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DETERMINING CHOICE OF ANESTHESIA IN ANORECTAL SURGERIES

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ABSTRACT

Anorectal surgeries are probably the surgieries which are performed in largest quantity. Sushruta has also considered *Arsha*, a disease at anal region as enemy of patient. And there are many traditional as well as recent methods of surgeries performed for anorectal diseases. But when standards for type of anesthesia for these surgeries are found, no particular recommendation is seen. Many studies have been done on various anesthesia for anorectal surgeries. Considering recent era of need of quicker recovery, many studies were conducted on use of Local Anesthesia for anorectal surgery. This article highlights on neurological anatomy as well as advantages, disadvantages and limitations of various types of anesthesia in order to conclude some specific recommendation.

Key words: Anesthesia in anorectal surgery, Pudendal Block, Day care surgery.

INTRODUCTION:

Anorectal diseases are one of the commonest problem faced by man due to his erect posture. The prevalence of hemorrhoids and other anorectal diseases is 4-5% in adult population in United States, out of which approximately 10% require operation.[1] Every major or minor surgery requires adequate anesthesia. Considering Ayurvedic surgery major part of Surgery in Ayurveda is occupied by anorectal surgeries like *Kshar Karma* (chemical cauterization), *Ksharsutra* (application medicated seton in Fistula in ano) Haemorrhoidectomy. But there is not uniformity regarding which type of anesthesia should be preferred for such surgeries. In certain parts of India certain standard protocols are followed as per tradition of that area. Like in south India most or the ano rectal surgeries are performed under local anesthesia whereas in Maharashtra or some of middle part of India Spinal Anesthesia is preferred. Anorectal surgeries require deep anesthesia since this region of body has a dense sensory nerve supply. Deep anesthesia for anorectal procedures can be achieved using different forms of anesthesia including general endotracheal, regional or local anesthesia; local anesthesia is generally in adjunction with general sedation. Many anorectal procedures can be safely and cost effectively performed using local anesthesia. [2] So this article was written in order to determine exact suitable anesthesia for Anorectal Surgeries.

Aims: To determine choice of anesthesia in Anorectal surgeries.

Objectives:

1. Study anatomical consideration of nerve innervation of anorectal regions.
2. Study different types of anesthesia, their advantages and disadvantages.

Neurological consideration of ano rectal region:

Nerve supply to anorectam is mixed, somatic and autonomic.

Mixed nerve supply- Sympathetic nerve supply to anorectal region is from sympathetic chain to hypo gastric plexus (getting branches from, L1-L5) and celiac plexus (T11-L2) and sympathetic nerves proceed to pelvic plexuses.

Parasympathetic nerve supply is from rami of S2-S3 and forms the pelvic splanchnic. Somatic nerve supply to Pelvic floor and external sphincter is from sacral plexus (L4-L5 and S1-S4 segments)

whereas somatic supply to Coccygeal zone is from S4, S5 and Coccygeal 1.

There are many somatic nerves supplying to anorectal region out of which Pudendal Nerve is main nerve having root value S2-S4. One of its branch Inferior Haemorrhoidal nerve supplies external anal sphincter and perianal skin. Other branches supply some peripheral fibers of Levator Ani muscle, the base of bladder, Ischiocavernosus and Bulbospongiosus muscles, penis and clitoris and some part of Vagina.[3] ANATOMY

Direct peripheral branches from S3-S4 supply major part of Levator ani, Puborectalis. Anococcygeal nerve (S4, S5, and Co 1) supply skin over coccyx. Some others nerves supplying to structures related to Ano-rectum are Superior gluteal nerve (L4 and L5, S1), Inferior Gluteal nerve (L5, S1 and S2), Posterior femoral cutaneous nerve (S1-S3) supplying gluteal region, the perineum and back of the thigh and leg, Perforating cutaneous nerve (S2 and S3) supplying skin over the median and lower parts of the Gluteus Maximus.The above consideration of neurological anatomy of anorectum highlights some important points regarding nerve supply which has to be considered during anesthesia to anorectum while performing surgeries in anorectal diseases as-

- Parasympathetic fibers supply the smooth muscle, including the internal sphincter.
- Sympathetic fibers are mainly vasomotor,
- Somatic motor fibers supply the external sphincter.
- Sensory fibers are concerned with reflex control of the sphincters and with pain.
- The fibers in pelvic splanchnic nerves reach the intestine by way of plexus.
- During rectal dissection all pelvic nerves are in danger of injury, as they lie in plane between the peritoneum and the endopelvic fascia.[4]

Different types of anesthesia: There are mainly three types of anesthesia can be given for anorectal surgery. Local anesthesia, Regional anesthesia and General anesthesia. There are different schools of thought regarding which type of anesthesia is to be preferred for anorectal surgeries. Many studies have been conducted for this purpose to determine specific type of anesthesia. But every study came with conclusion that there are some merits and some demerits for particular anesthesia. So detailed study of different types of anesthesia is done in order to make conclusion.

a) Local Anesthesia: Local anesthesia is the one in which anesthetic agent is injected locally at the place of surgery. There are different types of local anesthesia like Infiltration, Nerve block, Ring block, Field block. Considering anorectal surgeries Nerve Block mainly Pudendal Nerve along with Infiltration Anesthesia is used worldwide. Perianal block by local anesthetic infiltration is safe, simple and effective for various anal operations with very high degree of acceptance and satisfaction among patients. It had been found to be associated with low pain score and postoperative complications and faster return to daily social activity. The cost saving has been significant. [5] Because so many surgical procedures now are performed without admission, the risk associated with ambulatory anesthesia is particularly important. To access this risk 38598 patients who had undergone 45,090 consecutive ambulatory surgical procedures were contacted within 72 hours and 30 days of surgery. (99.94% and 95.90% of patients) no patient died of a medical complication with one week of surgery, the total death rate was 1:11,273 (four deaths) and the total complication rate was 1:1366. [6] So when details of local anesthesia are studied following points are mentionable. As Pudendal nerve is the main nerve supplying to anal canal and perineum, local anesthesia can be achieved by blocking Pudendal Nerve [7]. The areas which get anesthetized by Pudendal Block are external anal sphinc-

ter, perineal skin, peripheral fibers of levator ani muscle, base of bladder, Ischicavernous and Bulbospongious muscles, penis and clitoris. Local anesthesia some advantages like it is cheap, comparatively safe, can be given to respiratory compromised patients. It doesn't require much attention on vital parameters like respiration, level of consciousness. It provides very good post-operative pain relief which minimizes requirement of analgesics and provides good post-operative comfort to patient. But it has got some disadvantages like chances of intravenous injection of anesthetic agent, chances of spread of infection as anorectal diseases may accompanied with ischiorectal abscesses. A large nerve block can be dangerous, as severe kidney or liver diseases delay the breakdown or elimination of local anesthetic. Local anesthesia requires perfect knowledge of anatomy. [8] Also local anesthesia has some limitations like; it doesn't produce adequate muscle relaxation which results restricted field view of operation, so chances of missing some pathology. It has some failure rate which necessitates conversion of local anesthesia into general anesthesia. Although successful local anesthetics abolish the sensation of pain it does not abolish hearing, touch and pressure sensation. Pudendal nerve supplies only lower part of anal canal so the area above pectinate line is not anaesthetized in local anesthesia.

b) Spinal or subarachnoid anesthesia: Spinal or Subarachnoid anesthesia is the anesthesia in which anesthetic drug mainly Lignocaine 5 % or Bupivacaine is injected in subarachnoid space near nerve roots. Spinal anesthesia has certain advantages over other types in operations below level of diaphragm. It gives a degree of muscular relaxation that cannot be attended in general anesthesia even if relaxant drugs are used, without undesirable depression of respiratory and circulatory functions. A study on 5000 operations with use of spinal anesthesia there have been no deaths and no instances of permanent motor paralysis. It is assumed that both surgeon and anesthesilolgist are on the alert for such possible complications as nervous apprehension, nausea, vomiting, respiratory depression and cardiovascular disturbances. Postoperative urinary retention necessitated catheterization in approximately 30% of this series, it is doubtful whether this figure differ significantly from that for colonic and anorectal surgery under general anesthesia. The incidence and severity of headache have become negligible. Since techniques have been improved by using small gauge Lumber Puncture Needles, avoiding multiple punctures of Dura, keeping the patient horizontal for at least 24 hour after operation and making sure adequate hydration. Two important contraindications are neurological disease and intestinal obstruction. Spinal anesthesia, properly used, has advantages that are especially appreciated by surgeon operating colon and anorectal diseases.[9] So study of spinal anesthesia in anorectal surgeries revels that Spinal anesthesia has some advantages over local anesthesia like; it produces good muscle relaxation which helps much in procedure for good field view of operation. It requires minimal patient's cooperation which is definitely required in local anesthesia. As it blocks nerve roots at lumber plexus, it produces anesthesia over rectum, upper anal canal and lower anal canal, which is useful in operating pathologies in upper parts like high anal fistulae. It is easy to give and better suited for long duration procedures. But spinal anesthesia has also got some disadvantages *a*s it produces hypotension, so it is restricted in patients having hypotension. Also there are chances of injecting drug in vertebral veins which can cause fits, collapse. It produces post-operative urine retention.

CSF can leak through injection site leading to sever headache. [10] Like local anesthesia it also has got some limitations like, anatomical abnormalities of vertebral column, fungal infections, and sepsis anywhere on back, diabetic neuropathy. One of the distressing complications of bottom surgeries, especially in elderly is urinary retention which occurs in up to 17% patients, perineal reflex urethral sphincter spasm, prolonged motor/ autonomic blockade, over hydration by intravenous fluids and restriction of movements are some of the important causes of urinary retention.[11]

c) General Anesthesia: In general anesthesia sedation with temporary loss of consciousness is achieved with help of inducing agent like faster acting barbiturates and maintenance drugs like slower acting barbiturates. General Anesthesia has very important advantage that it can be given in uncooperative patients and provides very good muscle relaxation, where additional muscle relaxants can be given. So it is very suitable for surgeon. But considering disadvantages, it does not produce post-operative pain relief, it requires expert anesthetist, and it has more cardiopulmonary complications. [12] Hospital stay is more compared to local and spinal anesthesia. Cost issue is also of very much concern in case of general anesthesia. Regarding limitations it should be avoided in systemically compromised patients.

Observations- This study shows that

- In case of high anal fistula it is difficult to achieve anesthesia by local anesthetic injection.
- Local anesthesia provides less muscle relaxation hence restricted field view.
- Local anesthesia provides good post-operative analgesia.
- Spinal anesthesia provides good muscle relaxation.
- It causes post-operative urine retention.
- Regarding General anesthesia, it provides good muscle relaxation, best suitable for surgeon but requirement of expert anesthetist and contraindication in systemically compromised patient limits its usability.

DISCUSSION:

Anorectal diseases rather common among adult population of working age are to be treated operatively in ambulatory centers. Anorectal surgeries require deep anesthesia, and postoperative period is followed by severe pain, urinary retention. Novel anesthetics and analgesics with easily adjustable level of anesthesia are recommended. [13]

Selection of specific technique- A first step in selecting specific anesthetic technique for an individual patient is to consider if the procedure can appropriately be performed using monitored anesthesia care, regional anesthesia, or general anesthesia. Monitored anesthesia care supplement local anesthesia performed by surgeons. Anesthesiologist usually participate because an individual patient or procedure requires higher doses of potent sedatives or opioids or because an acutely or chronically ill patients requires close monitoring and haemodynamiclly or respiratory support. Regional anesthesia is useful for operations on the pelvis and lower abdomen. [14]

In case of Anorectal Surgeries Spinal, Epidural or local anesthesia is satisfactory. If an inhalation anesthesia is given, it should be remembered that dilatation of anus stimulates the respiratory centers. Spinal anesthesia must be used with caution because it may so completely relax the anal sphincter such that it cannot be properly identified by palpation. [15]

The use of local anesthesia supplemented with conscious sedation for the procedure for prolapsing hemorrhoids yields results equivalent to those

achieved with general or regional anesthesia without the attendant risks and additional costs. [16]

Regardless of the suitability of a specific technique for specific surgical procedure, other factors, including the patient's preferences must be considered. For insistence regional anesthesia might not be chosen if patient is extremely anxious or could not communicate effectively because of language barrier. Monitored anesthesia care might be inappropriate if patient is unlikely to lie quietly during delicate or prolonged surgery. Any procedure planned under regional anesthesia or local anesthesia require conversion to general anesthesia if the original choice proves unsatisfactory. [17]

CONCLUSION:

From this study of neurological details of anorectum and anesthesia details along with current trends it can be concluded that, many of the surgeries in anorectal region can be performed under Local (Regional) anesthesia and if requires its effect can be augmented with the use of intravenous sedation or general anesthesia. And we can determine some rules before deciding proper choice of anesthesia as

a) In co-operative patient with low anal fistula and known pathology, Local anesthesia is preferable.
b) In complicated cases with High anal fistula and septic conditions like ischiorectal abscess, Spinal anesthesia is preferable.
c) In uncooperative, otherwise healthy patients, General Anesthesia is preferable.

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