

Post Operative Pain Assessment in Spine Surgery- A Prospective Observational Study in a Tertiary Trauma Care Centre.

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ABSTRACT: Pain is a sensory sensation brought on by potential tissue injury. Method used for assessing pain perception is VISUAL ANALOGUE SCALE(VAS SCORE) which includes 0-10 VAS numeric pain distress scale. The numeric pain rating scale done by asking the Patient to rate their pain intensity on a scale of 0(no pain) to 10 (the worst pain).An incision is made along the backbone during the open surgery on the spine. To access the spinal cord's bones, the surgeon displaces soft tissue and muscle. Some of the traditional spine surgery procedures are Laminectomy, Microdelectomy, Traditional lumbar fusion. The study concluded that multimodal analgesia and the erector nerve block are the mainly used for the postoperative pain management.

KEY WORDS: Spine surgery, Pain score, Post operative pain, VAS score, Multimodal analgesia.

I. INTRODUCTION:

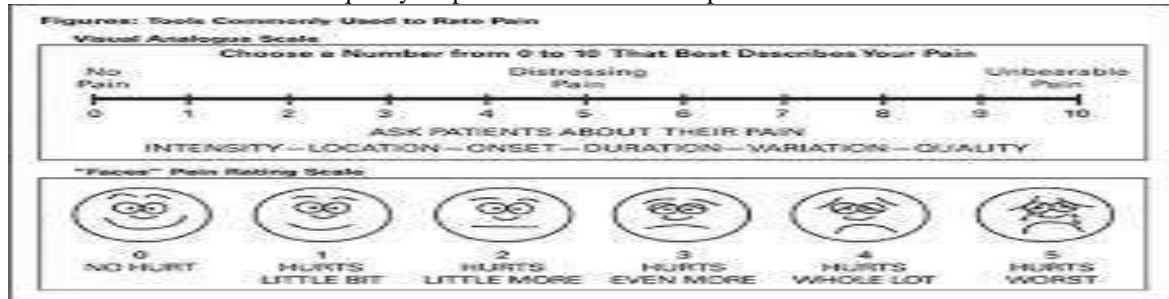
The pain may be addressed since doing so will lessen suffering, prevent unrelieved pain consequences, and increase patient satisfaction. In the past, it has frequently received inadequate care and a negative evaluation. (1) Pain intensity, impairment brought on by pain, and duration are the characteristics that characterize pain and its effects. In addition to reducing hospital costs and length of stay, pain treatment will hasten recovery time, boost productivity, and improve quality of life. Pain should be evaluated by patient interaction, observation for changes in physiological indications, and a pain grading system. Three basic scales—the verbal numerical rating scale (VNRS), the categorical rating scale, and the VAS—were used to measure pain. All components of the nervous system work together to produce pain. The thalamus, medulla oblongata, and cerebral cortex are the last recipients of pain signals. (2) Patients continue to have discomfort and incapacity due to neuropathic pain following surgery, which is referred to as failed back surgery syndrome. Medication effectiveness is limited in

this situation. Consequences of unrelieved pain include increased heart rate, blood pressure, decreased lung volume, stomach emptying, etc. (3) The main repercussions of pain are sadness, reduced socializing, sleep disturbances, diminished ambulation, and negative side effects from various medicine prescriptions. Multimodal analgesia, which employs more than one medication for pain control, is the emphasis of pain management. Drugs with several mechanisms are utilized, each at a lower dose when taken by itself. It offers superior analgesia with fewer adverse effects and provides additive or synergistic benefits. Anxiety, depression, exhaustion, and lack of sleep are side effects of improper post-operative pain management. The assessment of pain intensity and prompt management of the condition with the right analgesic dosage are crucial components of postoperative care. The primary impacts of pain include an increase in heart rate, an increase in pupil dilation, a decrease in GI motility, an increase in muscle tension, and an increase in respiration rate. (4) The patient must receive personalized pain management and be actively involved for the pain management to be effective. The goal of postoperative pain management will be advanced through improved patient engagement in pain assessment, knowledge of anesthesia, analgesics, and a comprehension of the pain perceptible, numerical rating scale.

VISUAL ANALOGUE SCALE is a tool for measuring the experience of pain (VAS SCORE). The 0–10 VAS numeric pain distress scale is included. The patient is asked to rate their level of pain intensity on a scale of 0 (no pain) to 10 using the numerical pain rating scale (the worst pain). Some patients can't accomplish this with just verbal instructions, but they might be able to look at a scale of numbers and indicate the number that corresponds to the degree of discomfort. An evaluation of the pain's quality, intensity, impact on function, and overall quality of life is done using a visual analogue score. The numerical rating scale and VAS are reliable instruments for determining

the degree of pain. (5) A number of pain tools are used to assess the degree of the pain, and as a result, painkillers must be given. The instruments to determine the initial site and quality of pain are

the numerical scale, VAS scale, and McGill questionnaire. The level of pain will depend on the patient's nerve block, level of activity, and amount of sleep.



(fig:1 visual analogue scale)

The spine surgery may choose to perform an open spine surgery, which requires a backbone incision. To reach the spinal bones and the spinal cord, the surgeon separates the muscles and soft tissues. In general, the postoperative phase following spinal surgeries is marked by severe discomfort, especially in the first several days. adequate pain Early ambulation, early release, and preventing the onset of chronic pain have all been demonstrated to correlate favorably with management during this time. (6)The most challenging surgical procedure to improve clinical outcomes is spinal surgery. There is no established procedure describing the quantity, kind, and duration of painkillers. Following the period of recovery, the pain medication will be administered for a very long time. The majority of spine operations are elective in nature. Laminectomy, discectomies, spinal fusion, instrumentation, scoliosis corrections, and the removal of spinal tumors are among the frequently carried out spine procedures. Traditional spinal operations frequently include substantial dissection of bones, ligaments, and skin, which causes a significant amount of postoperative pain. The agony usually lasts three days and is excruciating. The activation of multiple pain receptors causes post-operative pain. Nociceptive, neuropathic, and inflammatory mechanisms are some examples. Different tissues, including vertebrae, intervertebral discs, ligaments, and muscles, can cause back pain. These Sensations are transmitted through a variety of pain-inducing nociceptors and mechanoreceptors. . Pain is caused by mechanical irritation, compression, or surgical inflammation. The number of vertebrae involved in the surgery closely correlates to the severity of the postoperative discomfort. (5) The majority of the time following the surgical procedure days, spinal surgeries are

followed by extreme pain. By providing the patients with enough analgesics, sedation, early discharge, and ambulation, these pains will be lessened. For the relief of pain, a variety of pharmacological treatments, combination therapy, and multimodal analgesia are typically recommended. Extreme bone, ligament, and subcutaneous tissue dissection during surgery will result in postoperative pain. The main objective of postoperative therapy is to relieve pain, and all surgical pain will endure for four to five days.

(7) Multimodal pain management techniques are utilized to reduce the need for opioids while improving pain control. Surgery-related tissue damage is what causes the pain. Intense pain is a common side effect of spinal surgeries, and this pain needs to be managed or it may reduce patient movement and increase the risk of pulmonary embolism and deep vein thrombosis problems. Opioid analgesics are the primary line of treatment, and multimodal pain management focuses primarily on the pathways that communicate pain, which minimizes side effects (8) Opioids are the industry standard for treating post-operative pain. Patients' quality of life can be enhanced, and multimodal analgesia can help patients get out of bed earlier and experience fewer postoperative problems. During these periods, analgesics are typically preferred, and if they work as intended, the patients' hospital stays will be cut short by the complete pain relief they experience. the long-term discomfort that had been managed with opioids and other painkillers. The most popular method for treating moderate to severe postoperative pain is intravenous opiate analgesics. (5) The majority of the time, narcotic analgesics are utilized to treat severe pain Laxatives and antiemetics are suggested because patients should have constipation and vomiting while taking

analgesics, which will lower their pain score. Patients who are experiencing extreme discomfort should have a sleep issue and struggle to get a good night's sleep. The use of NSAIDs is preferred because they reduce pain and inflammation and enhance postoperative mobility. Ketorolac, diclofenac, and ibuprofen are NSAIDs that are delivered intravenously. It will begin three days after surgery and last for another three or more days. Paracetamol is also used as an analgesic, and the descending serotonergic pathways and prostaglandins are inhibited as part of this process. 5 to 10 minutes after ingestion, the effect starts to take effect. The purpose of this study is to evaluate how post-operative pain is evaluated in spine surgery.

II. METHODOLOGY:

This is a six month prospective ,observational study from february to july . Post operative pain following spine surgery was assessed in 100 surgical patients. We used VISUAL ANALOGUE SCORE scale to assess the pain. The vas score is from 0 to 10.In this zero Indicates no pain and ten indicates worst pain. Some patients are unable to express their intensity of pain in terms of numerals .We followedup the patients from POD1 to POD4 and we noted the

analgesics and sedation that given to the patients including the nerve block that were performed .Theambulation ,sleep, constipation,nauseaandvomiting are also noted.All the collected data was recorded and compiled. Study centre:Ganga Medical Centre and Hospital PVT Ltd Coimbatore,tamilnadu. Study Design:Prospective observational study was conducted in a tertiary trauma care centre under Department of orthopaedics and plastic surgery. Study population :100 spine surgery patients Study duration : 6 months(February to July) Statistical analysis: Microsoft EXCEL. Source of data :Patient case file Parameters involved: pain score.

Study criteria:

Inclusion criteria:

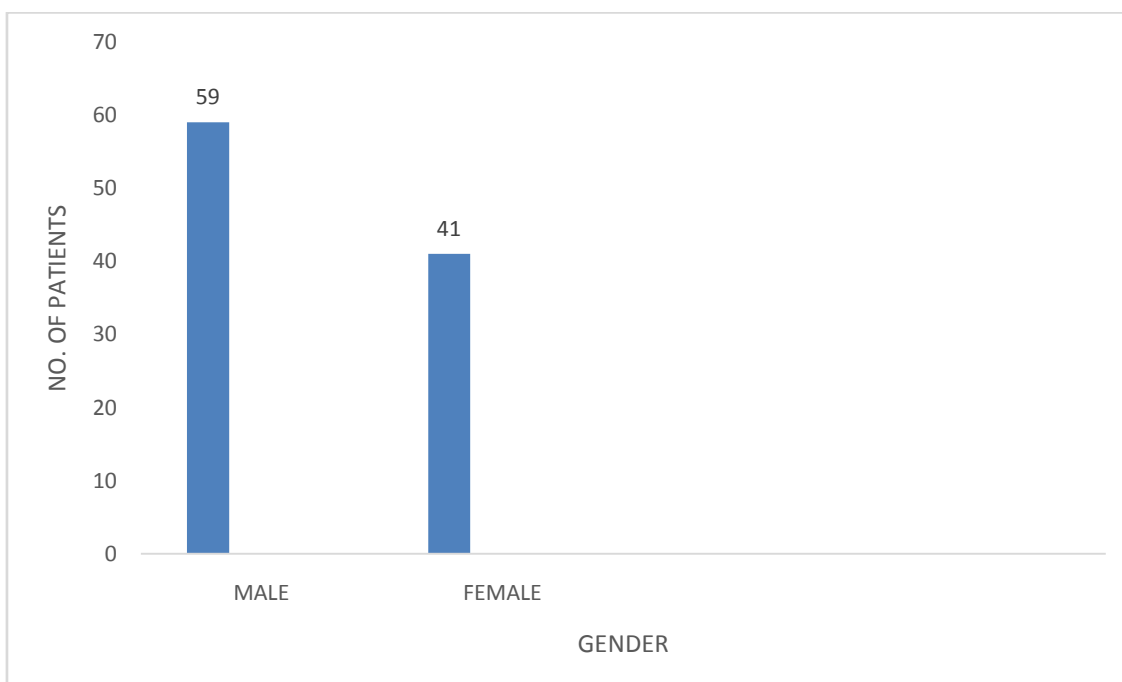
- Patients of both male and female
- Patients who are admitted in orthopedics department
- Patients of all age groups are included
- Patients who underwent spine surgery.

Exclusion criteria:

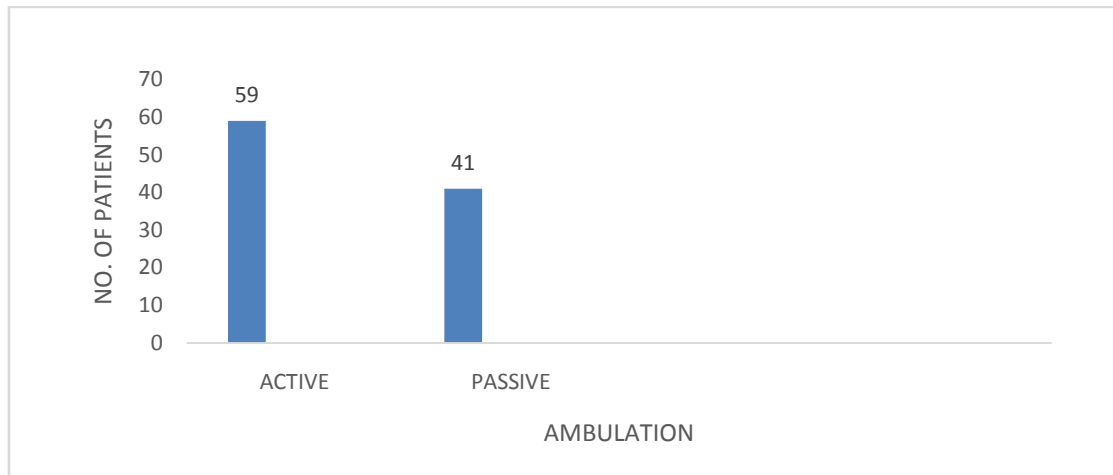
- Patients case profile lacking information
- Patients who arehaving conservative management.

III. RESULT:

GENDER	MALE	FEMALE
NO. OF PATIENTS	59	41



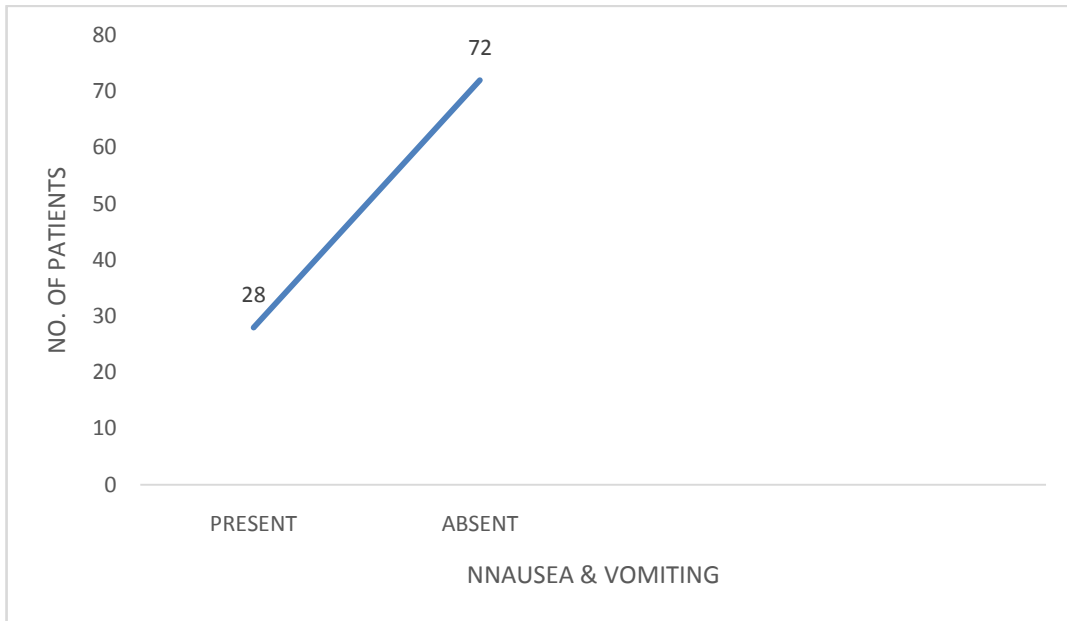
AMBULATION	ACTIVE	PASSIVE
NO. OF PATIENTS	59	41



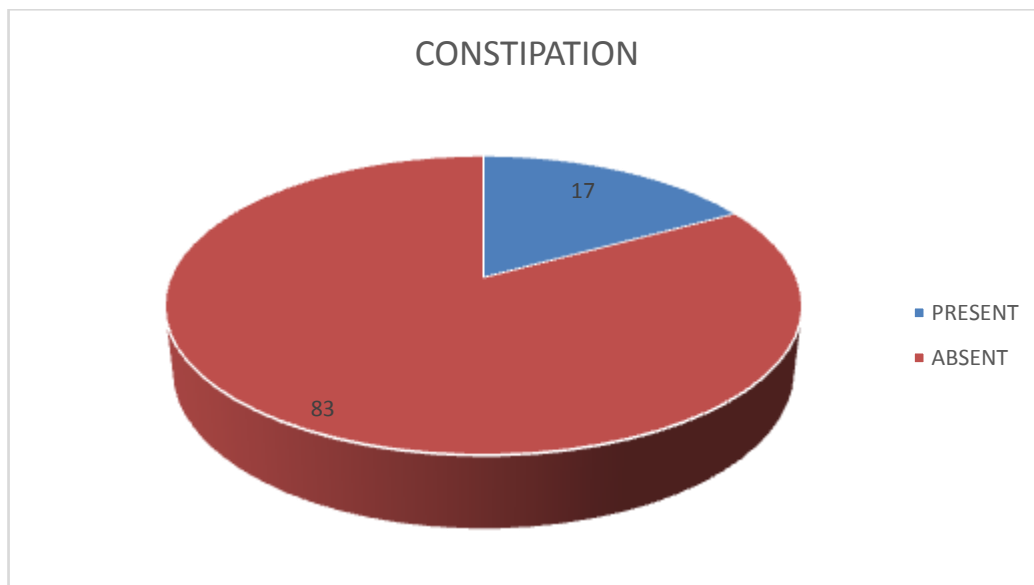
SLEEP	ADEQUATE SLEEP	INADEQUATE SLEEP
NO. OF PATIENTS	95	5



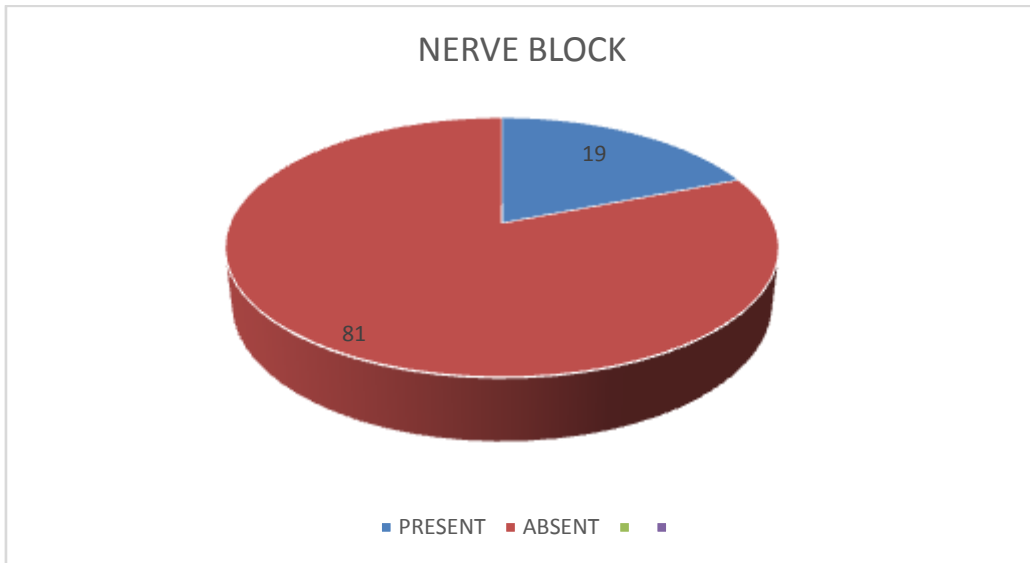
NAUSEA AND VOMITING	PRESENT	ABSENT
NO. OF PATIENTS	28	72



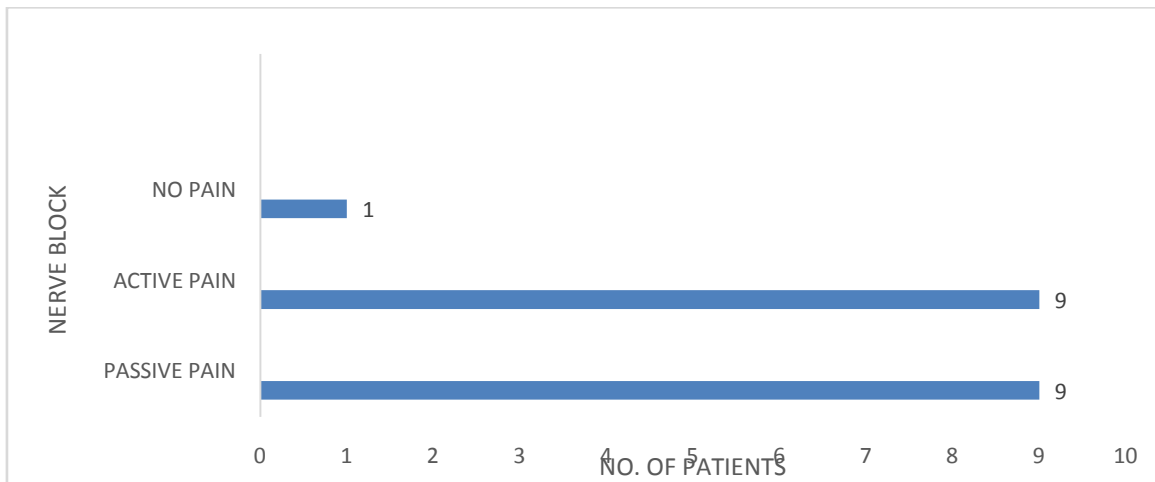
CONSTIPATION	PRESENT	ABSENT
NO. OF PATIENT	17	83



NERVE BLOCK	PRESENT	ABSENT
NO. OF PATIENTS	19	81



NERVE BLOCK	PASSIVE PAIN	ACTIVE PAIN	NO PAIN
NO. OF PATIENTS	9	9	1



IV. DISCUSSION:

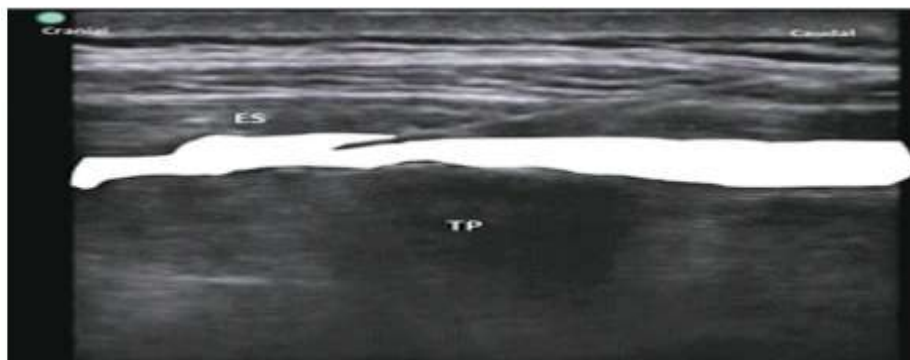
A total cases of 100 samples were taken to evaluate the post operative pain assessment of spine surgery. Out of 100 patients, 59 are males and 41 are females . (9)Pain is unpleasant sensory experience ,influenced different aspects such as intensity of pain and the effective component.VAS scale consists of the 100mm straight horizontal line labeled no pain at one end and severe pain at the another end.59 patients are having active pain and 41 patients are having passive pain on ambulation.(10) Physically felt pain will cause a negative stress response that will impair both mental and physical function as well as cause

exhaustion and dysphoria. Patients' negative thoughts, variations in the cycle of stress and impairment, and disruptions to their productive lives, regular family lives, social interactions, etc. result from the belief that their pain is uncomfortable.(11) Sleep disturbances are more common overall in people with spinal cord injury (SCI) than in the general population, which may be a factor in their dysfunction and low quality of life. In addition to increasing cardiovascular risk in a condition that already raises mortality from heart disease, many sleep disturbances may also contribute to poor health outcomes.

The normal sleep pattern was observed on 95 patients and 5 patients reported to have sleep

disturbance. 28 patients had vomiting and are prescribed with antiemetics and 17 patients had constipation and are treated with cremaffin. (12) A brand-new method was put forth in 2016 called the erector spinae plane block. Many nerve specialists are interested in ESPB. ESPB may lessen perioperative muscle relaxation and analgesic drug consumption because it can block the posterior root of the spine nerve and partially induce the paraspinal block action with drug solution diffusion. ESPB may be preferable to epidural injection because the nerve block reduced the need for analgesic medication in patients who had spine surgery and reduced postoperative discomfort. ESPB might not always be preferable to thoracolumbar interfascial plane block. (13) block

method for the erector spinae is When lying on one's back, a high-frequency linear ultrasound transducer was sagittally positioned against the target vertebral level and moved in around 3-cm lateral to the spinous process. Next, the local anaesthetic was injected into the area between the erector spinae and the underlying transverse process using a needle that had been inserted through the interfascial plane between the two muscles (Fig. 2). After lumbar spinal surgery, the 40 mL of 0.375% levobupivacaine (twenty mL into each side) were injected into the fascial plane between the deep surface of the erector spinae muscle and the transverse processes of the lumbar vertebrae to execute bilateral ESP blocks.



(fig no.2,Ultrasound image of local anesthetic (white frame) after erector spinae plane block)

Erector spinae nerve block intraoperatively ultrasound guided in 19 patients .As the nerve block is not performed,the rest of the study population experiences a comparative rise in passive pain. (14) A thorough and standardised multimodal pain and PONV strategy exhibited concurrently low levels of nausea, sedation, and dizziness while dramatically reducing opioid intake and improving postoperative mobilisation. The usage of opiates will reduce after nerve block. (15)Improved patient satisfaction, quicker recovery, and fewer complications are all made possible by effective postoperative pain management. Historically, opioid drugs were frequently used to manage pain following spine surgery. To lessen opioid use and its negative effects, multimodal regimens were created. Studies have indicated reduced opioid usage, improved pain and function, and shorter hospital stays when using multimodal techniques in orthopaedic surgery of the lower leg, notably joint replacement. Multimodal analgesia in spine surgery is being supported by more and more evidence. NSAIDs, the neuromodulatory drugs gabapentin and

pregabalin, acetaminophen, and extended-action local anaesthetic are some of the techniques. In order to design a standard method for multimodal analgesia in spine surgery, a thorough analysis of the literature is necessary. A systematic approach to multimodal analgesia may offer significant benefits due to the large number of spine procedures conducted each year, especially in light of the rising focus on responsibility within the healthcare system.

After spine surgery, postoperative pain control regimes heavily relied on opioid drugs, which were administered on an as-needed basis in response to patient-reported discomfort. Even though opioids are still the go-to medication for treating severe acute postoperative pain, intermittent opioid use can have significant opioid-induced side effects and insufficient pain alleviation. Opioid use is linked to a number of serious side effects, such as respiratory depression, cardiovascular stress, impaired cognition, delayed wound healing, urinary and gastrointestinal problems, and acquired tolerance. 6 Preemptive multimodal analgesia (MMA) regimens have been

established to enhance postoperative pain control and lessen the use of opioids and their negative effects. Central sensitization, which is the activation of central neurons and their amplified peripheral neurons in response to unpleasant stimuli, is avoided by preemptive analgesia, or analgesia given before the onset of pain. To increase the consistency of pain control, lessen side effects, and aid in rehabilitation, 7 MMA regimens depend on the synergistic action of nonopioid drugs administered in lower doses at regular intervals.

V. CONCLUSION:

In this observational study we concluded that, the use of Multi model analgesia helps in reducing post operative pain in patients with spine surgery and also pain relief was good in patients with erector spinae nerve block was administered. Implementing proper pain management protocol by including nerve block may help further good control of post operative pain in patients with spine surgery.

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