# "A ONE YEAR RANDOMISED CONTROL TRIAL COMPARING SURFACE LOCAL ANAESTHESIA VS SUBARACHNOID BLOCK IN ANORECTAL SURGERIES WITH RESPECT TO POST OPERATIVE PAIN AT KLES DR. PRABHAKAR KORE HOSPITAL, BELGAUM"

By

DR. SOLINGAPURAM LAKSHMI TILAK

# Dissertation

**Submitted to the**

**KLE University**

**Belgaum, Karnataka**

**In partial fulfillment of the requirements for the degree of**

M.S. (GENERAL SURGERY)

**Under the Guidance of**

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**BELGAUM-590010.**

**MAY 2010**

**KLE UNIVERSITY, BELGAUM, KARNATAKA**

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# ABSTRACT

**Background and Aims :**

Ambulatory anorectal surgeries are gaining popularity in recent times, as they are being performed under local anaesthesia. The aim of this study was to compare surface local anaesthesia versus subarachnoid block for postoperative pain relief at 1, 3, and 5 hours in anorectal surgeries

**Materials and Methods :**

This study was conducted on 60 patients undergoing elective anorectal surgeries from December 2007 to December 2008 at KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum. Patients were randomly allotted to either surface local anaesthesia or subarachnoid block. 30 patients formed in each group. Postoperatively clinical data and outcomes following each procedure were analyzed.

**Results :**

There were significant statistical differences in the postoperative pain relief at 1, 3 hours in surface local anaesthesia. Significant statistical differences were also observed in decreased hospital stay in surface local anaesthesia. There were more instances of postoperative urinary retention in subarachnoid group, which was statistically significant.

**Conclusion :**

Patients who underwent surface local anaesthesia for anorectal surgeries have less postoperative pain at 1, 3 hours as compared to the subarachnoid block group. The duration of hospital stay in surface local anaesthesia group was definitely less than the subarachnoid block group decreasing hospital costs and giving more affordability to the patients. Moreover there were more instances of postoperative urinary retention in subarachnoid group, which was statistically significant.

## ABBREVIATIONS

| | | |
|---|---|---|
| SAB | : | Subarachnoid Block |
| SLA | : | Surface Local Anaesthesia |
| LA | : | Local Anaesthesia |
| D.M | : | Diabetes Mellitus |
| H.T | : | Hypertension |
| VAS | : | Visual Analogue Scale |

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# INTRODUCTION

Ambulatory anorectal surgeries are gaining popularity in recent times, as they are being performed under local anaesthesia. The use of surface local anaesthesia is advantageous in the form of predictable good postoperative analgesia, early ambulation, reduction in hospital stay, low incidence of postoperative urinary retention, selective local anaesthesia, no postdural headache and hypotension.[1]

In the past decade, there has been significant increase in the number of patients undergoing ambulatory anorectal surgery. In this era of escalating medical costs, it is estimated that 90% of all anorectal procedures may eventually be performed in ambulatory setting.[2] The recent advances in anaesthesia, newer drugs have contributed to positive outcomes and promise a tremendous growth in this field.

Since its beginning at University of California, Los Angeles,in 1962, ambulatory anorectal surgery under surface local anaesthesia has evolved to include increasingly complex and invasive procedures.[3]

Although spinal anaesthesia in the form of subarachnoid block for anorectal surgery has evolved over a long time, but the recent introduction of surface local anaesthesia has promises to keep. A proper detailed comparative study is inadequate at present comparing surface local anaesthesia vs subarachnoid block in anorectal surgeries with respect to postoperative pain.

Hence this study is designed to assess the advantage of surface local anaesthesia over conventional subarachnoid block for anorectal surgeries with respect to postoperative pain.

# OBJECTIVES

- **Primary objective :**

1. To compare the post operative pain relief obtained in two groups using VAS.

- **Secondary objectives :**

1. To compare the incidence of urinary retention in each of the groups.

2. To compare the average length of hospital stay in both of the groups.

# REVIEW OF LITERATURE

Surgeons use different positions and anaesthesia when performing anal surgery (mostly haemorrhoids and fissures). Some use the lithotomy position, whereas others use the jack-knife position. Many surgeries can be done under general anaesthesia or surface local anaesthesia. Using the lithotomy position and general or regional anaesthesia are often risky. Certainly, the lithotomy with local anaesthesia should prove to be the safest combination.[4]

In 1976 a study with bupivacaine as a surface local anaesthesia in anorectal surgeries was suggested to be safe and effective, it had none of the operative and postoperative complications frequently associated with general or spinal anaesthesia.[5] In another study lateral internal sphincterotomy for anal fissures has been performed under surface local anaesthesia with advantage of lesser hospitalization, reduced postoperative discomfort and early healing of wounds.[6]

Another study in 1986 adds that more than 90% of anorectal surgeries can be done in an outpatient setting. The use of surface local anaesthesia for anorectal surgery enhances patient safety as well as reduces the costs.[2]

Interestingly in another study, haemorrhoidectomy under surface local anaesthesia was suggested to be safe, comfortable and cost effective compared to conventional haemorrhoidectomies.[7]

In one of randomized clinical trial of haemorrhoidectomy under mixture of local anaesthesia versus general anaesthesia, suggested that surface local anaesthesia could be effectively used for haemorrhoidectomy and provide an alternative to general anaesthesia and there were no differences in the above groups in terms of operating time, nausea, vomiting, pain free interval after operation and analgesic requirements.[9]

Another study comparing local and epidural anaesthesia for haemorrhoidectomy mentions majority of patients were satisfied with outpatient surface local anaesthesia, helped in reducing their costs and few patients had minor symptoms on discharge in form of bleeding, pain, mucous discharge, urinary retention.[10]

A distinguished study comments that optimal technique and dose are needed in the group of regional blockade for ambulatory anorectal surgery as these patients require deep anaesthesia and post operative period is followed by severe pain and urinary retention.[11]

Even stapled haemorrhoidectomies are being performed under local anaesthesia with results equivalent to those with general / spinal anaesthesia.[12]

Recently a manometric study of the anal sphincter during haemorrhoidectomy using posterior perineal block before and after procedure revealed significant reduction of resting and squeeze pressures of anal canal allowing surgeons to perform radical haemorrhoidectomy in the overnight stay

setting with optimal intra and postoperative analgesia, safe sphincter relaxation, lower postoperative complications, and lower costs to the public health service.[13]

## ANORECTAL ANATOMY

### THE RECTUM

At first the rectum proceeds downward, then downward and forward closely applied to the concavity of the sacrum and coccyx for 13-15 cm. It ends 2-3 cm in front of and below the tip of the latter bone by turning abruptly downward and backward, and passing through the levator muscles to become the anal canal, which has an average length of 3-4 cm and terminates at the anal orifice or anus.

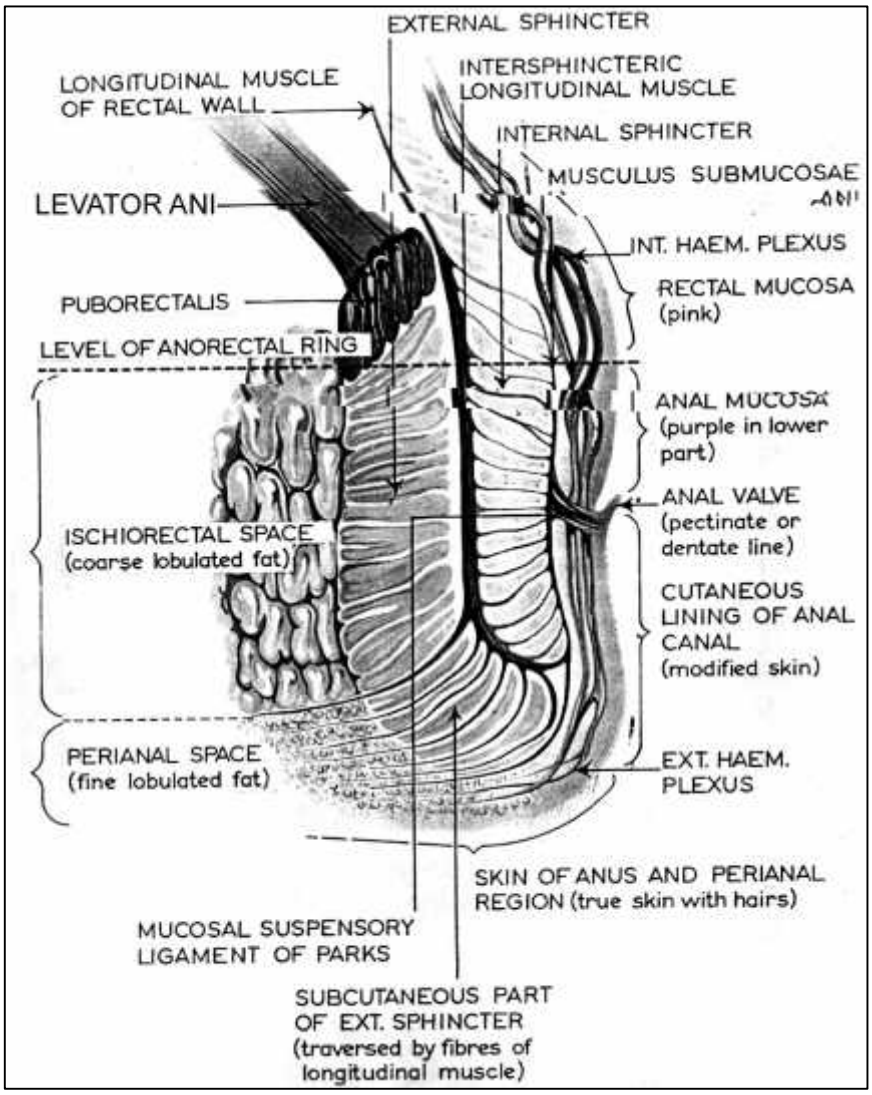



**Fig : Coronal section of anorectal anatomy**

## RELATION OF PELVIC PERITONEUM TO RECTUM

The upper third or so of the rectum has a complete peritoneal investment except for a thin strip posteriorly where the peritoneum is reflected off it as the two leaves of the thick short mesorectum. As the rectum descends into the pelvis the mesorectum becomes broader and shorter and the peritoneum sweeps off, not at the back, but at the sides of the rectum, so that the uncovered portion posteriorly becomes progressively wider until only the anterior aspect has a peritoneal coat. Finally this becomes reflected forward at the bottom of the rectovesical or rectouterine pouch on to the back of the seminal vesicles and bladder, or of the vagina and uterus in the female, leaving the lower third or so of the rectum without any peritoneal covering. Another difference to be detected in the peritoneal investment of the rectum as it is traced downward is in the closeness of its attachment to the underlying muscle coat. In the upper rectum the peritoneum is closely applied, but this attachment becomes gradually looser lower down as a result of the interposition of a layer of fatty tissue, which is naturally thicker in obese subjects.

## THE FASCIAL RELATIONS OF THE RECTUM

On either side of the rectum below the pelvic peritoneum, between it and the floor of the pelvis formed by the levator ani muscles, is a space filled with fibrofatty tissue. The fibrous elements in this tissue are a part of the pelvic fascia and connect the parietal pelvic fascia on the sidewall of the pelvis with the rectum. They are known as the lateral ligaments of the rectum and seen from above, after a certain amount of definition, have a roughly triangular shape with the base on the pelvic sidewall and the apex joining the side of the rectum.

The posterior aspect of the extraperitoneal rectum is loosely bound down to the front of the sacrum and coccyx by connective tissue, which is easily separated by blunt dissection.

Anteriorly, the extraperitoneal part of the rectum is also covered with a layer of visceral pelvic fascia that extends from the anterior peritoneal reflection above to the superior fascia of the urogenital diaphragm (triangular ligament) below, and laterally becomes continuous with the front of the lateral ligaments. It is a definite fascial layer, easily seen at operation for excision of the rectum, and known to surgeons as Denonvilliers fascia.

**OTHER RELATIONS OF THE RECTUM**

Outside the fascia of Waldeyer, the rectum is related to the sacrum and coccyx, the levator ani muscles, the left, and sometimes also the right, coccygeus muscle, the middle sacral vessels and the roots of the sacral plexus on either side.

In the male, the extraperitoneal rectum is related from below upward to the prostate, seminal vesicles, vasa deferentia, ureters and bladder wall. The intraperitoneal rectum has immediately in contact with it loops of small gut and possibly the sigmoid colon, and more remotely across the rectovesical pouch it is related to the upper parts of the seminal vesicles and bladder.

In the female, the extraperitoneal rectum lies immediately behind the posterior vaginal wall. The intraperitoneal rectum is related across the pouch of Douglas to the upper part of the vagina and to the uterus, but occupying the pouch and separating it from these structures are frequently coils of small intestine, the ovaries, uterine tubes and the sigmoid colon.

Laterally above the peritoneal reflection are viscera, mainly loops of small gut, uterine appendages and the sigmoid colon. Below the reflection it is separated from the sidewall of the pelvis, the ureter and iliac vessels by the connective tissue and fascia of the lateral ligament. At a still lower level the levator ani muscle becomes a close lateral relation, separated to some extent by the lower part of the lateral ligament.

**LATERAL CURVES OF RECTUM:**

There are three of them, both the uppermost and lowermost being convex to the right, the middle one convex to the left. The angulation of the bowel on the concave side of each of these curves is accentuated by infoldings of the mucosa known us Houston's valves (Houston 1830). There is thus an upper and lower valve on the left side and a middle valve on the right. The last-named, which is also known as Kohlrausch’s fold.

The part of the rectum lying below the right valve and the peritoneal reflection has a wider lumen than has the intraperitoneal part; this dilated lower portion is known as the ampulla of the rectum.

**THE ANAL CANAL**

In the normal living subject the anal canal is completely collapsed owing to the tonic contraction of the anal sphincters, and the anal orifice is represented by an anteroposterior slit in the anal skin. Posteriorly, the canal is related to the coccyx with a certain amount of fibrous, fatty and muscular tissue intervening. laterally, there is the ischiorectal fossa on either side with its contained fat and the inferior haemorrhoidal vessels and nerves which cross it to enter the wall of the

canal. Anteriorly, in the male the canal is related to the central point of the perineum, the bulb of the urethra and the posterior border of the urogenital diaphragm (triangular ligament) containing the membranous urethra. In the female the canal is related in front to the perineal body and to the lowest part of the posterior vaginal wall.

**THE MUCOCUTANEOUS LINING**

As seen in excised specimens of the rectum and anal canal and in the living anus on proctoscopy, the lining of the anal canal consists of an upper mucosal and a lower cutaneous part, the junction of the two being marked by the line of the anal valves about 2 cm from the anal orifice and opposite the middle or the junction of the middle and lower thirds of the internal sphincter. This level is also sometimes referred to as the pectinate or dentate line because of the serrated fringe produced by the valves. The pectinate line marks the junction of the post allantoic gut and the proctodeum, the valves themselves representing remnants of the proctodeal membrane. Above each anal valve is a little pit or pocket known as an anal sinus, or crypt or sinus of Morgagni.

Below the pectinate line, the anal canal is lined with a modified skin devoid of hair and sebaceous and sweat glands, and closely adherent to the underlying tissues. As seen in an opened-up excised rectum and anal canal, the lining of this part of the canal for about 1 cm below the anal valves appears thin, smooth, pale and stretched. This area is sometimes known as the pecten. Traced further inferiorly, the lining becomes thicker and just outside the anal orifice acquires the hair follicles, glands and other histological features of normal skin.

**ANAL INTERMUSCULAR GLANDS**

It is often possible to demonstrate extensions of the anal mucosa through the substance of the wall of the anal canal — these are the anal glands or ducts. There are apparently four to eight of these glands in the normal anal canal as a rule. Each has a direct opening into the apex of an anal crypt and occasionally two glands open into the same crypt. About half the crypts in any anal canal have no gland communicating with them. Traced outwards from its cryptal opening, the average gland has a short tubular portion in the submucosa that quickly branches into a racemose structure of widely ramifying ducts.

The general direction of extension of the glands is outward and downward, but practically never upward above the level of the anal valves. Consequently the anal glands are always confined to the submucosa, internal sphincter or longitudinal layer of the lower half of the anal canal, branches of one gland may extend over an area about 1cm.

**THE MUSCULATURE**

*The Internal Anal Sphincter:* In longitudinal sections of the anal canal in both coronal and sagittal planes, the most striking structure is the internal sphincter. Superiorly it is continuous with the circular muscle coat of the rectum, and inferiorly it ends with a well-defined rounded edge 6-8 mm above the level of the anal orifice, and 12-8 mm below the level of the anal valves.

*The External Anal Sphincter:* On the coronal and posterior sagittal section the external anal sphincter is seen to extend further downward than the internal sphincter, and the lowermost portion curves medially to occupy a position below

and slightly lateral to the lower rounded edge of the internal sphincter and close to the skin of the anal orifice.

*The Longitudinal Muscle Fibers:* In coronal and sagittal sections the main layer of longitudinal fibers in the anal canal is seen to lie between the internal and external sphincters.

## ATTACHMENTS OF EXTERNAL ANAL SPHINCTER

The external sphincter is an elliptical cylinder muscle that surrounds the anal orifice and, traced upwards on the lateral sides, becomes continuous with the puborectalis and pubococcygeus muscles. *Posteriorly*, the cylinder is attached at the lowest level to the skin of the perianal region in and close to the midline, at a slightly higher level the external sphincter fibers form an anococcygeal raphe which runs backward and is attached to the dorsal aspect of the coccyx. Above this raphe the external anal musculature is devoid of posterior attachment, but forms a loop of muscle round the back of the canal. This unfixed, free-lying part of the sphincter extends up to the level at which the median raphe of the levator muscle inserts on to the front of the coccyx.

Anteriorly, many of the lower fibers of the external sphincter are inserted into the perianal skin in and near the midline. At a higher level corresponding roughly with the posterior attachment to the anococcygeal raphe, the external sphincter fibers merge into the transverse perineal muscles by a process of decussation at the central point of the perineum or perineal body.

**THE LEVATOR ANI MUSCLES**

The levator ani is a broad, thin muscle, attached peripherally to the inner surface of the side of the pelvis, and united medially with its fellow of the opposite side to form the greater part of the floor of the pelvic cavity. It consists of three parts:

*The Iliococcygeus :* This is a very thin muscle which arises from the ischial spine and posterior part of the white line of the pelvic fascia covering the obturator internus. The fibers run downward, backward and medially and are inserted into the sides of the last two pieces of the sacrum and into the anococcygeal raphe of the levator muscles, a median fibrous band which stretches between the anus and the superior surface of the coccyx.

*The Pubococcygeus :* This arises from the back of the pubis and the anterior part of the obturator fascia, and is directed almost horizontally backward along the side of the lower part of the rectum as a flat band which lies superior to the innermost fibers of the ileococcygeus region to fuse with its fellow of the opposite side to constitute a broad fibrous band lying on the anococcygeal raphe formed by the ileococcygeus.

*The Puborectalis:* This name is sometimes applied to those fibers of the pubococcygeus, which unite with the corresponding fibers of the opposite side to form a sling behind the rectum at the anorectal junction. The puborectalis arises from the lower part of the back of the symphysis pubis and the superior fascia of the urogenital diaphragm, runs backward alongside the anorectal junction to join with its fellow immediately behind the bowel and form a strong U-shaped loop which slings the rectum to the pubis.

## THE ANORECTAL RING

This is composed of the upper borders of the internal and external sphincters, which completely encircle the junction, and on the posterior and lateral aspects of the strong puborectalis sling.

## TISSUE SPACES IN RELATION TO THE ANAL CANAL

*The Ischiorectal Fossa:* On either side of the anal canal and lower part of the rectum, intervening between them and the sidewall of the pelvis, is the ischiorectal fossa.

*The Perianal Space:* This contains finely lobulated fat similar to that found elsewhere in the superficial fascia of the body, and laterally it becomes continuous with the subcutaneous fat of the buttocks. Medially it may be considered as extending into the lower part of the anal canal where it is lined by modified skin.

*The Ischiorectal Space :* This comprises the upper two-thirds of the ischiorectal fossa, is filled with coarsely lobulated fat rather similar to that found in lipomas and is crossed by the inferior haemorrhoidal vessels and nerves on their way medially and forward to the anal sphincter and canal.

*The Submucous Space.* This space lies between the internal sphincter and the mucocutaneous lining of the upper two-thirds of the anal canal. Below, it probably extends down to the level of Parks mucosal suspensory ligament, and above it becomes continuous with the submucous layer of the rectum. It contains the internal haemorrhoidal venous plexus and related terminal branches of the superior haemorrhoidal artery.

*The Pelvirectal or Supralevator Space :* This term is applied to the potential space between the pelvic peritoneal floor and the levator ani muscles, partly on either side in the area occupied by the loose connective tissue of the lateral ligaments of the rectum and partly in front and behind the rectum.

*The Central Space:* It is situated between the lower end of the longitudinal inter-sphincteric muscle and the subcutaneous external sphincter, and is occupied by the central tendon.

*The Intersphincteric Space (or Spaces):* This space lies between the internal and external sphincter, the anal intermuscular glands terminate in this space.[37]

**Blood supply :**

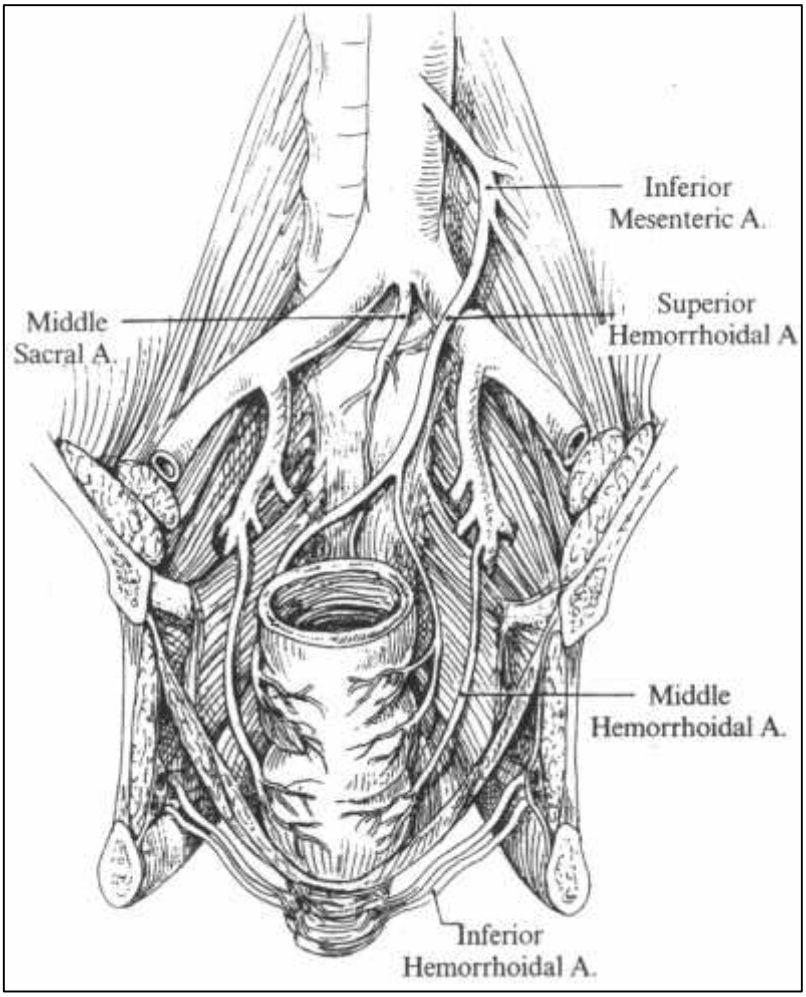



**Figure : The arterial supply of the anorectum**

Superior and inferior rectal (inferior haemorrhoidal) arteries are major blood suppliers to ano rectum.

The contribution of middle rectal arteries varies inversely with magnitude of superior rectal artery. It originates from anterior division of internal iliac or pudendal artery. The paired inferior rectal artery, which is a branch of internal pudendal artery which in turn is a branch of internal iliac artery. The superior haemorrhoidal artery is a branch of inferior mesenteric artery.

**VENOUS DRAINAGE :**

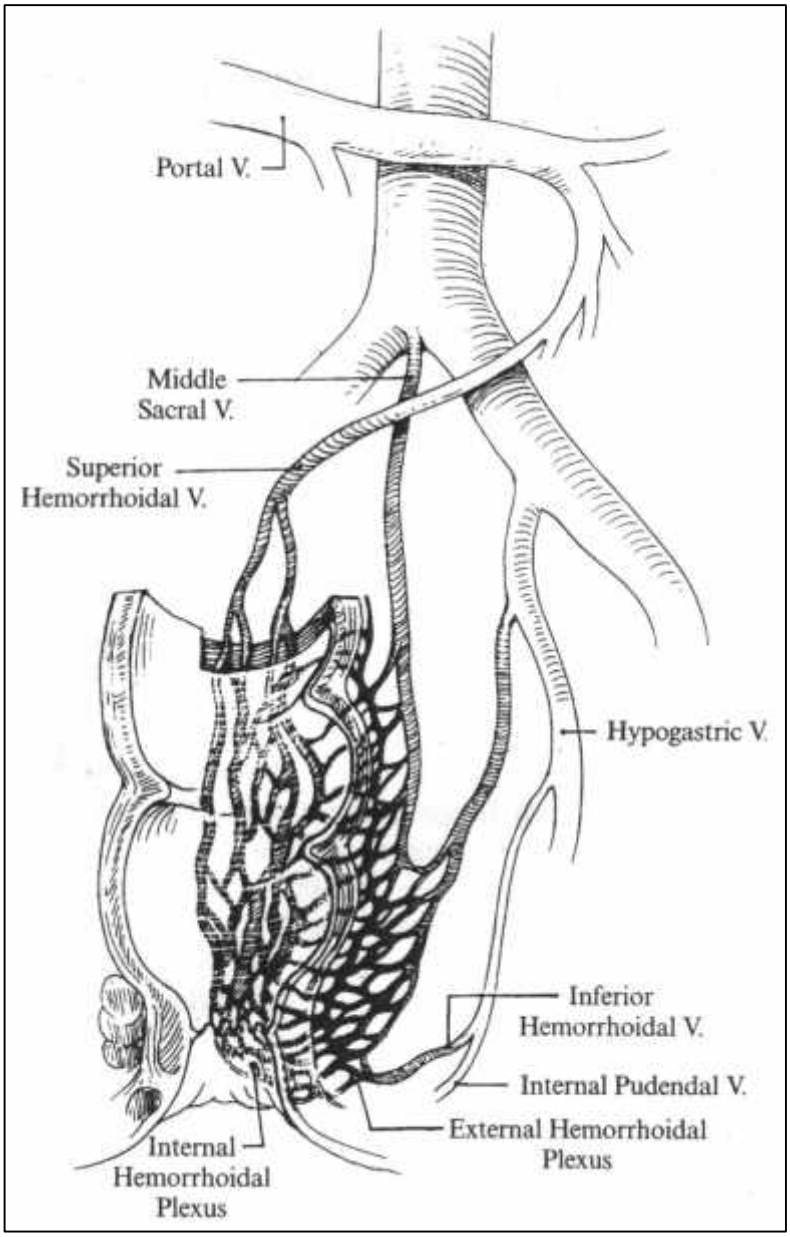



**Figure : Venous drainage**

Blood from rectum along with left colon, via the inferior mesenteric vein reaches liver through portal vein.

Ano rectum also drains via middle and inferior rectal veins, to internal iliac veins and then to inferior venacava.

**Lymphatic drainage :**

Above the dentate line lymph is drained into inferior mesenteric and internal iliac nodes and below along the inferior rectal lymphatics to the superficial inguinal nodes.

## NERVE SUPPLY OF ANORECTAL AREA:

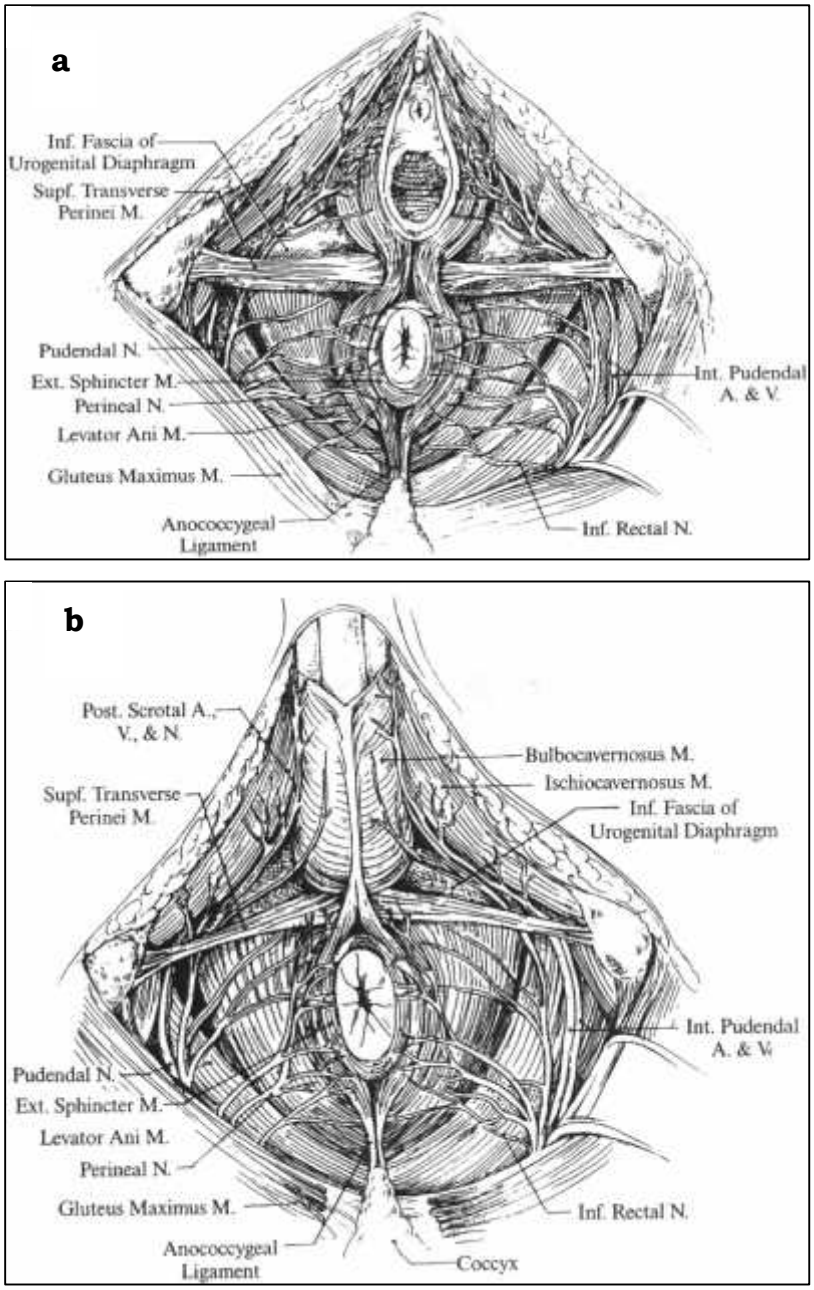



**Figure : Diagram showing the muscles and nerves of perineum in a female (a) and male (b)**

Nerve supply of anorectal area consists of mixed, somatic and autonomic nerves.

Sympathetic supply comes from sympathetic chain to hypogastric plexus ($L_1$-$L_5$) and coeliac plexus ($T_{11}$-$L_2$), which further ends into pelvic plexus.

Parasympathetic supply from ventral rami of $S_2$-$S_4$ and later forms pelvic splanchnic nerves which joins sympathetic plexus to relay in tiny end-organ ganglia. Sympathetic fibers inhibit visceral motor function and cause contraction of sphincteric muscle. Parasympathetic fibers provide rectal and bladder motor function, inhibit sphincteric muscle and cause genital vasodilation.

Somatic nerves supply pelvic floor and external sphincters which derive from sacral plexus ($L_4$-$L_5$ and $S_1$-$S_4$ segments). Coccygeal zone gets nerve fibers from $S_4$, $S_5$ and $Co_1$. The following are main somatic nerves.

1. Pudendal nerve ($S_2$ – $S_4$), gives origin to inferior haemorroidal nerve, supplies external anal sphincter and perianal skin.

   Other branches supply some peripheral fibers of levator ani, as well as vagina, clitoris in females, the base of bladder, ischiocavernosus, bulbospongiosus muscles of penis in males.
2. Direct perineal branches from $S_3$-$S_4$ supply major part of levator ani, puborectalis and has afferent fibers from anal canal and peri-anal skin.
3. Anococcygeal nerve ($S_3$, $S_4$, $Co_1$) innervate skin over coccyx.
4. Superior gluteal nerve ($L_4$ and $L_5$, $S_1$)
5. Inferior gluteal nerve ($L_5$, $S_1$ and $S_2$)
6. Posterior femoral cutaneous nerve ($S_1$-$S_3$) – Supplies skin over inferior part of gluteal region, perineum, back of thigh and leg.
7. Perforating cutaneous nerve ($S_2$ and $S_3$) supplies skin over medial and lower part of gluteus - maximus.[14]

**Review of diseases under study :**

**Haemorrhoids**

(Haemorrhoids meaning "Bleeding" in Greek) are cushions of submucosal vascular tissue located in the anal canal starting just distal to the dentate line.

**Classified as :**

1. Internal – Involves upper 2/3$^{rd}$ of anal canal lined by columnar epithelium.
2. External – Involves lower 1/3$^{rd}$ of anal canal lined by skin.

**Number and position of internal piles :**

Two are on right side → Right anterior

Two are on right side → Right posterior

Third on left side → Left lateral piles

Additional haemorrhoids may be present between the above mentioned piles.

**Classification of haemorrhoids**

1st degree - Piles tend to form swelling which slightly project into lumen of anal canal, when the veins are congested at defecation.

2nd degree - Larger swellings which not only protrude into anal canal but descend towards anal orifice and appear externally when patient is straining but return spontaneously when defecation effect has ceased.

3rd degree –-Piles prolapse even during defecation and after, until they are digitally replaced.

4th degree - piles become so large, skin covered that they cannot be properly returned to anal canal, but remain as permanent projection of anal mucosa.

**Symptoms :**

Include bleeding, prolapse, pain, discharge, local irritation and anemia.

**Treatment :**

1. Medical treatment
2. Injection treatment
3. Rubber band ligation
4. Manual dilatation
5. Cryosurgery
6. Infra-red coagulation
7. Operative treatment (Either closed or open haemorrhoidectomy)

**Anal fissure :**

Consists of a crack in the skin-lined part of anal canal, which often shows a considerable reluctance to heal.

Secondary changes consists of a tag-like swelling (sentinel pile) due to low grade infection and lymphatic edema at lower end of fissure which might get fibrosed to form anal papilla.

**Symptoms :**

Include pain, bleeding, swelling, discharge, pruritis and urinary symptoms.

**Treatment :**

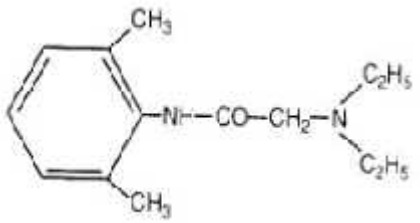
1. Conservative - laxatives, local anaesthetics (in form of 2% Xylocaine gel)
2. Operative treatment
    a. Stretching of anal sphincters (Lord's dilatation).
    b. Excision of fissure with skin tags.
    c. Open posterior internal sphincterotomy.
    d. Closed lateral internal sphincterotomy.

**BASIC PHARMACOLOGY OF LOCAL ANAESTHETICS :**

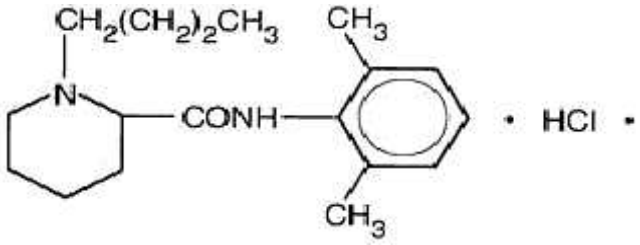
**1. Chemistry :**

Typical molecule contains tertiary amine attached to a substituted aromatic ring by an intermediate chain. The tertiary amine is a base. The chain almost always contains either an ester or amide linkage, local anaesthetics may therefore be classified as aminoester or aminoamide compounds. The aromatic ring system gives a lipophic (membrane liking) character to its portion of molecule, whereas the tertiary amine end is relatively hydrophilic.

**Structure of lignocaine**




**Structure of Bupivacaine**




The intrinsic potency and duration of local anaesthetics is clearly dependent on :

1. Lipophilic – Hydrophilic balance

   Lipophilicity – Expresses the tendency of a compound to associate with membrane lipids.

2. Local hydrogen ion concentration : which is expressed as pKa.

## MECHANISM OF ACTION :

Local anaesthetics produce conduction blockade of neural impulses by preventing passage of sodium ions through ion selective sodium channels in nerve membranes. The sodium channel itself is a specific receptor for local anaesthetic molecules. Binding affinities of local anaesthetics to the sodium ion channels are stereo specific and depend on the conformational state of the sodium channels. By selectively binding to sodium channels in inactivated-closed states, local anaesthetic molecules stabilize these channels in this configuration and prevent their change to the rested-closed and activated-open states in response to nerve impulses. It is speculated that local anaesthetic molecules bind to specific sites located on the inner portion of sodium channels as well as obstructing channels near their external opening. Sodium channels in the inactivated-closed state are not permeable to sodium. Failure of sodium ion channel permeability to increase slows the rate of depolarization such that threshold potential is not reached and an action potential is not propagated along the nerve membrane.

Local anaesthetics are poorly soluble in water and therefore are marketed most often as water-soluble hydrochloride salts. These hydrochloride salt solutions are acidic (pH 6), contributing to the stability of local anaesthetics. An acidic pH is also important if epinephrine is present in the local anaesthetic solution, because this catecholamine is an unstable in an alkaline pH.

**Classification of nerves and sensitivity to local anaesthetics**:

Nerve fibers can be classified according to fiber diameter, presence (type A and B) or absence (type C) of myelin, and function. Nerve fiber diameter and degree of myelination in turn determine the conduction velocity and makes the nerve membranes more susceptible to local anaesthetic-induced condition blockade by insulating the axolemma from the surrounding media and forcing the current to flow through periodic interruptions in the myelin sheath (Nodes of Ranvier). The classic concept relating sensitivity to local anaesthetic blockade to nerve diameter (small diameter fibers are more sensitive than large diameter fibers) may be incorrect. In fact, there is evidence that large myelinated fibers are more sensitive to local anaesthetic blockade than the smaller unmyelinated fibers.

**Classification of Nerve Fibers:**

| **Fiber Type** | **Diameter(«m)** | **Conduction Velocity (m/s)** | **Sensitivity to Local Anaesthetic (%)** | **Function** |
|---|---|---|---|---|
| A (Myelinated) | | | | |
| Alpha | 12-20 | 30-120 | 1 | Proprioception<br>Large motor |
| Beta | 5-12 | 30-120 | 1 | Small motor<br>Touch<br>Pressure |
| Gamma | 3-6 | 15-35 | 1 | Muscle tone |
| Delta | 2-5 | 5-25 | 0.5 | Temperature<br>sharp pain |
| B (myelinated) | 3 | 3-14 | 0.25 | Preganglionic autonomic |
| C (unmyelinated) | 0.3-1.2 | 0.1-2 | 0.5 | Dull pain<br>Temperature<br>Touch |

**SPREAD OF ANAESTHESIA AND PERIPHERAL NERVE BLOCKADE :**

When local anaesthetics are deposited around a peripheral nerve, they diffuse from the outer surface (mantle) toward the centre (core) of the nerve along a concentration gradient. As a result, nerve fibers located in the mantle of the mixed nerve are blocked first. These mantle fibers are often distributed to more proximal anatomic structures, in contrast to distal structures innervated by nerve fibers near the core of the nerve.

**PHARMACOKINETICS**

The pKa of local anaesthetics is such that less than one-half the total local anaesthetic exists in a lipid soluble nonionized form at physiologic pH. This is important because the nonionized form of local anaesthetic is necessary to cross the lipophilic nerve sheath to gain access to sodium channels in the nerve membranes.

Lipid solubility is a primary determine of local anaesthetic potency. Peak plasma concentrations of local anaesthetic after their absorption from tissue injection sites are ultimately determined by the rate of tissue redistribution and rate of clearance of the drug. Intrinsic vasodilator activity (lidocaine greater than mepivacaine) results in greater systemic absorption and shorter duration of action of lidocaine.

Clearance of local anaesthetics represents hydrolysis of ester drugs, whereas amide local anaesthetics undergo metabolism by hepatic microsomal enzymes. The lungs are also capable of extracting local anaesthetics such as lidocaine, bupivacaine, and prilocaine from the circulation.

**Comparative Pharmacology of Local Anaesthetics :**

| Classification | Potency | Onset | Duration after Infiltration (min) | Maximum Single Dose for Infiltration* (adult, mg) | Toxic Plasma concentration («g/ml) | Nonionized (%) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | pKa | pH 7.2 | pH 7.4 | pH 7.6 |
| **Lidocaine** | 1+ | Rapid | 60-120 | 300 | >5 | 7.9 | 17 | 25 | 33 |
| **Bupivacaine** | 1 | Slow | 240-480 | 175 | >1.5 | 8.1 | 11 | 15 | 24 |

Addition of epinephrine (5 μg/ml / 1:2,00,000) to local anaesthetic solutions that are to be injected produces local tissue vasoconstriction, which limits systemic absorption and prolongs the duration of action of local anaesthetics by keeping them in contact with nerve fibers. Decreased systemic absorption of local anaesthetic solutions produced by epinephrine increases the likelihood that the rate of metabolism will match the rate of absorption, thus decreasing the possibility of systemic toxicity. The addition of epinephrine to local anaesthetic solutions has little if any effect on the rate of onset of local anaesthesia, although bleeding in the area infiltrated is decreased owing to drug-induced vasoconstriction. Systemic absorption of epinephrine may contribute to cardiac dysarhythmias in the presence of volatile anaesthetics or accentuate hypertension in vulnerable patients.

**Systemic toxicity of local anaesthetics**

Systemic toxicity of local anaesthetics is due to excess plasma concentrations of these drugs, most often as a result of accidental intravascular injection of local anaesthetic solutions during performance of nerve blocks. Less often, excess plasma concentrations of local anaesthetic solutions result from

absorption of local anaesthetics from tissue injection sites. The magnitude of this systemic absorption from tissue injection sites depends on the (1) dose injected (2) vascularity of the injection site, and (3) inclusion of a vasoconstrictor in the local anaesthetic solution.

Systemic toxicity of local anaesthetics manifests most prominently as changes in the central nervous system and cardiovascular system.

**CENTRAL NERVOUS SYSTEM:**

Increasing plasma concentrations of local anaesthetics are associated initially with restlessness, vertigo, tinnitus, and slurred speech culminating in tonic-clonic seizures. Seizures can be followed by central nervous depression (apnea) and death. The onset of seizures may reflect selective depression of inhibitory cortical neurons by local anaesthetics, leaving excitatory pathways unopposed.

**Seizures:**

Treatment of local anaesthetic-induced seizures includes administration of drugs to stop seizures and of supplemental oxygen, as arterial hypoxemia and metabolic acidosis can occur rapidly. Hyperventilation of the lungs decreases delivery of additional local anaesthetic to the brain, whereas associated respiratory alkalosis and hypokalemia result in hyperpolarization of nerve membranes and decreased central nervous system stimulating effect of the local anaesthetic. Diazepam (0.1 mg/kg IV) is effective in inhibiting local anaesthetic-induced seizures, most likely by exerting specific effects on the temporal lobe or amygdala.

Small-doses of thiopental (0.5 to 2 mg/kg IV) also inhibit seizures, but their site of action in the central nervous system is nonspecific. Paralyzing doses of rapidly acting neuromuscular blocking drugs stop manifestations of seizure activity. Administration of neuromuscular blocking drugs followed by tracheal intubation is indicated when benzodiazepines or barbiturates are not promptly effective in stopping seizure activity. Placement of a cuffed tracheal tube decreases the likelihood of pulmonary aspiration of gastric contents and facilitates delivery of oxygen to the lungs.

**CARDIOVASCULAR SYSTEM:**

The cardiovascular system is more resistant to toxic effects of local anaesthetics than is the central nervous system. Nevertheless, high plasma concentrations of local anaesthetics can cause profound hypotension due to relaxation of arteriolar vascular smooth muscle and direct myocardial depression. Part of the cardiac toxicity reflects the ability of local anaesthetics to block cardiac sodium channels. As a result, cardiac automaticity and conduction of cardiac impulses are impaired, manifesting on the electrocardiogram as prolongation of the P-R interval and widening of the QRS complex. Local anaesthetics differ in their ability to produce cardiac toxicity. For example: The ratio of cardiac to central nervous system toxicity is 4 with lidocaine and 2 with bupivacaine. Thus bupivacaine has a greater tendency to produce cardiac toxicity than does lidocaine.

Accidental intravenous injection of bupivacaine may result in precipitation of hypotension, cardiac dysarhythmias (including ventricular tachycardia and fibrillation), and atrioventricular heart block; pregnancy may increase sensitivity

to cardiotoxic effects of bupivacaine. The threshold for cardiac toxicity produced by bupivacaine may be decreased in patients being treated with drugs that inhibit myocardial impulse propagation (beta-adrenergic blockers, digitalis preparations). Epinephrine and phenylephirine may increase bupivacaine cardiotoxicity, reflecting bupivacaine-induced inhibition of catecholamine-stimulated production of cyclic adenosine monophosphate.

**NEUROTOXICITY :**

Placement of local anaesthetic-containing solutions into the epidural or subarachonoid space may result in transient radicular irritation or overt neurotoxicity as manifested by cauda equina syndrome.

**TRANSIENT RADICULAR IRRITATION :**

Transient radicular irritation (more correctly characterized as transient neurologic symptoms, as the etiology of the radicular irritation is often unproven) of the lumbosacral nerves manifests as moderate to severe pain in the lower back, buttocks, and posterior thighs that appear within 24 hours after complete recovery from spinal anaesthesia.

Full neurologic recovery from the symptoms of transient radicular irritation usually occurs within 7 days. Spinal anaesthesia produced with bupivacaine seems to be associated with a lower incidence of transient radicular irritation than following spinal anaesthesia produced by lidocaine 0.5% to 5%.

**CAUDA EQUINA SYNDROME :**

Cauda equina syndrome occurs when diffuse injury to the lumbosacral plexus produces varying degrees of sensory anaesthesia, bowel and bladder sphincter dysfunction, and paraplegia.

**ALLERGIC REACTIONS :**

Allergic reactions to local anaesthetics are rare, despite the frequent use of these drugs. Indeed, it is estimated that fewer than 1% of all adverse reactions to local anaesthetics are due to allergic mechanisms.

Allergic reactions following use of local anaesthetics may be due to preservatives in commercial preparations of ester and amide local anaesthetics.

Documentation of allergy to local anaesthetics is based on clinical history (rash, laryngeal edema, hypotension, bronchospasm) and perhaps use of intradermal testing with preservative-free solutions. Hypotension associated with syncope, tachycardia, or bradycardia when epinephrine-containing local anaesthetic solutions are used is more suggestive of an accidental intravascular injection or a psychogenic-vagally mediated reaction than of an allergic reaction.[15]

**Addition of sodium bicarbonate to local anaesthetic mixture**

It is done to make pH of local anaesthetics less acidic (or closer to the pKa) following which more of the nonionized form will be present in the body and the onset of nerve-block will be more rapid, as it is the nonionized form of the local anaesthetic that crosses nerve sheaths and membranes.

# MATERIALS AND METHODS

**Study design:**

Prospective randomized clinical trial

**Source of data:**

Patients who were undergoing elective anorectal surgeries as per the inclusion and exclusion criteria at KLES Prabhakar Kore Hospital and Medical Research Centre, Nehru Nagar, Belgaum, between December 2007 to December 2008.

A total of 60 patients will be randomized into two groups of 30 each using a computer generated randomization table. Group A 30 cases with surface local anaesthesia and 30 with subarachnoid block. (This was as per the yearly average of the previous 3 years of anorectal surgeries in the hospital as per the inclusion criteria.)

**Inclusion criteria:**

1. All patients undergoing elective anorectal surgeries for haemorrhoids, anal fissures and anal tags.
2. Age: 18-65 years.

**Exclusion criteria:**

- Perianal septic conditions e.g., ano-rectal and perianal abscess, fistula in ano.
- Known hypersensitivity to surface local anaesthesia.
- Uncooperative patients.
- Bleeding/coagulation disorders.
- Patient with known cardiac problems e.g. ischaemic heart disease.

After a thorough physical examination, routine investigations were done in form of complete blood count, random blood sugar, serum creatinine, blood urea, urine routine, bleeding time, clotting time, ECG, xylocaine test dose given following which random allotments to either procedure was done with the help of Computerized random number table to undergo either surface local anaesthesia or subarachnoid block. Patients were postoperatively assessed with respect to pain relief at 1, 3 and 5 hours obtained in two groups using VAS.

Other parameters which were also studied were to compare the incidence of urinary retention in each of the groups and to compare the average length of hospital stay in both of the groups.

**Standardization of drugs used for all patients :**

a) **Pre operatively :**

1) Inj. T.T. 0.5 ml im
2) Inj. Ciprofloxacin 100 ml iv
3) Inj. Metronidazole 100 ml iv
4) Inj. Diclofenac 3 cc im
5) Proctoclysis enema at night.

b) **Post operatively :**

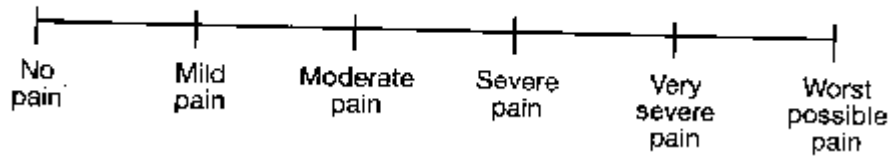
1) NBM for 6 hours.
2) Inj. Ciprofloxacin 100 ml iv BD
3) Inj. Metronidazole 100 ml iv TID
4) Inj. Diclofenac 3 cc im TID
5) IVF DNS and RL alternate at 100 ml / hr

**Procedure :**

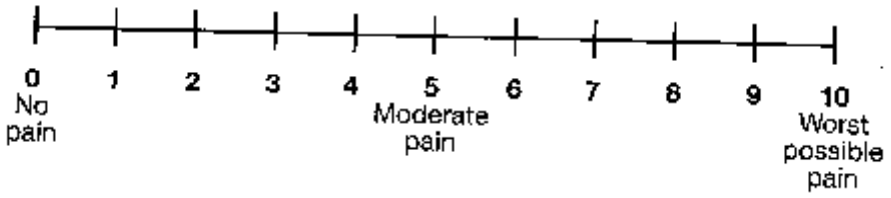
a) **Technique of Spinal Anaesthesia :** After giving a test dose on right forearm on flexor surface under strict aseptic condition, either the patient in sitting position or lateral decubitus position in L3-L4 interspace with 22-26 gauze spinal needle 2-3 ml of 0.5% hyperbaric bupivacaine is injected.[16]

**b) Technique of Local Anaesthesia :** A tube containing 5% Lignocaine hydrochloride gel around 5 gm inserted into the anal canal. By doing rectal examination gel is spread on the anal walls around and with patient in Lithotomy position again 5 gm of gel squirted into the anal canal. For sedation, a vial of midazolam hydrochloride 5 mg in a 5 ml solution was used. A cocktail of local anaesthesia, 20 ml, composed of bupivocaine hydrochloride 0.5% with adrenaline and lidocaine hydrochloride 2% in equal amounts was slowly injected around the perianal skin using 22-26 G needle which blocks the sensation of the anoderm. An additional 2 ml of local anaesthesia can be injected directly submucosally on the right and left sides of the anal canal to obtain full relaxation of the autonomic internal sphincter.[4]

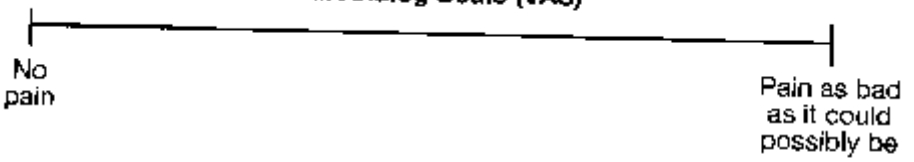
**Simple Descriptive Pain Intensity Scale**[1]




**0–10 Numeric Pain Intensity Scale**[1]




**Visual Analog Scale (VAS)**[2]




[1]If used as a graphic rating scale, a 10 cm baseline is recommended.
[2]A 10-cm baseline is recommended for VAS scales.

**Source:** Acute Pain Management Guideline Panel, 1992.

**ANALYSIS**

1) Evaluation of pain in postoperative period is by visual analogue scale.
   - On numerical rating scale the person is asked to identify how much pain they are having by choosing a number from 0 (no pain) to 10 (the worst pain).
   - Evaluation is done at regular intervals that are 1-3-5 hours post operatively.
2) Duration of hospital stay done at 1-3-5 days.
3) Urinary retention any time over 12 hours post operatively.

**STATISTICAL ANALYSIS**

Statistical analysis was done applying :

a) Test of proportion

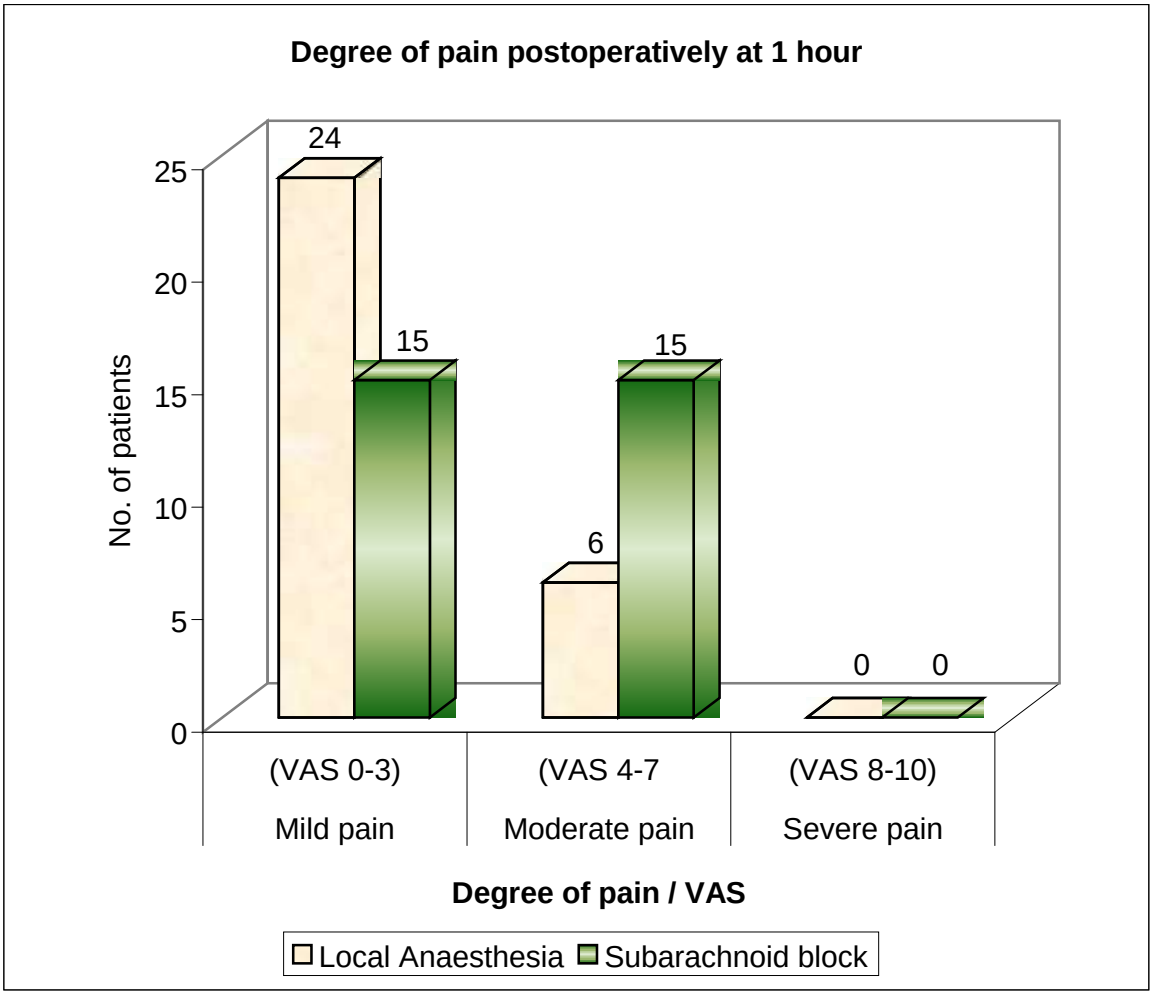
b) Chi-square test

c) Statistical significance by using ‘p’ value where ‘p’<0.05 was significant.

**STATISTICAL DATA :**

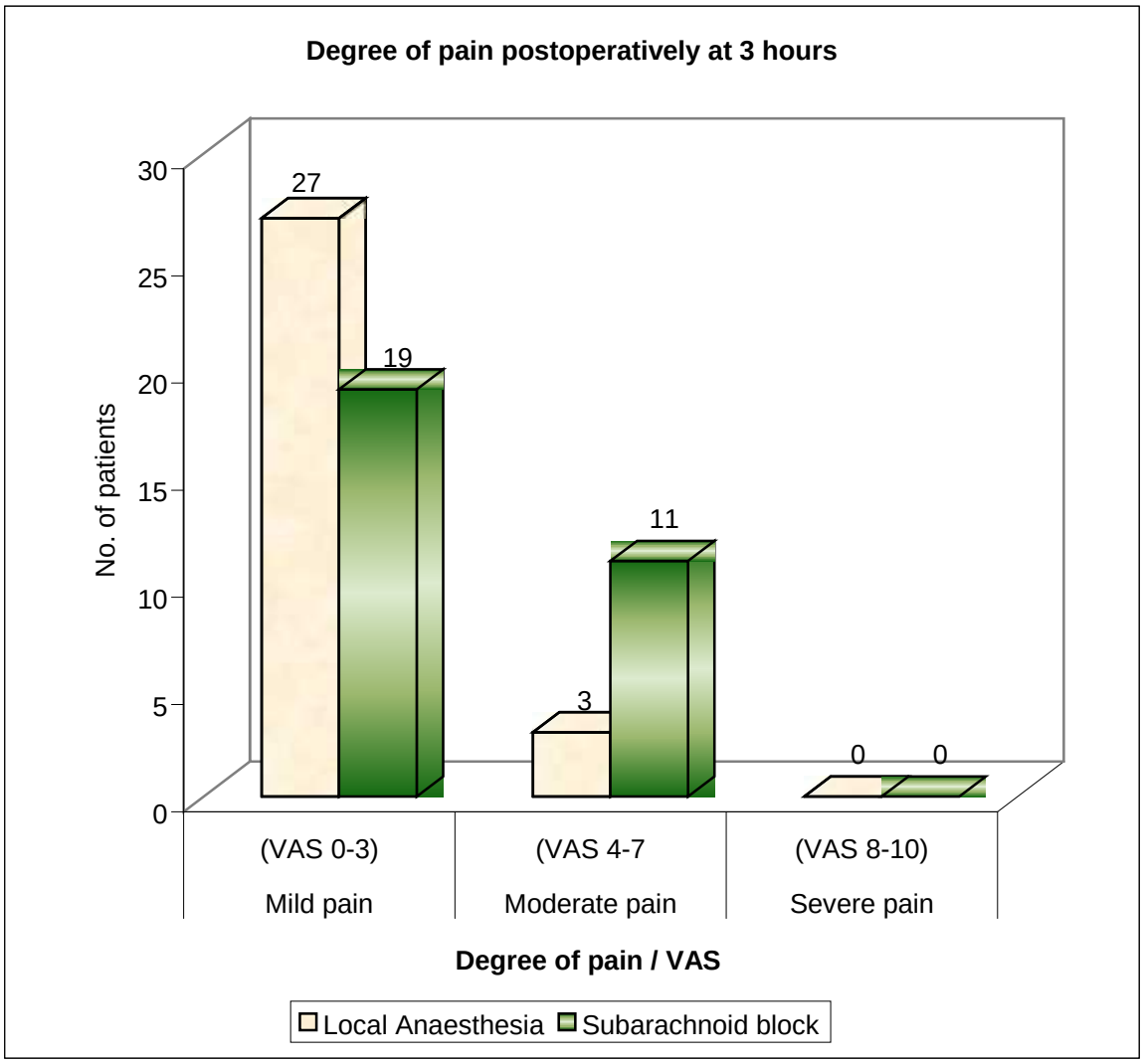
**a. Degree of pain postoperatively at 1 hour**

| Group | Mild pain (VAS 0-3) | Moderate pain (VAS 4-7) | Severe pain (VAS 8-10) |
|---|---|---|---|
| **Local Anaesthesia** | 24 | 06 | 00 |
| **Sub-arachnoid block** | 15 | 15 | 00 |



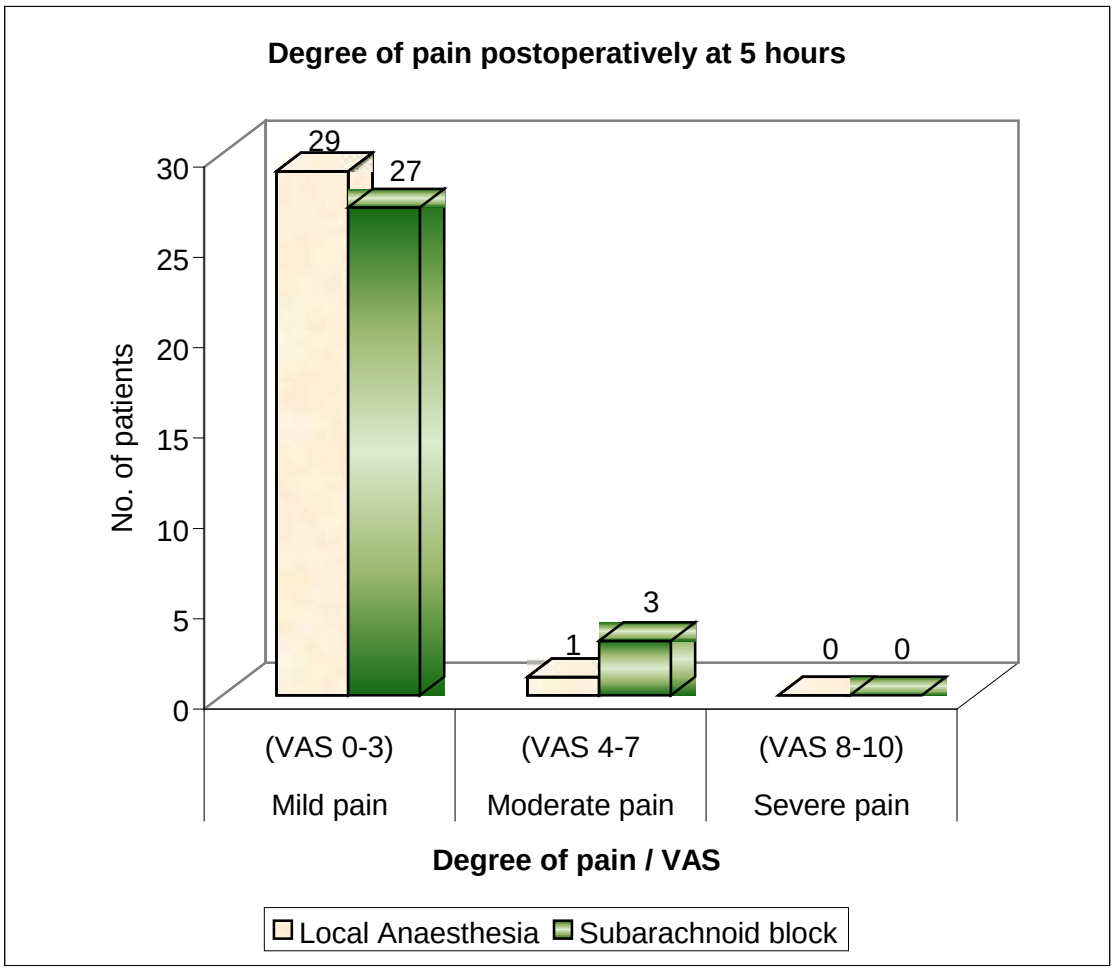
**b. Degree of pain postoperatively at 3 hours**

| Group | Mild pain (VAS 0-3) | Moderate pain (VAS 4-7) | Severe pain (VAS 8-10) |
|---|---|---|---|
| **Local Anaesthesia** | 27 | 03 | 00 |
| **Sub-arachnoid block** | 19 | 11 | 00 |



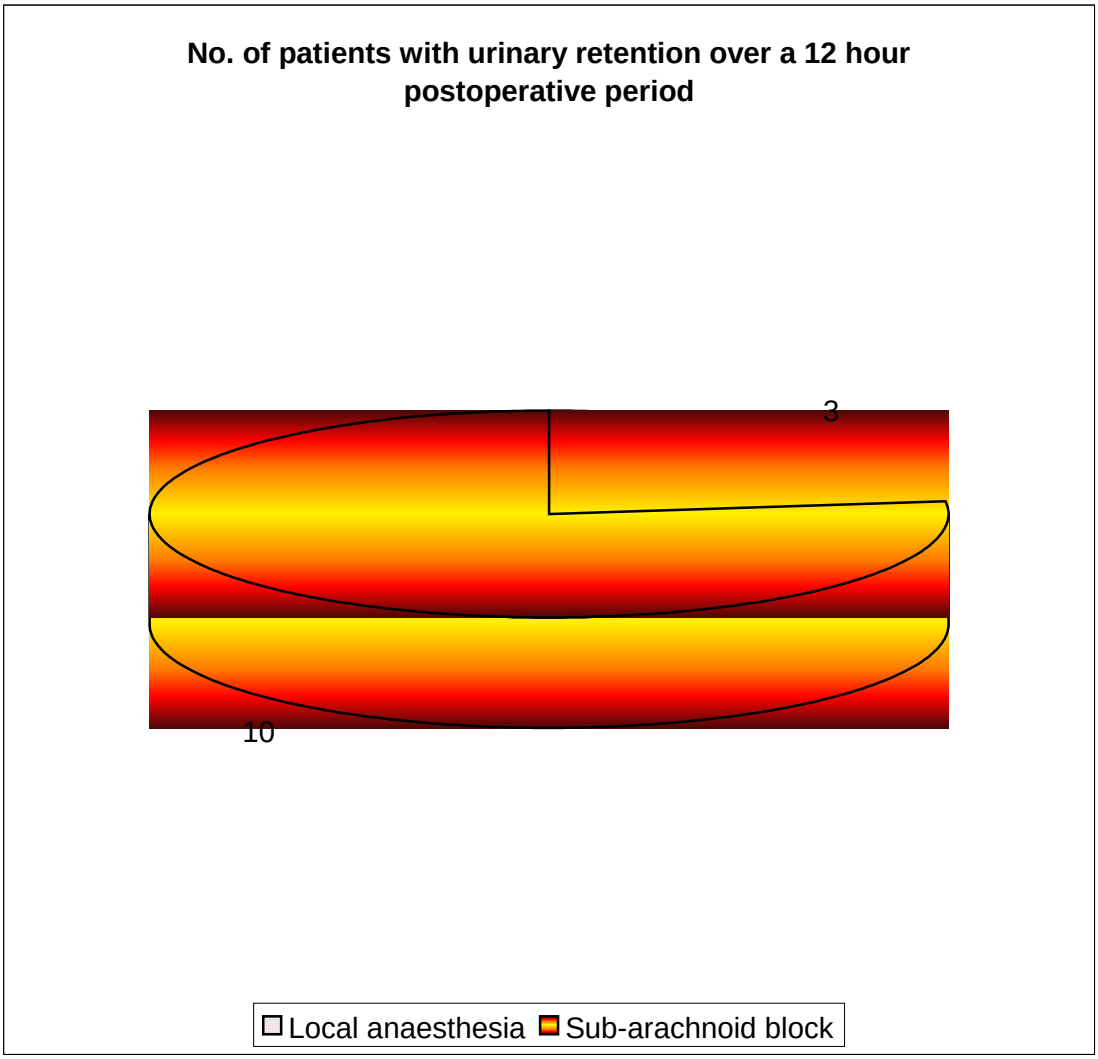
**c. Degree of pain postoperatively at 5 hours**

| Group | Mild pain (VAS 0-3) | Moderate pain (VAS 4-7) | Severe pain (VAS 8-10) |
|---|---|---|---|
| **Local Anaesthesia** | 29 | 01 | 00 |
| **Sub-arachnoid block** | 27 | 03 | 00 |



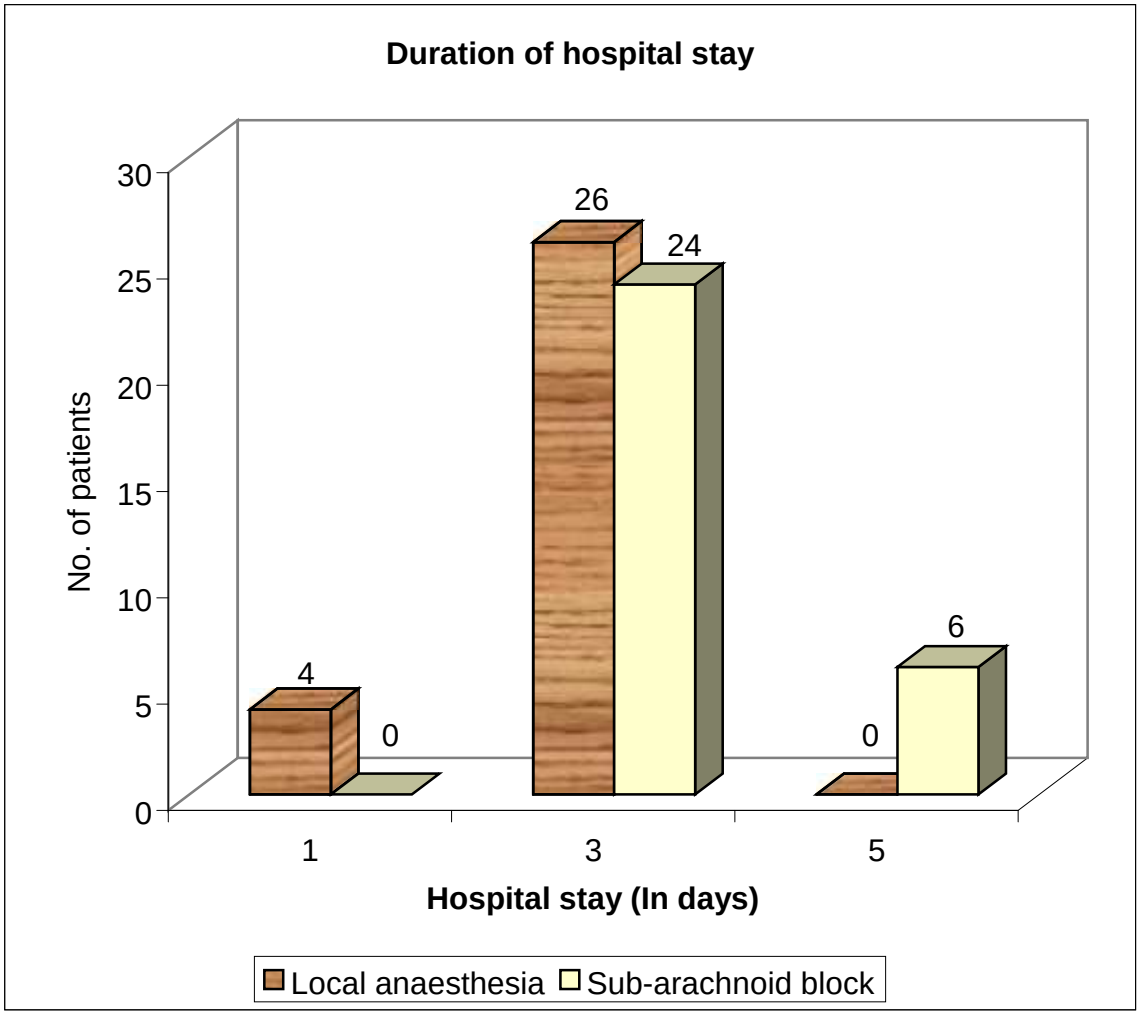
**d. Urinary retention :**

| **Urinary retention any time over 12 hrs post operative duration** | **Local anaesthesia** | **Sub-arachnoid block** |
|---|---|---|
| **No. of patients** | 03 | 10 |



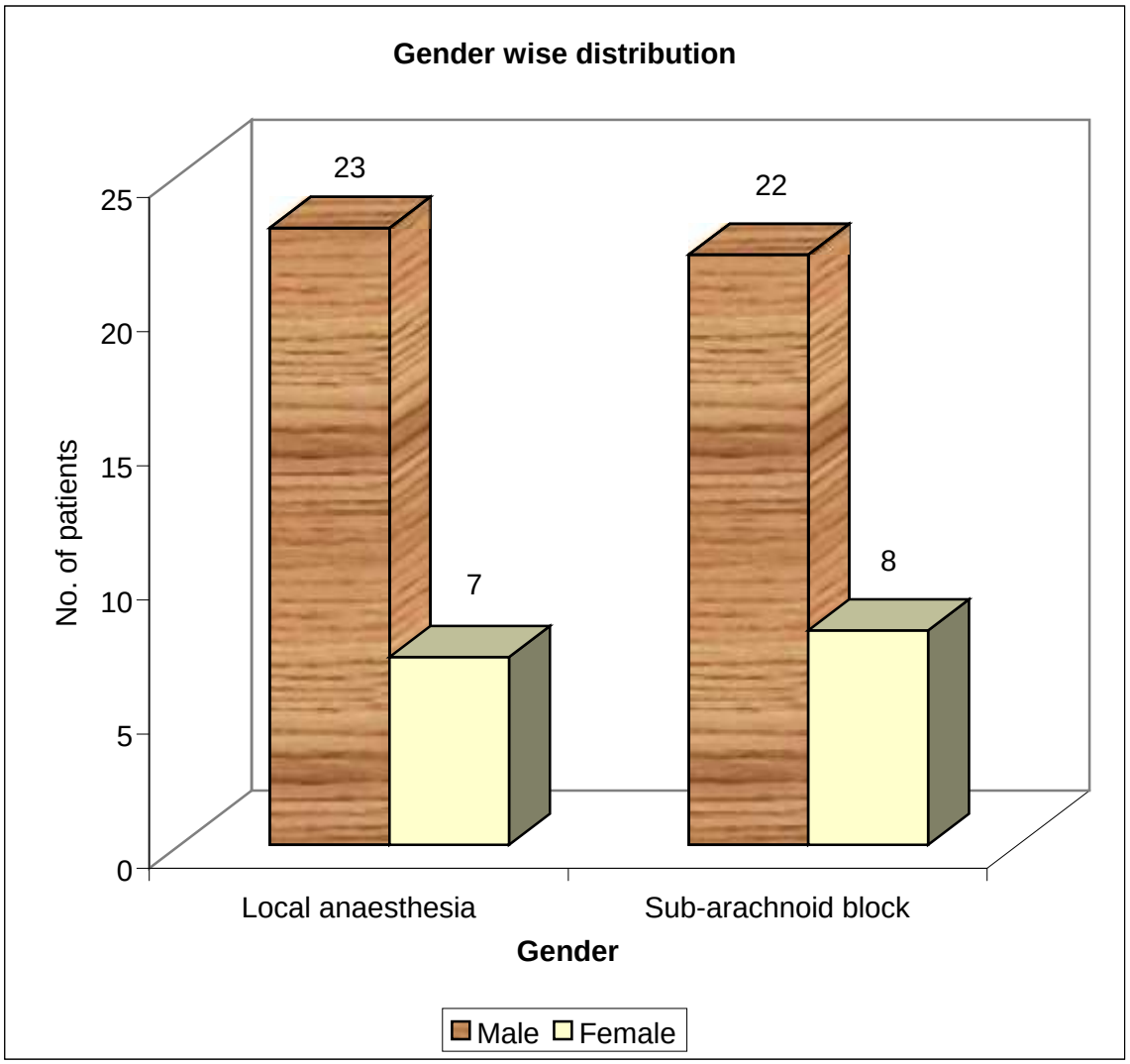
**e. Duration of hospital stay :**

| Days | Local anaesthesia | Sub-arachnoid block |
|---|---|---|
| **1** | 04 | 00 |
| **3** | 26 | 24 |
| **5** | 00 | 06 |



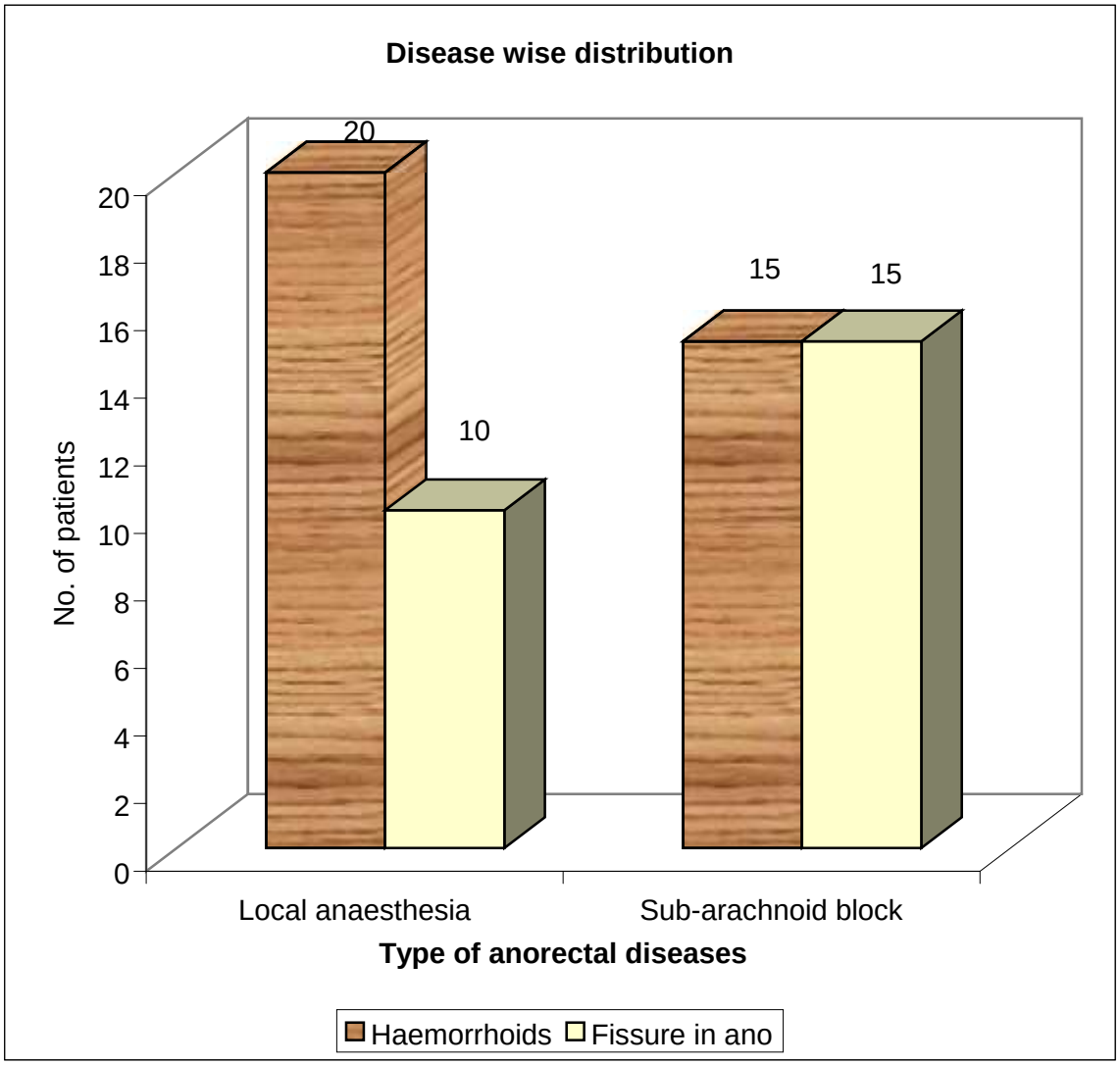
**f. Gender wise distribution :**

| Gender | Local anaesthesia | Sub-arachnoid block |
|---|---|---|
| **Male** | 23 | 22 |
| **Female** | 07 | 08 |



**g. Disease wise distribution of patients :**

| Disease | Local anaesthesia | Sub-arachnoid block |
|---|---|---|
| **Haemorrhoids** | 20 | 15 |
| **Fissure in ano** | 10 | 15 |



# RESULTS

**Applying Chi-square test :**

| Postoperative pain relief | Chi-square value | 'p' value | Significance |
|---|---|---|---|
| **At 1 hr** | 4.689 | 0.0304 | Significant |
| **At 3 hrs** | 4.565 | 0.0326 | Significant |
| **At 5 hrs** | 0.268 | 0.6048 | Not significant |

- Degree of pain post operatively at 1 hr as depicted in table (a) applying chi-square test to the data concludes chi-square as 4.689 and 'p' value 0.0304 showing significant difference between two groups.
- Degree of pain post operatively at 3 hrs as depicted in table (b) applying chi-square test to the data concludes chi-square as 4.565 and 'p' value 0.0326 showing significant difference between two groups.
- Degree of pain post operatively at 5 hrs as depicted in table (c) applying chi-square test to the data concludes chi-square as 0.268 and 'p' value 0.6048 showing no significant difference between two groups.
- Urinary retention any time over 12hrs post-operative duration analysing as depicted in table (d), applying the test of proportion to data, "z" is 2.194 and 'p' value is 0.028 implicating significant difference between 2 groups.
- Length of hospital stay as depicted in table (e), 4 of 30 cases of L.A. discharged on $1^{st}$ day & remaining 26 patients on $3^{rd}$ day of operation while 24 of 30 cases of SAB discharged on $3^{rd}$ day and remaining 6 patients on $5^{th}$ day

of operation. Applying chi-square to data concludes chi-square as 10.080 and 'p' value of 0.0065 showing significant difference between two groups.

- With respect to gender wise distribution of patients as depicted in table (f) applying chi-square test value as 0.0000 and 'p' value of 1.0000 indicating no significant difference between 2 groups.
- With respect to type of disease whether haemorrhoids or fissure in ano as depicted in table (g) applying chi-square test value as 1.097 and 'p' value of 0.2949 indicating no significant difference between 2 groups.

# DISCUSSION

Anorectal diseases are one of the commonest diseases which present frequently to surgical department. When operative option is given to these patients, naturally the patients prefer the shortest course of hospital stay.

The present study of one year randomized control trial of local anaesthesia versus subarachoid block in anorectal surgeries for postoperative pain relief addresses the above problem.

All the patients in L.A group has less post operative pain as compared to subarachnoid block group which was primary objective of our study.

24/30 pts in L.A. group has mild pain at 1hr duration post operatively while in SAB 15/30 pts has moderate pain.

Only 3/30 pts in L.A group has moderate pain at 3hrs post operatively but in SAB 11/30 pts has moderate pain.

Our study also showed no relation in the difference of intensity of post operative pain between L.A. and subarachoid block group at 5 hours post operatively under standardized immediate post operative injection of diclofenac 3 cc i.m to both the groups.

33% of patients in SAB had post operative urinary retention as compared to only 10% in L.A group.

13.33% of patients (4 Pts) in the L.A. group were discharged within 24 hours of operation in comparison with none in the subarachoid group. The remaining (86.67%) 26 patients in L.A. group who were discharged in the next 48

hours (3 days). 20% (6 pts) in SAB was discharged on 5$^{th}$ day of operation. The above study also impresses upon the cost savings to the patients in L.A. group by early hospital discharge.

Our study also showed no significant differences when the underlying anorectal condition is either fissure in ano or haemorrhoids.

This study also impresses upon cost savings to patients in L.A. by early hospital discharge & it is consistent with study by Gabrielli F, Cioffi U, Chiarelli M, Guttadauro A, De Simone M., although in their study only haemmoroidectomy patients were taken into account & no comparative study with SAB.[8]

Our study is also consistent to previous studies by B. Roche & M.C.Marti on outpatient proctological studies with lesser complications over 12 yrs period.[35]

A large number of haemmorhoids patients have formed a large group in our L.A. group with less postoperative pain showing partly synonymous results with studies by Gordon PH, Vasilevsky CA who have done closed haemmoroidectomy under local anaesthesia, and suggested reduced hospitalisation and post operative discomfort which is minimal and wounds heal quickly.[6]

# CONCLUSION

From our study we conclude that patients who underwent L.A. for ano rectal surgeries have less post operative pain at 1 hr and 3hrs when compared with subarachnoid block, but no relation in difference in intensity of pain between 2 groups at > 5hrs post operatively.

Duration of hospital stay in surface local anaesthesia was definitely less than subarachnoid block thereby decreasing hospital costs.

We also conclude that there were more instances of urinary retention in subarachnoid block which is statistically significant.

# SUMMARY

In this present study titled '**A ONE YEAR RANDOMISED CONTROL TRIAL COMPARING SURFACE LOCAL ANAESTHESIA VS SUBARACHNOID BLOCK IN ANORECTAL SURGERIES WITH RESPECT TO POST OPERATIVE PAIN AT KLES DR. PRABHAKAR KORE HOSPITAL, BELGAUM'** we have compared the postoperative pain at 1hr, 3hrs and 5 hrs in surface local anaesthesia and subarachnoid block group, which was our primary objective.

We have also compared incidence of urinary retention anytime over a 12 hour postoperative period and average length of hospital stay in both the groups; which was our secondary objectives. The study was conducted on 60 patients undergoing elective anorectal surgeries e.g. haemorrhoids, fissure in ano and anal tags. Patients were randomly allotted to either procedure with the help of computer generated random number table. Each group contained 30 patients. After a thorough physical examination and routine investigations, patients were given either surface local anaesthesia or subarachnoid block primarily to compare the postoperative pain at 1, 3 and 5 hours in both the groups.

We have found postoperative pain relief at 1, 3 hours in surface local anasesthesia were found statistically significant. Secondarily our study also showed no relation in the difference of intensity of postoperative pain between surface local anaesthesia and subarachoid block group at 5 hours post operatively, although there were more cases of post-operative urinary retention in subarachnoid

block group as compared to surface local anasesthesia, which was also statistically significant.

Our study also showed all patients in surface local anasesthesia group were discharged in 3rd day post operatively, making it more cost effective for these patients. There were no statistical differences when the underlying condition is either fissure in ano or haemorrhoids and either surface local anasesthesia or subarachoid block is given to the above patients.

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# CONSENT FOR PARTICIPATION IN RESEARCH

Mr/Mrs. _____ we are requesting you to enroll yourself in our study of **"A ONE YEAR RANDOMISED CONTROL TRIAL COMPARING SURFACE LOCAL ANAESTHESIA VS SUBARACHNOID BLOCK IN ANORECTAL SURGERIES WITH RESPECT TO POST OPERATIVE PAIN AT KLES PRABHAKAR KORE HOSPITAL, BELGAUM"** conducted by **Dr. Solingapuram Lakshmi Tilak,** Post Graduate student in General Surgery under the guidance of **Dr. S. S. Shimikore** $_{\text{M.S}}$ at JNMC, Belgaum under K.L.E University Belgaum Karnataka.

You are suffering form an anorectal disease which needs curative surgery under anesthesia.

You have been requested to participate in the research because post operative pain forms significant form of morbidity following anorectal procedures During this study you will be asked some questions which you are supposed to answer to the best of your knowledge.

Your participation in our research is voluntary, and your decision to participate or not will not affect your current or future relation with JNMC. If you decide to participate you are free to withdraw at anytime without affecting the relationship.

Purpose of this research is to compare the post operative pain of surface local anaesthesia vs spinal anaesthesia

**PROCEDURE INVOLVED**

You will be randomly selected for surface local anaesthesia/spinal anaesthesia for your anorectal operation using a computer generated randomization table similar surgical procedure will be carried out in both the groups.

**RISK AND BENEFITS**

There are minor risks involved with both types of anaesthesia like post dural headache, hypotension, urinary retention and rarely hypersensitivity. Though

both methods have proven benefits in anorectal procedures. We are trying to compare both of them in this study.

**PRIVACY AND CONFIDENTIALITY**

The only people who will know that you are the research subjects are the members of the research team. No information about you will be disclosed to others without your written permission, except :

a) In emergency to protect your rights and welfare

b) If required by law

When the results of the research will be published or discussed in conferences, no information will be disclosed that will reveal your identity. Any information that is obtained in connection with this study and that can be identified with you will remain confidential, and will be disclosed only with your permission of if required by law. In the event of injury related to this research study, treatment will be made available in KLES Hospital, Belgaum, by law. In case of doubt or emergency you may contact Dr. Solingapuram Lakshmi Tilak at 9986327765. You will not be paid or offered any free gift for participating in the research. There will be no remuneration for participation in the research. You will not be reimbursed for expenses such as conveyance. If you volunteer to be in this study, you may withdraw at any time and refuse to answer any question.

If you have any question about your rights as a research subject, you may call Chairman of Ethical Clearance Committee at JNMC, Belgaum.

You will be given a copy of this form for your information and for your record.

Sign of the subject Date

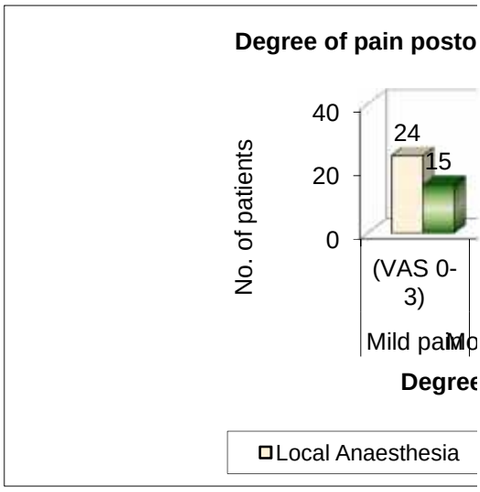
Name

Sign of the Researcher Date

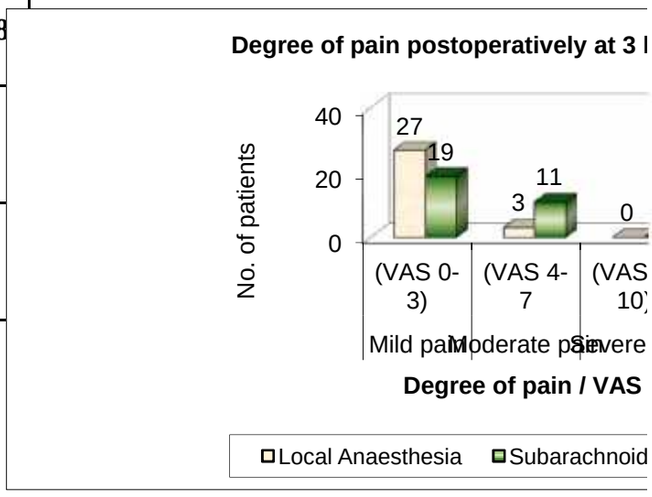
Name

Sign of a Witness Date

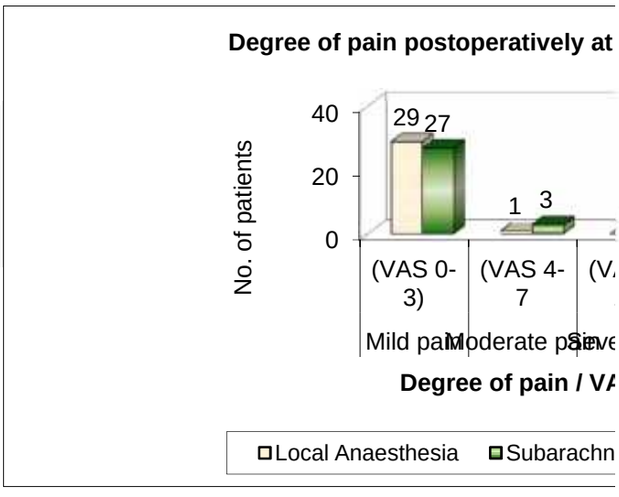
| Group | Mild pain (VAS 0-3) | Moderate pain (VAS 4-7 | Severe pain (VAS 8-10) |
|---|---|---|---|
| Local Anaesthesia | 24 | 6 | 0 |
| Subarachnoid block | 15 | 15 | 0 |



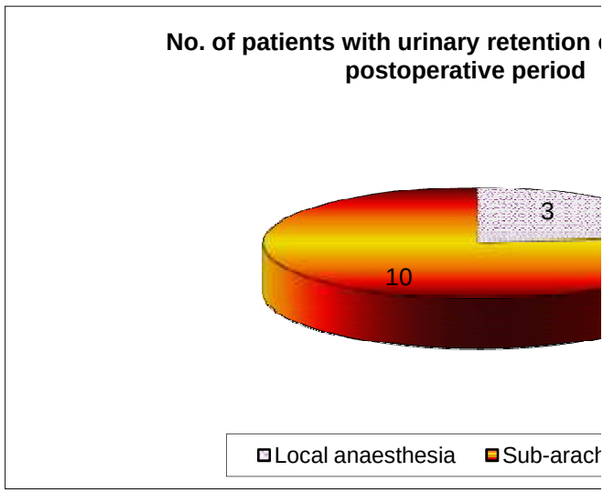

| Group | Mild pain (VAS 0-3) | Moderate pain (VAS 4-7 | Severe pain (VAS 8-10) |
|---|---|---|---|
| Local Anaesthesia | 27 | 3 | 0 |
| Subarachnoid block | 19 | 11 | 0 |



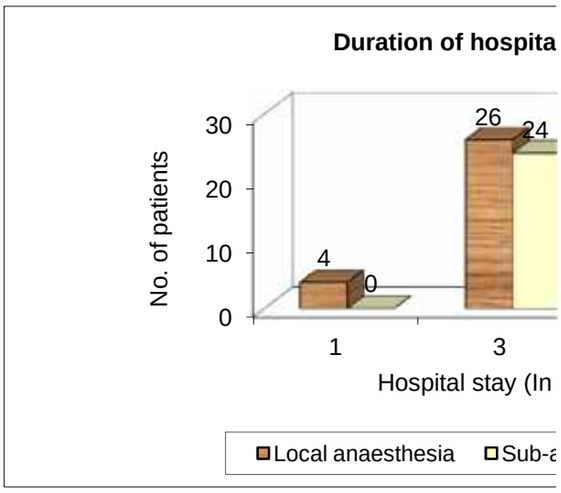

| Group | Mild pain (VAS 0-3) | Moderate pain (VAS 4-7 | Severe pain (VAS 8-10) |
|---|---|---|---|
| Local Anaesthesia | 29 | 1 | 0 |
| Subarachnoid block | 27 | 3 | 0 |



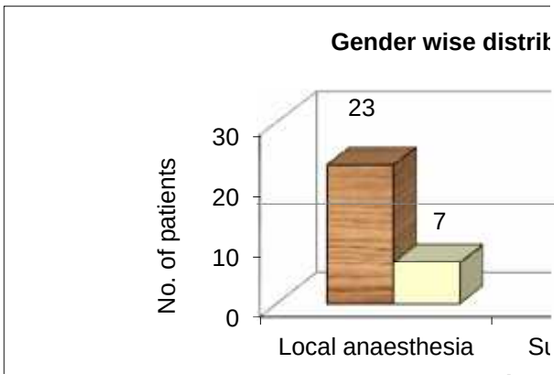
| Urinary retention any time over 12 hrs post operative duration | Local anaesthesia | Sub-arachnoid block |
|---|---|---|
| No. of patients | 3 | 10 |



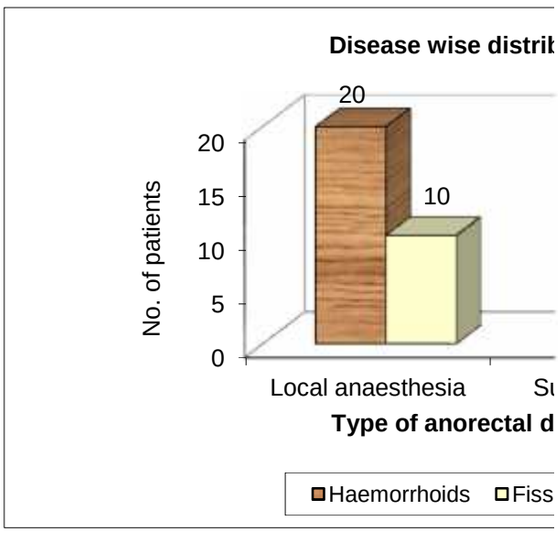

| | Local anaesthesia | Sub-arachnoid block |
|---|---|---|
| **1** | 4 | 0 |
| **3** | 26 | 24 |
| **5** | 0 | 6 |

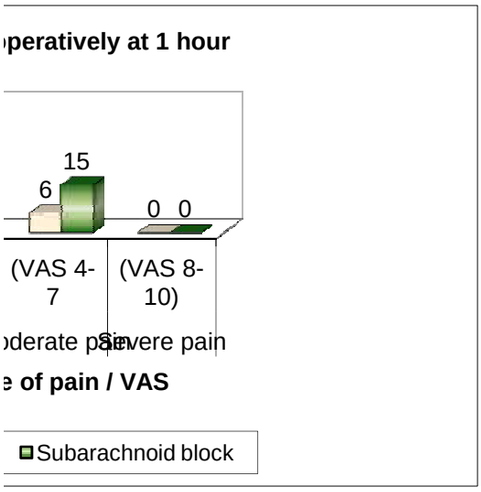


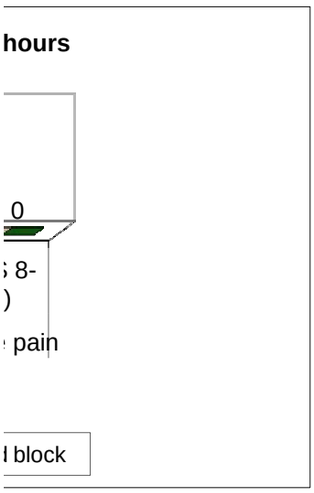

| Gender | Local anaesthesia | Sub-arachnoid block |
|---|---|---|
| **Male** | 23 | 22 |
| **Female** | 7 | 8 |

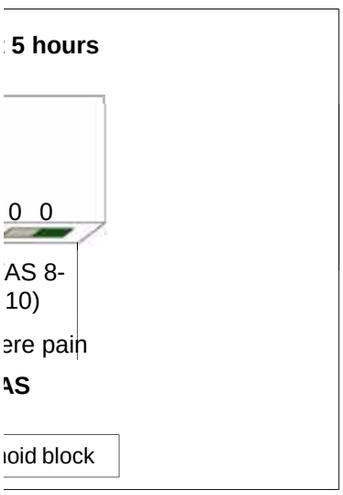



| Disease | Local anaesthesia | Sub-arachnoid block |
|---|---|---|
| Haemorrhoids | 20 | 15 |
| Fissure in ano | 10 | 15 |

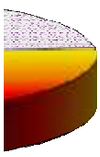



peratively at 1 hour
15
6
0 0
(VAS 4-7
(VAS 8-10)
derate pain
Severe pain
e of pain / VAS
Subarachnoid block


hours
0
8-
)
pain
l block

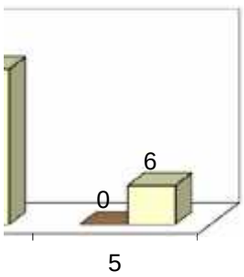

5 hours
0 0
AS 8-
10)
ere pain
AS
oid block

**over a 12 hour**



noid block

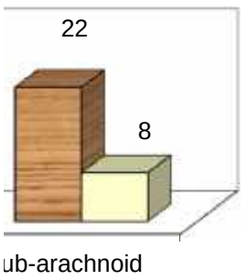
**l stay**




days)

arachnoid block

**oution**




ub-arachnoid
block

DIOCK

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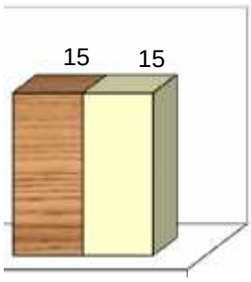
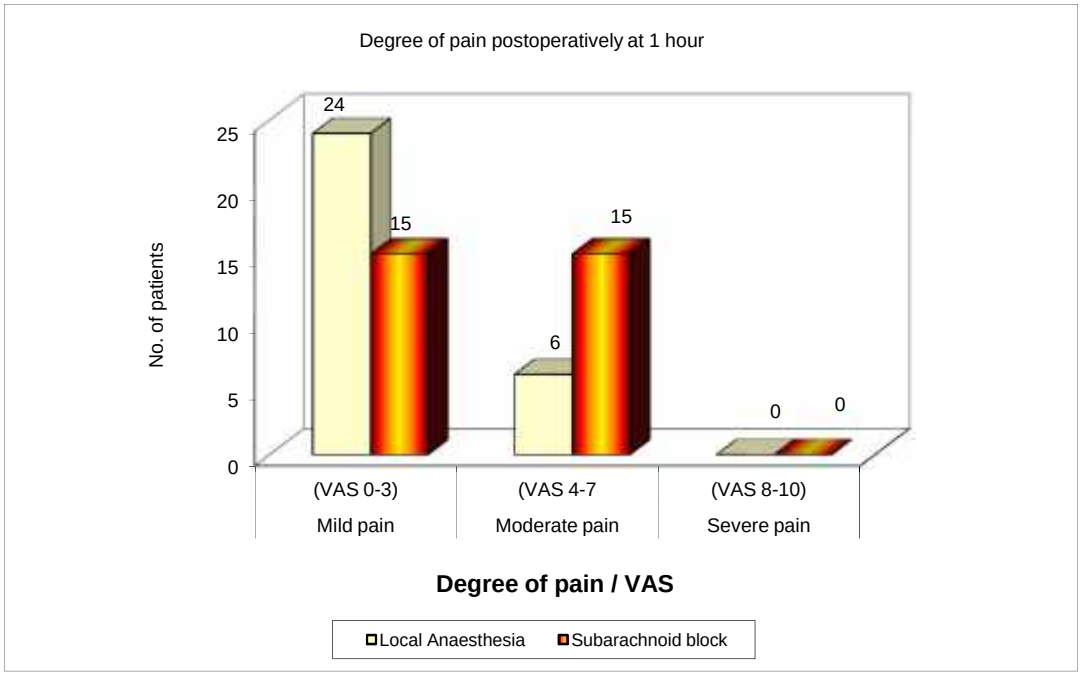
bution

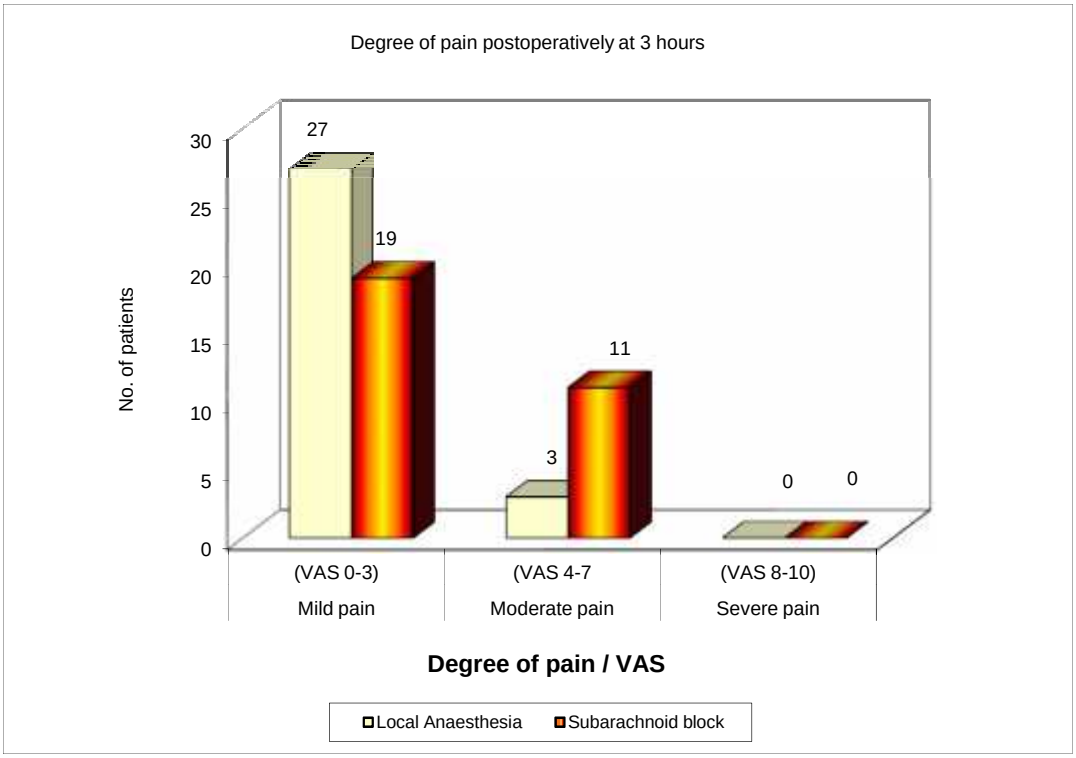


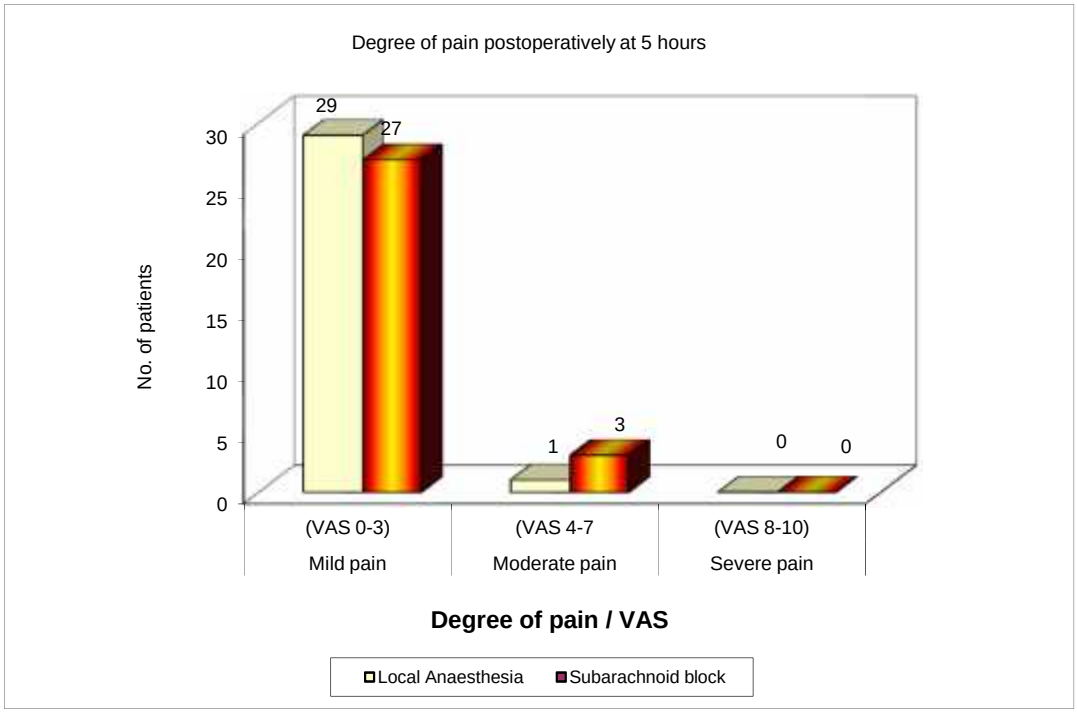

ub-arachnoid
block

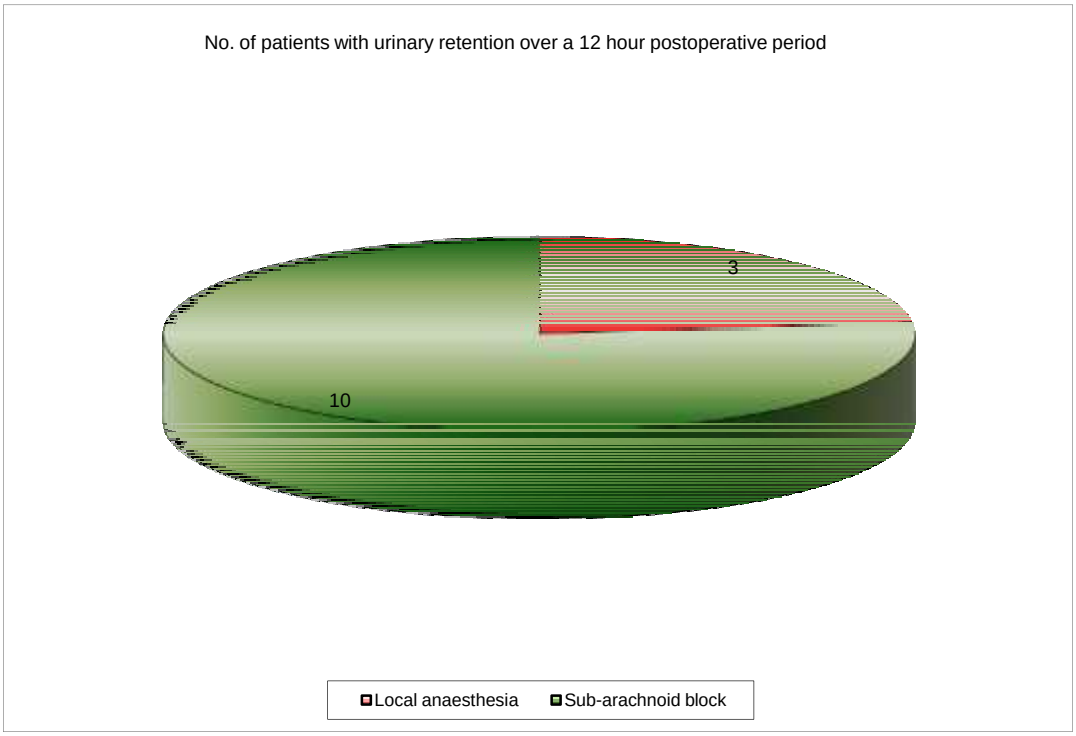
**liseases**

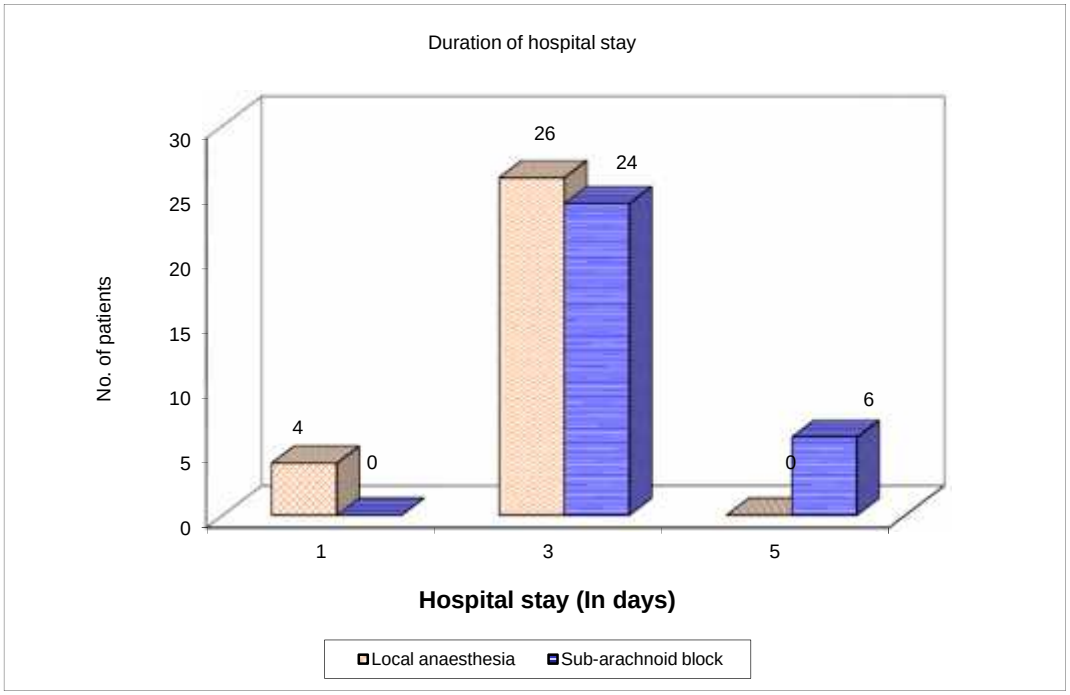
sure in ano

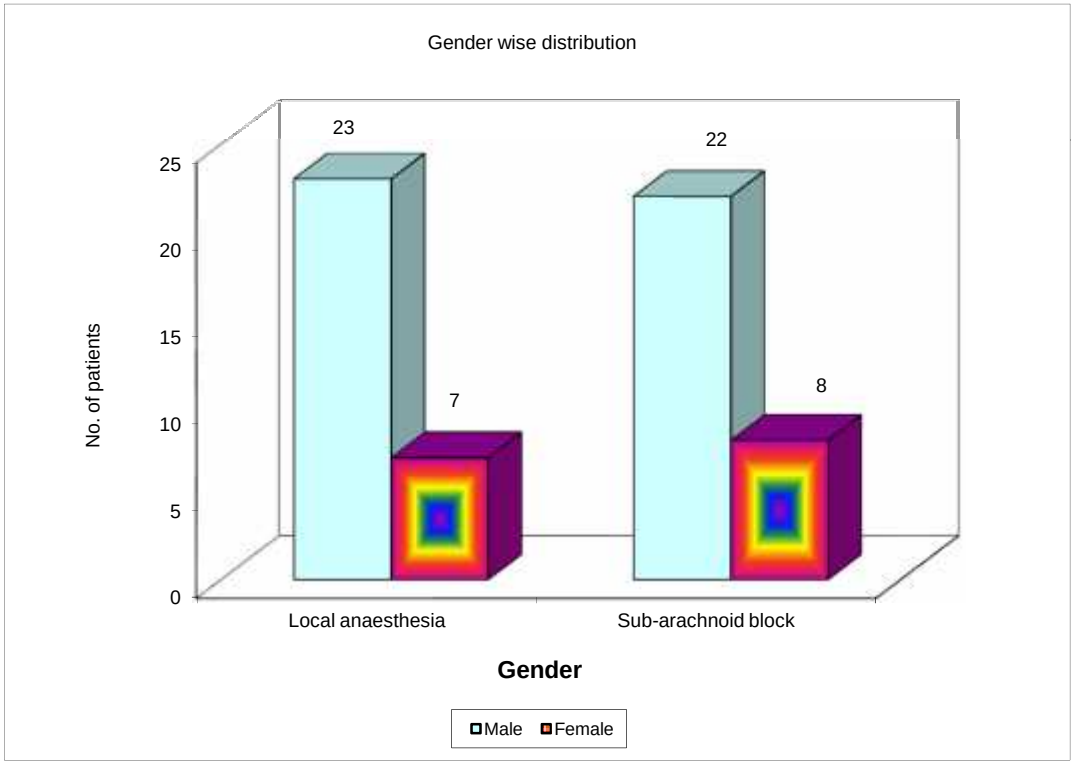

Degree of pain postoperatively at 1 hour
No. of patients
25
20
15
10
5
0
24
15
6
15
0
0
(VAS 0-3)
Mild pain
(VAS 4-7
Moderate pain
(VAS 8-10)
Severe pain
Degree of pain / VAS
Local Anaesthesia
Subarachnoid block

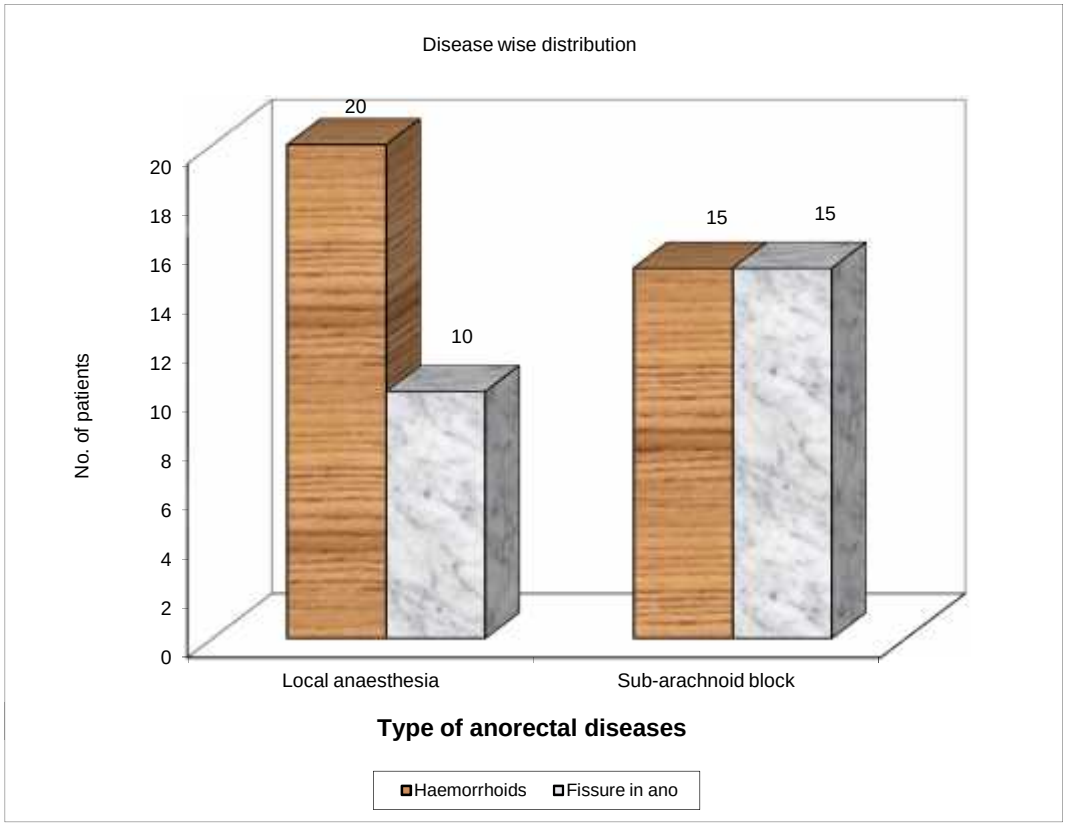

Degree of pain postoperatively at 3 hours
No. of patients
30
25
20
15
10
5
0
27
19
3
11
0
0
(VAS 0-3)
Mild pain
(VAS 4-7
Moderate pain
(VAS 8-10)
Severe pain
Degree of pain / VAS
Local Anaesthesia
Subarachnoid block


Degree of pain postoperatively at 5 hours
No. of patients
30
25
20
15
10
5
0
29
27
1
3
0
0
(VAS 0-3)
Mild pain
(VAS 4-7
Moderate pain
(VAS 8-10)
Severe pain
Degree of pain / VAS
Local Anaesthesia
Subarachnoid block


No. of patients with urinary retention over a 12 hour postoperative period
3
10
Local anaesthesia
Sub-arachnoid block


Duration of hospital stay
No. of patients
30
25
20
15
10
5
0
26
24
4
0
0
6
1
3
5
Hospital stay (In days)
Local anaesthesia
Sub-arachnoid block


Gender wise distribution
No. of patients
25
20
15
10
5
0
23
22
7
8
Local anaesthesia
Sub-arachnoid block
Gender
Male
Female


Disease wise distribution
No. of patients
0
2
4
6
8
10
12
14
16
18
20
20
10
15
15
Local anaesthesia
Sub-arachnoid block
Type of anorectal diseases
Haemorrhoids
Fissure in ano

# KEY TO MASTER CHART

| | | |
|---|---|---|
| SAB | : | Subarachnoid Block |
| SLA | : | Surface Local Anaesthesia |
| D.M | : | Diabetes Mellitus |
| H.T | : | Hypertension |

## MASTER CHART

| S.No | Patient's Names | I.P No | Age (yrs) | Sex | Underlying condition (Fissure/Haemorrhoids, Anal tags) | Co-morbid conditions (D.M / H.T) | Procedure adopted (SAB / L.A.) | Operation | Pain at 1hr post.op | Pain at 3 hrs post.op | pain at 5hrs post .op | Urinary retention any time over 12 hrs post.op duration | Duration of hospital stay (days) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Rukmini | 254342 | 60 | F | External haemorrhoids | Nil | SAB | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 2 | Ramangouda | 256100 | 60 | M | Chronic fissure in ano | Nil | SAB | Sphincterotomy | Moderate | Moderate | Mild | Yes | 3 |
| 3 | laxman patil | 262443 | 45 | M | External haemorrhoids | Nil | SAB | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 4 | laxmibai | 261632 | 62 | F | Chronic fissure in ano | D.M | SAB | Sphincterotomy | Moderate | Moderate | Mild | Yes | 5 |
| 5 | Iranna | 283567 | 20 | M | External haemorrhoids | Nil | SAB | Sphincterotomy + Fissurectomy | Moderate | Moderate | Mild | No | 3 |
| 6 | prabhavathi | 291819 | 50 | F | Chronic fissure in ano | Nil | SAB | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 7 | Malappa | 291820 | 50 | M | External haemorrhoids | Nil | SAB | Haemorrhoidectomy | Moderate | Moderate | Mild | Yes | 3 |
| 8 | Lakkapa | 298227 | 58 | M | External haemorrhoids | Nil | SAB | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 9 | Syamala | 290191 | 50 | F | External haemorrhoids | H.T | SAB | Haemorrhoidectomy | Moderate | Mild | Mild | No | 3 |
| 10 | Irranna | 290794 | 20 | M | Chronic fissure in ano | Nil | SAB | Sphincterotomy | Mild | Mild | Mild | No | 3 |
| 11 | Paul kamal | 253772 | 46 | M | Thrombosed external haemorrhoids | Nil | SAB | Haemorrhoidectomy | Moderate | Moderate | Moderate | Yes | 5 |
| 12 | Vignesh | 258450 | 23 | M | External haemorrhoids | Nil | SAB | Open Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 13 | Bhimappa | 258497 | 64 | M | Chronic fissure in ano | Nil | SAB | Sphincterotomy | Moderate | Mild | Mild | Yes | 3 |
| 14 | Vishwas rao | 264993 | 32 | M | Chronic fissure in ano | Nil | SAB | Sphincterotomy | Moderate | Mild | Mild | No | 3 |
| 15 | Raju kamble | 269819 | 60 | M | External haemorrhoids | Nil | SAB | Closed Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |

| S.No | Patient's Names | I.P No | Age (yrs) | Sex | Underlying condition (Fissure/Haemorrhoids, Anal tags) | Co-morbid conditions (D.M / H.T) | Procedure adopted (SAB / L.A.) | Operation | Pain at 1hr post.op | Pain at 3 hrs post.op | pain at 5hrs post .op | Urinary retention any time over 12 hrs post.op duration | Duration of hospital stay (days) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | Sheetal | 273455 | 22 | F | Chronic fissure in ano | Nil | SAB | Sphincterotomy | Mild | Mild | Mild | No | 3 |
| 17 | Apasahab | 284467 | 56 | M | Chronic fissure in ano | H.T | SAB | Sphincterotomy | Moderate | Moderate | Mild | Yes | 5 |
| 18 | Sidappa | 288609 | 22 | M | Chronic fissure in ano | Nil | SAB | Sphincterotomy | Moderate | Moderate | Mild | Yes | 3 |
| 19 | Basawwa | 290075 | 40 | F | Chronic fissure in ano | Nil | SAB | Sphincterotomy | Mild | Mild | Mild | No | 3 |
| 20 | Sumangala | 297503 | 32 | F | Chronic fissure in ano | Nil | SAB | Sphincterotomy | Moderate | Moderate | Mild | No | 5 |
| 21 | Maruthi | 299418 | 42 | M | Chronic fissure in ano | Nil | SAB | Fissurectomy + Anal dilatation | Mild | Mild | Mild | No | 3 |
| 22 | Asiya yusuf | 288496 | 26 | F | Chronic fissure in ano | Nil | SAB | Fissurectomy + Anal dilatation | Moderate | Moderate | Moderate | No | 5 |
| 23 | Chanabasaya | 294478 | 65 | M | Internal haemorrhoids | Nil | SAB | Open Haemorrhoidectomy | Moderate | Moderate | Mild | Yes | 3 |
| 24 | Shankar | 286954 | 42 | M | External haemorrhoids | Nil | SAB | Closed Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 25 | Annappa | 286411 | 35 | M | Chronic fissure in ano | Nil | SAB | Fissurectomy + Anal dilatation | Moderate | Mild | Mild | Yes | 3 |
| 26 | Faiyaz | 263798 | 38 | M | External haemorrhoids | Nil | SAB | Closed Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 27 | satish | 262432 | 30 | M | Internal haemorrhoids | Nil | SAB | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 28 | Gangappa | 261860 | 65 | M | Prolapsed haemorrhoids | Nil | SAB | Open Haemorrhoidectomy | Moderate | Moderate | Moderate | Yes | 5 |
| 29 | Bhujang | 259379 | 44 | M | Chronic fissure in ano | Nil | SAB | Fissurectomy + Anal dilatation | Mild | Mild | Mild | No | 3 |
| 30 | Paramappa | 290853 | 40 | M | Prolapsed haemorrhoids | Nil | SAB | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |

| S.No | Patient's Names | I.P No | Age (yrs) | Sex | Underlying condition (Fissure/Haemorrhoids, Anal tags) | Co-morbid conditions (D.M / H.T) | Procedure adopted (SAB / L.A.) | Operation | Pain at 1hr post.op | Pain at 3 hrs post.op | pain at 5hrs post .op | Urinary retention any time over 12 hrs post.op duration | Duration of hospital stay (days) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | Ganapathi | 298394 | 40 | M | Chronic fissure in ano | Nil | LA | Fissurectomy + Anal dilatation | Mild | Mild | Mild | No | 3 |
| 32 | Shridhar | 299204 | 41 | M | Chronic fissure in ano | Nil | LA | Fissurectomy + Anal dilatation | Moderate | Moderate | Mild | No | 3 |
| 33 | Farhin | 299506 | 36 | M | Chronic fissure in ano | Nil | LA | Fissurectomy + Anal dilatation | Mild | Mild | Mild | No | 3 |
| 34 | Bassaya | 3008836 | 40 | M | Chronic fissure in ano | Nil | LA | Sphincterotomy | Mild | Mild | Mild | No | 1 |
| 35 | Asha | 301336 | 35 | F | External haemorrhoids | Nil | LA | Closed Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 36 | Shivaputraya | 287107 | 60 | M | External haemorrhoids | Nil | LA | Closed Haemorrhoidectomy | Mild | Mild | Mild | Yes | 3 |
| 37 | Basanaik | 288719 | 64 | M | External haemorrhoids | Nil | LA | Closed Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 38 | Suresh patil | 255111 | 32 | M | Internal haemorrhoids | Nil | LA | Haemorrhoidectomy | Moderate | Mild | Mild | No | 3 |
| 39 | Bibi nazira | 257358 | 38 | F | Internal haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 1 |
| 40 | Sevab nyima | 260135 | 30 | M | Prolapsed haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 41 | Balappa | 260933 | 39 | M | Internal haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 42 | Malayya | 263893 | 42 | M | Prolapsed haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 43 | Suresh | 283904 | 46 | M | Internal haemorrhoids | Nil | LA | Haemorrhoidectomy | Moderate | Mild | Mild | No | 3 |
| 44 | Balu kitakar | 282982 | 45 | M | Prolapsed haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 45 | Sidrai burma | 286413 | 65 | M | Prolapsed haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | Yes | 3 |

| S.No | Patient's Names | I.P No | Age (yrs) | Sex | Underlying condition (Fissure/Haemorrhoids, Anal tags) | Co-morbid conditions (D.M / H.T) | Procedure adopted (SAB / L.A.) | Operation | Pain at 1hr post.op | Pain at 3 hrs post.op | pain at 5hrs post .op | Urinary retention any time over 12 hrs post.op duration | Duration of hospital stay (days) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | Irappa | 286461 | 65 | M | Internal haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 47 | Mahadevi | 303498 | 28 | F | Prolapsed haemorrhoids | Nil | LA | Haemorrhoidectomy | Moderate | Moderate | Mild | No | 3 |
| 48 | Hanumanth | 264146 | 20 | M | Internal haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 49 | Tanaji | 251664 | 28 | M | Chronic fissure in ano | Nil | LA | Sphincterotomy | Mild | Mild | Mild | No | 1 |
| 50 | Sumitra | 262747 | 50 | F | Chronic fissure in ano | Nil | LA | Fissurectomy + Anal dilatation | Mild | Mild | Mild | No | 3 |
| 51 | Basawwa | 263892 | 41 | F | External haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 1 |
| 52 | Maryimhee | 264588 | 26 | F | Internal haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 53 | Swathi | 282710 | 39 | F | External haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 54 | Pakshappa | 265236 | 48 | M | Chronic fissure in ano | Nil | LA | Sphincterotomy | Mild | Mild | Mild | No | 3 |
| 55 | Babasab | 290676 | 45 | M | Prolapsed haemorrhoids | Nil | LA | Haemorrhoidectomy | Moderate | Moderate | Moderate | No | 3 |
| 56 | Anwar | 291672 | 50 | M | External haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 57 | Maleshappa | 293312 | 41 | M | Chronic fissure in ano | Nil | LA | Fissurectomy + Anal dilatation | Mild | Mild | Mild | No | 3 |
| 58 | Parushetti | 300349 | 35 | M | Internal haemorrhoids | Nil | LA | Haemorrhoidectomy | Mild | Mild | Mild | No | 3 |
| 59 | Mahadev | 302052 | 35 | M | Chronic fissure in ano | Nil | LA | Sphincterotomy | Moderate | Mild | Mild | Yes | 3 |
| 60 | Basappa | 303694 | 36 | M | Chronic fissure in ano | Nil | LA | Sphincterotomy | Mild | Mild | Mild | No | 3 |

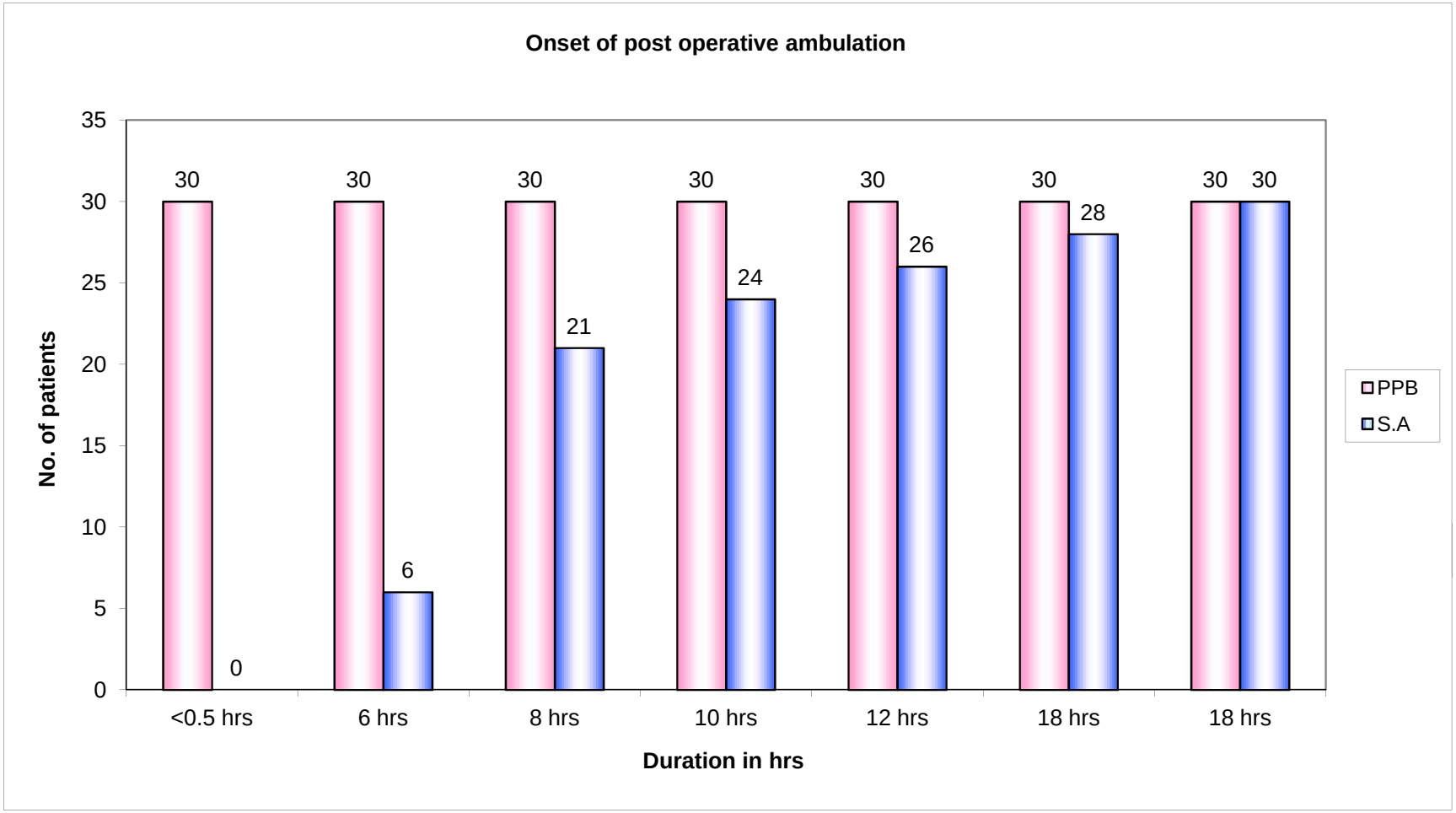
## MASTER CHART - STUDY GROUP (PPB)

| S.No | Names | I.P No | Age (yrs) | Sex | Underlying condition (Fissure/Haemorrhoids, Anal tags) | Co-morbid conditions (D.M / H.T) | Procedure adopted (SA / PPB) | Operation | Onset of post.op ambulation(minutes) | Pain at 3 hrs post.op | Lower limb motor/sensory sensations at 1 hr | Urine retention (Yes/No) <12 hr period | Hypotension (Yes/No) <12 hr period | Headache (Yes/No) upto discharge | Duration of hospital stay (days) | Complaints at discharge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Shashitala | 129095 | 38 | F | Chronic fissure in ano | Nil | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 2 | Severina | 129042 | 58 | F | External haemorrhoids | H.T | PPB | Haemorrhoidectomy | <30 | Moderate | Decreased peri-anal sensations | Yes | No | No | 3 | |
| 3 | Shantarayya | 124035 | 52 | M | Chronic fissure in ano | Nil | PPB | Sphincterotomy | <32 | Mild | Decreased peri-anal sensations | No | No | No | 3 | Moderate Pain at operated site |
| 4 | | 129115 | 50 | M | External haemorrhoids | Nil | PPB | Haemorrhoidectomy | <33 | Mild | Decreased peri-anal sensations | No | No | No | 3 | Bleeding at operated site |
| 5 | Somappa | 1430329 | 54 | M | Chronic fissure in ano | Nil | PPB | Sphincterotomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 6 | Irappa | 13790 | 56 | M | Haemorrhoids | Nil | PPB | Open Haemorrhoidectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 7 | Shivaji | 130118 | 38 | M | Chronic fissure in ano | D.M | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 4 | |
| 8 | Ganagawwa | 150057 | 35 | F | Haemorrhoids | Nil | PPB | Closed Haemorrhoidectomy | <30 | Moderate | Decreased peri-anal sensations | Yes | No | No | 3 | |
| 9 | | 135268 | 42 | F | Acute fissure in ano | D.M | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 4 | |
| 10 | Shankar | 136508 | 40 | M | Acute fissure in ano | Nil | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | Moderate Pain at operated site |
| 11 | Mallikarjun | 139049 | 50 | M | Acute fissure in ano | H.T | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 12 | Bhagwant | 139395 | 21 | M | Chronic fissure in ano | Nil | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 13 | Shailaga | 141314 | 38 | F | Chronic fissure in ano | Nil | PPB | Sphincterotomy + Fissurectomy | <30 | Moderate | Decreased peri-anal sensations | No | No | No | 3 | |
| 14 | | 141502 | 35 | M | Chronic fissure in ano, Anal tag | Nil | PPB | Sphincterotomy + Excision of anal tag | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 15 | Shantadevi | 143867 | 55 | F | Chronic fissure in ano | Nil | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | Moderate Pain at operated site |
| 16 | Sarojini | 198996 | 26 | F | Chronic fissure in ano | Nil | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 17 | Rekha | 148850 | 50 | F | Chronic fissure in ano | Nil | PPB | Sphincterotomy + Fissurectomy | <30 | Moderate | Decreased peri-anal sensations | Yes | No | No | 3 | |
| 18 | Mohan | 148783 | 55 | F | Internal haemorrhoids | Nil | PPB | Closed Haemorrhoidectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | Minimal bleeding at operated site |

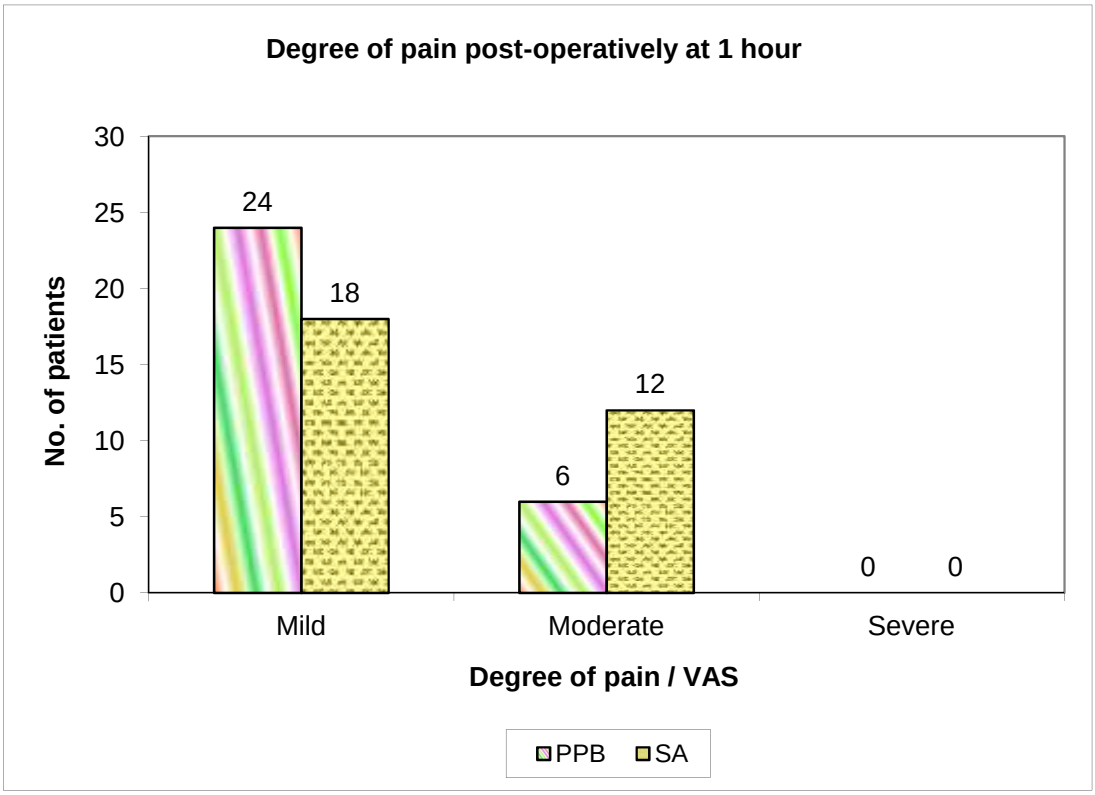
| S.No | Names | I.P No | Age (yrs) | Sex | Underlying condition (Fissure/Haemorrhoids, Anal tags) | Co-morbid conditions (D.M / H.T) | Procedure adopted (SA / PPB) | Operation | Onset of post.op ambulation(minutes) | Pain at 3 hrs post.op | Lower limb motor/sensory sensations at 1 hr | Urine retention (Yes/No) <12 hr period | Hypotension (Yes/No) <12 hr period | Headache (Yes/No) upto discharge | Duration of hospital stay (days) | Complaints at discharge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | Kashawa | 152873 | 53 | F | Chronic fissure in ano | D.M | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 4 | |
| 20 | Geeta | 153418 | 18 | F | Chronic fissure in ano | Nil | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 21 | Naganppa | 151702 | 65 | M | Haemorrhoids | Nil | PPB | Haemorrhoidectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 22 | | 154614 | 60 | M | Chronic fissure in ano | H.T | PPB | Sphincterotomy + Fissurectomy | <30 | Mild | Decreased peri-anal sensations | Yes | No | No | 3 | |
| 23 | Zudeba | 154574 | 40 | F | External haemorrhoids | Nil | PPB | Closed Haemorrhoidectomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 24 | Rubari | 155339 | 40 | F | External haemorrhoids + fissure in ano | Nil | PPB | Closed Haemorrhoidectomy + Sphincterotomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 25 | Jayshree | 155968 | 40 | F | External haemorrhoids + fissure in ano | Nil | PPB | Closed Haemorrhoidectomy + Sphincterotomy | <30 | Moderate | Decreased peri-anal sensations | No | No | No | 4 | |
| 26 | Vadiraj | 156040 | 49 | M | Haemorrhoids | Nil | PPB | Haemorrhoidectomy | <30 | | Decreased peri-anal sensations | No | No | No | 3 | |
| 27 | Jaya | 156686 | 28 | F | External haemorrhoids + fissure in ano | Nil | PPB | Closed Haemorrhoidectomy + Sphincterotomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 28 | Jaywant | 159079 | 65 | M | Acute fissure in ano | H.T | PPB | Sphincterotomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | |
| 29 | Shivanand | 160829 | 65 | M | Haemorrhoids | Nil | PPB | Haemorrhoidectomy | <30 | Moderate | Decreased peri-anal sensations | Yes | No | No | 3 | |
| 30 | Rubabi | 161124 | 43 | F | Chronic fissure in ano | Nil | PPB | Sphincterotomy | <30 | Mild | Decreased peri-anal sensations | No | No | No | 3 | Moderate Pain at operated site |

| S.No |
| --- |
| Names |
| I.P No |
| Age (yrs) |
| Sex |
| Underlying condition (Fissure/Haemorrhoids, Anal tags) |
| Co-morbid conditions (D.M / H.T) |
| Procedure adopted (SA / PPB) |
| Operation |
| Onset of post.op ambulation(minutes) |
| Pain at 3 hrs post.op |
| Lower limb motor/sensory sensations at 1 hr |
| Urine retention (Yes/No) <12 hr period |
| Hypotension (Yes/No) <12 hr period |
| Headache (Yes/No) upto discharge |
| Duration of hospital stay (days) |
| Complaints at discharge |

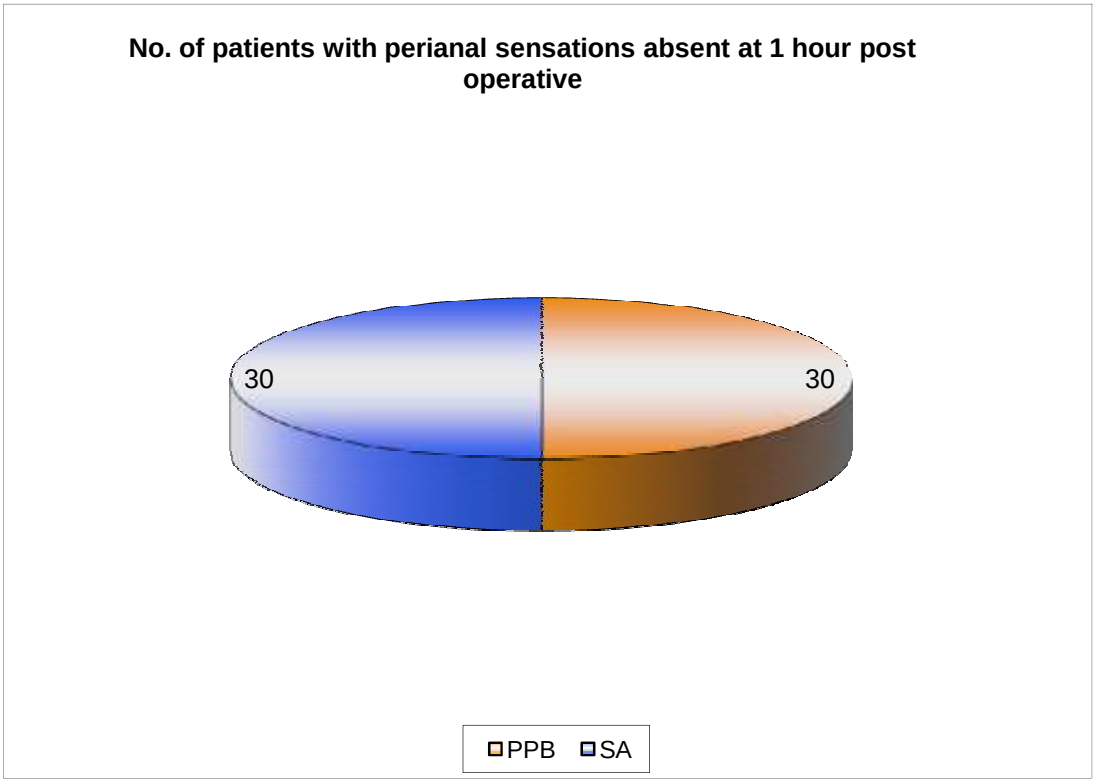
**Graph 1**


Onset of post operative ambulation
No. of patients
35
30
25
20
15
10
5
0
30
0
30
6
30
21
30
24
30
26
30
28
30
30
<0.5 hrs
6 hrs
8 hrs
10 hrs
12 hrs
18 hrs
18 hrs
Duration in hrs
PPB
S.A

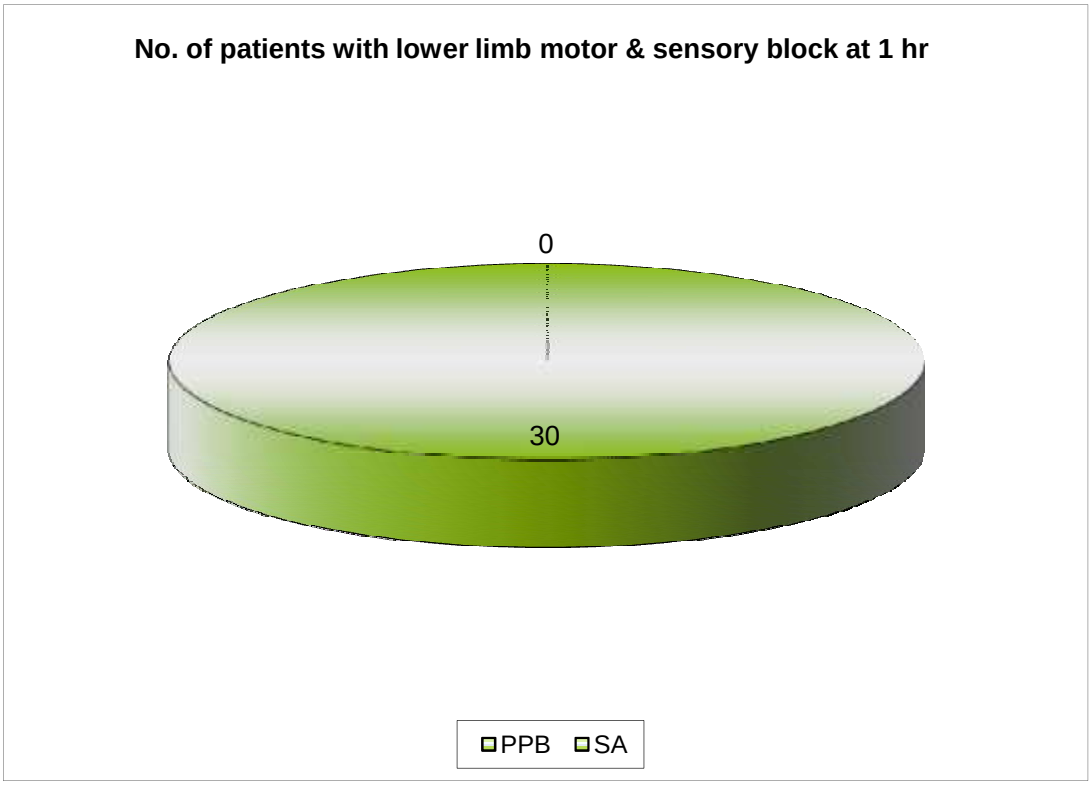
**Graph 2**



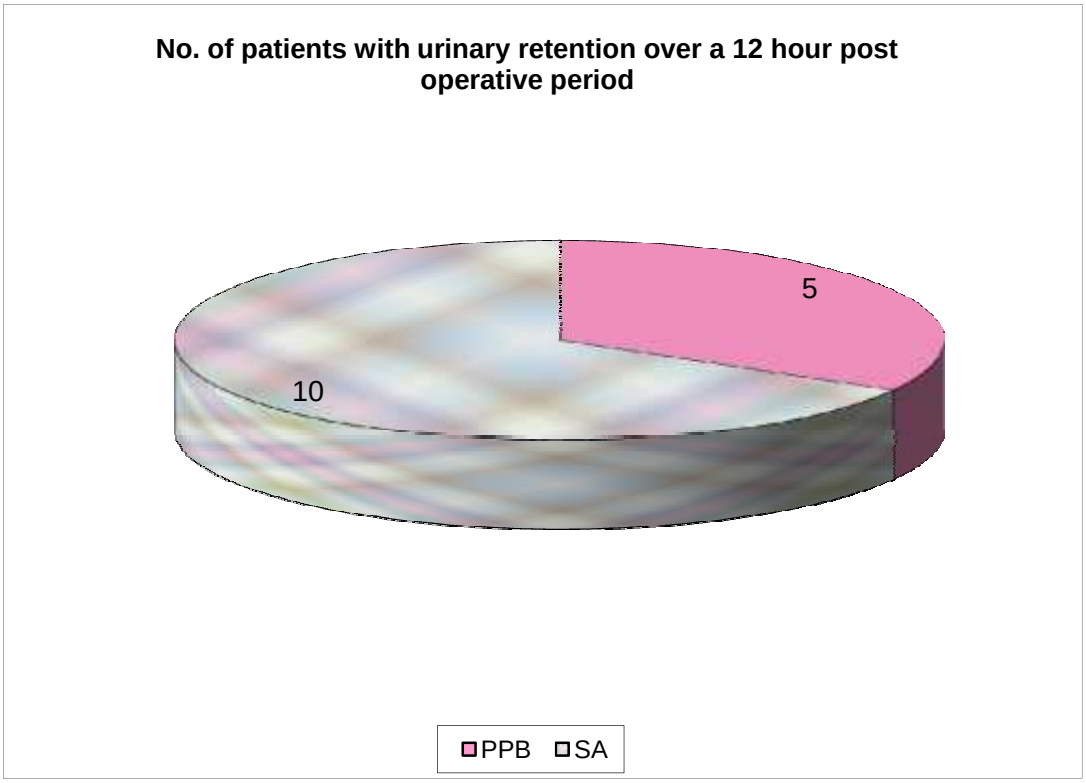

**Graph 3**



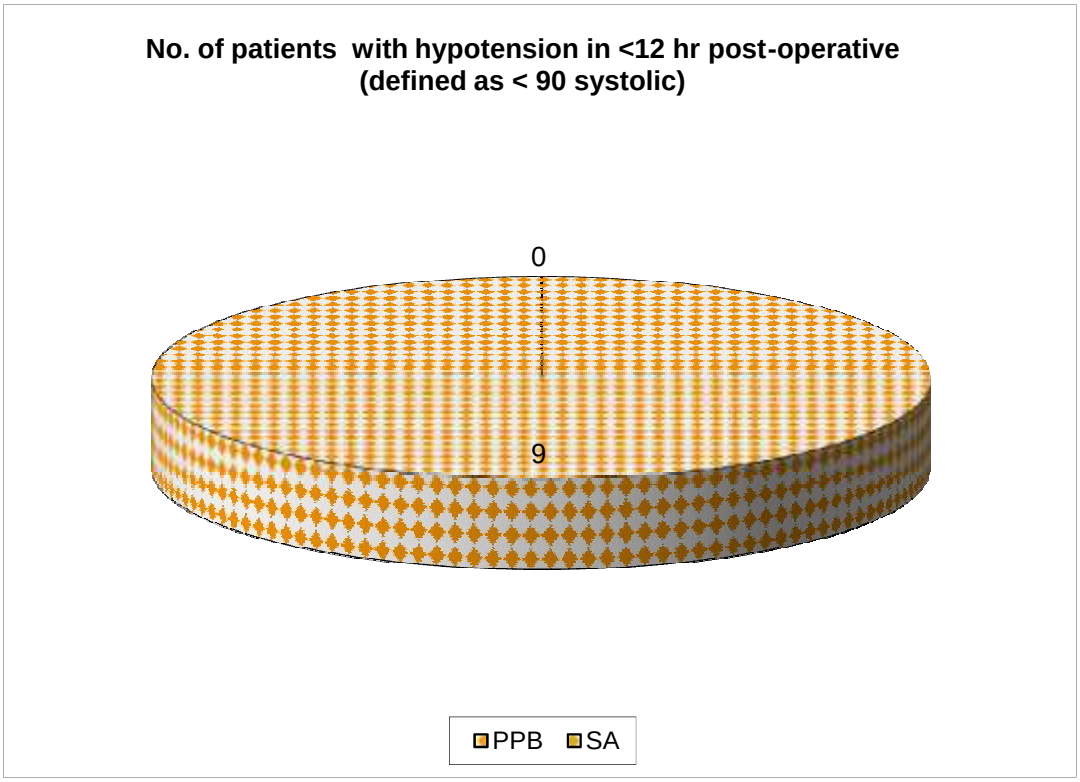
**Graph 4**



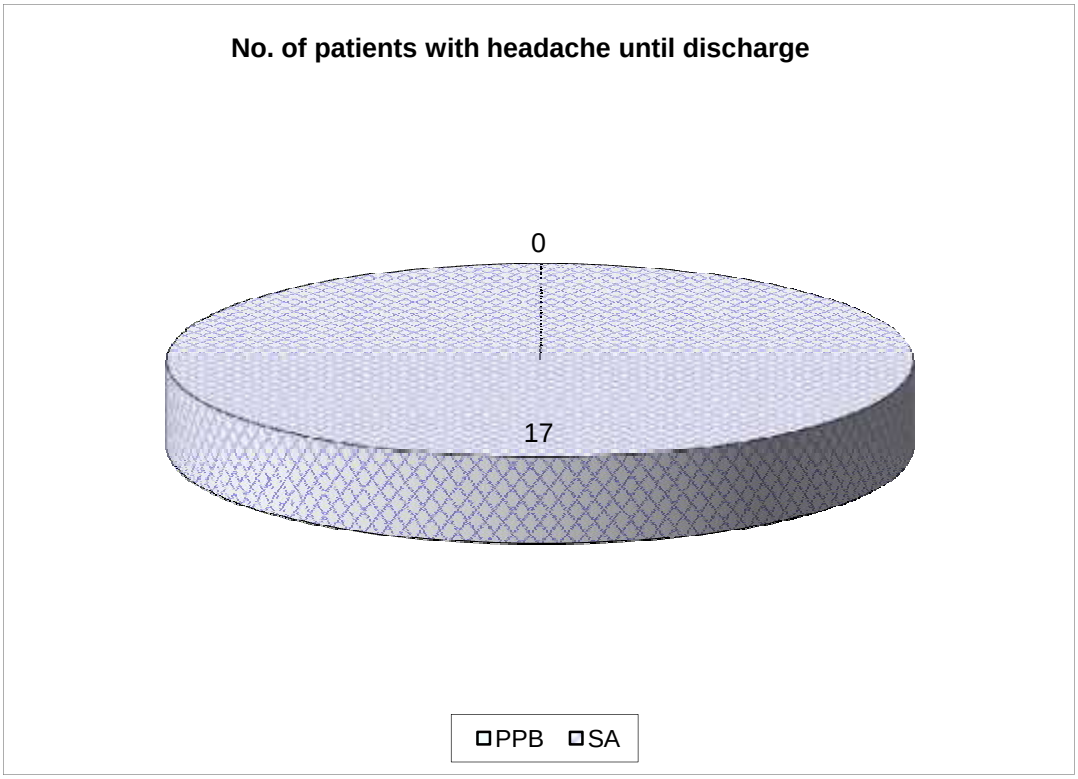

**Graph 5**



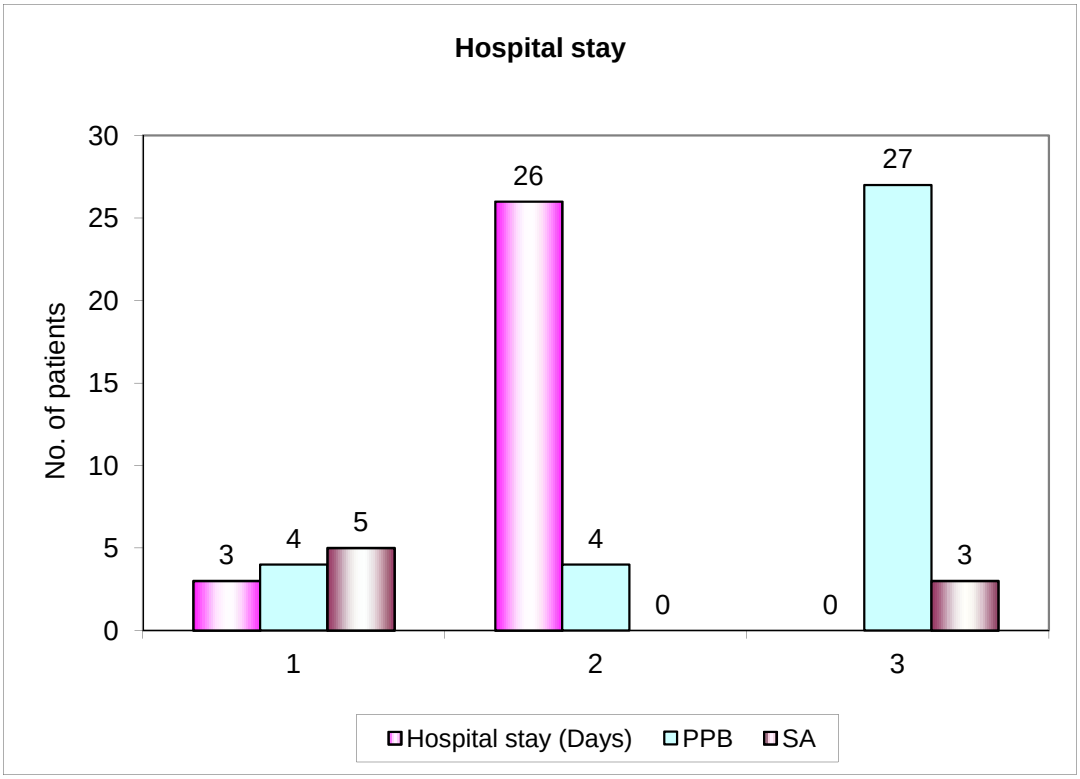
**Graph 6**



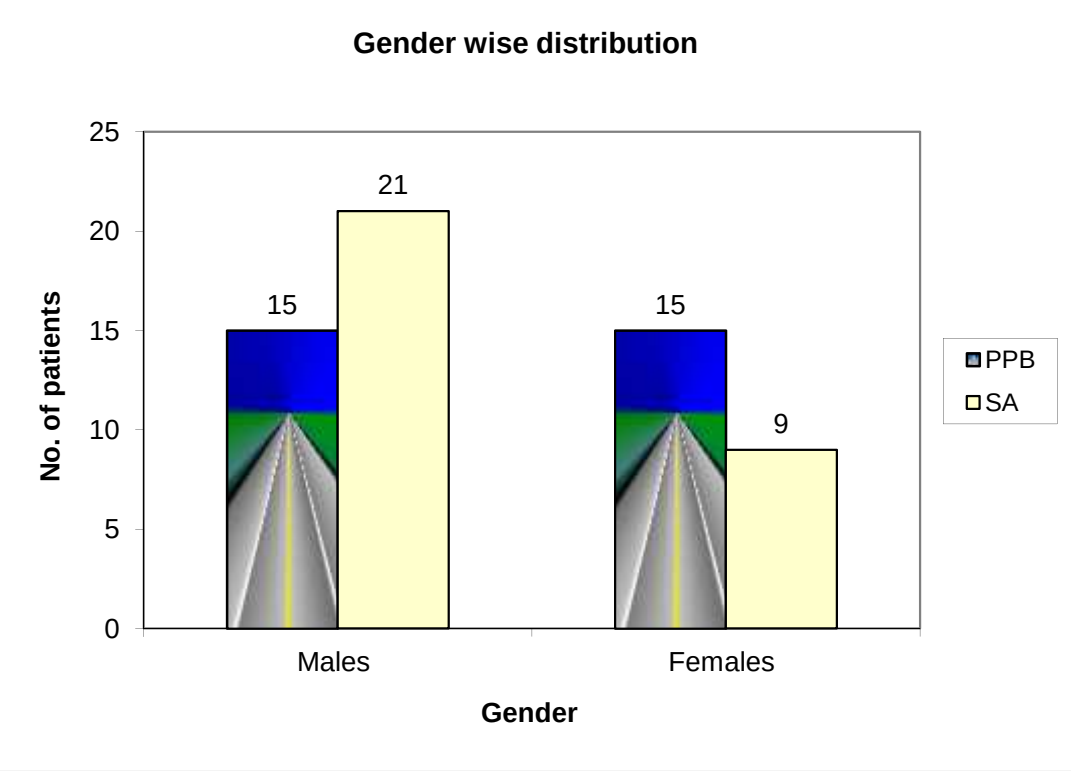

**Graph 7**



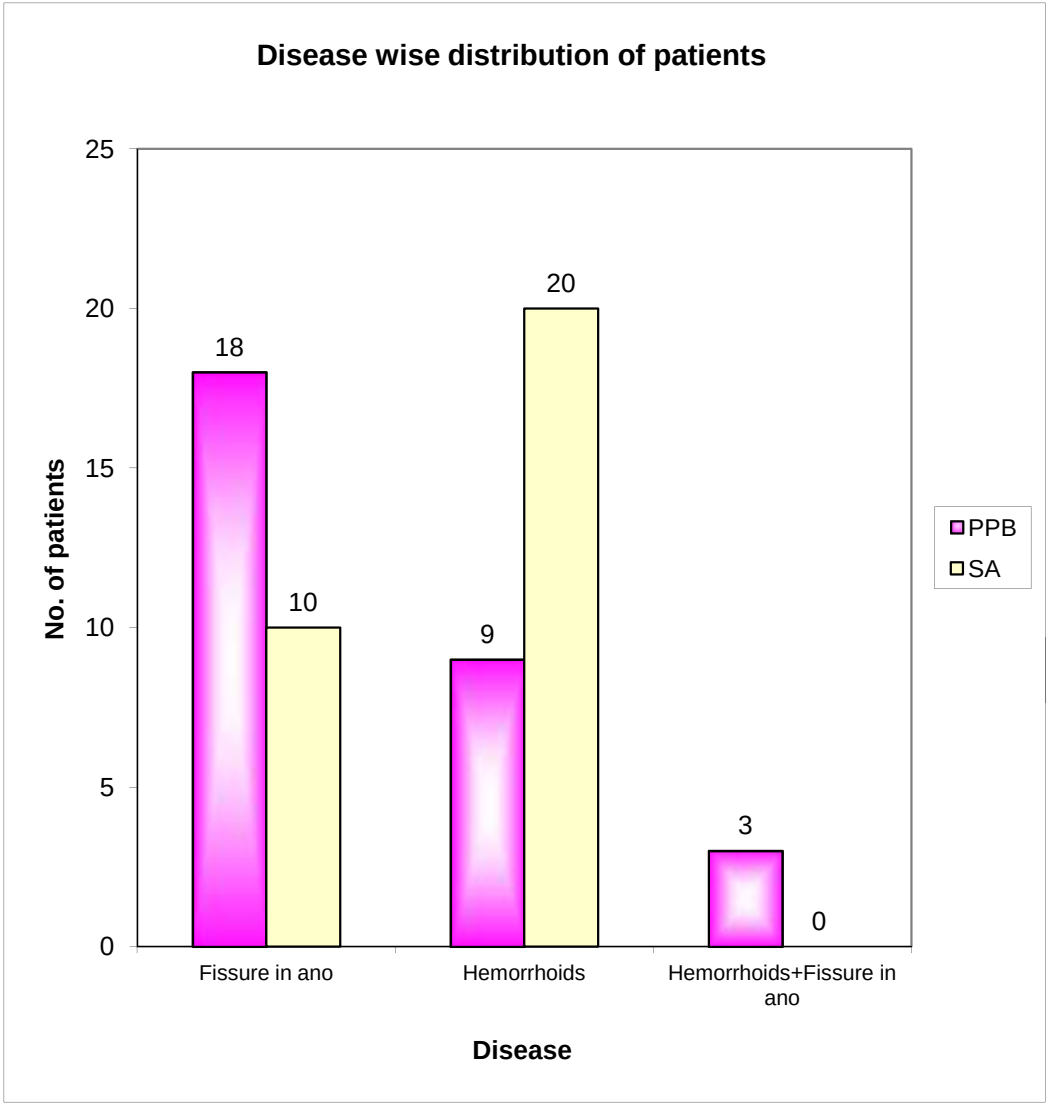
**Graph 8**



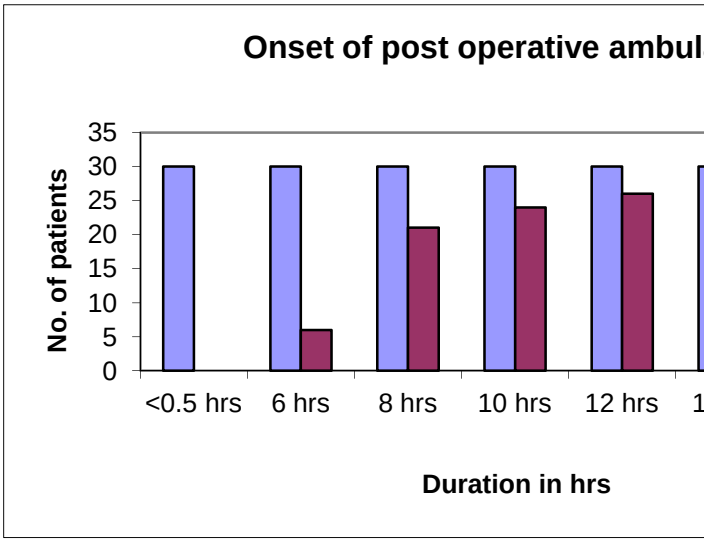

**Graph 9**



**Graph 10**

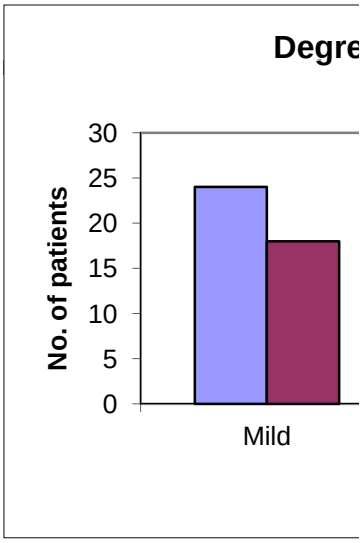

Disease wise distribution of patients
No. of patients
25
20
15
10
5
0
18
10
9
20
3
0
Fissure in ano
Hemorrhoids
Hemorrhoids+Fissure in ano
Disease
PPB
SA

| | PPB | S.A |
|---|---|---|
| <0.5 hrs | 30 | 0 |
| 6 hrs | 30 | 6 |
| 8 hrs | 30 | 21 |
| 10 hrs | 30 | 24 |
| 12 hrs | 30 | 26 |
| 18 hrs | 30 | 28 |
| 18 hrs | 30 | 30 |

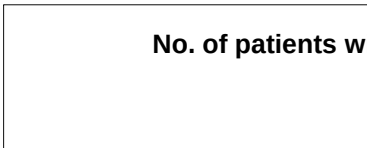


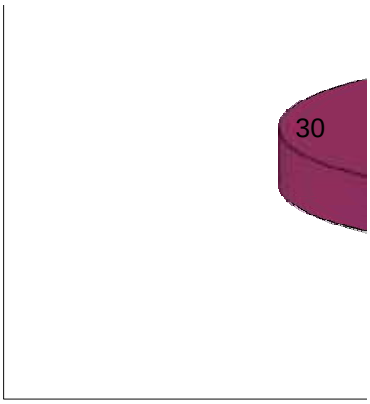

| Post-operative duration (hours) | PPB (No. of patients) | S.A (No. of Patients) |
|---|---|---|

| Degree of pain/VAS | PPB | SA |
|---|---|---|
| Mild | 24 | 18 |
| Moderate | 6 | 12 |
| Severe | 0 | 0 |

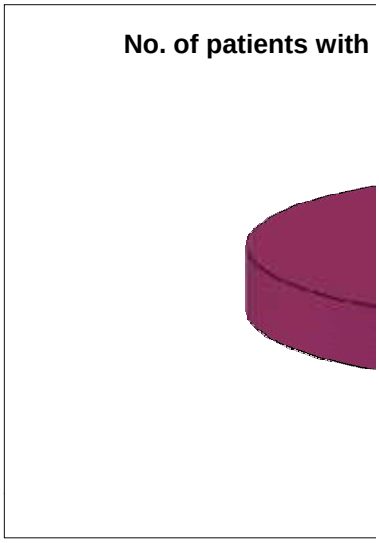



| PPB | 30 |
|---|---|
| SA | 30 |

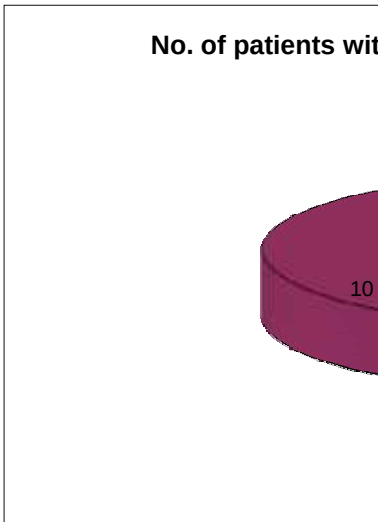




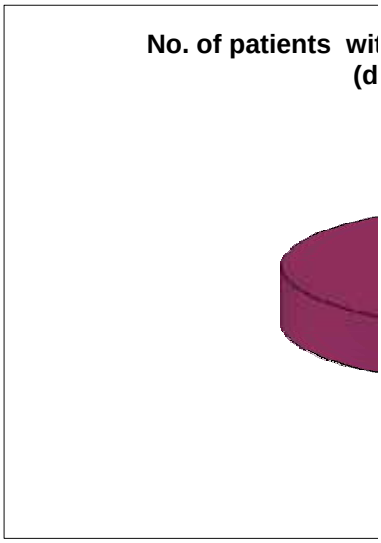

| | |
|---|---|
| **PPB** | 0 |
| **SA** | 30 |



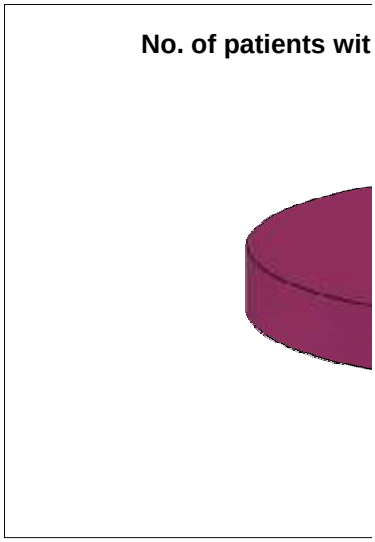

| | |
|---|---|
| **PPB** | 5 |
| **SA** | 10 |



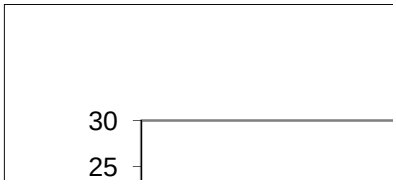
| | |
|---|---|
| **PPB** | 0 |
| **SA** | 9 |



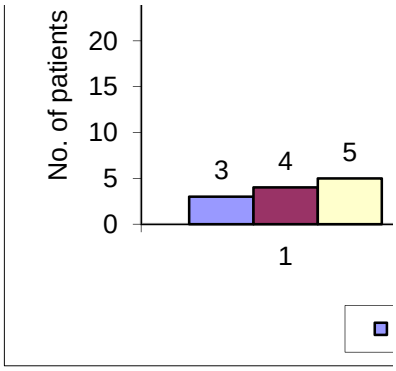

| | |
|---|---|
| **PPB** | 0 |
| **SA** | 17 |



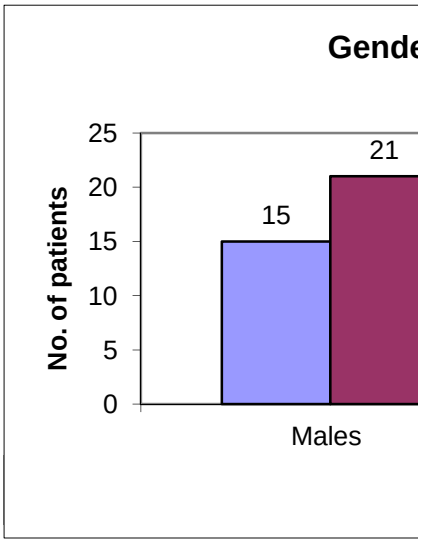

| **Hospital stay in days** | **PPB** | **SA** |
|---|---|---|



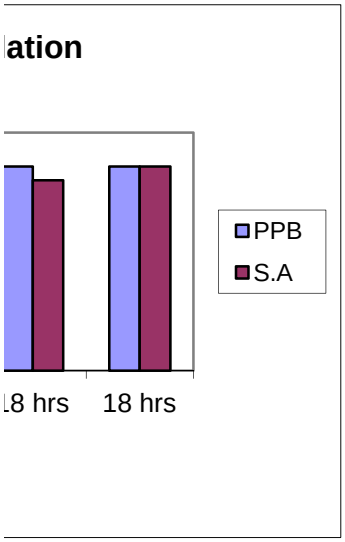
| | | |
|---|---|---|
| 3 | 26 | 0 |
| 4 | 4 | 27 |
| 5 | 0 | 3 |

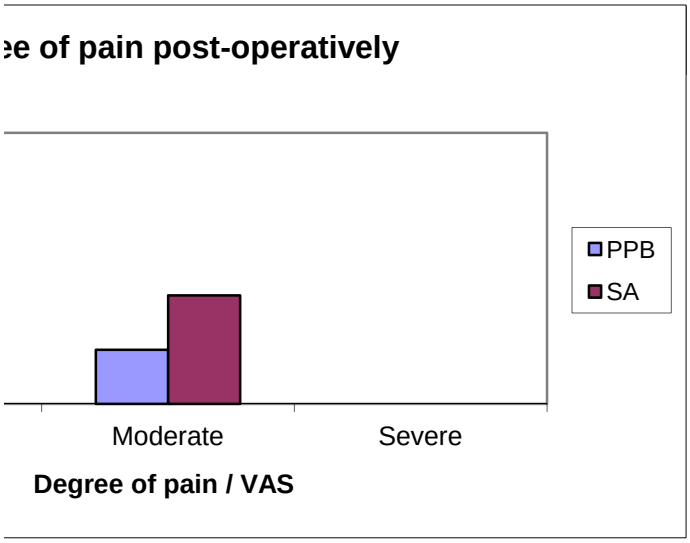


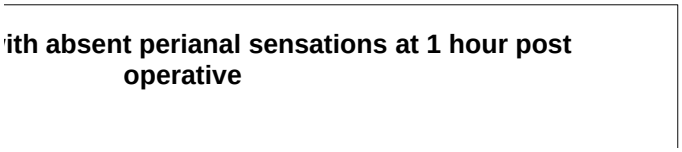

| Type of block | Males | Females |
|---|---|---|
| PPB | 15 | 15 |
| SA | 21 | 9 |

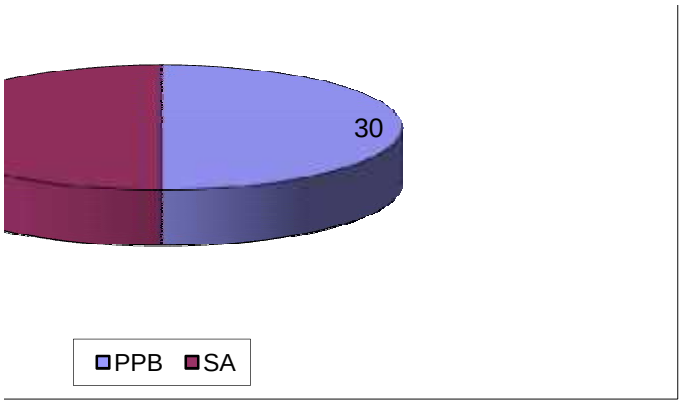


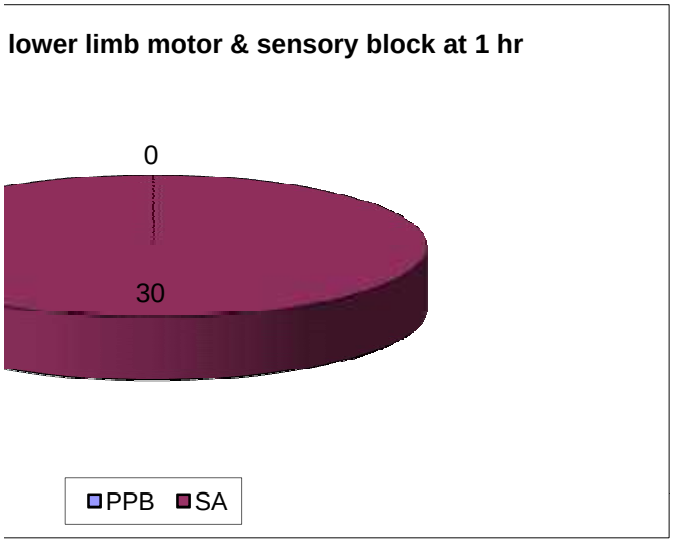

| Type of block | Fissure in ano | Hemorrhoids | Hemorrhoids+Fissure in ano |
|---|---|---|---|
| PPB | 18 | 9 | 3 |
| SA | 10 | 20 | 0 |

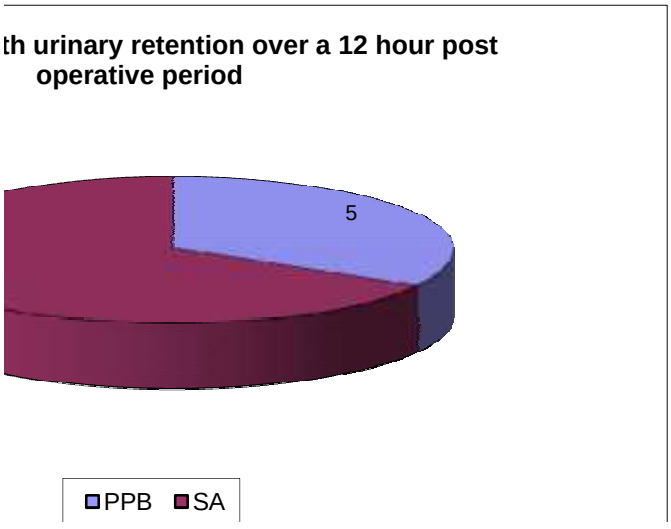

ation
PPB
S.A
8 hrs
18 hrs

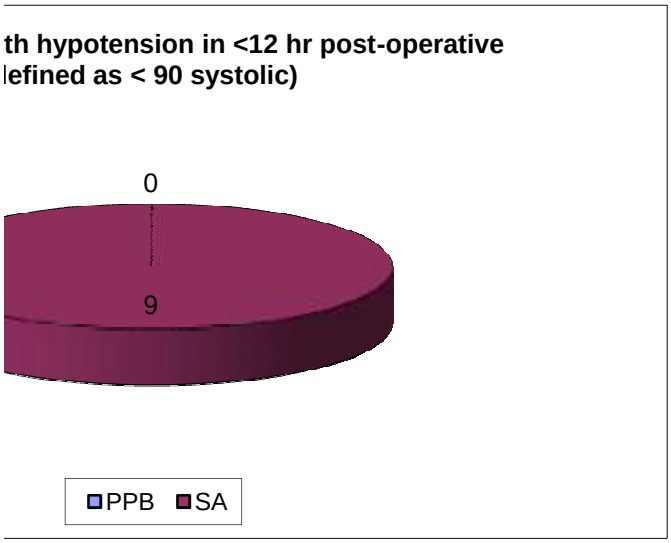

ee of pain post-operatively
PPB
SA
Moderate
Severe
Degree of pain / VAS

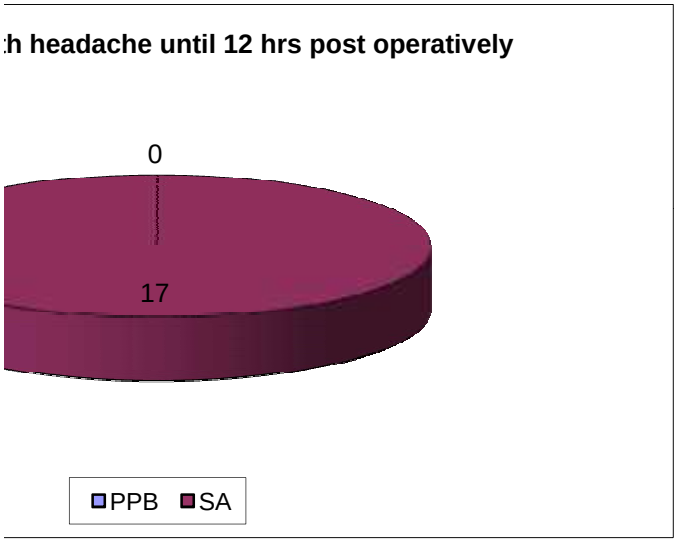

ith absent perianal sensations at 1 hour post operative

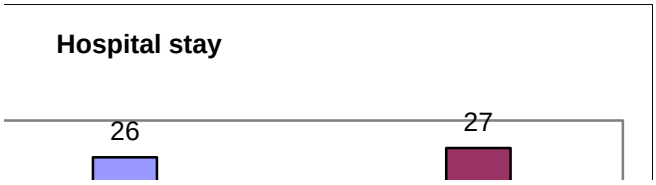

30
PPB
SA

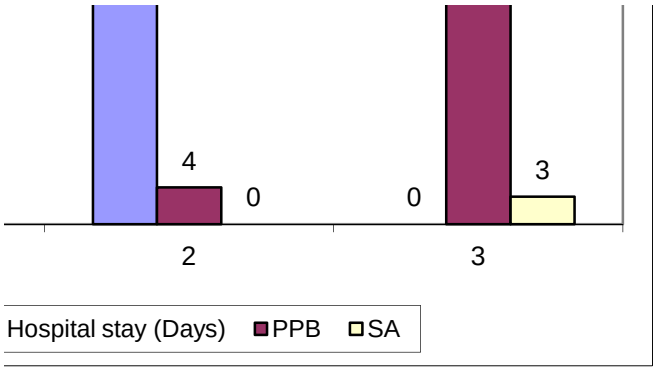

lower limb motor & sensory block at 1 hr
0
30
PPB
SA

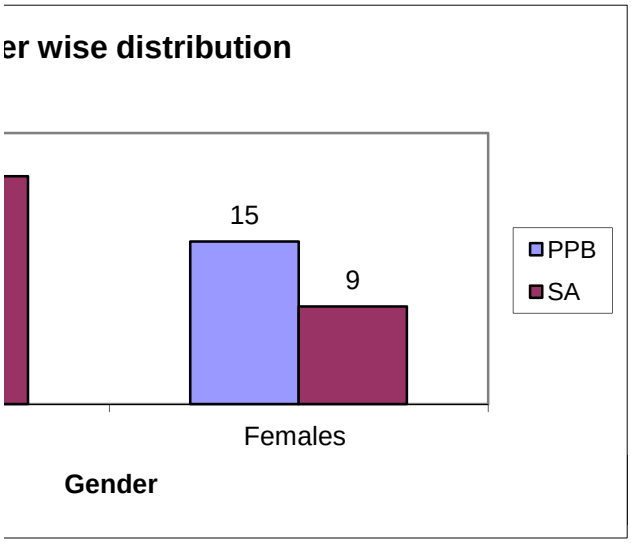

th urinary retention over a 12 hour post operative period
5
PPB
SA

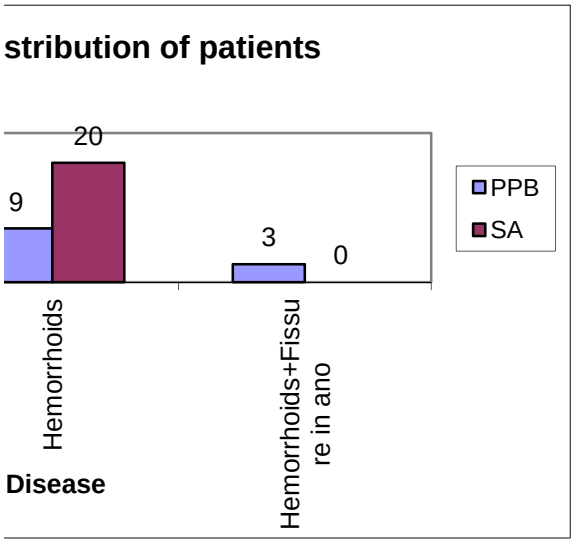

th hypotension in <12 hr post-operative
lefined as < 90 systolic)
0
9
PPB
SA


h headache until 12 hrs post operatively
0
17
PPB
SA


Hospital stay
26
27


4
0
0
3
2
3
Hospital stay (Days)
PPB
SA


er wise distribution
15
9
PPB
SA
Females
Gender


stribution of patients
20
9
3
0
PPB
SA
Hemorrhoids
Hemorrhoids+Fissure in ano
Disease

# PROFORMA

**A ONE YEAR RANDOMISED CONTROL TRIAL COMPARING SURFACE LOCAL ANAESTHESIA VS SUBARACHNOID BLOCK IN ANORECTAL SURGERIES WITH RESPECT TO POST OPERATIVE PAIN AT KLES PRABHAKAR KORE HOSPITAL, BELGAUM.**

Sr.No.

Name : Age :

Sex :

Address : Religion :

IP No. :

Date of admission : Date of discharge :

Duration of hospital stay :

Date of operation :

Chief complaints :

History of presenting complaints :

1) Bleeding Duration
    a. Slight streak
    b. Steady drip after motion
    c. Apart from defecation
2) Pain Duration
    a. Nature
    b. Relation to defecation
3) Discharge
    a. Type
    b. Associated fever

4) Foreign body sensation in peri-anal region.
5) Anal irritation
6) Bowel habits
    a. Constipation
    b. Diarrhea
    c. Straining at stool
7) Fecal continence / Urinary complaints
8) Other relevant history
9) Medical history
    a. Diabetes mellitus
    b. Hypertension
    c. Tuberculosis
    d. Bleeding and coagulation disorders
    e. Pregnancy
    f. Ischemic heart disease
10) Past history
    a. Hypersensitivity to local anesthetics
11) Family history
12) Personal history
    a. Appetite
    b. Diet
    c. Smoking
    d. Alcohol consumption

13) Vitals

a. Pulse

b. B.P.

14) Generation of physical examination

a. Pallor

b. Icterus

c. Edema

d. Clubbing

e. Lymphoedema

15) Local examination

a. Hemorrhoids - Grade - I, II & III

- Type – Internal, External

b. Fissure in ano - Type – Acute, Chronic

c. Sentinel tags / skin tags

d. P/R Examination

16) Systemic examination

Respiratory system

Cardiovascular system

Abdominal examination

Central nervous system

17) Investigation

Hb% Total count Differential count. Urine Routine

Random blood sugar

Blood urea

Serum creatinine

ECG

Other relevant investigations

18) Pre-op orders

1. Antibiotics
2. Proctoclysis enema
3. Bupivacaine sensitivity

19) Type of procedure adopted

Subarachnoid / Surface Local Anaesthesia

20) Operation done and intra-operative findings

21) Duration of procedure

22) Early post-operative complaints

| | |
|---|---|
| Pain (VAS) | Urinary retention |
| Hypotension | Pulse |

23) Onset time of post operative pain

24) Post dural headache

25) Late post operative complaints

26) Duration of hospital stay (days)

27) Post operative complications

28) Follow up

29) Comments