Original Article

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Comparative Study of Saddle Anaesthesia versus General Anaesthesia Utilizing I-Gel in Patients with Minimal Invasive Procedure for Hemorrhoids: A Retrospective Study

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Abstract

Background and Aim: MIPH (Minimal invasive procedure for prolapsed piles) is preferred over conventional hemorrhoidectomy and performed at day stay unit. Conventional hemorrhoidectomy patients are usually admitted and operated under saddle anaesthesia. Choice of anaesthesia for MIPH at day care unit needs to consider more safe technique which helps early recovery and discharge with minimum complications. Present study was performed with an aim to compare saddle anaesthesia and general anaesthesia utilizing i-gel in patients with minimal invasive procedure for hemorrhoids. *Material and Method:* A total of 60 patients of ASA Grade 1 & 2, between age of 18 and 60yrs undergoing MIPH as day stay surgery were randomly allocated by a computer generated list in to two groups. Group-S received saddle anaesthesia and Group-G received general anaesthesia with i-gel. Patients were observed for per operative events and post operative pain, nausea, vomiting, urinary retention and postural hypotension. Any adverse events were recorded. Time and Number of patients that could be successfully discharged in both the group were recorded. *Results:* Group-S had less pain and needed less analgesic as compared to Group-G in immediate post operative period and had less nausea and vomiting but urinary retention and postural hypotension was more common in them which delayed their discharge and needed unplanned admission. *Conclusion:* Aim of surgery to treat patient at day stay unit could be achieved more by selecting general anaesthesia over saddle anaesthesia with less chances of urinary retention. Saddle anaesthesia is associated with increased risk of unplanned admission after hemorrhoidal day surgery.

Keywords: Hemorrhoidectomy; Nausea; Saddle Anaesthesia; Urinary Retention.

Introduction

Now days many of the anorectal procedures are being performed routinely at day stay unit in hospital. MIPH (minimal invasive procedure for hemorrhoids) or PPH (procedure for prolapsing hemorrhoids) or Stapler hemorrhoidectomy, is preferred over conventional hemorrhoidectomy for its many advantages [1,2]. In 1995, Longo described a new and innovative operative technique for hemorrhoid. This novel procedure to treat piles is not a hemorrhoidectomy. In this technique neither the anal mucosa and nor the hemorrhoidal tissue is excised. The procedure of MIPH is performed in the patient with piles on distal rectal mucosa and submucosa, proximally to the dentate line. MIPH hemorrhoidectomy includes excision of a band of excessive or loose prolapse mucosa and submucosa within the rectum, proximally to the hemorrhoidal tissue and fixation of the mucosa by stapled end to end mucosa anastomosis. This minimally invasive maneuver occludes the blood supply of the superior hemorrhoidal artery above the hemorrhoidal tissue and thus piles is cured as well as prolapsed mucosa is retracted up. It can be performed on patients having 2nd, 3rd and 4th degree piles with shorter duration of surgery, minimum blood loss and less post operative pain with early recovery

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[3-6]. MIPH is not hemorrhoidectomy in principle, it is a hemorrhoidopexy in which prolapsed anal mucosa above dentate line is excised and anchored to the underlying tissue with two or three line circular stapler (a specially manufactured stapler). As a result there is shrinkage of internal and external hemorrhoids. As it is performed above dentate line, it is less painful with minimum blood loss [7-9].

Due to urban life style and non fiber dietary habits more and more younger patients present with advanced degree of piles that need surgical intervention. So choice of anaesthesia should be such that minimize pain, allow early ambulation with minimal side effects and rapid recovery. Advantages of spinal technique are it provides post-operative analgesia, reduces blood loss during surgery and prevents the need for tracheal intubation that may irritate the airway leading to coughing and straining and may exacerbate postoperative hemorrhage. The major problem of spinal technique is risk of hypotension. In spinal anesthesia due to sympathetic blockade, there is vasodilatation leading to diminished venous return which is the main contributory factor for hypotension. The chemical sympathectomy due to spinal anesthesia extends for 2-6 dermatomes above the sensory level and at the same level with epidural anesthesia. In elderly patients with cardiac disease systemic vascular resistance may decrease 25% whereas in normovolumic healthy patients it may decrease only 15-18% [10,11]. Saddle block paralyzed pelvic muscles and sacral nerve roots. As lower level of block is achieved, hemodynamic derangement is less and fluid requirement is also less. So there is minimum chance of circulatory overload. I-gel is the single use supraglottic airway from intersurgical, with an anatomically designed mask made of a gel like thermoplastic elastomer. It has features designed to separate the gastrointestinal and respiratory tracts and allow a gastric tube to be passed into the stomach. The tensile properties of the I-gel bowl, along with its shape and the ridge at its proximal end, contribute to the stability of the device upon insertion. Upon sliding beneath the pharyngo-epiglottic folds, it becomes narrower and longer, creating an outward force against the tissues. The ridge at the proximal bowl catches the base of the tongue, also keeping the device from moving upward out of position

Present study was performed with an aim to find out more safe and satisfactory anaesthesia technique for MIPH that serve objective of selection of surgery with early ambulation and fast recovery so that patient can be treated as day care patient and can restart work as early as possible [12-14].

Material and Methods

This is a retrospective study of 60 patients operated for MIPH at SHREE RAJ HOSPITAL (Drive in Road & Bopal branch) and Ved hospital (Thaltej) during the year of 2015-2016. Patients selected were between age of 18 to 60 years of either sex with ASA grade 1&2. Patients with abscess and ASA grade 3 or more were excluded as surgery has to be performed as day care surgery. Informed consent was taken from all the participants.

Inclusion criteria were patients with 2nd, 3rd and 4th degree piles with ASA grade 1&2, Exclusion criteria were patients with perianal abscess, patients of ASA grade 3,4 & 5, age less than 18 and more than 60 morbidly obese patient mouth opening < 2 fingers or difficult airway

Adult subjects in the age group between 18 and 60 years of either sex belonging to ASA grade 1 & 2 posted for MIPH without any co-morbid disease are grouped randomly by computer generated numbers into 2 groups with 30 patients in each group.

Group-S: received saddle anaesthesia

Group-G: received general anaesthesia with i-gel

Pre-operative assessment was done for each patient. Patients were explained about procedure and informed consent was obtained. All the patients were admitted on the day of surgery at 8:00am in the hospital and were kept NBM after 12:00am previous night. Pre-medication inj. glycopyrrolate 0.01mg/kg i.v. half an hour before taking patients to OR to both group. In OR standard monitor with pulse oximetry, ECG, NIBP, SPO2 and ETco2 applied.

Group-S patients were pre-loaded with 10ml/kg of NS through 18G intravenous cannula. Under all aseptic precautions, with patient in sitting position, lumber puncture was performed at the level of L4-L5 or S1-S2 through midline or lateral approach using 25G Quince spinal needle and 2.5ml of bupivacaine 0.5% Heavy was injected after confirmation of subarachnoid space by clear and free flow of CSF. Sitting position was maintained for 15-20mins for complete saddle block. Blood pressure recorded every 2mins for 1st 10 mins and then every 5mins till the end of surgery. Continuous i.v.fluid was given to maintain BP. After complete sensory blockage of saddle area lithotomy position was given. No other per-operative analgesic was needed to this group.

Group G patients were pre-oxygenated with 100% oxygen at flow rate of 10 lits/min for 5 mins. Then general anaesthesia induced with inj.Midazolam 1ml

and inj.Propofol 2mg/kg i.v. After adequate depth of anaesthesia and successful mask ventilation inj.Succinylcholine 2mg/kg given. After proper relaxation, properly lubricated and well fitted i-gel(between no.3 to no.5) introduced with standard technique. Successful placement was judged by chest wall movement, auscultation and $ETCO_2$ monitoring. Then i-gel was fixed with head in neutral and neck in slightly flexed supine position. Anaesthesia was maintained with oxygen, nitrous oxide, inhalation agent isoflurane 0.5-1.5% titrated and inj.Actracurium 0.5mg/kg with controlled ventilation. Per-operative analgesic inj. fentanyl 2 mg/kg and i.v.fluid inj.NS 10ml/kg/hr was given to this group. At the end of the surgery isoflurane and nitrous oxide discontinued and patients were allowed to breath 100% O_2. After reversing with inj.Glycopyrrolate 0.04mg/kg and inj.Neostigmine 0.05mg/kg. I-gel removed after eye opening and limbs movement on oral command and reversal of protective reflexes. Both the group were observed post-operatively for pain, nausea, vomiting, urinary retention, limb movements, sore throat and dysphagia.

PPH set of Instruments

- 33-mm Hemorrhoidal Circular Stapler
- Suture Threader
- Circular Anal Dilator
- Purse-String Suture Anoscope

Fig. 1

Fig. 2

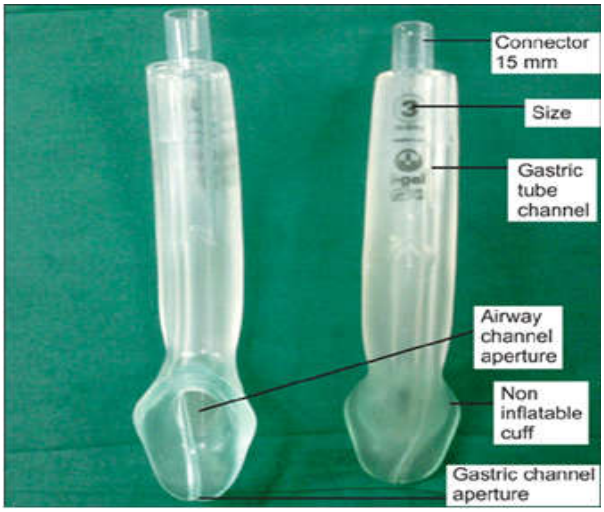

Fig. 3

Results

All the patients in post-operative period assessed for pain at 2, 4 and 8 hours on a visual analogue scale using different facial expressions to grade severity of pain from scale 0-10 where 0 represents no pain and 10 represents most discomforting hurting pain. Any time when pain score was more than 4, Inj tramadol 1-2mg/kg was given in varying dose given according to severity of pain. Sixty patients undergoing MIPH thirty received saddle anaesthesia and 30 patients received general anaesthesia were compared in term of following criteria.

Table 1: Per operative complications among patients undergoing anesthesia

Complications	Group-S Number (%)	Group-G Number (%)
Bradycardia & hypotension	3 (10)	0
Tachycardia & hypertension	0	6 (20)
Missed beats	0	1 (3.3)
Failure of procedure (lumber puncture or i-gel insertion)	0	0

As shown in Table 1, 10% patients of Group-s had bradycardia and hypotension while 20 % patient of Group-G had tachycardia and hypertension, but they were minor and could be treated on Table 1

successfully without any mortality.

VAPS was higher in Group-G in early post-operative period but after 4 hrs it was same in both groups (Table 2).

As per Table 3 post-operative analgesic requirement was earlier and significantly ($p \leq 0.05$) higher in Group-G. Group-G patients needed first analgesic within two hrs of surgery while Group-S needed first analgesic after six hrs of surgery. Total analgesic requirement in Group-G was 1.5 to 2mg/kg of tramadol, while Group-s needed 0.5 to o.75mg/kg of tramadol. Difference between these two group was found to be statistically significant ($p \leq 0.05$).

Table 4 shows that nausea and vomiting was more common in Group-G patients as happen in patients of all general anaesthesia. While urinary retention occurred in 20% OF Group-S and 10% of Group-G patients.

Table 2: Post-operative visual analogue pain score among patients undergoing anesthesia

Time	Group-S	Group-G
2Hrs	0	7(6-7)
4Hrs	1(1-2)	6(6-7)
8Hrs	5(5-6)	5(6-7)

Table 3: Post-operative analgesic requirement among patients undergoing anesthesia

	Group-S (Mean ± SD)	Group-G (Mean ± SD)	P value
Request for 1st analgesic(hrs)	6.75 +/- 2.82	2.82 +/- 0.688	0.05*
Total analgesic consumption (mg)	50.33 +/- 34.57	150 +/- 40	0.001*

*Indicates statically significant difference at p=0.05
Test of significance- Student t test, SD: Standard Deviation

Table 4: Post-operative complications among patients undergoing anesthesia

	S-Group(no. of patients)	G-Group(no. of patients)
Nausea & vomiting	4	8
Urinary retention	6	3
Postural hypotension	3	0

Table 5: Post-operative ambulation and discharge time among patients undergoing anesthesia

	S-Group(no. of patients)	G-Group(no. of patients)
1st ambulation within 6 hrs of surgery	20	28
Discharge within 12 hrs of surgery	27	30

Discussion

Hemorrhoidectomy involves surgery on the sensitive anoderm, which is rich in nerve endings. Several possible ways of reducing pain and discomfort have been proposed, including the use of multimodal analgesics, restricting surgery to one hemorrhoid at a time, avoiding a closed technique, rectal application of metronidazole, preemptive analgesia, caudal block, preoperative lactulose, pudendal, perineal blocks, stapled anopexy, and Doppler-guided hemorrhoid artery ligation. MIPH/PPH/Stapler hemorrhoidectomy is an advanced surgical technique for treatment of late 2nd, 3rd or 4th degree hemorrhoids. This procedure is less painful and patient return to normal activities much faster than who undergo convectional hemorrhoidectomy. MIPH makes use of a surgical stapler that reduces the prolapsed of hemorrhoidal tissue by excising a band of prolapsed mass along with the mucosal membrane [15]. Since the excision is done above dentate line the pain is significantly less and since there are no post operative wounds the recovery is much faster. Thousands of surgeons are currently performing PPH around the world and over 3,75,000 procedures have been carried out to date. Over 33,000 procedures have been performed in the U.S. since September 2001. Usually the procedure takes 30 to 45 minites [16,17].

More and more surgeons prefer to perform the procedure as day care surgery. As per observation Table 1&2 post-operative analgesic requirements was earlier and higher in Group-G. Toumiren stressed that concentration and volume of local anesthetics along with position during and after injection are the major factors affecting the distribution of local anesthetics [18]. Though total dose required in both

the groups was quite less which suggest the procedure done above the dentate line affecting fewer nerve endings than the conventional procedure [19]. Percentage of nausea and vomiting was in 30% patients of Group-G and 5% of Group-S and could be easily manageable by inj ondensetron 2 ml in all cases which was consistent with findings suggested by Vinayak Gour and Darshana Verma (2016) [20].

Occurrence of urinary retention was two times higher in Group-S than Group-G. Post-operative urinary retention is common after anaesthesia and surgery. Prasad ML, et al (1978) [21] found that acute urinary retention is a common complication following anorectal surgery with a reported incidence of up to 52%, independent of the type of anaesthesia. Tarkkila P1, et al (1997) performed study in which 54 patients were studied prospectively to evaluate home-readiness after a small dose (1 or 2 ml) of subarachnoid hyperbaric 0.5% bupivacaine. Although the sensory and motor block after 1 or 2 ml hyperbaricbupivacaine recovered within a reasonable time for day-case surgery, in some patients recovery of the ability to void was delayed to an undesirable extent. The control of micturition is a complex process involving afferent and efferent neural pathways, reflexes and central and peripheral neurotransmitters. The perioperative period includes myriad insult that may interrupt this process and promote the development of urinary retention. After hemorrhoidectomy, urinary retention may occur due to different factors like temporary detrusor muscle dysfunction, urethral spasm secondary to anal pain and pre and post operative fluid load.

Out of six 3 patients of Group-S had postural hypotension especially when patients strained to pass urine. Ozmen et al [22] compared epidural, spinal, saddle anesthesia during TURP. They found that intraoperative systolic arterial pressure and SpO_2 remained more stable and sufficient surgical anesthesia was achieved quickly without statistically significant motor block ($P < 0.001$) in the saddle group. So patients needed to be catheterized and advised complete bed rest, given additional dose of analgesic and admitted as indoor patients for 1 more day and then discharged. One patient out of 3 presented on third day with spinal headache so advised bed rest for 2-3 days, plenty of fluids orally and analgesic. Though 3 patients of Group-G also developed urinary retention they could be managed easily by top off dose of analgesic , sound of running tap water, reassurance and could be discharged home late evening. There was no difference in both the groups regarding ease of surgery, sphincter relaxation or per operative bleeding. Surgeon was equally comfortable with both the anaesthesia techniques and actual time required for surgery was almost same in both the groups.

Conclusion

Aim of surgery to treat patient of MIPH at day care unit could be achieved more by selecting general anaesthesia over saddle anaesthesia with less chances of urinary retention. Spinal anesthesia is associated with an increased risk of unplanned admission after hemorrhoidal day surgery.

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