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Haemorrhoidectomy under local anesthesia success and limitation

ABSTRACT:

Background Local anesthesia in hemorrhoid or anal surgery has a reputation for being a painful and risky procedure.

The aim of this study is to determine efficiency and safety of this method of local anesthesia.

Patients & Methods : 60 patients with hemorrhoids underwent surgery under local anesthesia compared to 70 patients under general anesthesia from February 2009 to July 2011.

Effectiveness of anesthesia per-operative monitoring, post-operative analgesia and analgesic requirements, post-operative urinary complications.

Results: Of our patients 73.3 % showed optimal analgesia 25 % showed satisfactory analgesia, 1.6 % showed poor analgesia and non was converted to general anesthesia.

Concerning post-operative pain a valid analgesia last from 40—180 (mean 96) minutes for local anesthesia group and 20—40(34) minutes for general anesthesia group. No local or systemic complications were observed during or after surgery that could be attributed to the anesthetic mixture.

Conclusion: This method appears to be well tolerable, safe and effective, reduce hospitalization and cost and can be considered as a day clinic procedure.

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Introduction

Hemorrhoids can be performed under various types of anesthesia including general, spinal, and local anesthesia.⁽¹⁾

A comparison was made between two groups of patients undergoing surgery for hemorrhoids one in which topical and local anesthesia was used and in the other the surgery was performed under general anesthesia.

The length of the anal canal is about 4 cm ,the inner muscular wall of the anal canal is the continuation of the circular smooth muscle layer of the rectum that has become thickened to form the internal sphincter.this is surrounded by an outer funnel shaped tube of skeletal muscle arranged in the three U-shaped loops. The top loop is the puborectalis,the intermediate loop is the superficial external sphincter muscle that surrounds the anal canal and is attached via anococcygeal ligament to the coccyx. The base loop is the subcutaneous portion of the external sphincter.⁽⁵⁾

The internal sphincter is supplied by both sympathetic and parasympathetic from the inferior hypogastric plexus. The inferior hypogastric plexus is an autonomic plexus on the side wall of the pelvis, lateral to the rectum and within the parietal pelvic fascia. It's sympathetic components are derived from the superior hypogastric plexus and by branches from upper sacral ganglia of the sympathetic trunk. It's parasympathetic components are

carried by branches from the second and third(or third and fourth) sacral nerves these are the pelvic parasympathetic nerves(pelvic splanchnics).^(5,6) The external sphincter and puborectalis are supplied by the inferior rectal branch of the internal pudendal and perineal branch of the fourth sacral nerve.

The sensory innervation of the upper half of the anal canal and rectum is autonomic from the inferior hypogastric plexus, and this part of the anal canal is relatively insensitive to touch though it registers pressure and stretching. The sensory innervation is come from S2 and S3 (parasympathetic). The pelvic parasympathetic (nervi erigentes)arise by several rootlets from the anterior surface of S2 and S3 (or 3 and 4).the pelvic parasympathetic nerves are branches of the sacral plexus and these can be found in the retro rectal space in front of the sacrum.⁽⁷⁾

The pudendal nerve is a branch of the sacral plexus (S2,S3 and S4). The nerve enters the perineum, after a brief course in the gluteal region,through the lesser sciatic foramen just behind the ischial spine . The nerve then passes forward in the pedendal canal . Branches of the nerve are :-a: inferior rectal nerve , b: dorsal nerve of the penis ,c: perineal branch.

The drug that has been used in the procedure is lignocaine (lidocaine, xylocaine). Lignocaine is of moderate potency and duration , but of good

penetrative powers and rapid onset of action . adrenaline prolongs the action of lignocaine and also reduces it's rate of systemic absorption . Lignocaine is very effective as a surface anaesthetic. After the publication by Deacock and Simpson the upper safe dose ascribed to it was 200 mg plain and 500 mg with adrenaline .⁽⁸⁾ That was a rough estimate for the dose . The maximum safe dose in man is probably 6mg/kg more than this has often been given with impunity with adrenaline . Contradication to local anaesthetic infiltration are local infection and clotting disorders. Local infiltration spreads infection and local anaesthetic drugs are ineffective in an acid PH produced by infection.⁽⁹⁾ Toxic effects of local anaesthetic agent include convulsions and asystole , adrenaline should not be used in hypertensive patients or for patients taking either

monoamine oxidase inhibitors or tricyclic drugs, for it's cardiovascular effects are potentiated.⁽¹⁰⁾

Aim of the study

The study is conduct to show the safety and effectiveness of local anaesthesia in the surgical management of hemorrhoids .

Also to prove the effectiveness and duration of post-operative analgesia with early dismissal of the patient.

Patients and Methods

From Feb.2009 to July 2011 ,surgery done for 60 cases of hemorrhoids under local anesthesia ,and 70 cases under general anesthesia taken as control group .

The patients were included are those classified as American society of anesthesiologist grades I or II.⁽¹⁾ [Table 1]. All patients were fasted 8 hours before the operation with no medication.

Table (1)American Society of Anesthesiologists (ASA) Scale⁽¹⁾

| <i>Class</i> | <i>Criteria</i> |
|--------------|---|
| Class I | Normal healthy individual |
| Class II | Patients with mild systemic disease |
| Class III | Patients with severe systemic disease not incapacitating |
| Class IV | Patients with incapacitating systemic disease that is a constant threat to life |
| Class V | Moribund patient who is not expected to live 24 hrs. with or without surgery |
| E | Added to emergency procedures |

In the LA group 5 grams of 2% xylocaine gel impregnated gauze was applied to the perineal region at least 20 minutes before the time of surgery. Sedation of particularly female patients was performed approximately 1 hour before the operation with 10 mg. diazepam intramuscular injection. The mixture used was xylocaine at 0.5% with adrenaline (1:200000). The age, sex, and weight of all patients were recorded.

The posterior perineal block is composed of four phases :-

- (a) Infiltration of perineal skin (10 ml.)
- (b) Infiltration of Rt. And Lt. ischio-rectal fossa.
- (c) Infiltration of retrorectal space.
- (d) Infiltration of the haemorrhoidal pedicles with 10 ml of anaesthetic mixture.

If at any time the patient was intolerant to pain the operation was continued under general anaesthesia.

Technique of posterior perineal block:

Patient is positioned in lithotomy. After sterilization with antiseptic and draping, the following steps are made:

(a) Infiltration of perianal skin at mucocutaneous junction all around the anal verge is made by 10 ml of the anaesthetic mixture. The patients were asked about pain during the injection of anaesthetic drug and is stated in the form of none, mild, moderate and severe.

(b) After that to block the pudendal nerves a guide finger is introduced into the anal canal and the lower part of the rectum. Then try to localize to ischial spine⁽¹¹⁾. Which is usually few centimeters lateral to the midpoint of the anal verge. After localization the needle is not intravascular, then inject the mixture into this space (10 ml is injected for each side).

(c) with the finger still in the anal canal, palpate for the tip of the coccyx which is at the level of the anorectal junction then pass a spinal needle just anterior to the coccyx and guide it with the curve of the sacrum to the retrorectal space. Once in the retrorectal space, inject 10 ml of the

anaesthetic mixture to block the pelvic parasympathetic nerves.⁽¹²⁾

(d) after that, the surgeon can do anal dilatation safely and surgical procedures can be done thereafter.

Four classes have been defined to assess the effectiveness of anaesthesia:

(a) Optimum analgesia (no pain).

(b) Satisfactory analgesia that allows the operation to be performed in a proper way.

(c) Poor analgesia, for which intravenous analgesics (e.g. fentanyl).

(d) Operations involving conversion to general anaesthesia.

Both groups of patients had peri-operative monitoring with ECG, pulse oximetry and non-invasive blood pressure monitoring. In addition the operation time, and any complication that might develop were recorded.

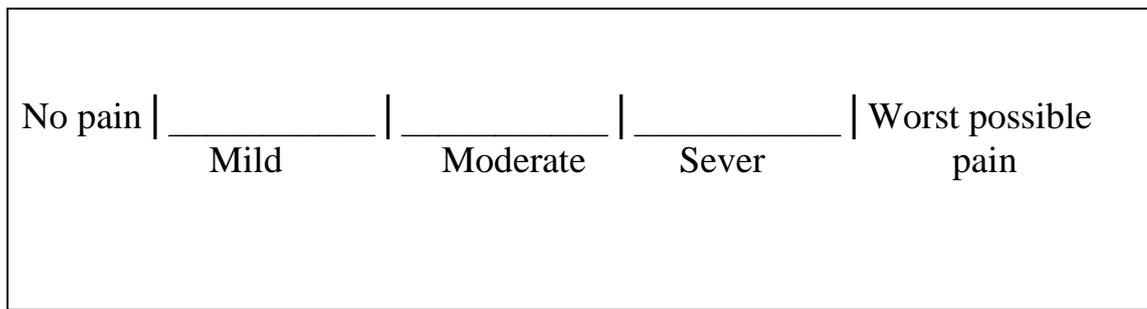
After operation, all patients were sent to the recovery area of the operating theatre, oxygen saturation was measured by pulse oximetry, and blood pressure was monitored. Patients were

asked if they experienced any pain, nausea or vomiting.

After returning to the ward, patients were asked about the pain at the operation site. The time elapsed from surgery to the first feeling of pain was recorded. The severity of pain is judged by the patient in terms of mild, moderate, and severe, depending on the visual analogue scale obtained after McGill⁽¹³⁾ pain questionnaire where the patients should tell about his pain on a special scale by pointing (figure 1).

The analgesia given depends on the severity of pain. Paracetamol for mild pain, injectable non-steroidal anti-inflammatory drugs (e.g. Voltaren) for moderate, and injectable potent analgesic for severe pain

(tramadol, pethidine). The patients post-operatively were checked if they develop any problems in micturition and if this requires intervention, and whether the patient needs to be admitted or sent home.



(Figure I) Visual analogue scale

Results

Sixty patients (50 men and 10 women) were assigned to the (LA group), the mean age was 42 (18-56) years.

Seventy patients (55 men and 15 women) have been taken as the (GA group), the mean age in this group was 40 (range 20-60) years.

Fourty patients experienced painless injection of local anaesthetic (66.6%),10 patient experienced mild pain (16%), 10 patient described moderate pain (16%), while only 1 female patient described sever pain (1.6%).

The mean time for operation was 15 minutes in the (LA group) and 10 minutes in the (GA group). The mean duration of application of topical anaesthesia in the (LA group) was 20

minutes. The quantity of anaesthetic mixture adopted varied from 40-50 ml. (average 65 ml.).

As far as effectiveness of local anaesthesia is concerned in the (LA group), 44 patient were listed in class A (73.3 %),15 patients in class B (25 %), 1 in class C (1.6 %) and zero in class D (0%) [Fig.2].

Class A: optimum analgesia (no pain).

Class B: Satisfactory analgesia that allows the operation to be performed in a proper way.

Class C: Poor analgesia, operations for which the anaesthetist administration intravenous analgesic drugs(e.g. fentanyl).

Class D: Operations involving conversion to general anaesthesia.

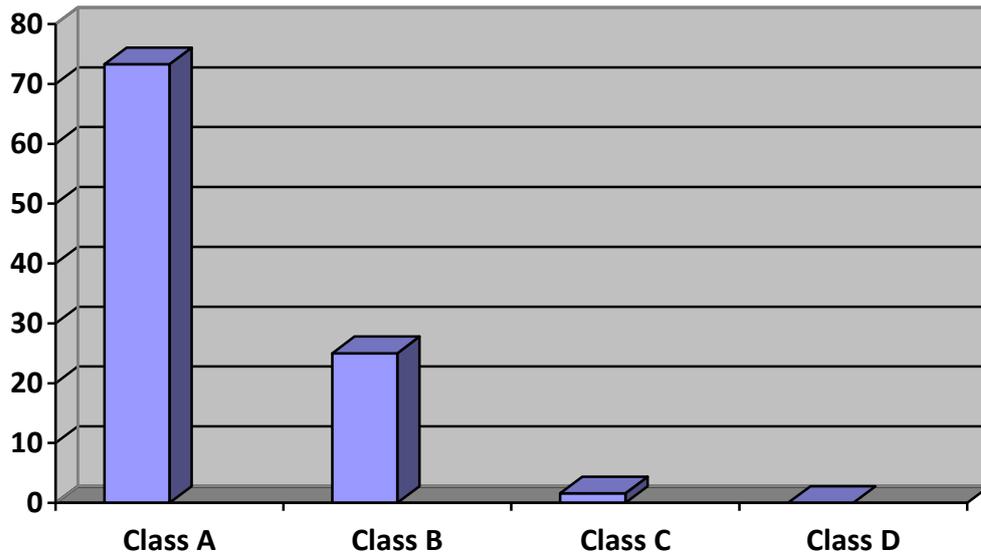


Figure (2) Effectiveness of local anaesthesia

Table 2 A detailed patient sex relation with effectiveness of anaesthesia

| Class | Total patients(%) | Male | Female |
|-------|-------------------|-------|--------|
| A | 73.3% | 90.9% | 9.09% |
| B | 25% | 60% | 40% |
| C | 1.6% | 100% | none |
| D | none | none | none |

There were no conversion to general naesthesia. Sedation of particularly nervous patients was given to 8 patients (7 female and one male).

There was no difference in the oxygen saturation, but the pulse and the blood pressure were slightly higher in the (LA group) during and

immediately after operation in the recovery room.

No local or systemic complication were observed during or after surgery that could be attributed to the anaesthetic mixture.

As far as postoperative pain is concerned, a valid postoperative

analgesia lasts from 30-180 (mean 95) (mean 36) minutes for the (GA group minutes for the (LA group) and 20-40) [Fig 3].

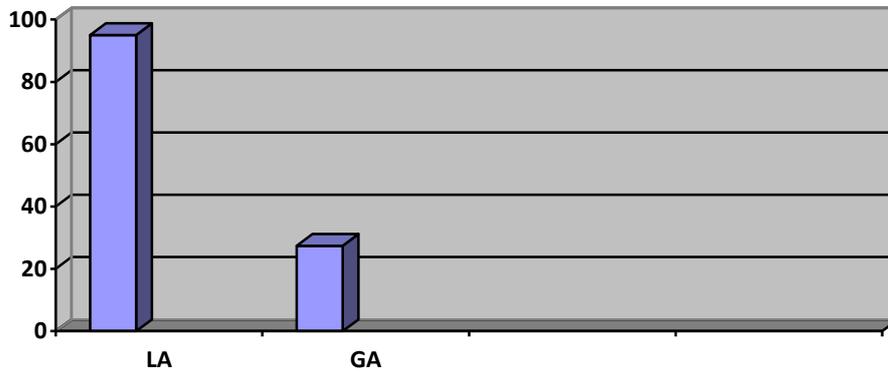


Figure (3) Postoperative analgesia time LA group: local anaesthesia group. GA group: general anaesthesia group.

In the (GA group), forty nine patients (70%) after feeling pain required injectable narcotic analgesics in the form of pethidine, 20 patients (28.5 %) described moderate pain required injectable none steroidal anti-inflammatory drugs, while only 1 patient(1.4 %) described mild pain and required paracetamol post operatively,while analgesic requirements for the(LA group) ranging from simple oral analgesic (paracetamol) to parenteral narcotics[table 3].

-Table 3 Post-operative analgesia requirements (LA group)

| Pain severity | Type of analgesia | No. of patients | Percentage |
|---------------|-------------------|-----------------|------------|
| Severe | Pethidine | 9 | 15% |
| Moderate | Injectable NSAIDS | 50 | 83.3% |
| Mild | Paracetamol | 1 | 1.6% |

Afterwards, two patients in the (LA group) (3.3 %) had problems in micturition, all were treated conservatively and non-needed catheterization for urinary retention and those patients were admitted for a day (in-patient). While in the (GA group) 5 patient (7.1 %) had urinary retention [Fig.4], 4 patients were treated

conservatively and one patient needed catheterization.

All the patients of the (GA group) were admitted for a day while all of the patients of the (LA group) were discharged few hours after the operation except 3 patients kept for a day.

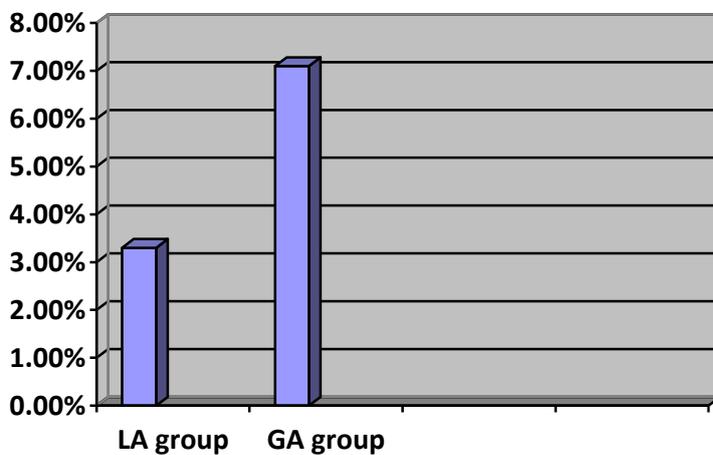


Figure 4 Post-operative urinary retention, LA group: local anaesthesia group. GA group:general anaesthesia group.

Discussion

Surgery for hemorrhoid is most frequently performed under general anaesthesia, as local infiltration of the perianal region is painful and it is understandably unpopular among surgeons and patients in addition to the danger vagal reflexes during sphincteric stimulation and dilatation. (12,14)

So that if local anaesthetic could be injected less painfully and the procedure can be carried out safely, then patients may be persuaded to undergo surgery for hemorrhoid as a day case under local anaesthesia. This would reduce hospitalization costs and makes beds available for others undergoing major surgical procedures. (15)

the use of topical anaesthesia before infiltration of anaesthetic, can effectively minimize pain during injection of anaesthetic drug. In my study 66.6 % of patients described no pain , 16.6 % with mild pain.

16.6 % with moderate pain and 1.6 % with severe pain (table 4). This may

help local anaesthesia gain wider acceptance among patients. On the other hand F.Gabrielli et al,⁽¹²⁾ Colucci G.et al,⁽¹⁵⁾ in their study advocated the use of local anaesthesia in hemorrhoidal surgery without taking into consideration the pain during injection of local anaesthetics.

Table (4) Pain during injection of anaesthetic drugs, Local anaesthesia group (LA group)

| Pain level | % of patients |
|------------|---------------|
| None | 66.6% |
| Mild | 16.6% |
| Moderate | 16.6% |
| Severe | 1.6% |

Sphincter relaxation is satisfactory, and it is comparable to that obtained under general anaesthesia. In posterior perineal block there is no risk for vagal reflexes during sphincter stimulation and dilatation maneuvers that simple local anaesthesia can never eliminate completely. This study shows that the application of topical and local anaesthesia does not take longer than

general anaesthesia because the topical anaesthesia is applied as apart of preparation for operation.

The technique adopted (posterior perineal block) is highly effective regarding peroperative analgesia than local infiltration alone carried out by F.Gabrielle et al,⁽¹²⁾ and Ahmed AR ,⁽¹⁸⁾) for treatment of hemorrhoid under local anaesthesia (Table 5).

(Table 5) Per-operative effectiveness of local anaesthesia.

| Effectiveness of anaesthesia | % of patients | | |
|------------------------------|---------------|--------------------------|----------------------------------|
| | The study | Ahmed AR ⁽¹⁸⁾ | F.Gabrielliet al ⁽¹²⁾ |
| Class A/None | 73.3% | 30.6% | 40.9% |
| Class B/Mild | 25% | 40.3% | 50.8% |
| Class C/Mod | 1.6% | 20.9% | 8.3% |
| Class D/Sever | Zero% | 8% | Zero% |

Furthermore, it must be stressed that postoperative analgesia in my study is effective and long lasting compared to the classical standard Milligan, Morgan⁽¹⁹⁾ AND Furguson⁽²⁰⁾

haemorrhoidectomy under general anaesthesia claimed to reduce postoperative pain carried by Mehigan and collaegues⁽²¹⁾ (table 6).

Table (6) Post-operative pain severity. LA group: local anaesthesia group. GA group: general anaesthesia group.

| Pain severity | The study | | Milligan Morgan ⁽¹⁹⁾ | Mehigan et al ⁽²¹⁾ |
|---------------|-----------|-------|---------------------------------|-------------------------------|
| | LA | GA | | |
| Sever | 15% | 70% | 25% | 15% |
| Moderate | 83.3% | 28.5% | 65% | 55% |
| Mild | 1.6% | 1.4% | 10% | 30% |

If a long lasting local anaesthetic mixtures are used such as “Bupivacaine” with adrenaline 1:200000, a 6 hours or more post operative, pain free interval may be achieved.^(22,23,24)

It is shown in the results that, being a female reduces the effectiveness of analgesia. The longer the operation time and the more extensive surgery reduce the postoperative pain free interval in both groups similarly.

Postoperative nausea and vomiting was not seen in the (LA group) while it is seen in 20% of our (GA group) compared to AR Aitkenhead⁽²⁵⁾ text book of anaesthesia (table 7).

Table (7) Postoperative nausea and vomitting. LA group: local anaesthesia group. GA group: general anaesthesia group.

| Postoperative nausea and vomiting | % of patients | | |
|-----------------------------------|---------------|-----|-------------------------------|
| | LA | GA | AR Aitkenhead ⁽²⁵⁾ |
| | zero | 20% | 14-82% |

The patient's oxygen saturation were similar in both groups during and after operation. The rate and the blood pressure is slightly higher in the LA group and especially in female patients which may be attributed to the fact that the patients are awake and embarrassed because the procedure is carried out in a sensitive area for both male and female but definitely more in the female specially in our community. This fact also explains why preoperative sedation is used more in the female than in the male.

However, patients who general anaesthesia had lower man arterial blood pressure and pulse rate than those assigned to local anaesthesia, which may be due to the effect of drugs used for general anaesthesia and that the operation is carried out when they are unconscious. Therefore, and and

because of proven safety, patients with medical conditions that make them in the risk group for general anaesthesia, the use of local anaesthesia is preferable. In addition to the above mentioned advantages there is less risk of urinary retention after operation due to the longer postoperative pain free interval where the patients asked to void before they are discharged since they are fully conscious and ambulant compared to the (GA group) and to the work carried out by F.Gabrielli et al⁽¹²⁾ in their study of local anaesthesia in anal surgery,standar Milligan-Morgan⁽¹⁹⁾ haemorrhoidectomy under general anaesthesia and Pavlin-Dj et al⁽²⁶⁾ in the study of bladder function after anal surgery under local

anaesthesia (table 8). As a result dismissal can be sooner, supported by the results of F.Gabrielli et al,⁽¹²⁾ Colucci G. et al,⁽¹⁵⁾ Maturanza M.et al⁽¹⁶⁾ where they consider the anal

surgery under local anaesthesia is an outpatient clinic procedure.

Table (8) Postoperative urinary retention

| studies | | Postoperative urinary retention |
|-----------------------------------|----------|---------------------------------|
| My satudy | LA group | 3.3% |
| | GA group | 7.1% |
| F.Gabrielli rt al ⁽¹²⁾ | | 4.7% |
| Pavlin-Dj et al ⁽¹⁵⁾ | | 5% |
| Milligan-Morgan | | 10-32% |

Conclusion

It is concluded that the use of topical and local anaesthetics in the posterior perineal block is a well tolerable, safe and effective form of anaesthesia in the greater part of anal surgery and can be carried out by the surgeon only without the of anaesthetist cover and

monitoring, therefore, it can be considered as a day clinic procedure. This technique has the potential to reduce hospitalization stay and cost for both the patient and the hospital and makes beds available for others undergoing major surgical procedures.

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