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Study of Efficacy of Hernia Block for Elective Inguinal Hernia Surgery

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Abstract: The Asia-Pacific Hernia Society states the extrapolated incidence of hernia in India as 1,957,850 cases per year. 93% of these cases were inguinal hernias. Surgical repair of inguinal hernia is the most common general surgery procedure performed today. Onlay mesh hernioplasty by open method of groin herniotomy is an established technique. The study was conducted at Dr.Hedgewar Rugnalaya which represents tertiary centre located in Aurangabad City, divisional place of Maharashtra, which serves a large population of the community of different socioeconomic levels. There was significant difference noted between the pain experienced between the two groups during surgery. Significant pain and discomfort was complained intraoperatively in 5 cases (10%) under hernia block. Additional sedative in the form of Inj. Ketamine 0.5 to 1 mg/kg was administered during the surgery in 4 cases. One case was converted to general anaesthesia. No significant pain was complained by any patient under spinal anaesthesia.

Keywords: Hernia, Surgical repair, groin herniotomy, community

INTRODUCTION

The Asia-Pacific Hernia Society states the extrapolated incidence of hernia in India as 1,957,850 cases per year. 93% of these cases were inguinal hernias[1]. Surgical repair of inguinal hernia is the most common general surgery procedure performed today. Onlay mesh hernioplasty by open method of groin herniotomy is an established technique.

Elective inguinal hernia repair may be performed under general anaesthesia, regional anaesthesia (epidural or spinal) or local anaesthesia (Ilioinguinal-Iliohypogastric nerve block anaesthesia). The choice of anaesthesia depends on several factors, including patient and surgeon preferences, feasibility of the technique in a given patient, intra and post-operative pain control, early recovery and monitoring requirements, post-operative morbidity and peri-operative costs[2].

Local anaesthesia for groin hernia repair was proposed by Cushing on the basis of study initiated by Halsted more than 100 years ago[2]. The advent of local anaesthesia began because the general anaesthetics available in those days had very poor efficacy profile. They were associated with high morbidity and mortality. Local anaesthesia proved to be a convenient option for such cases which were contraindicated under the available general anaesthetics. Studies indicate that local anaesthesia has the lowest complication rate as compared to general or spinal anaesthesia in patients of advanced age and those with concomitant illnesses[3].

MATERIALS AND METHODS

The study was conducted at Dr. Hedgewar Rugnalaya which represents tertiary centre located in Aurangabad City, divisional place of Maharashtra, which serves a large population of the community of different socioeconomic levels.

Criteria for inclusion

- Age between 40 years and 80 years
- Unilateral, reducible, uncomplicated Inguinal Hernias.

Criteria for exclusion

- Bilateral inguinal hernia.
- Obstructed / strangulated hernias.
- Morbid obesity.
- Uncontrolled diabetes, hypertension.
- Local skin disease
- Allergy or hypersensitivity to local anaesthetics.

Hernia Block (Ilioinguinal – Iliohypogastric Nerve Block Anaesthesia)

With patient in supine position, the inguinal region was cleaned with spirit. The solution for the block was prepared in 20 ml syringes. 22G needle was used for administration of block. Inj. Hyaluronidase

(1500 I.U.) was mixed with 20ml of Inj. Bupivacaine to improve tissue permeability. Hernia was completely reduced before institution of anaesthesia.

Step-1: 10 ml of 0.5% Bupivacaine + 10 ml sterile water (20 ml) was injected 1 inch medial and inferior to anterior superior iliac spine after reaching to the depth of iliac crest
Step-2: 10 ml of 2% Lignocaine with Adrenaline + 10 ml sterile water (20 ml) was injected at the pubic tubercle
Step-3: 10 ml of 2% Lignocaine with Adrenaline + 10 ml sterile water (20 ml) was injected at mid-inguinal point at a depth of 1 inch
Step-4: 10 ml of 0.5% Bupivacaine + 10 ml sterile water (20 ml) was infiltrated along the line of incision in transdermal and subcutaneous planes.

RESULTS

In our study, patients in the age group of 40 to 80 years were included. Of the 100 cases, 50 were operated under hernia block and 50 under spinal anaesthesia. The age distribution in both the groups was similar.

Mean pain experienced by patients during surgery was:

Hernia Block – 0.76		Spinal Anaesthesia – 0.16			
	Mean	Standard Deviation	Standard Error	Z Value	P
HB	0.76	1.42227	0.20785	2.88675	> 0.05
SA	0.16	0.37032			

There was significant difference noted between the pain experienced between the two groups during surgery. Significant pain and discomfort was complained intraoperatively in 5 cases (10%) under hernia block. Additional sedative in the form of Inj. Ketamine 0.5 to 1 mg/kg was administered during the surgery in 4 cases. One case was converted to general anaesthesia. No significant pain was complained by any patient under spinal anaesthesia.

42 cases operated under hernia block group were able to ambulate within 6 hrs of surgery. In patients operated under spinal anaesthesia, bed rest was advised for 24 hrs to prevent post dural puncture headache.

3 cases operated under hernia block and 4 cases operated under spinal anaesthesia had positive history of urinary symptoms (Diagnosed cases of BPH on medical therapy). Urinary catheterisation was done intraoperatively in these patients to avoid postoperative retention, straining and discomfort. No case of hernia block complained of any urinary complains, discomfort or retention in post-operative period. Patients were able to pass urine. 2/46 (4.3%) patients operated under spinal anaesthesia had difficulty in passing urine after surgery. Postoperative urinary catheterisation was required in these 2 cases to relieve urinary retention.

DISCUSSION

Inguinal hernia may present with the chief complaint of inguinal swelling, pain or discomfort. These affect the routine day to day activities of the person. There is possibility of complications such as irreducibility, strangulation, obstruction, etc. The only definitive treatment of inguinal hernia is surgery. Inguinal hernias surgeries have a low complication / mortality rates but present with appropriate technical difficulties. The choice of anaesthesia depends on the preference of the operating surgeon and the patient. The anaesthetic technique used must provide adequate analgesia as well as muscle relaxation in the inguinal region for the surgery to be performed.

Garavello *et al*. 4 reported 83% of intraoperative comfort under local anaesthesia. The discomfort occurs mainly due to hernia sac dissection, pulling of the cord and anxiety. Hernia block does not anaesthetize any bowel or intra-peritoneal tissue. Hence, these tissues need to be handled gently by the surgeon during surgery. We also noted pain and discomfort intraoperatively in 5 cases (10%). Additional sedative in the form of Inj. Ketamine 0.5 to 1 mg/kg was administered during the operation as necessary to allay anxiety or discomfort during procedure in 4 cases.1 case was converted to general anaesthesia. 45 cases (90%) were satisfied with the analgesia and did not complain of any pain during surgery. In 1979 to 1982 comparative studies were done by Young D V of over 230 patients[3].

They report 13% of patients under hernia block and 7% patients under spinal anaesthesia had mild pain during the procedure. They concluded that patients had more discomfort during operation under hernia block than other anaesthesia but less postoperative wound pain, headache, nausea, difficulty in voiding, respiratory and urinary tract infections. Some studies report 99% satisfaction rates for local anaesthesia. These may be attributed to use of supplementary sedation in these studies by propofol or opioids[5]. In one patient in hernia block group, conversion to general anaesthesia was required due to unsatisfactory surgical condition. A small conversion rate from local to general anaesthesia has been reported in literature[5]. In spinal anaesthesia, patients need close monitoring during surgery. Incidence of hypotension following spinal anaesthesia is 10 to 40%[4]. It is due to paralysis of preganglionic sympathetic fibres transmitting motor impulses to the

peripheral vasculature. This leads to reduction of peripheral vascular resistance. This effect produces decreased venous return to the heart leading to decreased cardiac output which inturn leads to hypotension. Yilmazlar *et al*. studied comparison ofmilioinguinal-iliohypogastric nerve block versus spinal anaesthesia for inguinal herniorrhaphy[6]. They concluded that there were statistically significant decreases in the mean pulse rate and arterial blood pressure in the spinal anaesthesia group. In our study hypotension was recorded in 8 cases (16%) in spinal anaesthesia group. Hypotension was corrected with appropriate administration of IV fluids. None of the cases in hernia block group recorded any intraoperative hypotension. No bradycardia was noted in any case of both the groups. Bradycardia and cardiac arrest are known rare complications of spinal anaesthesia.

Intraoperative nausea and vomiting were complained by one patient in hernia block group and one patient in spinal anaesthesia group[4].

Recovery room care was needed in only 5 cases under hernia block group (Supplemental Ketamine was given in 4 cases and 1 case was converted to general anaesthesia). Spinal anaesthesia group patient were monitored for 30 minutes after surgery in recovery room before shifting to the general ward/room. This can facilitate early discharge from hospital especially in day-care surgery [5,6]. The newer inventions may add value [7]. Role of data mining techniques in more refine the work will helpful[8].

CONCLUSION

There was significant difference noted between the pains experienced between the two groups during surgery. The newer inventions may add value.

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