing	Dry and clean	2
	Wet or marked but area constant	1
	Growing area of wetness	0
Pain	Pain free	2
	Mild pain managed with oral therapy	1
	Severe pain requiring parenteral therapy	0
Ambulation	Able to stand up and walk straight	2
	Vertigo when erect	1
	Dizziness when supine	0
Fasting/ Feeding	Able to drink fluids	2
	Nauseated	1
	Nausea and vomiting	0
Urine output	Has voided	2
	Unable to void, but comfortable	1
	Unable to void, but uncomfortable	0

Table 1: Total score-20 Fit for discharge score more than 18

RESULTS

Age Distribution

Age in Years	Number of Patients
18-25	20
26-30	12
31-35	9
36-40	17
41-45	8
46-50	5
51-55	12
56-60	17
Total	**100**

Table 2

Mean age distribution; 39.83 years with standard deviation of 13.79

Weight Distribution

Weight in KG	Number of Patients
51-60	48
61-70	47
71-80	4
81-90	1
Total	**100**

Table 3

Weight distribution; mean weight 61.38 kg with standard deviation of 6.098

Quality of Analgesia and Relaxation

	Number of Patients
Excellent	80
Good	15
Fair	2
Poor	3
Total	**100**

Table 4

Quality of analgesia and relaxation; Excellent - 80, Good - 15, Fair-2, Poor-3, Success rate 97%, Failure rate 3%

Duration of Analgesia

Time Range in Minutes	Number of Patients
No of analgesia	3
151-160	5
161-170	7
171-180	9
181-190	4
191-200	6
201-210	16
210-220	20
221-230	9
231-240	8
241-250	8
251-260	1
261-270	2
271-280	2
281-290	Nil
291-300	Nil
Total	**100**

Table 5

Duration of analgesia mean -212.38 mins , minimum of 160 mins and maximum of 280 mins

Time	Mean Score	Standard Deviation
0 minute	15.01	1.243
30 minutes	15.44	1.249
60 minutes	16.75	0.903
90 minutes	17.59	0.985
120 minutes	18.53	1.149
150 minutes	18.92	0.8

Table 6

Modified Aldrete post anaesthetic.[1] recovery score parameters- total score

STATISTICAL METHOD

Normally distributed continuous data were analyzed using students t-test, continuous data not normally distributed were analyzed by Mann-Whitney U-test. Categorical data were analyzed using the X^2 test or Fisher's exact test where appropriate. Data presented as mean with standard deviation, median values with interquartile ranges, numbers or percentages (%).[3]

DISCUSSION

The safety and effectiveness of hernia repair using local anaesthesia is more in teaching hospitals, because there is no need for admission so it avoids hospital stay as well as low cost to the patients.[4]

The advantages of local anaesthesia are safety, simplicity effectiveness, cost effectiveness, low rate of recurrence and infection. It is a method of choice in outpatient surgery and for minimising the cost of surgery.[2,5,6]

Many authors have used lignocaine alone for inguinal filed block (Prevoznik).[7] but it is short acting.

Catherine J, et al.[8] Using the above combination for institution of block found that there was an improvement in quality and duration of block.

Concentration of Lignocaine with Epinephrine Solution

Study	Total Volume	ASIP	MIP	PT	SC	Neck of the Sac
Scott early.[9] (1960)	35-40ml	5-10 ml	-	3.5 ml	5-20ml	2ml
Dirking et al.[10] (1992)	55ml (15ml 1%+ 40ml 0.5%)	25ml	5 ml	5 ml	20 ml	-
Present study	35-37ml	15ml	5 ml	5 ml	10ml	2ml

Table 7

Dosage and Concentration of Lignocaine with Epinephrine

Dierking et al.[10] used 1% lignocaine with epinephrine because epinephrine reduces plasma concentration of lignocaine and minimizes toxicity and prolonged post-operative pain relief. We have also used 1% lignocaine with epinephrine. It has been suggested that upper limit for lignocaine with epinephrine 7mg/kg. As a fairly large volume of drug required for the block the concentration kept at 1% for lignocaine in our study. As the mean weight of our patients 61.3kg and mean volume used 35.3ml, it became clear that the total dose of the lignocaine employed by us was well within the upper recommended limit.

Quality of Analgesia and Relaxation

Most of the authors have not commented regarding the quality of analgesia in field block even though they carried out surgery under local anaesthesia. Reid MF, et al.[11] demonstrated good quality analgesia could be achieved by ilio-inguinal nerve block. Costa E. Silva classified the quality of analgesia as good, regular or bad, in the present study we graded 80% patients had excellent analgesia and relaxation. Only 15 patients had good analgesia and mild discomfort during sac manipulation which required supplementation.

With additional infiltration around neck of the sac with lignocaine 1% with epinephrine. Two (2%) patients had analgesia graded as fair with mild pain during surgery. These patients were given pethidine 50mg to alleviate pain. Those had severe intolerable pain during surgery (3%) requiring conversion to general anaesthesia. It has been observed by various authors that at the time of pulling of the sac, patients often complain of discomfort.[9]

This finding was observed in 15 patients in the present clinical study. Some authors used narcotic for pain relief during surgery. In the present study two patients required narcotic in addition to local anaesthetic supplementation.

As per Marshall et al.[12] use of sedative dose of propofol has advantage of less nausea and vomiting, because of antiemetic action which in turn results faster discharge and cost effectiveness. In our study, we used propofol at a dose of 25-35mg at the time of Herniorrhaphy.

Callesen et al.[13,14] studied 400 hernia patients who underwent surgery under local anaesthesia in whom 0-5% were converted to general anaesthesia. In our study, three patients (3%) required general anaesthesia.

Duration of Analgesia and Surgery

Duration of Surgery	Duration
G. W. Dierling et al.(1992).[10]	48(25-90) minutes
Mark Tverkoy et al.(1990).[15]	31+5 minutes
Present study	32.58 minutes (15-60)

Table 8

Present study is similar to that of Mark Tverskoy.[15] in this respect.

DC moore.[16] stated that duration of analgesia with lignocaine can prolong up to 180 mins with adrenaline solution. As per Covino et al.[17] duration of analgesic effect of lignocaine is 195+25 mins for brachial plexus block for local infiltration 35-340 mins, duration can be prolonged up to 200% by addition of epinephrine. In the present study, mean duration of analgesia was 212 minutes (160 minutes to 280 minutes). So the present study correlates with the studies done by Covino et al.[17]

After shifting patients from operation theatre to post-surgical ICU annexure, the post anaesthetic recovery is assessed by using modified Aldrete Post Anaesthetic Recovery (PAR) score.[1,2]

The following are the studies done by various authors for hernia repair. Under filed block or monitored anaesthesia care as a day care anaesthesia.

Year	Study		Result
1994	Ding, Yifing et al.[18]	MAC with field block	Ambulation time 86 +18 mins Fit for discharge 112 + 49 minutes
1995	A E Kark et al.[6]	Field block	Able to walk to room assisted by nurse after 1.5 hours but fully able to walk within 3 hours
2002	Jetfrey l apfelbaum.[19]	Mac with field block	Recovery time mean 90 mins Recovery range 20 mins to 210 mins GA ; 90 mins to 270 mins
2004	Hangama et al.[3]	Field block with propofol	Eye opening-7+ 9mins Responds to commands-10+ 9 mins Orientation -12+11 mins Sitting up-53+27 mins Tolerate to oral fluids-60+ 26 mins Standing up-101+ 39 mins Ambulating-102+ mins Home readiness- 115+ 43 mins
Table 9			

With respect to activity our study correlates with the study done by A E Kark, et al.[6]

Only three patients complained of pain and were managed with oral analgesics in our study, so it correlates with the study of G W Dierking et al.[10]

The mean ambulation score was 1.06 at 90 mins, 1.68 at 120 mins, 1.94 at 150 mins.

The mean score for the ability to drink fluid was 1.04 at 60 mins and 1.56 at 90 mins so it correlates with the study of Hangama et al.[3]

At 90 mins 64 patients were fit for discharge, at 120 mins 86 patients fit for discharge, at 150 mins almost all patients became fit for discharge.

So it correlates with the study done by Hangama et al.[3]

CONCLUSION

Lignocaine with adrenaline is effective for carrying out field block for outpatient anaesthesia and provides long duration of post-operative pain relief in comparison to general anaesthesia with mean duration of 212 mins.

Field block fulfils the requirements of surgical anaesthesia.

Field block is best method for outpatient anaesthesia because fit for discharge achieved early compared to general or spinal anaesthesia.

Outpatient anesthesia with field block avoids polypharmacy, is safe and economical because it avoids hospital stay.

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