"COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT"

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IN

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APRIL 2019

CERTIFICATE OF THE GUIDE

This is to certify that the dissertation titled **"COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT"** is a bonafide research work done by **Dr.H.MOHAMED SHAHID** in partial fulfilment of the requirement for the degree of DOCTOR OF MEDICINE in Anaesthesiology.

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CERTIFICATE

This is to certify that the dissertation titled, **"COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT."** Submitted by **DR.H.MOHAMED SHAHID** in partial fulfilment for the award of the degree of DOCTOR OF MEDICINE in anaesthesiology by The Tamilnadu Dr.M.G.R medical university, Chennai is a bonafide record of work done by her in the INSTITUTE OF ANAESTHESIOLOGY & CRITICAL CARE, Madras Medical College, during the academic year 2016 -2019.

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DECLARATION

I hereby declare that the dissertation titled, **"COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT"** has been prepared by me under the guidance of **Prof.Dr.N.LATHA, M.D., D.A.,** Professor of Anaesthesiology, **INSTITUTE OF ANAESTHESIOLOGY AND CRITICAL CARE, MADRAS MEDICAL COLLEGE, CHENNAI**, in partial fulfilment of the regulations for the award of the degree of M.D (Anaesthesiology), examination to be held in May 2019. This study was conducted at I**NSTITUTE OF ANAESTHESIOLOGY AND CRITICAL CARE, MADRAS MEDICAL COLLEGE, CHENNAI.**

I have not submitted this dissertation previously to any journal or any university for the award of any degree or diploma.

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Place: Chennai

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INTRODUCTION

Urinary bladder mass resections are commonly performed under subarachnoid block which offers many advantages such as technical ease of performing the procedure, reduced risk of bleeding, and early recognition of bladder perforation. The only shortcoming with subarachnoid block is sparing of the obturator nerve with a potential complication of bladder rupture or injury secondary to adductor muscle contraction from obturator nerve stimulation (obturator reflex) during transurethral resection of bladder tumor (TURBT).

The obturator nerve is derived from the 3rd to 4th lumbar nerves with a minor contribution from L2. The nerve descends on psoas muscle and lies deep in obturator canal (which is bordered by the obturator membrane, obturator muscles, and superior pubic ramus) from which it exists and divides into anterior and posterior branches. Anterior branch gives rise to articular branch to hip and innervates adductor muscles, whereas the posterior branch innervates deep adductor muscles and knee joint. The obturator nerve along with vessels pass from pelvic cavity where it runs close to prostatic urethra, bladder neck, and inferolateral bladder wall and exit to thigh through a canal where it can be easily blocked.

The obturator nerve block was first applied by Gaston Labat in the year 1922. Much of the works in obturator nerve block followed a few years later when Gaston Labat and Victor Pauchet, stated that obturator nerve block

combined with blocks of the sciatic and femoral nerves provided complete anaesthesia of the entire lower limb.

However, lacking of clear cut anatomic landmarks, the block complexity, and inconsistent results were the reasons for this block to be used infrequently. From the time of discovery, the classical Labat's technique remained in use until the year 1967, then it was modified by Parks. In the year 1993, an alternate approach has been described as the interadductor approach by Wassef, which was further modified by Pinnock in the year 1996.

Later, Alon Winnie introduced the concept of the three in one block as an anterior approach to the lumbar plexus using a simple paravascular inguinal injection to completely anesthetize the femoral, lateral cutaneous and obturator nerves. Since then studies have refuted the ability of the three in one block to reliably block the obturator nerve with this technique.

With the introduction of modern nerve stimulators and ultrasound guidance selective block of the obturator nerve has become more reliable and successful.

INDICATIONS OF OBTURATOR NERVE BLOCK:

Obturator nerve block is used to treat hip joint pain and is also used in the relief of adductor muscle spasm associated with hemiplegia or paraplegia. Muscle spasticity is a relatively common problem among patients suffering from central neurologic problems, such as cerebrovascular pathology, medullary injuries, multiple sclerosis, and cerebral palsy.

Spasticity of the adductor muscle induced via the obturator nerve plays a major role in associated pain problems and makes patient hygiene and mobilization very difficult. Tenotomies, cryotherapy, botulinum toxin infiltration, surgical neurolysis, and muscle interpositions have been suggested to remedy this problem.

Common clinical practice is to combine a sciatic nerve block with the femoral nerve block for surgical procedures distal to the proximal third of the thigh. When deemed necessary, addition of a selective obturator nerve block may reduce intraoperative discomfort, improve tourniquet tolerance, and improve the quality of postoperative analgesia in these cases.

Neurolytic blocks with alcohol or phenol, performed with the help of a nerve stimulator and/or fluoroscopy, result in a cost-effective and effective reduction of muscle spasms. The main drawback to neurolytic blockade is its temporary duration and the need to repeat the block when the previous block wears off.

Selective obturator nerve block has also been used in the diagnosis and treatment of chronic pain states secondary to knee arthrosis or pelvic tumors resistant to conventional analgesic approaches.

Obturator nerve block is also occasionally used in urologic surgery to suppress the obturator reflex during transurethral resection of the lateral bladder wall. Direct stimulation of the obturator nerve by the resector as it passes in close proximity to the bladder wall results in a sudden, violent adductor muscle spasm. This is not only distracting to the surgeon, but may increase the risk of complications such as bladder wall perforation, vessel laceration, incomplete tumor resection and obturator hematomas.

The preventive strategies include muscle relaxation, reduction in the intensity of the resector, the use of laser resectors, shifting to saline irrigation, periprostate infiltrations, and/or endoscopic transparietal blocks.

This randomized clinical study was undertaken to compare the success rate of the inguinal and pubic approach in Obturator nerve block using a nerve stimulator under spinal anesthesia for transurethral resection of bladder lateral wall masses in INSTITUTE OF ANAESTHESIOLOGY AND CRITICAL CARE, MADRAS MEDICAL COLLEGE, CHENNNAI

AIMS AND OBJECTIVES OF THE STUDY

The aim of the study is to compare the success rate of the inguinal and classic pubic approach in obturator nerve block using nerve stimulator for transurethral resection of bladder lateral wall masses.

TRANURETHRAL RESECTION OF BLADDER TUMOUR (TURBT):

TURBT is widely used surgical technique for both diagnosis and treatment of bladder cancer. Usually performed under subarachnoid block, TURBT cannot be carried out effectively due to sparing of obturator nerve which courses on the lateral wall of bladder where it can be easily get stimulated by the electrical current passed through the loop during resection with an intense involuntary response from adductors (adductor longus, brevis, magnus, gracilis) and external rotation (obturator externus) of hip.

Adductor jerk or obturator reflex is associated with a serious injury such as vessel wall laceration with profuse bleeding, bladder wall tear or perforation, and even incomplete resection due to frequent distractions and interruptions to the operating surgeon.

Several methods have been used to abolish the reflex such as reducing the diathermy power and using bipolar instead of monopolar cautery but none been completely successful.

Venkatramani *et al*.[1] compared monopolar with bipolar cauterization for TURBT and concluded that bipolar TURBT was not superior to unipolar TURBT with respect to obturator jerk, bladder perforation, and hemostasis are concerned.

Gupta *et al*.[2] eliminated nerve stimulation with the use of current of power as low as 50 W and 40 W for cutting and coagulation, but these settings have been reported to be too low for satisfactory resection.

Various other strategies have been adapted to avoid complications during surgery

- Partial filling of the bladder during resection,
- modification in the surgical procedure such as resecting the tumor on thinner slices,
- laser resection,
- reverse in polarity of electric current,
- change in site of inactive electrode
- using general anesthesia with muscle relaxants

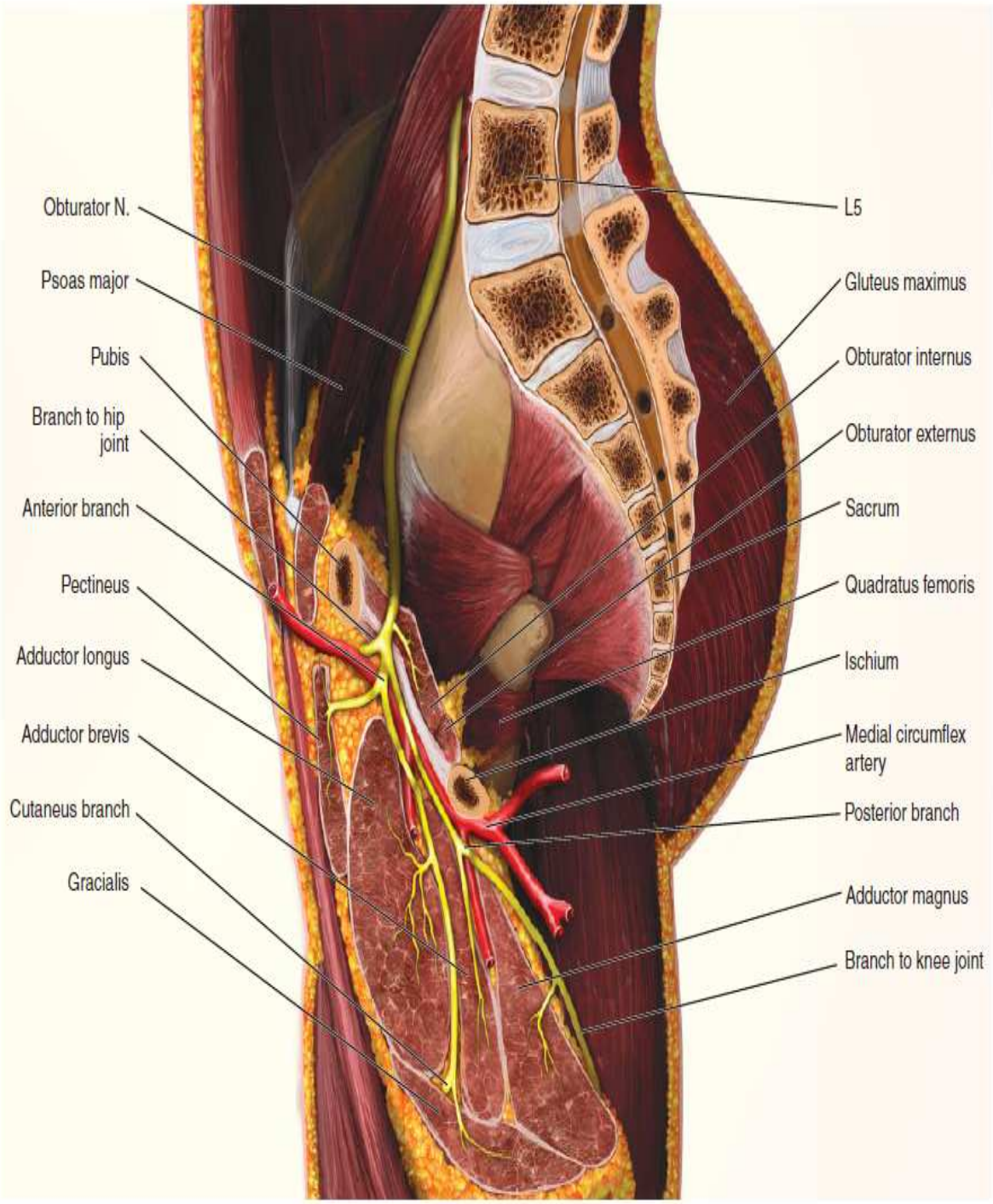
Laser systems are luxurious and not easily available at many centres. General anaesthesia is not a suitable option as it is associated with pulmonary complication which is so prevalent in this age group. Obturator nerve block combined subarachnoid anaesthesia can only be an effective modality in the TURBT which can easily be accomplished.

Various methods have been described in literature to block obturator nerve. Prentiss *et al*[3]. and later Parks and Kennedy described nerve stimulation technique with a success rate between 83.8% and 85.7%.

More recent studies have reported that the use of sonography is associated with higher success rates of 97.2% in ultrasound-guided obturator nerve block procedures. This is slightly higher than nerve stimulation technique.

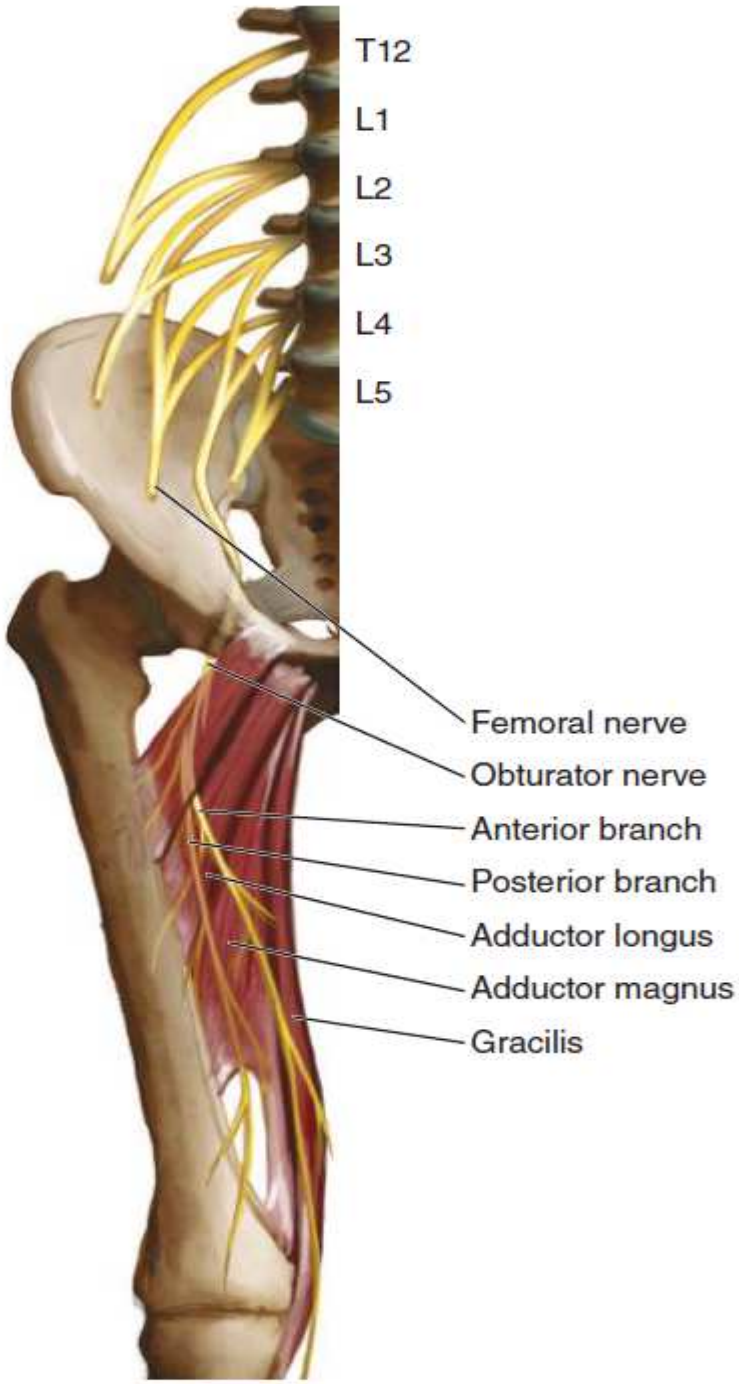
According to Augspurger and Donohue[4], effectiveness of abolishing obturator jerk with blind anatomic approach was 83.8% which is lower to nerve stimulation and ultrasound-guided techniques described above. As per Gasparich[5] *et al*. and Kobayashi[6] *et al*. with nerve stimulation, the effectiveness reaches between 89.4% and 100%.

ANATOMY



Sagittal section demonstrating the relationship of the obturator nerve to the adductor muscles.

The obturator nerve is formed by the anterior divisions of the second, third and fourth lumbar nerves.

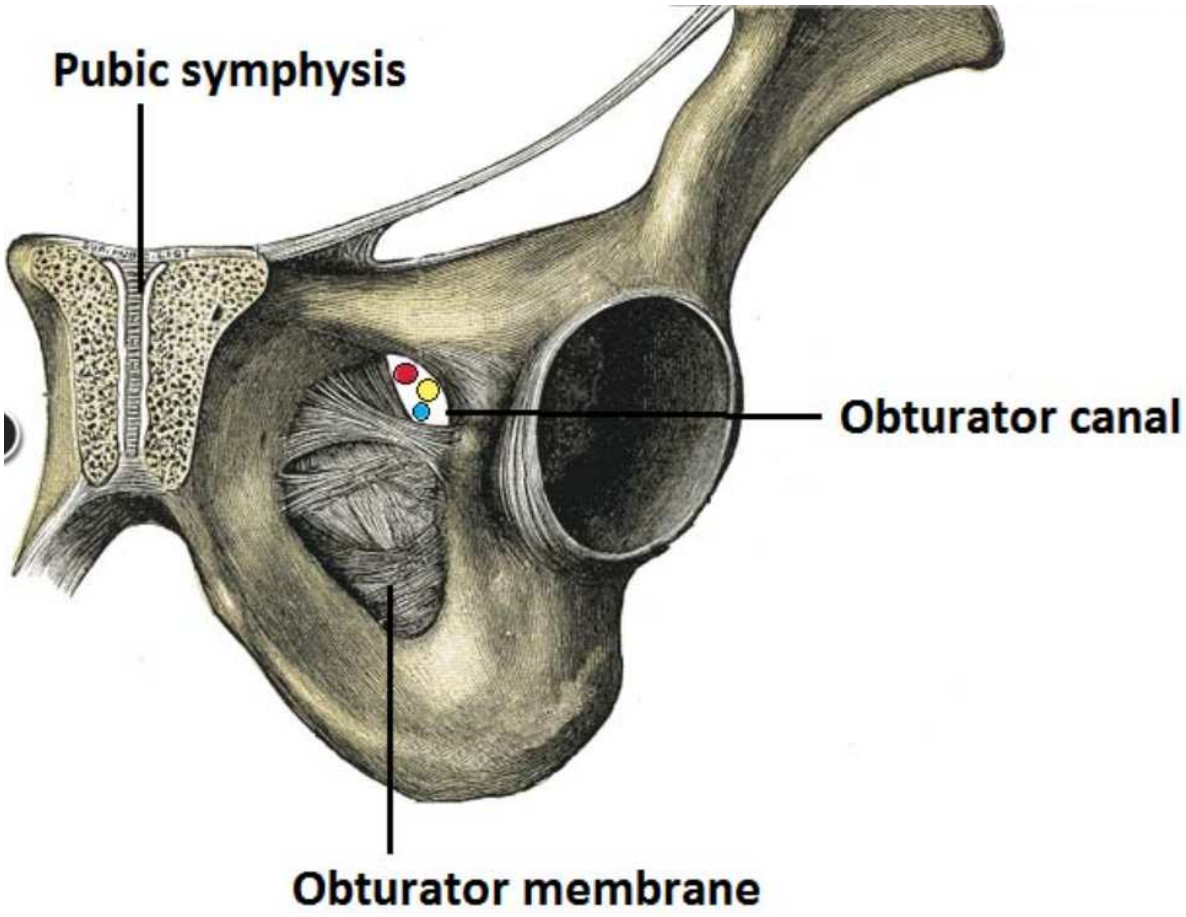


Coronal section demonstrating the relationship of the obturator nerve to the adductor muscles

It descends through the fibres of the psoas major muscle and emerges from its medial border, running posteriorly to the common iliac arteries and laterally along the pelvic wall to the obturator foramen. It then enters the thigh through the obturator canal and splits into anterior and posterior divisions.

The anterior division descends between the adductor longus and adductor brevis muscles towards the femoral artery, giving off branches to the adductor longus, adductor brevis and gracilis muscles. In rare cases it also gives off a branch to the pectineus muscle. It then pierces the fascia lata to become the cutaneous branch of the obturator nerve.

The posterior division descends through the obturator externus muscle before passing anteriorly to adductor magnus and giving off branches to supply it.



A diagram of the obturator canal, with the obturator artery, nerve and vein passing through

Motor Functions:

The obturator nerve innervates all the muscles in the medial compartment of the thigh except the hamstring part of the adductor magnus, which is innervated by the tibial nerve.

- Adductor Longus – adducts thigh
- Adductor Brevis – adducts thigh
- Adductor Magnus – adductor part adducts and flexes thigh, hamstring part extends thigh
- Gracilis – adducts thigh
- Obturator Externus – laterally rotates thigh

ANATOMICAL VARIANTS

Numerous variations to the formation, course, and distribution of the obturator nerve can have clinical implications. For instance, in 75% of cases, the obturator nerve divides into its two terminal branches as it passes through the obturator canal. In 10% of cases, this division occurs before the nerve reaches the obturator canal; in the remaining 15% of cases, after entering the thigh.

Occasionally, the anterior and posterior branches descend through the thigh behind the adductor brevis. Note that the sensory cutaneous branch of the obturator nerve is often absent.

Up to 20% of subjects possess an accessory obturator nerve that can be formed from variable combinations of the anterior rami L2–L4 or emanate

directly from the trunk of the obturator nerve. It accompanies the obturator nerve as it emerges from the medial border of the psoas, but unlike the obturator, passes in front of the superior pubic ramus to supply a muscular branch, the pectineus. It contributes articular branches to the hip joint and terminates by anastomosing with the obturator nerve itself.

PERIPHERAL NERVE STIMULATOR

The growing interest in regional anaesthesia has led to considerable innovations in the field of peripheral nerve blockade. Peripheral nerve block involves identification of a nerve or a nerve bundle followed by injection of local anaesthetic solution around the nerve to block the impulse conduction from the area supplied by the nerve. Various techniques are used to achieve this aim.

The most commonly used techniques include paraesthesia elicitation, nerve stimulation, ultrasonographic identification or nerve stimulation with ultrasonographic identification. A Successful blockade of any nerve depends upon precise identification and localization of the nerve, which in turn reduces required amount of local anaesthetic agent to be injected.

Elicitation of paraesthesia with or without the use of nerve locator, and recently the aid of ultrasound is in use for exact localization of nerve. Historically, nerve blocks were performed using anatomical landmarks as a guide to insertion of the needle and then elicitation of paraesthesia. This technique is being practiced in many centres even today.

While locating the nerve using this technique, the patient experiences a paraesthesia (pins and needles like sensation) or a shock like sensation when the needle touches the nerve. The disadvantage of using this technique is the risk of damage to nerve when the needle touches it. Also the success rate is less as it relies on the patient's subjective sensation, and there is no definitive objective response that can guarantee the accurate location of the nerve.

Uncooperative patients pose greater difficulties. The sensation of paraesthesia and blind manipulation of nerve block needle is uncomfortable and unacceptable to some patients. Thus injury to nerve, multiple pricks, large amount of local anaesthetic, and high incidence of incomplete block are the main disadvantages of elicitation of paraesthesia technique.

Nerve stimulators have sought to add an objective end-point to nerve location. They work by an application of a small amount of direct current through the needle, which is transmitted to the stimulated nerve. This further produces a motor response. An appropriate motor response, corresponding to the motor innervation of the nerve to be blocked, has shown to improve the success of a block. However, the efficacious use of nerve stimulators mandates a thorough knowledge of anatomical landmarks. Without this knowledge, the nerve stimulator technique poses similar risks as the paraesthesia technique.

ELECTROPHYSIOLOGY

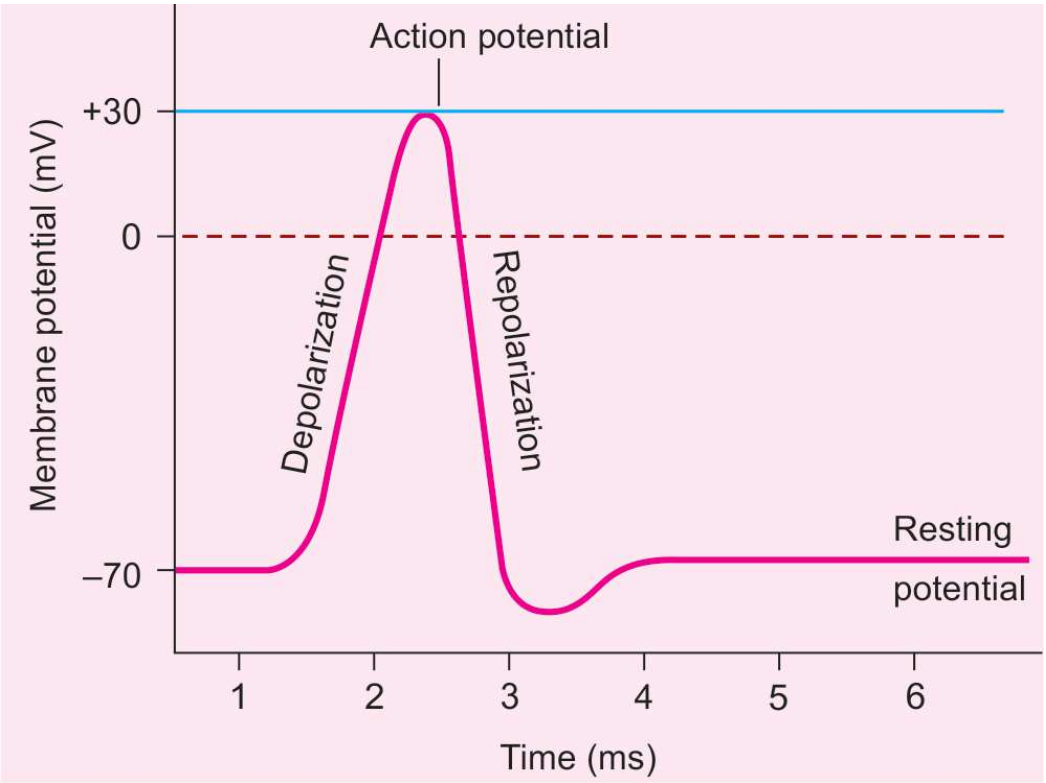
In order to use nerve stimulation effectively, it is important to know the electrophysiological principles guiding them. The following information is based on theoretical as well as practical concepts of nerve stimulation which are routinely accepted. However, there are a few discrepancies and conflicting concepts in nerve stimulation.

Neurons, like any other cell in the body, are in a resting state with a negative electric potential inside the cell relative to the outside. This is called the resting membrane potential and is about –70 mV.

When a neuron is stimulated, a transient change in the ion permeability of the membrane (an increase in sodium conductance) occurs. On reaching a threshold level, it depolarizes the membrane sufficiently to generate an action

potential which then propagates along the nerve to stimulate the muscle and cause a contraction.

Also depending on the characteristic of the electric impulse, the motor or sensory or both nerve fibres could be stimulated.



TOTAL CHARGE

The total charge (Q) applied to stimulate the nerve is calculated by the intensity (I) of the current and the duration (t) of the square wave pulse of the current.

Q = I × t If the stimulus is not strong enough, even if it is applied for a long time it will not produce an action potential. Conversely if a strong stimulus is applied for only a very short time it will not produce an action potential. Thus, it can be said that the stimulus needs to be strong enough and it needs to

be applied for sufficient time to produce an action potential to depolarize the nerve.

Current

The minimum current intensity required to initiate an action potential in the nerve is called the rheobase (Ir). It is expressed by the relationship $I = Ir (1+ C/t)$

Chronaxie

It is the length of time the current must be applied to the nerve to initiate an impulse when the current intensity is twice the rheobase. This terminology is used to describe the excitabilities of different nerve fibres.

The chronaxie (C) varies in different nerves depending on their sensitivities and their refractory period. The larger the nerve fibre, the shorter the chronaxie. Faster conducting nerves like Aα motor nerve fibres have a smaller chronaxie due to a shorter refractory period than the slower conducting sensory nerves like Aδ or the unmyelinated C sensory nerve fibres. Motor nerves have a shorter chronaxie than sensory nerves.

This implies that it is possible to stimulate a motor nerve but not the sensory nerve by using a current of smaller chronaxie (shorter time), which is applicable in the practical use of the peripheral nerve stimulator (PNS). However, the patient may still experience some sensory stimulation such as tingling.

Recent data has suggested that, factors like withdrawing and repositioning the stimulating needle, exaggerated motor response and use of high intensity current rather than pulse width are responsible for patient discomfort during nerve block.

The threshold current is the minimal current required to generate a motor response. A current of 0.2 mA and 0.5 mA has been suggested to ensure a successful block. It suggests the proximity of the needle to the nerve; however, it cannot be taken as a reliable indicator.

Ultrasound guided blocks have demonstrated that it is possible to be in close proximity to the nerve yet be unable to elicit motor responses, the incidence of which may be as high as 13.5%.

Distance

For a successful nerve stimulation, Coulomb's law states that

$I = k (i/r2)$

(I) is the current intensity, (k) is a constant, (i) is the minimum current from the needle tip and (r) is the distance of stimulus source from the nerve. It is evident that the current intensity is inversely proportional to the square of its distance from the nerve. Hence, while depolarizing a nerve, the farther the nerve from the stimulating electrode, higher the current stimulus required.

Polarity

Polarity of nerve stimulation plays an important role in the success of nerve blocks. Most peripheral nerve block stimulators have the cathode

(negative electrode) as the stimulating electrode connected to the needle and the anode (positive electrode) to the patient's skin.

With this arrangement significantly less current is required to elicit a motor response as the negative current immediately reduces the voltage outside the membrane, decreases the voltage gradient across it and causes depolarization. If the needle is connected to the positive electrode, then the nerve will get hyperpolarized. Therefore, a larger current will be needed to depolarize the nerve and obtain a response.

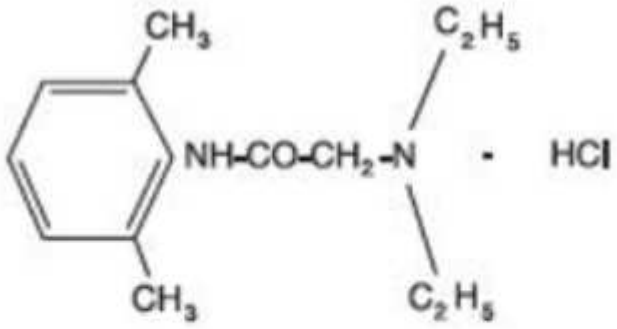
Frequency

The ideal electric parameters for comfortable stimulation are 1–2 Hz. A higher frequency gives more frequent feedback to the operator, but often causes greater discomfort to the patient. If too low a frequency is used, then there is a risk of nerve damage between current impulses. There is also a risk of missing the nerve between two stimuli.

LIGNOCAINE:

Lignocaine HCl, (chemical name - acetamide, 2-(diethylamino)-N-(2,6-dimethylphenyl)-, monohydrochloride) has a molecular weight. 270.8.

Lignocaine HCl (C14H22N2O•HCl) has the following structural formula:



C14H22N20.HCl. H20 M.W. 288.8

Mechanism of Action:

Lignocaine HCl stabilizes the neuronal membrane by inhibiting the ionic fluxes required for the initiation and conduction of impulses thereby effecting local anaesthetic action.

Hemodynamics :

Excessive blood levels may cause changes in cardiac output, total peripheral resistance, and mean arterial pressure. With central neural blockade these changes may be attributable to block of autonomic fibres, a direct depressant effect of the local anaesthetic agent on various components of the cardiovascular system, and/or the beta-adrenergic receptor stimulating action of epinephrine when present.

The net effect is normally a modest hypotension when the recommended dosages are not exceeded.

Pharmacokinetics and Metabolism:

Information derived from diverse formulations, concentrations and usages reveals that lignocaine HCl is completely absorbed following parenteral administration, its rate of absorption depending, for example, upon various factors such as the site of administration and the presence or absence of a vasoconstrictor agent. Except for intravascular administration, the highest blood levels are obtained following intercostal nerve block and the lowest after subcutaneous administration.

The plasma binding of lignocaine HCl is dependent on drug concentration, and the fraction bound decreases with increasing concentration. At concentrations of 1 to 4 mcg of free base per mL 60 to 80 percent of lignocaine HCl is protein bound. Binding is also dependent on the plasma concentration of the alpha-1-acid glycoprotein.

Lignocaine HCl crosses the blood-brain and placental barriers, presumably by passive diffusion.

Lignocaine HCl is metabolized rapidly by the liver, and metabolites and unchanged drug are excreted by the kidneys. Biotransformation includes oxidative N-dealkylation, ring hydroxylation, cleavage of the amide linkage, and conjugation. N-dealkylation, a major pathway of biotransformation, yields the metabolites monoethylglycinexylidide and glycinexylidide.

The pharmacological/toxicological actions of these metabolites are similar to, but less potent than, those of lignocaine HCl. Approximately 90% of lignocaine HCl administered is excreted in the form of various metabolites, and less than 10% is excreted unchanged. The primary metabolite in urine is a conjugate of 4-hydroxy-2,6-dimethylaniline.

The elimination half-life of lignocaine HCl following an intravenous bolus injection is typically 1.5 to 2.0 hours. Because of the rapid rate at which lignocaine HCl is metabolized, any condition that affects liver function may alter lignocaine HCl kinetics. The half-life may be prolonged two-fold or more in patients with liver dysfunction. Renal dysfunction does not affect lignocaine HCl kinetics but may increase the accumulation of metabolites.

Factors such as acidosis and the use of CNS stimulants and depressants affect the CNS levels of lignocaine HCl required to produce overt systemic effects. Objective adverse manifestations become increasingly apparent with increasing venous plasma levels above 6.0µg free base per mL. In the rhesus monkey arterial blood levels of 18–21 µg/mL have been shown to be threshold for convulsive activity.

Adverse effects:

Systemic:

Adverse experiences following the administration of lidocaine HCl are similar in nature to those observed with other amide local anaesthetic agents. These adverse experiences are, in general, dose-related and may result from high plasma levels caused by excessive dosage, rapid absorption or inadvertent intravascular injection, or may result from a hypersensitivity, idiosyncrasy or diminished tolerance on the part of the patient. Serious adverse experiences are generally systemic in nature. The following types are those most commonly reported:

Central Nervous System:

CNS manifestations are excitatory and/or depressant and may be characterized by light headedness, nervousness, apprehension, euphoria, confusion, dizziness, drowsiness, tinnitus, blurred or double vision, vomiting, sensations of heat, cold or numbness, twitching, tremors, convulsions, unconsciousness, respiratory depression and arrest. The excitatory manifestations may be very brief or may not occur at all, in which case the first manifestation of toxicity may be drowsiness merging into unconsciousness and respiratory arrest.

Drowsiness following the administration of lidocaine HCl is usually an early sign of a high blood level of the drug and may occur as a consequence of rapid absorption.

Cardiovascular System:

Cardiovascular manifestations are usually depressant and are characterized by bradycardia, hypotension, and cardiovascular collapse, which may lead to cardiac arrest.

Allergic:

Allergic reactions are characterized by cutaneous lesions, urticaria, oedema or anaphylactoid reactions. Allergic reactions may occur as a result of sensitivity either to local anaesthetic agents or to the methylparaben used as a preservative in the multiple dose vials. Allergic reactions as result of sensitivity to lidocaine HCl are extremely rare and, if they occur, should be managed by conventional means. The detection of sensitivity by skin testing is of doubtful value.

Neurologic:

The incidences of adverse reactions associated with the use of local anaesthetics may be related to the total dose of local anaesthetic administered and are also dependent upon the particular drug used, the route of administration and the physical status of the patient.

In a prospective review of 10,440 patients who received lidocaine HCl for spinal anaesthesia, the incidences of adverse reactions were reported to be about 3 percent each for positional headaches, hypotension and backache; 2 percent for shivering; and less than 1 percent each for peripheral nerve symptoms, nausea, respiratory inadequacy and double vision. Many of these observations

may be related to local anaesthetic techniques, with or without a contribution from the local anaesthetic.

In the practice of caudal or lumbar epidural block, occasional unintentional penetration of the subarachnoid space by the catheter may occur. Subsequent adverse effects may depend partially on the amount of drug administered subdurally. These may include spinal block of varying magnitude (including total spinal block), hypotension secondary to spinal block, loss of bladder and bowel control, and loss of perineal sensation and sexual function. Persistent motor, sensory and/or autonomic (sphincter control) deficit of some lower spinal segments with slow recovery (several months) or incomplete recovery have been reported in rare instances when caudal or lumbar epidural block has been attempted. Backache and headache have also been noted following use of these anaesthetic procedures.

OBTURATOR NERVE BLOCK

Indications for a single-injection obturator nerve block are generally limited to diagnostic applications or therapeutic relaxation of the adductor muscles of the thigh. Despite the significant amount of literature that has been devoted to anaesthetic sparing of this nerve with many approaches to the lumbar plexus, only two studies have examined the effect of the addition of an obturator nerve block to improve analgesia after major knee surgery.

Studies have reported a decrease in opioid consumption and pain scores in patients undergoing TKA receiving obturator nerve block in addition to a femoral or femoral and sciatic nerve block.

Technique:

The patient is placed supine with the leg to be blocked in slight abduction. An alternate interadductor approach was described by Wasseff.

In this technique, the needle is inserted behind the adductor tendon, near its pubic insertion, and is directed laterally toward a mark on the skin 1 to 2 cm medial to the femoral artery and immediately below the inguinal ligament, representing the obturator canal. The nerve is identified by a motor response to peripheral nerve stimulation in the adductor muscle.

A modification of this technique advocates searching for paraesthesia to the area of the inner thigh. If paraesthesia are not elicited, then it is suggested that a fan-like wall of anaesthesia to be deposited. The major difference in the two techniques lies in a greater attempt to palpate the tendon on the adductor

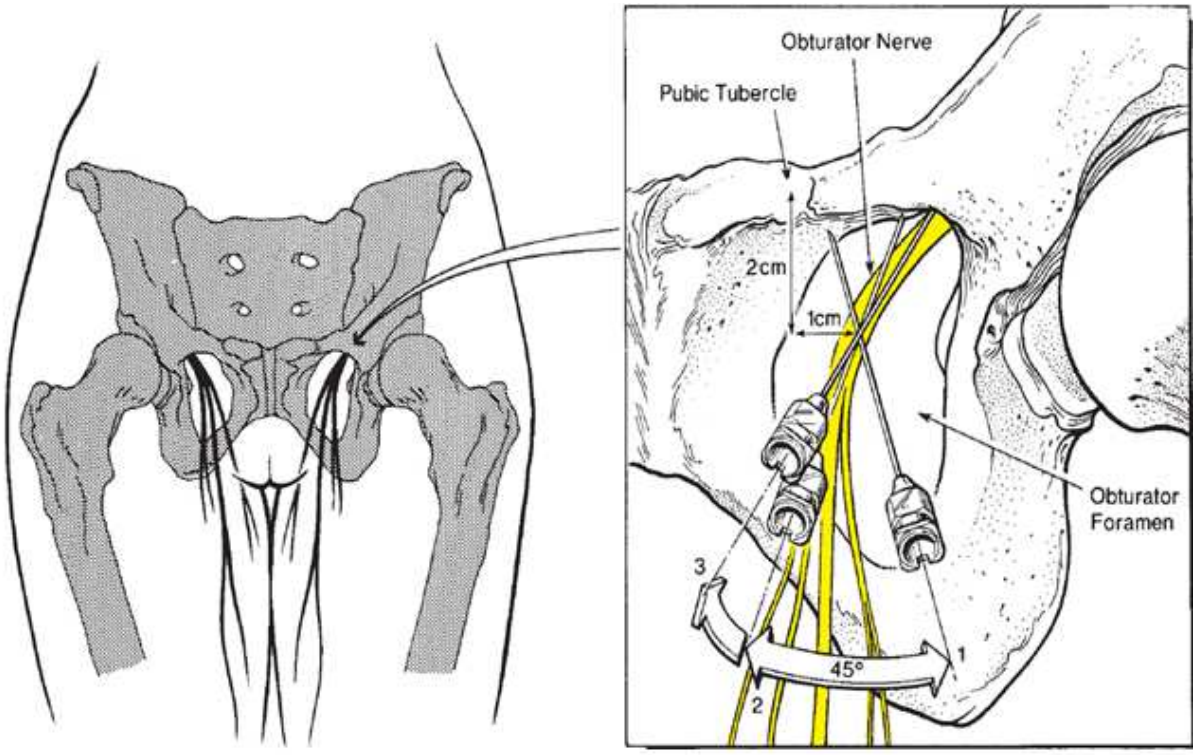
longus muscle, which constitutes the upper medial aspect of the obturator foramen. With gentle, deep palpation, one may be able to palpate the entire foramen and, placing the skin wheal inferior to the midpoint of the superior pubic ramus, gain a more precise location of the obturator nerve.

PUBIC APPROACH:

POSITIONING:

The patient is made to lie in supine position with both the legs slightly abducted and externally rotated. Special precaution should be taken to protect the skin of the genitalia from irritating antiseptic solutions used in preparing the area. It is not necessary to shave the pubic area.

A skin wheal is raised at a point 1 to 2 cm lateral and 1 to 2 cm caudad to the pubic tubercle, and a 22-gauge, 8- to 10-cm needle is advanced



Obturator nerve block - Pubic approach

perpendicular to the skin entry site with a slight medial direction. The inferior pubic ramus is encountered at a depth of 2 to 4 cm, and the needle is walked in a lateral and caudad direction, until it passes into the obturator canal.

Identification of the bony wall verifies that the needle has passed into the canal rather than into the soft tissues (e.g., bladder or vagina) medially or superiorly. The obturator nerve is located 2 to 3 cm past the initial point of contact with the pubic ramus. After negative aspiration, 10 to 15 mL of local anaesthetic is injected.

A nerve stimulator is helpful in locating the obturator nerve; correct needle position is evidenced by contraction of the adductor muscles of the medial thigh.

The presence of successful obturator nerve block is determined by demonstrating paresis of the adductor muscles, since the cutaneous distribution is small and inconstant

INGUINAL APPROACH:

The classic approach to obturator nerve block involves painful periosteal contact and multiple needle redirection. An alternate interadductor approach was described by Wasseff.

In this technique, the needle is inserted behind the adductor tendon, near its pubic insertion, and is directed laterally toward a mark on the skin 1 to 2 cm medial to the femoral artery and immediately below the inguinal ligament,

representing the obturator canal. The nerve is identified by a motor response to peripheral nerve stimulation in the adductor muscle.

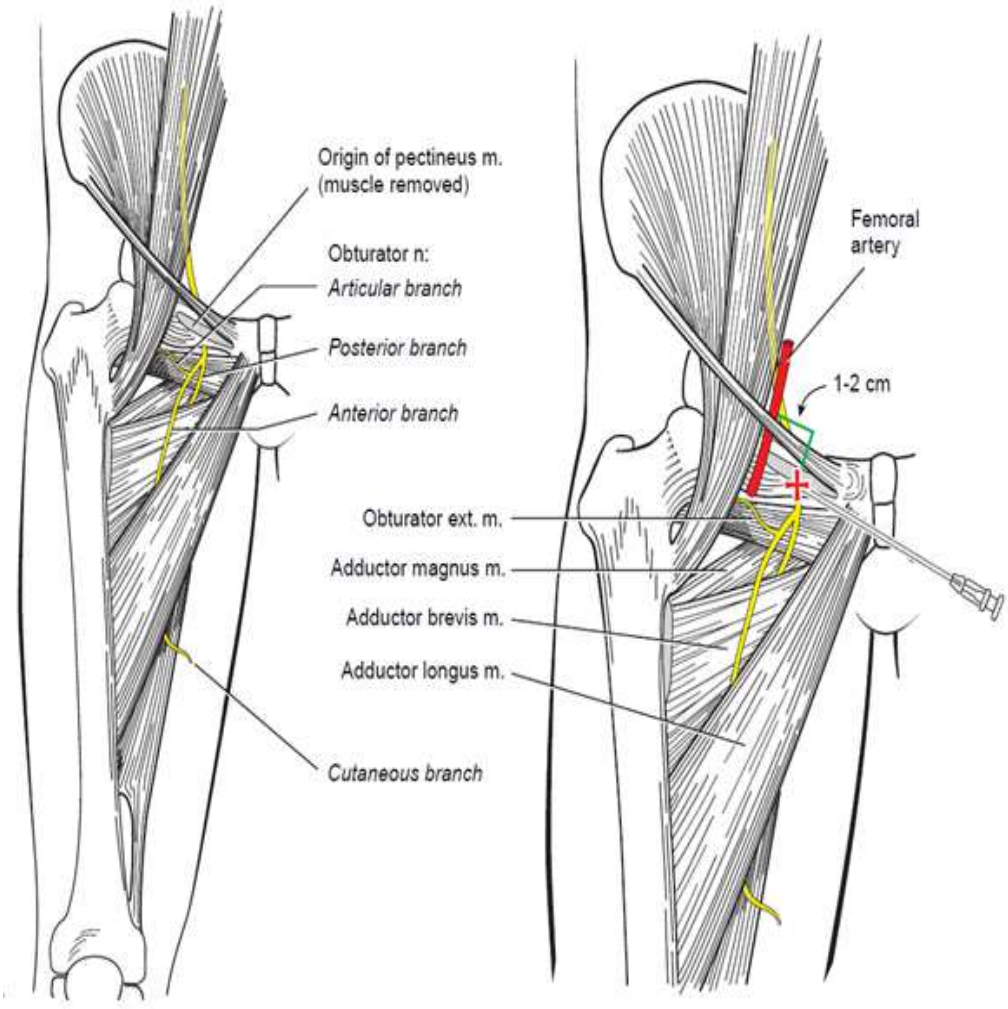
A modification of this technique advocates searching for paresthesias to the area of the inner thigh. If paresthesias are not elicited, then it is suggested that a fan-like wall of anesthesia be deposited.

The major difference in the two techniques lies in a greater attempt to palpate the tendon on the adductor longus muscle, which constitutes the upper medial aspect of the obturator foramen. With gentle, deep palpation, one may be able to palpate the entire foramen and, placing the skin wheal inferior to the midpoint of the superior pubic ramus, gain a more precise location of the obturator nerve.

In supine position, with the legs slightly abducted parts parts should be prepared. After identification of the adductor longus tendon by passive resistance against patients adduction in the medial part of the thigh, a mark on the skin is made on the inguinal crease at the midpoint of the line drawn between the femoral arterial pulsation and the inner border of the adductor longus tendon.

This approach can be performed in 2 stages, alternatively. At first the needle is inserted 0.5-1 cm below the mark, with a cephalad angulation of 30 degrees to the skin until adductor muscle (adductor longus or gracilis) contractions are elicited.

After achieving the contractions (anterior side of the inner thigh and the medial part of the knee), the local anaesthetic is injected (anterior branch block). Then the needle is advanced further deep for about 0.5-1 cm and 5 degrees laterally. When the contraction of the adductor magnus muscle occurred (i.e. noticeable hip adduction), the local anaesthetic is injected (posterior branch block).



Obturator nerve block - Pubic appraoch

COMPLICATIONS:

There are no convincing evidence of complications associated with obturator nerve block. This may be due to lack of reported complications, however, is more likely due to the infrequent use of this block rather than to its inherent safety.

Needle orientation for the classic pubic approach is aimed towards the pelvic cavity. Therefore, if then needle is advanced too far in a cephalad direction, it can pass over the superior pubic ramus and penetrate the pelvic cavity, leading to perforation the urinary bladder, rectum, and spermatic cord.

Reported cases of accidental puncture of the obturator vessels resulted in unintentional intravascular injection and hematoma formation. In some individuals a retropubic anastomosis between the external iliac and obturator arteries (known as corona Mortis). In such cases, bleeding secondary to puncture of the corona Mortis can be difficult to control. Due to direct needle trauma, intraneural injection, nerve ischemia, or local anaesthetic toxicity, the occurrence of obturator neuropathy is also possible, as with other peripheral nerve block techniques.

REVIEW OF LITERATURE

1. Yutaka Taira, Takashi Saitoh, Kazuhiro Sugahara et al., compared the interadductor approach of obturator nerve block with the traditional approach in terms of the insertion-adductor contraction interval (ICI), success rate, completion of the block, and plasma lignocaine concentration. An obturator nerve block by the interadductor approach was performed by needle insertion 1 cm behind the adductor longus tendon and 2 cm lateral to the pubic arch in 12 patients, and by the traditional approach in 12 patients. The ICI with the interadductor approach was significantly shorter than that with the traditional approach. The success rate, completion of the block, and plasma lignocaine concentrations were similar with both approaches. The interadductor approach can provide faster identification of the obturator nerve than the traditional approach.
2. Srilata Moningi, Padmaja Durga et al., compared classical inguinal approach versus paravascular approach for obturator nerve block and found that the ease of block (P = 0.09) and the median number of attempts to accomplish the block (P = 0.45) were comparable between the two approaches. The incidence of vascular injury was higher in classic approach (P = 0.056) and concluded that inguinal approach is a useful alternative to classic approach block for patients undergoing TURBT under SA.
3. Grise P, Jardel B, Rozada P, Dadoun D, Weber J, Winckler C (1987) Controlled obturator nerve block using electrostimulation: prevention of the

stimulation of the obturator nerve during resection of the lateral walls of the bladder. Obturator nerve blockade in the obturator canal by local anesthesia with control by nerve stimulator can prevent complications. The technique described, has been used in 12 patients it is reliable, fast and easy to perform.

4. Deepak Sharma, V. P. Singh, Nidhi Agarwal, and M. K. Malhotra (2017) Compared Obturator Nerve Block versus transvesical nerve block with a cystoscope in Transurethral Resection of Bladder Tumor. There was statistically significant difference between the groups for resection without adductor jerk, resection with a minimal jerk, and unresectable with high-intensity adductor jerk. Bleeding was observed in both groups and one bladder perforation was encountered. They concluded that obturator nerve block, when administered along with spinal anesthesia for TURBT, is extremely safe and effective method of anesthesia to overcome adductor contraction. obturator nerve block with nerve locator appears to be more effective method compared to the transvesical nerve block.
5. Kakinohana M, Taira Y, Saitoh T, Hasegawa A, Gakiya M, Sugahara K compared interadductor approach to obturator nerve block for transurethral resection procedure with traditional approach and observed the interadductor approach was significantly shorter than that with the traditional approach. The success rate, completion of the block, and plasma lignocaine concentrations were similar with both approaches. The interadductor

approach can provide faster identification of the obturator nerve than the traditional approach.

6. Wassef MR; 1993; in a study for evaluation of the Interadductor approach to obturator nerve blockade for spastic conditions of adductor thigh muscles. He evaluated the efficacy of the block achieved in terms of its success rate, the degree of alleviation of muscle spasm, the improvement of gait in the patients with multiple sclerosis, and the facilitation of nursing hygienic care in bedridden patients.

   He concluded that “The interadductor approach is a new approach based on the anatomy of the obturator nerve trunk, which, though in the obturator canal, is shielded by its osseous part from the anteroposterior perspective of the traditional approach. The interadductor approach allows needle positioning inside the obturator canal through a mediolateral perspective, thus facilitating the blockade of the obturator nerve trunk before it branches immediately outside the canal. The new approach proved to be successful, reproducible and without complications.”

7. Jo YY1, Choi E, Kil HK, 2011; Compared inguinal approach with classical pubic approach for obturator nerve block. One hundred and two patients who required obturator nerve block undergoing TURB with spinal anesthesia were included in this study.

   After spinal anesthesia, obturator nerve block was performed with an inguinal approach (Group I, n = 51) or pubic approach (Group P, n = 51)

using a nerve stimulator. In the pubic approach, a needle was inserted at a point 1.5 cm lateral and 1.5 cm inferior to the pubic tubercle. For the inguinal approach, a needle was inserted at the midpoint of the femoral artery and the inner margin of the adductor longus muscle 0.5 cm below the inguinal crease.

Puncture frequency, success rate, anatomical characteristics, and the presence of adductor muscle contraction during operation were evaluated. The success rate of obturator nerve block CK was higher in group I compared to group P (96.1% vs. 84.0%, P = 0.046) and the frequency of needle attempts was lower in group I than in group P (1.8 ± 0.9 vs. 1.3 ± 0.6, P = 0.01) and concluded that the inguinal approach for OBTURATOR NERVE BLOCK appears to be technically easier and offers certain anatomical advantages when compared to the pubic approach.

8. Rubial Alvarez M, Molins Gauna N, Rubio Pascual P, Martín Bermejo P, Pamplona Casamayor M, Actas Urol Esp. 1989; All techniques proposed since transurethral surgery began, until nowadays are reviewed: neuromuscular blockade, electric circuit modifications, transparietal endoscopic blockade, periprostatic and subvesical infiltration, obturator nerve blockade and the "3 in 1 block" described by Winnie. Practical advices are proposed finally
9. Takayuki Yoshida, Tatsuo Nakamoto, and Takahiko Kamibayashi, Various ultrasound-guided obturator nerve block techniques can be used and can be

classified according to whether the approach is distal or proximal. In the distal approach, a transducer is placed at the inguinal crease; the anterior and posterior branches of the nerve are then blocked by two injections of local anaesthetic directed toward the interfascial planes where each branch lies. The proximal approach comprises a single injection of local anaesthetic into the interfascial plane between the pectineus and obturator externus muscles. Several proximal approaches involving different patient and transducer positions are reported. The proximal approach may be superior for reducing the dose of local anaesthetic and providing successful blockade of the obturator nerve, including the hip articular branch, when compared with the distal approach.

10. Fujita Y, Kimura K, Furukawa Y, Takaori M with the aim to analyse Plasma concentrations of lignocaine after obturator nerve block combined with spinal anaesthesia in patients undergoing transurethral resection procedures. Bilateral obturator nerve block was performed with the aid of a peripheral nerve stimulator in 12 patients after spinal anaesthesia. In group I (n = 6), patients received 2% lignocaine 10 ml (200 mg) for the block; those in group II (n = 6) received 2% lignocaine 15 ml (300 mg). The block was satisfactory and no single adductor contraction was observed in either group during surgery. The peak plasma concentrations of lignocaine were 2.28 (SD 0.29) micrograms ml-1 and 3.75 (0.79) micrograms ml-1 in groups I and II, respectively. The greatest plasma concentration was 5.07 micrograms ml-1

in a patient of group II. There were no symptoms suggesting systemic toxicity. We conclude that bilateral obturator nerve block may be performed safely and effectively with 2% lignocaine 10 ml with the aid of a peripheral nerve stimulator in patients undergoing transurethral resection procedures with spinal anaesthesia.

11. Hyung-Sun Won et al., in studying Topographical relationships between the obturator nerve, artery, and vein in the lateral pelvic wall found that The Obturator nerve, obturator artery, and OV ran in that order (from upper to lower) within the lateral pelvic wall in 46.7 % of specimens. In 32 % of cases, the three structures were separated at the posterior portion of the wall and then converged toward the obturator canal. In 10 %, the obturator artery and obturator vein were in contact with each other and separate from the obturator nerve; in 2 %, the Obturator nerve was contiguous with the obturator artery and separate from the obturator vein; in 2.7 %, all three structures were in contact with each another. Alternately, the order of Obturator nerve, obturator artery, and OV was altered in the lateral pelvic wall in 41.3 % of specimens. Finally, in 12 % specimens, either the obturator artery or obturator vein or both were absent from the lateral pelvic wall.

12. J-A. Lin, J-A. Lin, T. Nakamoto, S-D. Yeh in a study of Ultrasound standard for obturator nerve block: the modified Taha's approach. They concluded that Taha’s approach into the thick hyperechoic fascia between the pectineus and obturator externus should be the first choice whenever possible, but it

should be modified to a lateral-to-medial approach with the echogenic needle in-plane to reach the target. However, there are limits to the current knowledge and available techniques regarding obturator nerve block for transurethral resection of bladder tumours, as the accessary obturator nerve, with an incidence of 10–30%, cannot be completely covered. Therefore, an overextended bladder should be avoided to stimulate the accessary obturator nerve if present. Finally, the modified Taha's approach will, in theory, also block the communicating ramus to the anterior branch of the obturator nerve as it runs its course beneath the pectineus.

13. K Arolina P Ladzyk, L Idia Jureczko, T Omasz Łazowsk in a study of over 500 obturator nerve blocks in the lithotomy position during transurethral resection of bladder tumor. In 431 patients undergoing TURB adductor spasms were observed. In these cases, nerve stimulation and obturator nerve block with 2% lidocaine using thigh interadductor approach in the lithotomy position were performed. They found that the efficacy of 542 obturator nerve block was 94%. In 31 cases general anesthesia was necessary. There were two cases of urinary bladder perforation, but only one resulted from an insufficient nerve block. Both were managed conservatively. Neither hematomas nor neurological adverse events were observed.

MATERIALS AND METHODS

Sixty patients of ASA physical status I, II or III undergoing elective Transurethral Resection of Bladder tumour were included in this study.

Patients belonging to age group 30 to 70 years of both the sex were included.

It is a prospective, randomized, double blinded clinical study. The study was approved by our institution ethical committee after obtaining written, informed consent from the patient, this study was conducted.

This study was done during the period from July 2018 to December 2018 in the Institute of anaesthesiology and Critical care (IACC), Madras Medical College, Chennai

INCLUSION CRITERIA:

- Age : 30 years to 70 yrs
- ASA : I,II,III
- Surgery : Elective
- Who have given valid informed consent

EXCLUSION CRITERIA:

- Not satisfying inclusion criteria
- Patients with Advanced cardiac and respiratory insufficiency,
- Allergy to local anaesthetics,

- Pre-existing neurologic deficits,
- Skin infections involving pubic area
- Prior operations involving the hip and the inguinal region and Bleeding tendency
- Lack of written informed consent
- Patient refusal

MATERIALS:

- Nerve Stimulator (Medilogix)
- 18 G Teflon insulated needle
- Inj. 0.5% Bupivacaine
- 25 G Quincke's Needle
- Inj. 1% Lignocaine
- Syringes
- Monitors – ECG, NIBP, SPO2,
- Sterile trays and drapes

ANAESTHESIA PROTOCOL

Obturator nerve block was performed in the patients in whom the Obturator nerve block was needed. Most of this was demanded by urologist because of invasive lateral bladder wall tumour. And these patients were randomly allocated to the conventional pubic approach group (Group P) or new inguinal approach group (Group I).

On arrival to the operating room, standard anaesthetic monitors were applied and 0.9% normal saline 300 ml was given intravenously. A spinal block was performed with a 25G Quincke's needle at the L3-4 or L4-5 interspace. After confirming free flow and clear CSF, 0.5% hyperbaric bupivacaine was administered to attain desired level of block, accordingly.

In a supine position, sympathetic and sensory blocks were checked with an alcohol swab and pin-prick test. When the sensory level block reached above T12, obturator nerve block was performed according to group assignment.

All obturator nerve block were performed by 2 investigators separately for both the approaches and they were not involved in further treatment of those patients. obturator nerve block was performed using a nerve stimulator (Medilogix Inc. Nerve stimulator, 18 G Braun Teflon insulated needle). Nerve stimulation was applied using a current of 0.5 mA at 1 Hz only.

Obturator nerve block

Pubic approach:

The patient was placed in a supine position with the legs slightly abducted and externally rotated. After identification of the pubic tubercle, a needle was inserted perpendicularly to the skin 1.5 cm lateral and 1.5 cm inferior to the tubercle. When the needle made contact with the inferior border of the superior pubic ramus, the needle was withdrawn short of the tip and then slipped along the anterior pubic wall. After this, the needle was redirected anteriorly or posteriorly and slightly withdrawn again and advanced cephalically and laterally at an angle of 45 degrees until contraction of the thigh adductor muscles were observed.

When the adductor muscle was contracted, 10 ml of 1% lignocaine was administered after confirmation so that no blood was present after negative aspiration. If there were no responses of adductor muscles after the third attempt, 15 ml of 1% lignocaine was instilled evenly and the needle was withdrawn and this was defined as a failed obturator nerve block.

Inguinal approach:

The patient was placed in a supine position with the legs slightly abducted and a line marked the inguinal crease. After identification of the adductor longus tendon in the medial part of the thigh, a mark on the skin was made in the inguinal crease at the midpoint of the line drawn between the femoral arterial pulse and the inner border of the adductor longus tendon.

This approach was performed in 2 stages. First, the needle was inserted 0.5 cm below the mark in the cephalad direction with a 30 degree angle to the skin until adductor muscle (adductor longus or gracilis) contractions were elicited. After identification of the contractions (anterior side of the inner thigh and the medial part of the knee), 5 ml of 1% lignocaine dose was administered (anterior branch block).

Then the needle was advanced deeper about 0.5-1 cm and 5 degrees laterally. When the contraction of the adductor magnus muscle occurred (i.e. noticeable hip adduction), 5 ml of 1% lignocaine was injected (posterior branch block). If there were no contractions of the adductor muscles after the third attempt, 15 ml of lignocaine was instilled evenly and this was defined as a failed obturator nerve block. Also, if the obturator sign occurs during the procedure, in cases with successful adductor contraction in the obturator nerve block, that case was defined as a failed case.

The number of needle attempts, the needle depth, performance time were recorded. An independent observer who was blinded to the approach evaluated the obturator signs during operation. We planned to administer a general anaesthesia with laryngeal mask airway (LMA) when the obturator sign occurred during operation.

STUDY OUTCOME MEASURES:

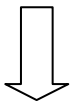
To compare the success rate of two different approaches of Obturator Nerve block **(**Inguinal approach Vs Pubic approach**)**

1.To evaluate the ease and reliability of the approaches

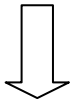
2.To assess the complications if any

METHODOLOGY

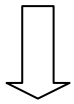
ETHICAL COMMITTEE APPROVAL



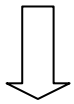
PATIENT SATISFYING INCLUSION CRITERIA



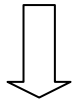
INFORMED CONSENT OBTAINED



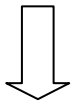
RANDOMIZATION BY CLOSED ENVELOPE METHOD



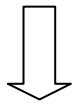
BASELINE HR, BP, SPO2 MEASUREMENT



SUB ARACHNOID BLOCK



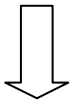
OBTURATOR NERVE BLOCK



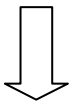
MEASUREMENT OF OTHER STUDY OUTCOME

- Number of attempts
- Presence of adductor muscle contraction during operation

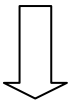
- Performance Time
- Needle depth



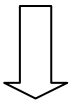
SURGERY PROCEEDED WITH MAINTENANCE OF ANAESTHESIA



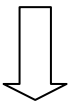
END OF SURGERY



DATA COMPILATION



STATISTICAL ANALYSIS

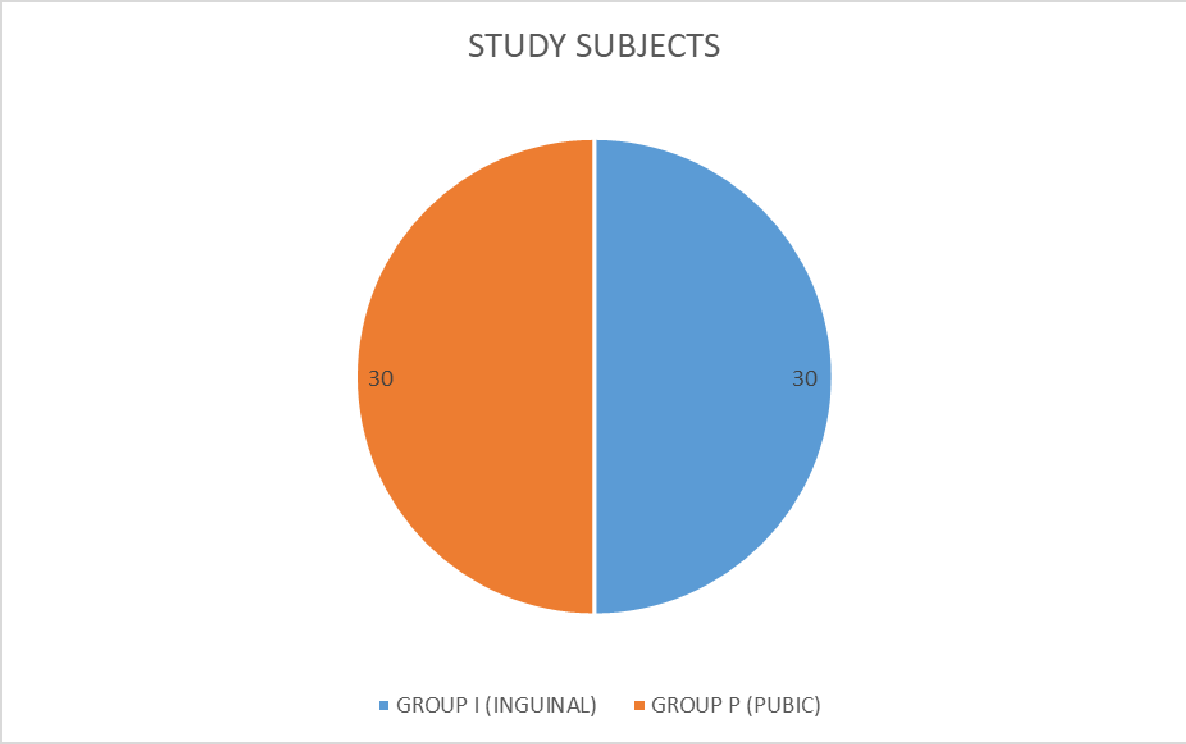


CONCLUSION

OBSERVATION AND ANALYSIS

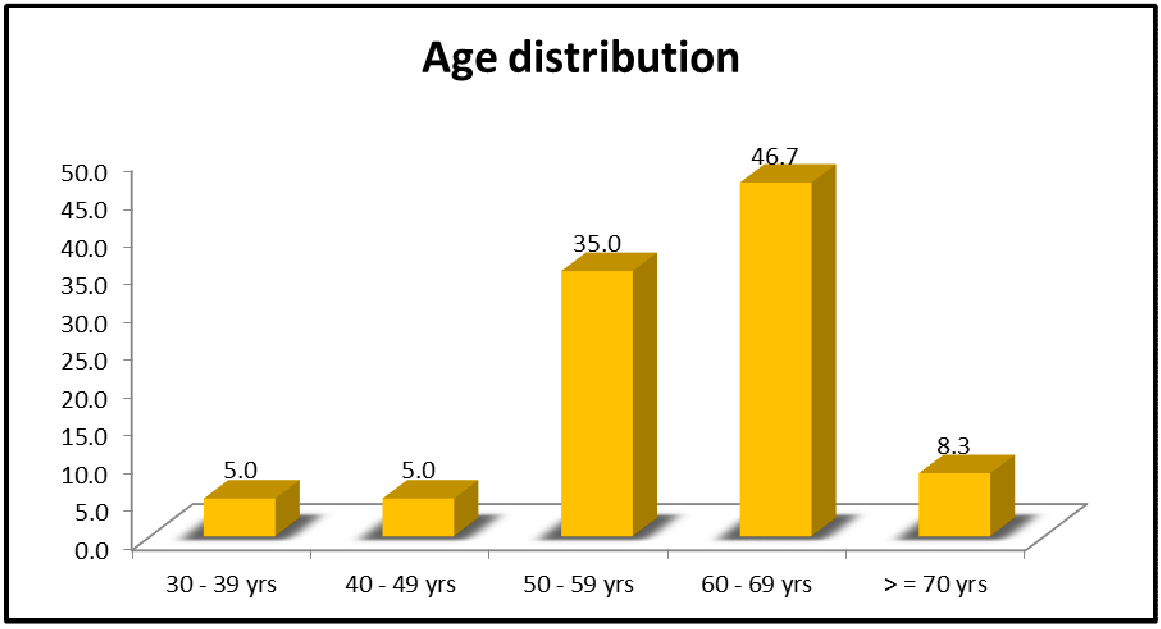
The collected data were analysed with IBM.SPSS statistics software 23.0 Version. To describe about the data descriptive statistics frequency analysis, percentage analysis were used for categorical variables and the mean & S.D were used for continuous variables. To find the significant difference between the bivariate samples in Independent groups the Unpaired sample t-test was used. To find the significance in categorical data Chi-Square test was used similarly if the expected cell frequency is less than 5 in 2×2 tables then the Fisher's Exact was used. In all the above statistical tools the probability value .05 is considered as significant level.

STUDY SUBJECTS:



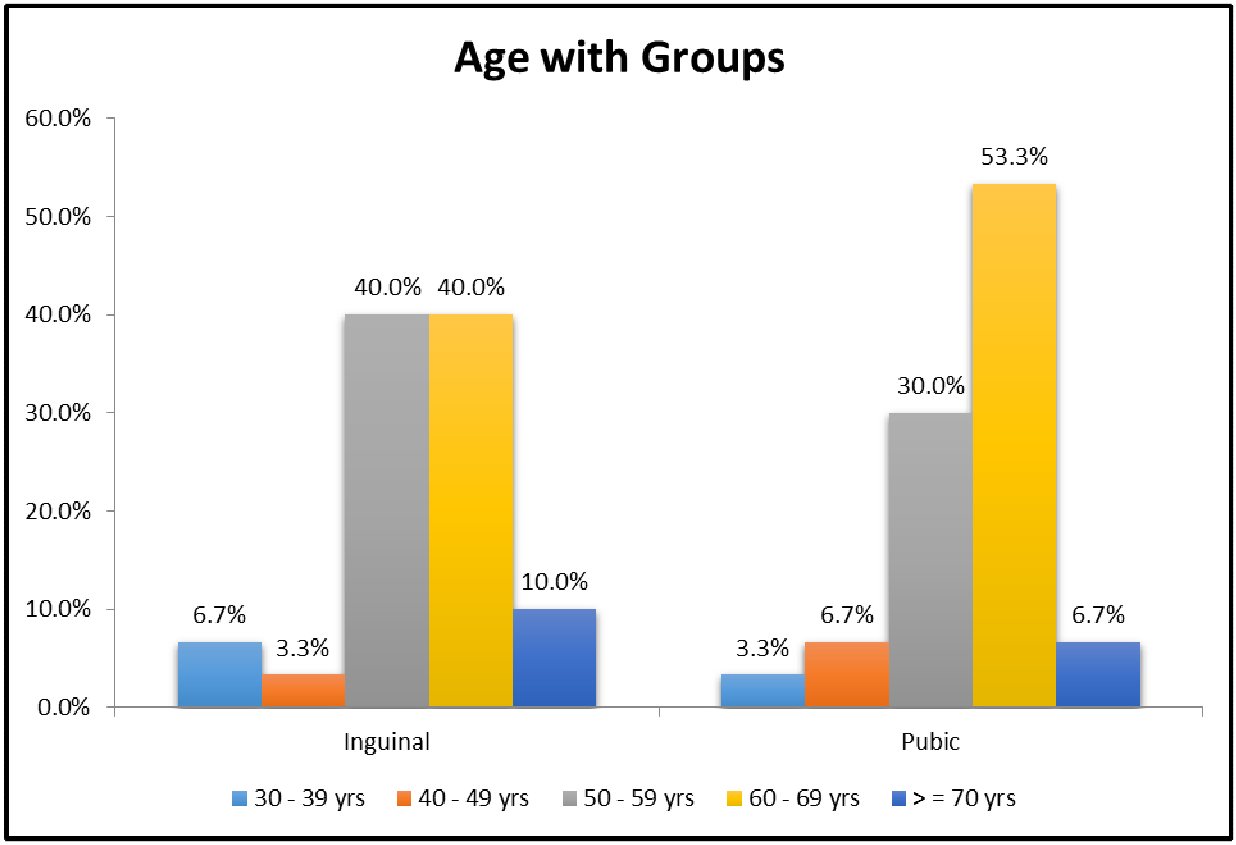
STUDY SUBJECTS	GROUP I (INGUINAL)	GROUP P (PUBIC)	TOTAL
NUMBER	30	30	60
PERCENTAGE	50.00	50.00	100.00

AGE:



		Frequency	Percent
Age	30 - 39 yrs	3	5.0
	40 - 49 yrs	3	5.0
	50 - 59 yrs	21	35.0
	60 - 69 yrs	28	46.7
	> = 70 yrs	5	8.3
	Total	60	100.0

AGE DISTRIBUTION:



Age distribution	Group Inguinal	Group Pubic
Mean	58.87	59.40
SD	9.365	8.692
P value Unpaired t Test		0.820

			Inguinal	Pubic	
AGE	30 - 39 yrs	Count	2	1	3
		%	6.7%	3.3%	5.0%
	40 - 49 yrs	Count	1	2	3
		%	3.3%	6.7%	5.0%
	50 - 59 yrs	Count	12	9	21
		%	40.0%	30.0%	35.0%
	60 - 69 yrs	Count	12	16	28
		%	40.0%	53.3%	46.7%
	> = 70 yrs	Count	3	2	5
		%	10.0%	6.7%	8.3%
Total		Count	30	30	60
		%	100.0%	100.0%	100.0%

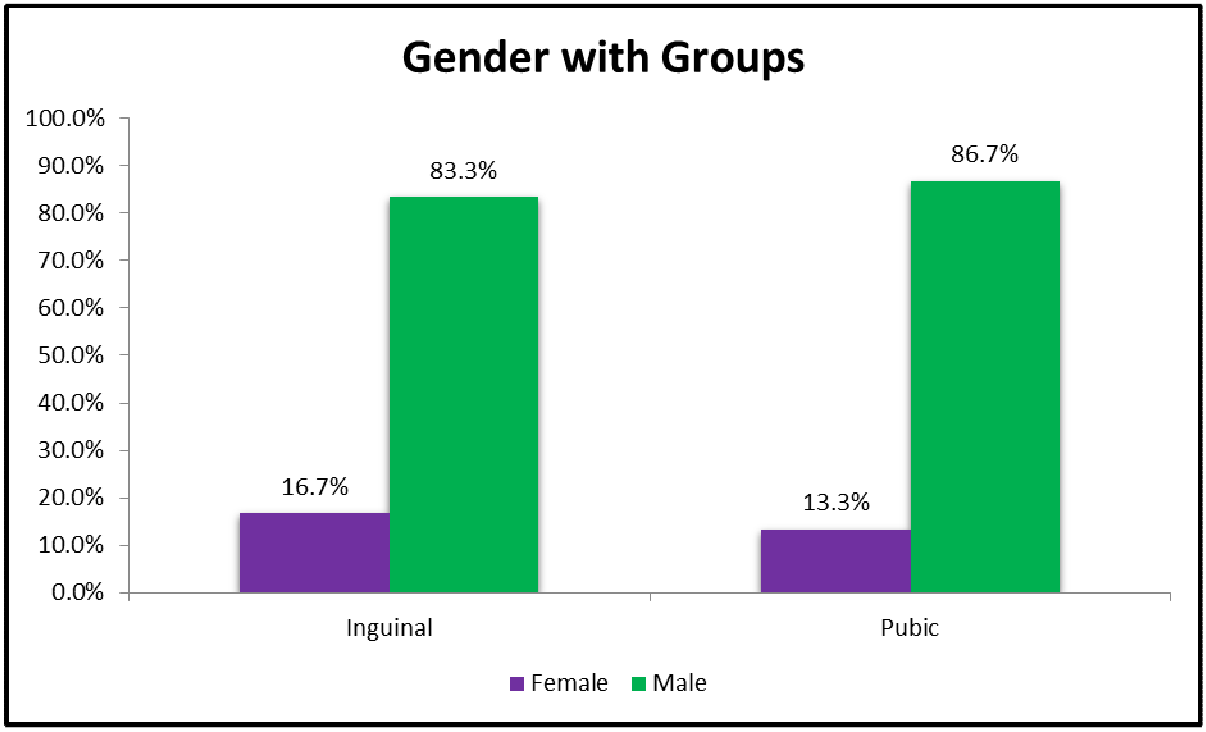
RESULTS:

Majority of the study subjects in inguinal group were distributed in 60-69 years age group (n=12, 40%) and same in Pubic group (n=16, 53.3%) (p=0.820, unpaired t test)

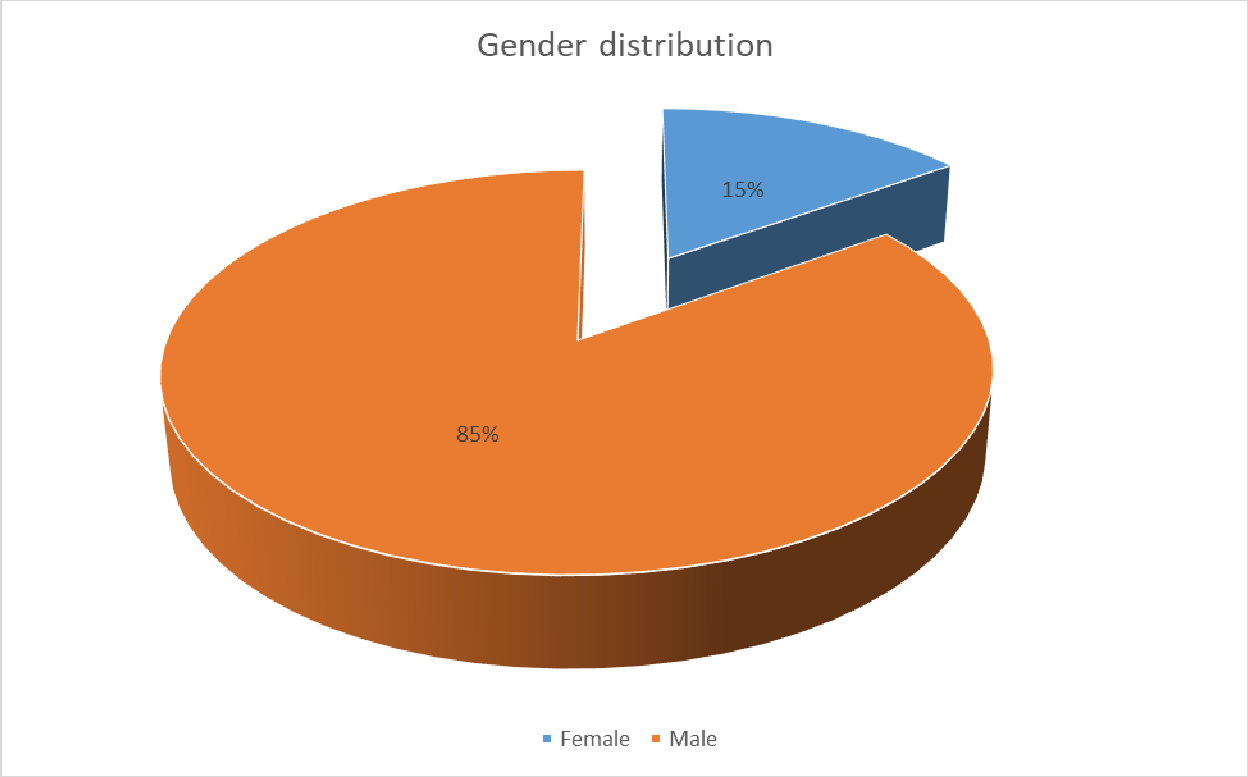
CONCLUSION:

Age of the study subjects is normally distributed across the intervention groups and has no effect on success rate of Obturator nerve block.

GENDER:



			Groups		Total
			Inguinal	Pubic	
SEX	F	Count	5	4	9
		%	16.7%	13.3%	15.0%
	M	Count	25	26	51
		%	83.3%	86.7%	85.0%
P value Chi Square Test			1.000		



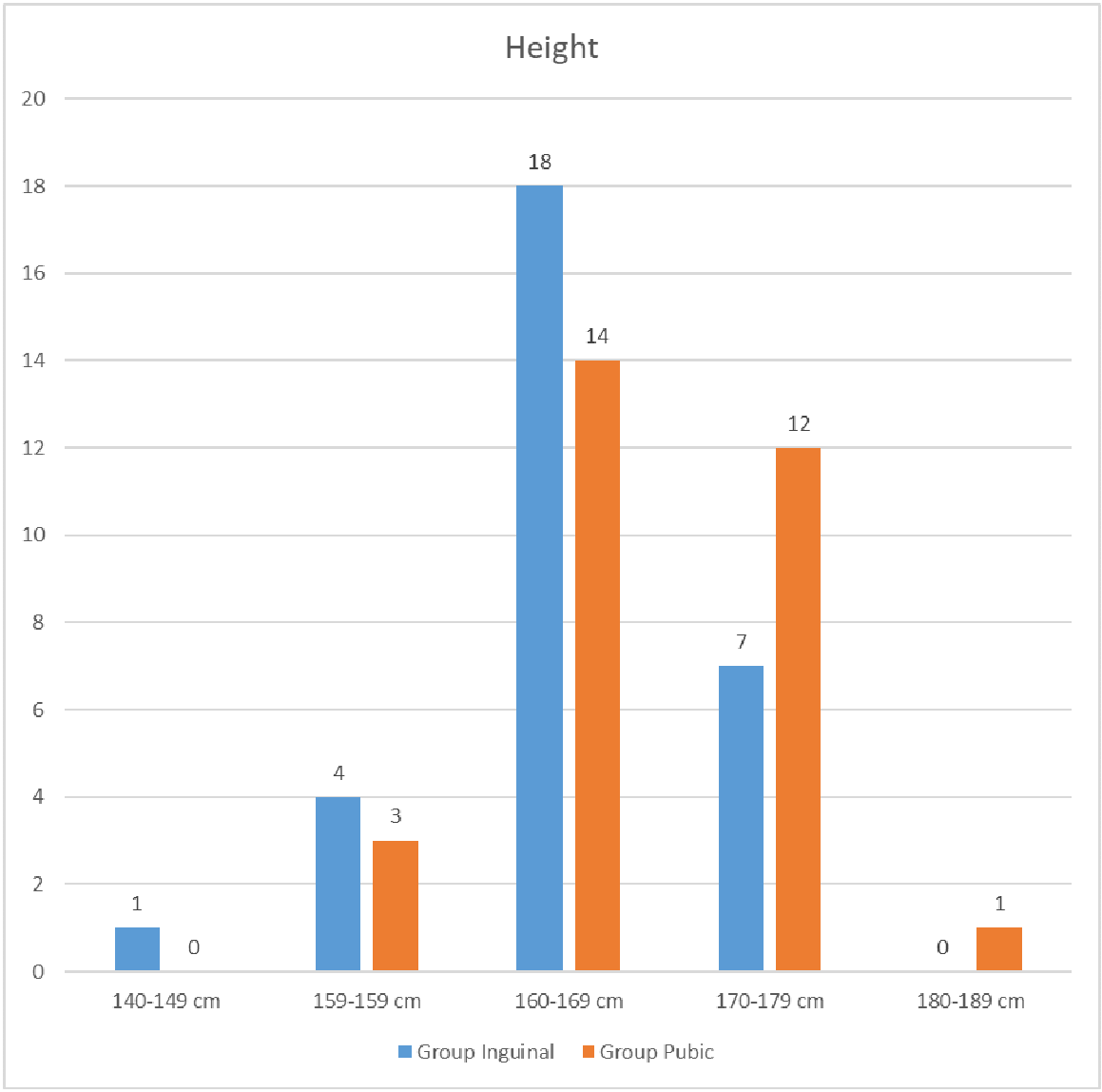
RESULTS:

Majority of the study subjects in Inguinal group were males (n=25, 83.3%) and same in Pubic group (n=26, 86.7%) (p=1.000, Chi squared test).

CONCLUSION:

Gender of the study subjects is normally distributed across the intervention groups and has no effect on success rate of Obturator nerve block.

HEIGHT:


Height
20
18
16
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0
1
140-149 cm
159-159 cm
160-169 cm
170-179 cm
180-189 cm
Group Inguinal
Group Pubic

			Groups		Total
			Inguinal	**Pubic**	**Total**
Height	140 - 149 cm	Count	1	0	1
		%	1.6%	0%	1.6%
	150 - 159 cm	Count	4	3	7
		%	6.7%	5%	11.7%
	160 - 169 cm	Count	18	14	32
		%	30.0%	23.3%	53.3%
	170 - 179 cm	Count	7	12	19
		%	11.7%	20.0%	31.7%
	180 -189 cm	Count	0	1	1
		%	0.0%	1.6%	1.6%
P value Unpaired t test			0.032		

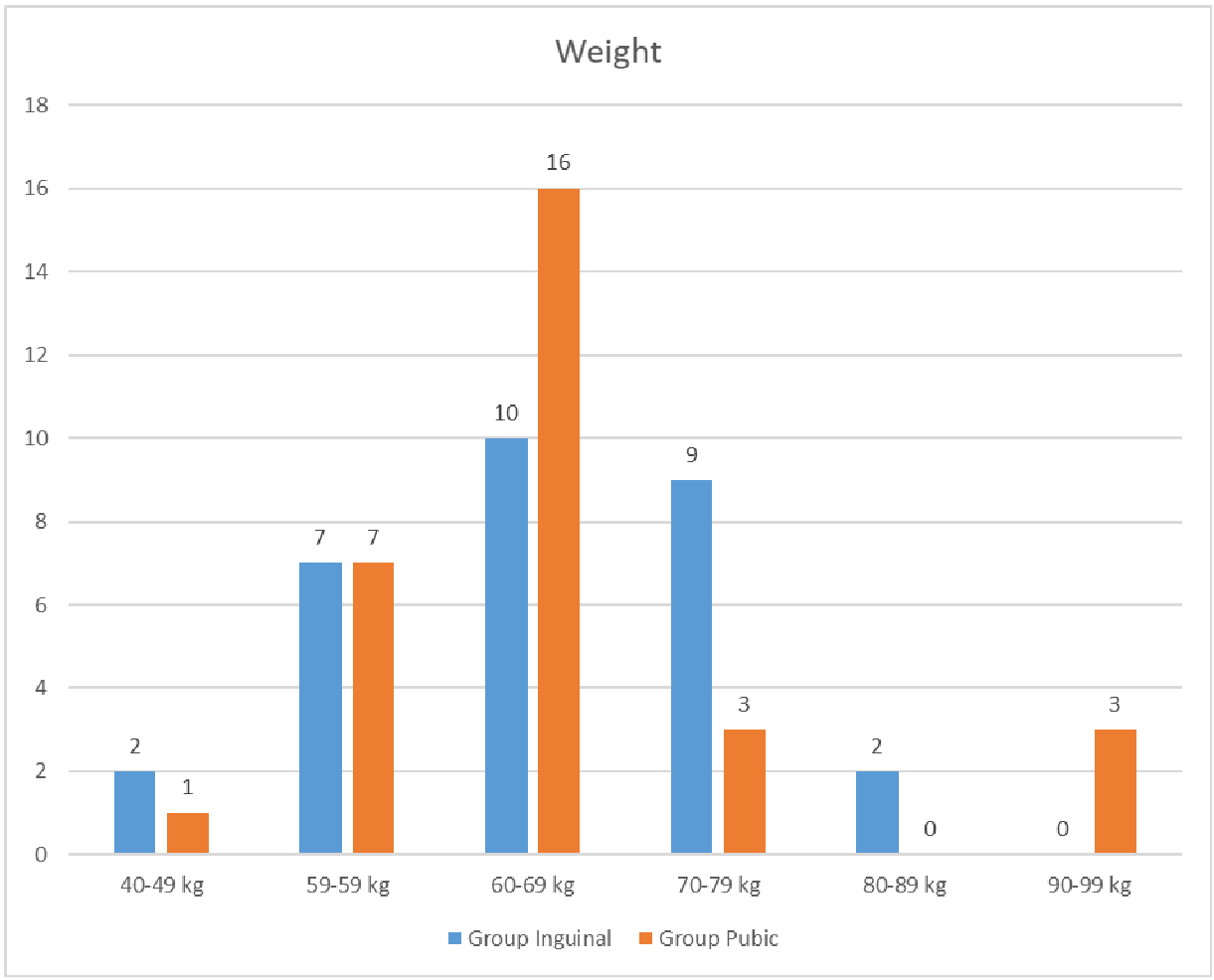
RESULTS:

Majority of the study subjects in Inguinal group were in the height of 160 -169 cm (n=18, 30.0%) and same in Pubic group (n=14, 23.3%) (p=0.032, Unpaired t test).

CONCLUSION:

Height of the study subjects is normally distributed across the intervention groups and has no effect on success rate of Obturator nerve block.

WEIGHT:


Weight
18
16
14
12
10
8
6
4
2
0
2
1
7
7
10
16
9
3
2
0
0
3
40-49 kg
59-59 kg
60-69 kg
70-79 kg
80-89 kg
90-99 kg
Group Inguinal
Group Pubic

			Groups		Total
			Inguinal	**Pubic**	**Total**
Weight	40-49 kg	Count	2	1	3
		%	3.3%	1.67%	5.0%
	59-59 kg	Count	7	7	14
		%	11.6%	11.6%	23.3%
	60-69 kg	Count	10	16	26
		%	16.6%	26.6%	43.3%
	70-79 kg	Count	9	3	12
		%	15.0%	5.0%	20.0%
	80-89 kg	Count	2	0	2
		%	3.3%	0.0%	3.3%
	90-99 kg	Count	0	3	3
		%	0.0%	5.0%	5.0%
P value Unpaired t test			0.900		

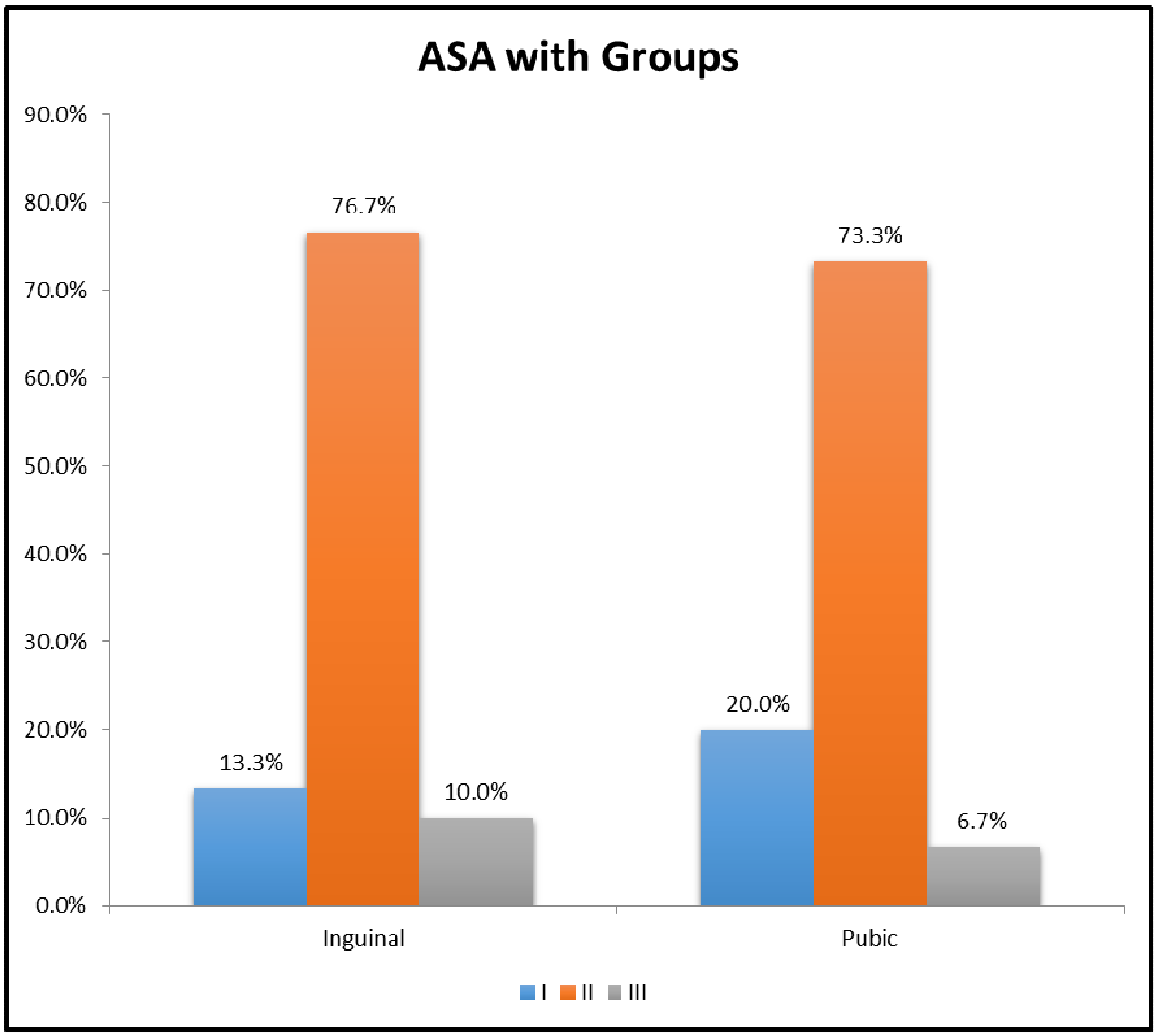
RESULTS:

Majority of the study subjects in Inguinal group were in the weight of 60 -69 kg (n=10, 16.6%) and same in Pubic group (n=16, 26.6%) (p=0.900, Unpaired t test).

CONCLUSION:

Weight of the study subjects is normally distributed across the intervention groups and has no effect on success rate of Obturator nerve block.

ASA PHYSICAL STATUS CALCULATION:



			Groups		Total
			Inguinal	Pubic	
ASA	I	Count	4	6	10
		%	13.3%	20.0%	16.7%
	II	Count	23	22	45
		%	76.7%	73.3%	75.0%
	III	Count	3	2	5
		%	10.0%	6.7%	8.3%
P Value Chi Square test				0.733	

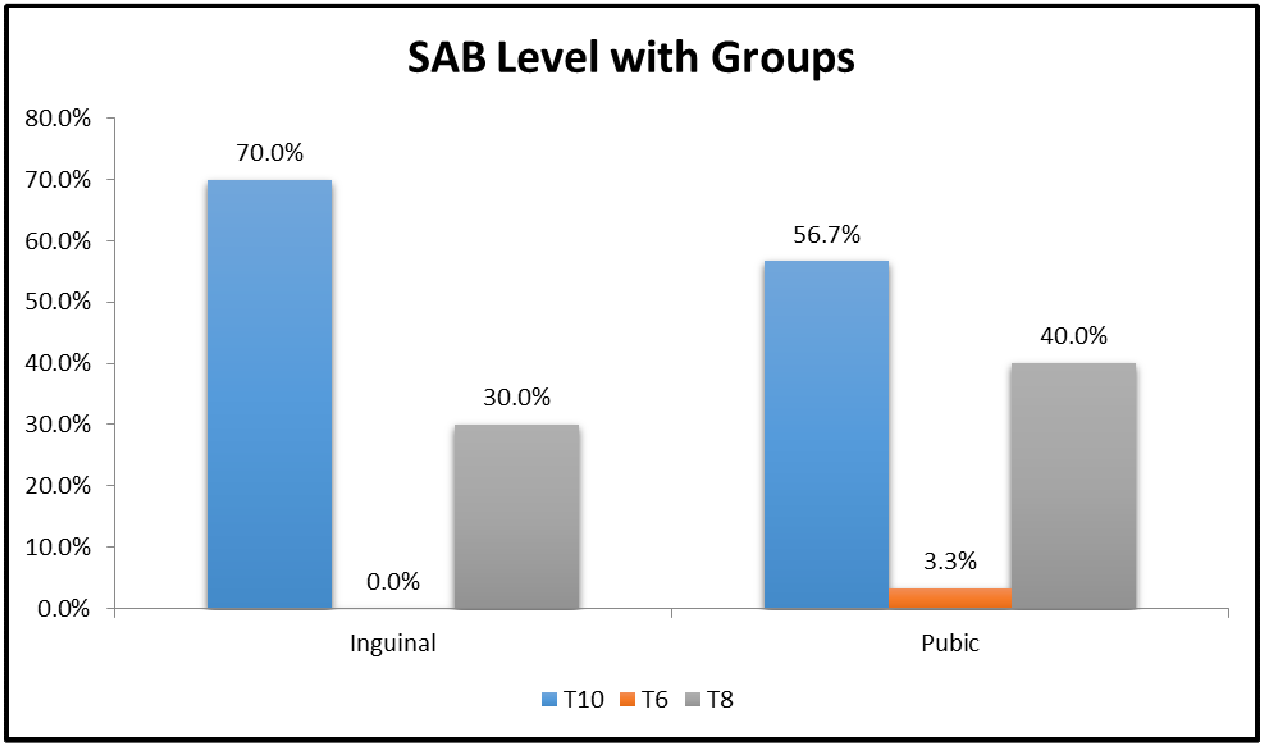
RESULTS:

Majority of the study subjects in Inguinal group (n=23, 76.7%) and Pubic group (n=22, 73.3%) were classified as ASA II .(p=0.733, chi squared test).

CONCLUSION:

ASA physical classification in study subjects is normally distributed across the intervention groups and has no effect on success rate of obturator nerve block.

SUBARACHNOID BLOCK LEVELS :



			Groups		Total
			Inguinal	Pubic	
SAB LEVEL	T10	Count	21	17	38
		%	70.0%	56.7%	63.3%
	T6	Count	0	1	1
		%	0.0%	3.3%	1.7%
	T8	Count	9	12	21
		%	30.0%	40.0%	35.0%
P Value Chi Square test				0.397	

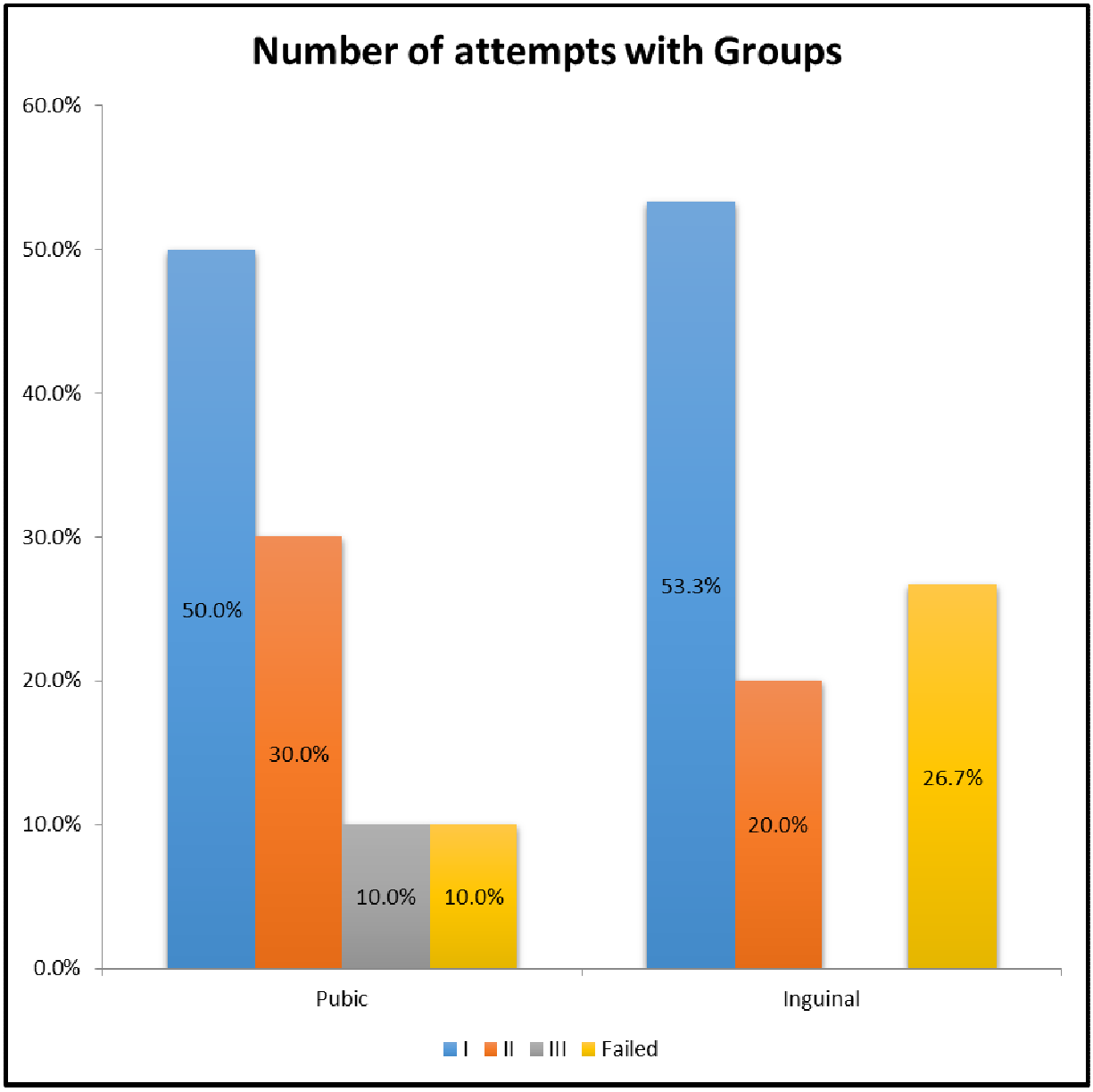
RESULTS:

Majority of the patients in both Inguinal group (n=21, 70%) and Pubic group (n=17, 56.7%) attained a Sub Arachnoid block upto a sensory level of T10.

CONCLUSION:

Sensory block level in study subjects is normally distributed across the intervention groups and has no effect on success rate of obturator nerve block.

NUMBER OF ATTEMPTS:



			Groups		Total
			Pubic	**Inguinal**	
NUMBER OF ATTEMPTS	1	Count	15	16	31
		% within Groups	50.0%	53.3%	51.7%
	2	Count	9	6	15
		% within Groups	30.0%	20.0%	25.0%
	3.	Count	3	0	3
		% within Groups	10.0%	0.0%	5.0%
	FAILED	Count	3	8	11
		% within Groups	10.0%	26.7%	18.3%
Total		Count	30	30	60
		% within Groups	100.0%	100.0%	100.0%

RESULTS:

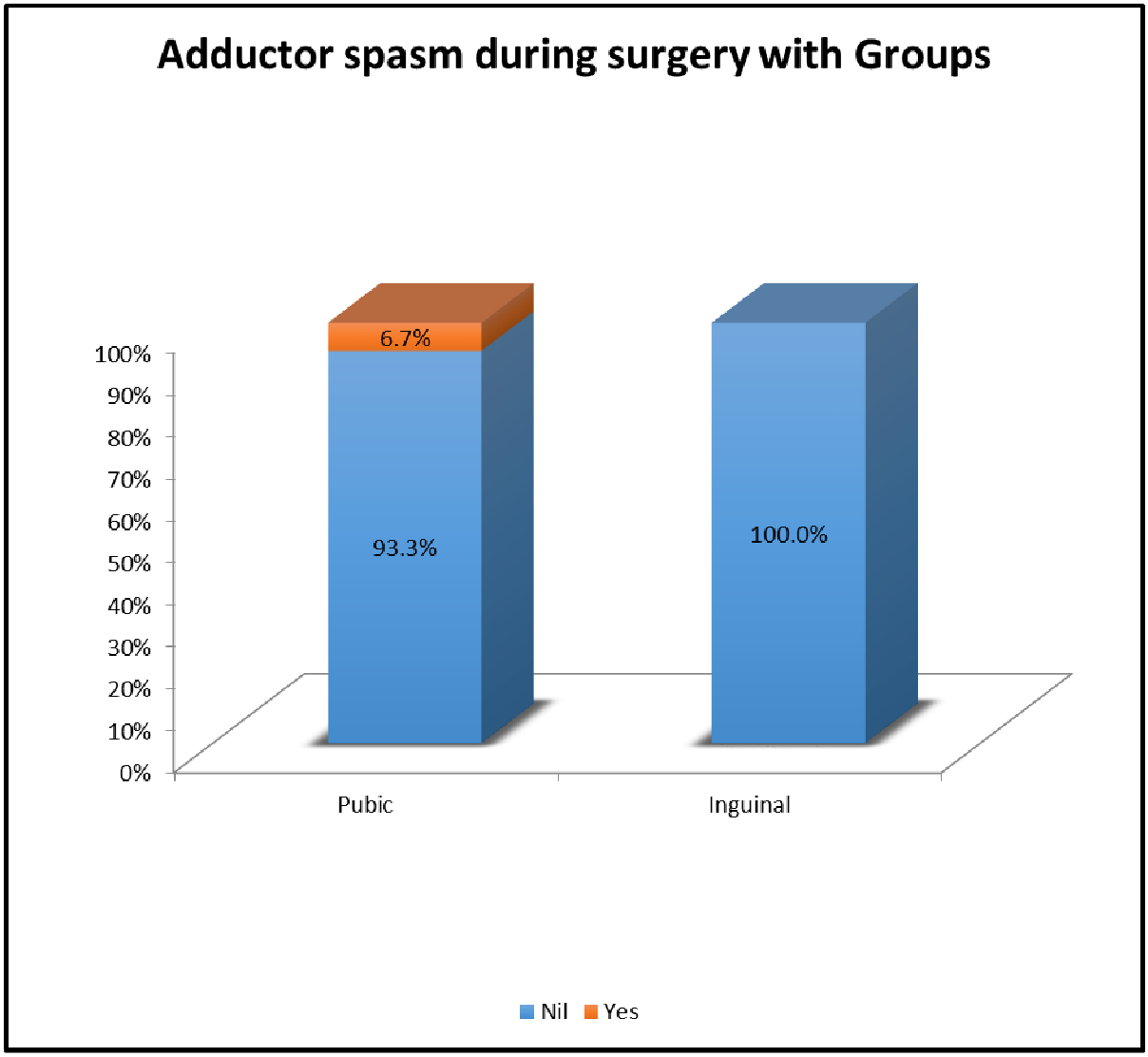
Majority of the subjects in Pubic group got successful location of obturator nerve in first attempt (n=16,53.3%) compared to inguinal group (n=15,50%). P value Chi Square test 0.116

Also the number of failed attempts is higher in the pubic approach (n=8, 26.7%) compared to that of inguinal approach (n=3,10%) p value is 0.067

CONCLUSION:

There is no significant difference in the required number of attempts in achieving the obturator nerve block in both the groups. However, there is significant higher failure rate in the inguinal approach.

ADDUCTOR SPASM DURING SURGERY:



			Groups		Total
			Pubic	Inguinal	
ADDUCTOR SPASM DURING SURGERY	NIL	Count	28	30	58
		%	93.3%	100.0%	96.7%
	YES	Count	2	0	2
		%	6.7%	0.0%	3.3%
P value Chi square test			0.492		

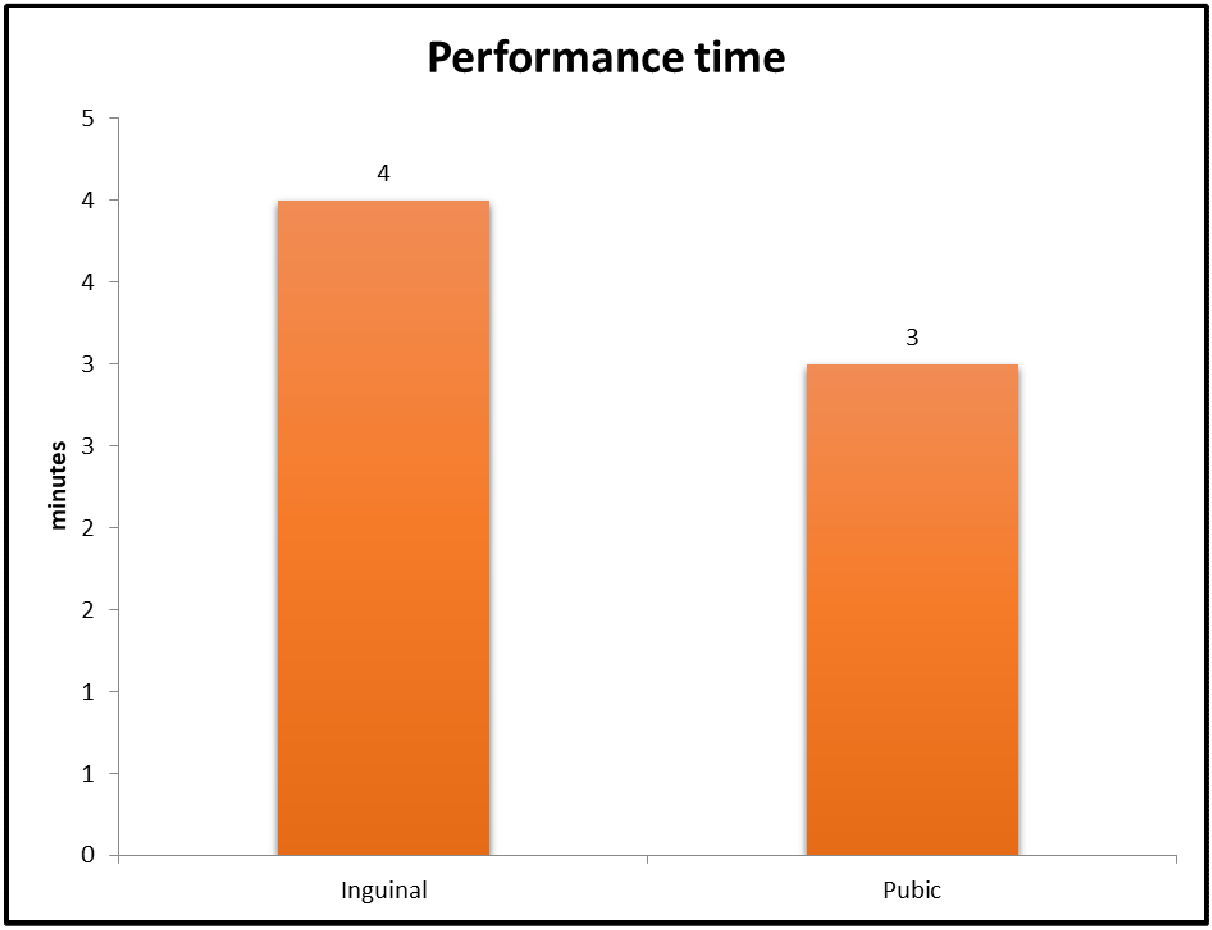
RESULTS:

The adductor spasm occurred in 2 of the 3 failed block cases in pubic group and no spasm occurred in 8 of the failed cases in Pubic group. p value Chi square test = 0.492

CONCLUSION:

The occurrence of adductor spasm is more in the pubic group compared to the inguinal group, that too occurred in failed cases of obturator nerve block.

PERFORMANCE TIME:



Groups		N	Mean	Std. Deviation	Std. Error Mean
PERFORMANCE TIME	Inguinal	27	3.96	2.457	.473
	Pubic	28	2.86	1.208	.228
p value Unpaired t test			0.006		

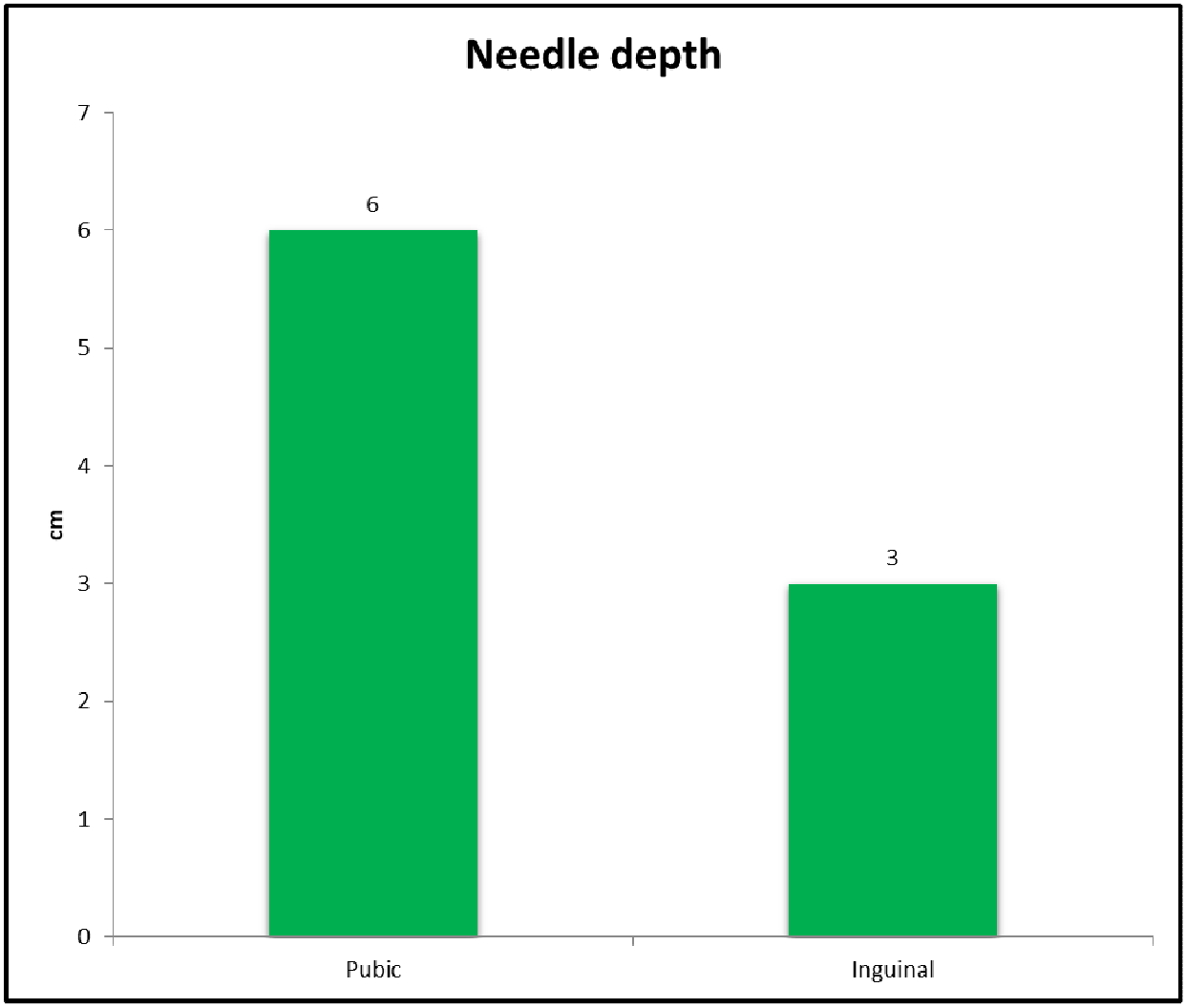
RESULTS :

The mean block performance time in Inguinal group is 3.96 minutes compared to 2.86 minutes in Pubic group. The p value (unpaired t test) is 0.006 which is highly significant.

CONCLUSION:

The Obturator Nerve block can be achieved considerably earlier by inguinal approach compared to that of Pubic approach.

NEEDLE DEPTH:



Groups		N	Mean	Std. Deviation	Std. Error Mean
NEEDLE DEPTH	Pubic	27	6.04	1.126	.217
	Inguinal	28	3.00	.770	.145
P value unpaired t test			0.0005		

RESULTS:

The mean needle depth in Pubic approach is 6.04 cm compared to 3.00 cm in inguinal group. p value unpaired t test is 0.0005

CONCLUSION:

The Obturator nerve is identified at a superficial level in Pubic area and can be identified relatively easier according to our study.

GROUP STATISTICS:

Groups		N	Mean	Std. Deviation	Std. Error Mean
AGE	Inguinal	30	58.87	9.365	1.710
	Pubic	30	59.40	8.692	1.587
HEIGHT	Inguinal	30	168.40	6.558	1.197
	Pubic	30	164.63	6.718	1.227
WEIGHT	Inguinal	30	65.53	12.235	2.234
	Pubic	30	65.17	10.171	1.857
PERFORMANCE TIME	Inguinal	27	3.96	2.457	.473
	Pubic	28	2.86	1.208	.228
NEEDLE DEPTH	Inguinal	28	3.00	.770	.145
	Pubic	27	6.04	1.126	.217

DISCUSSION

In our study we have compared the success rate of an inguinal approach and a pubic approach for obturator nerve block using nerve stimulator with spinal anaesthesia for transurethral resection of bladder lateral wall masses.

The obturator nerve originates from the lumbar plexus from the level of L2 to L4 and contains both motor and sensory nerve fibres. It runs in close proximity to the prostatic urethra, bladder neck and inferolateral bladder wall within the pelvic cavity.

During Transurethral Resection of Bladder tumour surgery, when the bladder is distended with irrigation fluid, the obturator nerve becomes very close to the lateral wall of the bladder and the electrical currents from the electrosurgical resector can stimulate the obturator nerve which leads to violent contraction of adductor muscles of the thigh.

Motor neurons carry Aα fibres which are thicker in diameter. For an effective obturator block, the local anaesthetic concentration must exceed that for pain and temperature sensations, which are carried by thin Aδ and C fibres, by 2-fold. Thus the concentration of lignocaine used must be greater than 1% for an effective motor block.

Lignocaine is the most commonly used local anaesthetic since it has rapid onset and can last up to 40 minutes, making it suitable for blocking obturator signs at the usual dose of 10 to 20 ml.

Although various methods have been used in an effort to increase the success rate of obturator nerve block, a blind approach using nerve stimulators is still a common technique.

With the available clinical data, the success rate of obturator nerve block with the classical pubic method varies from 60.5% to 91.7%. Even in the most experienced hands, this block can be missed. For the pubic approach, the pubic tubercle is the most definitive landmark. The identification of the pubic tubercle is difficult in obese patients or patients with a blunt pubic bone.

When identification of the tubercle is difficult, the needle may pass above the pubic ramus and may cause damage to the surrounding structures (bladder, rectum, spermatic cord). Furthermore, this approach is performed in a highly vascularized region.

In our study none of the complications related to Obturator nerve block has occurred, even though a safe approach is mandatory with this technique to avoid the damage to surrounding structures and vessels. In comparison, the inguinal approach is performed at a safer distance from the pelvis and the major vessels. Thus, this technique minimizes the risk of the complications and allows compression in the case of hematoma.

In our study, we have defined a block as successful when any adductor muscle contraction occurred within the third needle attempt and the adductor contraction did not occur during the surgical procedure.

In our study, according to the statistical analysis, the demographic variables were found to be equally distributed among the two groups and we proceeded with the comparison of other variables.

In our study, the rate of obtaining a successful block in the first attempt was 50.0% in pubic approach versus 53.3% in the inguinal approach with the p value of 0.116. This was found to be statistically insignificant.

In our study, the mean needle depth of attaining the obturator nerve block is 3.00 cm for inguinal group compared to 6.04 cm in pubic group. This can be attributed to the relatively superficial anatomical location of obturator nerve in the inguinal area.

In our study, the mean time for obtaining the obturator nerve block 2.45 minutes for inguinal approach compared to 3.96 minutes for pubic group with a p value of 0.006 which is statistically significant.

In our study, the block failure occurred in 26.7% of the cases in inguinal group compared to 10.0% of the cases in pubic group with a p value of 0.0067 which is statistically significant. This is attributed to the availability of definitive bony landmarks in the classic pubic approach compared to the arbitrary surface anatomical landmark in the inguinal approach.

In our study, the adductor muscle contraction occurred in 2 of the failed block cases in inguinal approach and in none of the cases in pubic approach with a p value of 0.492 which is statistically insignificant.

SUMMARY

Though the Classical pubic approach has been extensively practised for obturator nerve block, it requires more painful bony manipulations during the procedure, especially in case of an anesthetized individual. This has led to the search for the approaches with minimal manipulations of anatomical structures in locating the obturator nerve.

Though advanced ultra sonographical identification of obturator nerve is available, a blind anatomical approach using a nerve stimulator has been widely used.

From our study we conclude that the block can be achieved in a reasonably quicker time (2.45 minutes versus 3.96 minutes) in inguinal approach while the success rate of achieving the block is higher in the pubic approach (failure rate inguinal 26.7% versus pubic 10.0%)

CONCLUSION

In this study I conclude that the inguinal approach for obturator nerve block seems to be technically easier and offers certain anatomical advantages in comparison with the pubic approach, the classic pubic approach is more successful in providing the reliable blockade of the obturator nerve in Transurethral resection of Bladder tumour.

BIBLIOGRAPHY

1. Vivek Venkatramani et al., Monopolar Versus Bipolar Transurethral Resection of Bladder Tumors: A Single Center, Parallel Arm, Randomized, Controlled Trial; The Journal of Urology 191(6):1703–1707 · June 2014

2. Gupta NP, Saini AK, Dogra PN, Seth A, Kumar R. Bipolar energy for transurethral resection of bladder tumours at low-power settings: Initial experience. BJU Int. 2011;108:553–6

3. Prentiss RJ, Harvey GW, Bethard WF, Boatwright DE, Pennington RD. Massive adductor muscle contraction in transurethral surgery: Cause and prevention; development of electrical circuitry. J Urol. 1965;93:263–71

4. Augspurger RR, Donohue RE. Prevention of obturator nerve stimulation during transurethral surgery. J Urol 1980;123:170-2

5. Gasparich JP,MasonJT, Berger RE: Use of nerve stimulator for simple and accurate obturator nerve block before transurethtral resection. J Urol 132:291-293, 1984.

6. Kobayashi M, Takeyoshi S, Takiyama R, Seki E, Tsuno S, Hidaka S, *et al*. A report of 107 cases of obturator nerve block. Jpn J Anesth 1991;40:1138-43

7. Akata T, Murakami J, Yoshinaga A. Life-threatening haemorrhage following obturator artery injury during transurethral bladder surgery: a sequel of an unsuccessful obturator nerve block. Acta Anaesthesiol Scand 1999; 43: 784-8.

8. Shulman MS, Vellayappan U, Monaghan TG, Coukos WJ, Krenis LJ. Simultaneous bilateral obturator nerve stimulation during transurethral electrovaporization of the prostate. J Clin Anesth 1998; 10: 518-21.

9. Hobika JH, Clarke BG. Use of neuromuscular blocking drugs to counteract thigh-adductor spasm induced by electrical shocks of obturator nerve during transurethral resection of bladder tumors. J Urol 1961; 85: 295-6.

10. Lief PA, Narins L. Abolition of mass femoral muscular contractions during transurethral resection. J Mt Sinai Hosp N Y 1957; 24: 23-5.

11. Parks CR, Kennedy WF Jr. Obturator nerve block: a simplified approach. Anesthesiology 1967; 28: 775-8.

12. Macalou D, Trueck S, Meuret P, Heck M, Vial F, Ouologuem S, et al. Postoperative analgesia after total knee replacement: the effect of an obturator nerve block added to the femoral 3-in-1 nerve block. Anesth Analg 2004; 99: 251-4.

13. Kakinohana M, Taira Y, Saitoh T, Hasegawa A, Gakiya M, Sugahara K. Interadductor approach to obturator nerve block for transurethral resection procedure: comparison with traditional approach. J Anesth 2002; 16: 123-6.

14. Wassef MR. Interadductor approach to obturator nerve blockade for spastic conditions of adductor thigh muscles. Reg Anesth 1993; 18: 13-7

15. Choquet O, Capdevila X, Bennourine K, Feugeas JL, Bringuier-Branchereau S, Manelli JC. A new inguinal approach for the obturator nerve block: anatomical and randomized clinical studies. Anesthesiology 2005; 103: 1238-45.

16. Brown DL. Atlas of Regional Anesthesia. Philadelphia, PA, WB Saunders. 1992, pp 103-8.

17. Berberoğlu M, Uz A, Ozmen MM, Bozkurt MC, Erkuran C, Taner S, et al. Corona mortis: an anatomic study in seven cadavers and an endoscopic study in 28 patients. Surg Endosc 2001; 15: 72-5.

18. Atanassoff PG, Weiss BM, Brull SJ. Lidocaine plasma levels following two techniques of obturator nerve block. J Clin Anesth 1996; 8: 535-9.

19. Fujita Y, Kimura K, Furukawa Y, Takaori M. Plasma concentrations of lidocaine after obturator nerve block combined with spinal anaesthesia in patients undergoing transurethral resection procedures. Br J Anaesth 1992; 68: 596-8.

20. Taboada M, Rodriguez J, ALvarez J, Cortes J, Gude F, Atanassoff PG. Sciatic nerve block via posterior Labat approach is more efficient than lateral popliteal approach using a double-injection technique: a prospective, randomized comparison. Anesthesiology 2004; 101: 138-42.

21. Viel EJ, Perennou D, Ripart J, Pelissier J, Eledjam JJ. Neurolytic blockade of the obturator nerve for intractable spasticity of adductor thigh muscles. Eur J Pain 2002; 6: 97-104.

22. Heywang-Kobrunner SH, Amaya B, Okoniewski M, Pickuth D, Spielmann RP. CT-guided obturator nerve block for diagnosis and treatment of painful conditions of the hip. Eur Radiol 2001; 11: 1047-53.

23. Soong J, Schafhalter-Zoppoth I, Gray AT. Sonographic imaging of the obturator nerve for regional block. Reg Anesth Pain Med 2007; 32: 146-51.

24. Akkaya T, Ozturk E, Comert A, Ates Y, Gumus H, Ozturk H, et al. Ultrasound-guided obturator nerve block: a sonoanatomic study of a new methodologic approach. Anesth Analg 2009; 108: 1037-41.

25. Miller RD. Miller's anesthesia. 8th ed. Philadelphia, Churchill Livingstone. , pg 1741-42

26. Sinha SK, Abrams JH, Houle TT, Weller RS. Ultrasound-guided obturator nerve block: an interfascial injection approach without nerve stimulation. Reg Anesth Pain Med 2009; 34: 261-4.

INSTITUTIONAL ETHICS COMMITTEE
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EC Reg.No.ECR/270/Inst./TN/2013
Telephone No.044 25305301
Fax: 011 25363970

CERTIFICATE OF APPROVAL

To

Dr.H.Mohamed Shahid
I Year PG in MD Anaesthesiology
Institute of Anaesthesiology & Critical Care
Madras Medical College
Chennai 600 003

Dear Dr.H.Mohamed Shahid,

The Institutional Ethics Committee has considered your request and approved your study titled **"COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBLIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT" - NO.22052017**

The following members of Ethics Committee were present in the meeting hold on **02.05.2017** conducted at Madras Medical College, Chennai 3

1.Prof.Dr.C.Rajendran, MD.,	:Chairperson
2.Prof.R.Narayana Babu, MD.,DCH.,Dean, MMC,Ch-3	:Deputy Chairperson
3.Prof.Sudha Seshayyan,MD., Vice Principal,MMC,Ch-3	:Member Secretary
4.Prof.S.Suresh,MS.,Prof.of Surgery,MMC, Ch-3	: Member
5.Prof.S.Mayilvahanan,MD,Director,Inst. of Int.Med,MMC, Ch-3	: Member
6.Tmt.J.Rajalakshmi, JAO,MMC, Ch-3	: Lay Person
7.Thiru S.Govindasamy, BA.,BL,High Court,Chennai	: Lawyer
8.Tmt.Arnold Saulina, MA.,MSW.,	:Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

Member Secretary – Ethics Committee

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE
CHENNAI-600 003

URKUND

Urkund Analysis Result

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Submitted By:	mohamedshahid2k6@gmail.com
Significance:	17 %

Sources included in the report:

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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3101752/
https://www.sciencedirect.com/topics/neuroscience/obturator-nerve
http://www.frca.co.uk/Documents/193%20Fascia%20Iliaca%20compartment%20block.pdf
https://www.sciencedirect.com/science/article/pii/S0007091217465780
https://core.ac.uk/display/79796916
https://aneskey.com/obturator-nerve-block/
https://aneskey.com/the-lower-extremity-somatic-blockade/
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Instances where selected sources appear:

25

PLAGIARISM CERTIFICATE

This is to certify that this dissertation work titled **COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT** of the candidate **Dr.H.MOHAMED SHAHID** with registration Number 201620010 for the award of M.D degree in the branch of Anaesthesiology. I personally verified the urkund.com website for the purpose of plagiarism Check. I found that the uploaded thesis file contains from introduction to conclusion pages and result shows **17%** percentage of plagiarism in the dissertation.

Guide & Supervisor.
Dr. N.LATHA, M.D., D.A.,
Professor,
Institute of Anaesthesiology and Critical Care,
Madras Medical College
Chennai.

CONSENT FORM

TITLE:

COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT

STUDY CENTRE :

Institute of Anaesthesiology and Critical care,

Madras Medical College, Chennai

PARTICIANT NAME: AGE:

MRD No.:

I confirm that I have understood the purpose of the procedure for the above study. I have an opportunity to ask the question and all my questions and doubts have been answered to my satisfaction.

I have been explained about the possible complication that may occur during the procedure. I understand that my participation in the study in voluntary and that I am free to withdraw at any time without giving any reason.

I understand that investigator, regulatory authorities and the Ethics Committee will not need my permission to look at my health records both in the respective current study and any further research that may be conducted in relation to it, even if I withdraw from the study. I understand that my identity

will not be revealed in any information released to third parties of published, unless as required under the law. I agree not to restrict the use of any or results that arise from the study.

I hereby consent to participate in the study COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT

SIGNATURE OF THE PARTICIPANT:

DATE :

PLACE:

NAME OF THE INVESTIGATOR:

<u>சுய ஒப்புதல் படிவம்</u>

சிறுநீர்ப்பை கட்டி அறுவை சிகிச்சையில் ஆப்டுரேட்டர் நரம்பு உணர்வுநீக்க ஊசியினை அகட்டுப் பகுதி மற்றும் கீழ் இடுப்புப் பகுதி வழியாக கொடுத்தலைக் குறித்த வெற்றிவிகித ஒப்பீடு

ஆய்வு நடத்தபடும் இடம்: மயக்கவியல் மற்றும் தீவிர சிகிச்சை பிரிவு,
இராசீவ் காந்தி அரசு பொது மருத்துவமனை,
சென்னை மருத்துவக் கல்லூரி, சென்னை.

பங்குபெறுபவரின் பெயர்: பங்குபெறுபவரின் வயது:

பங்குபெறுபவரின் எண்:

இந்த ஆய்வில் குறிப்பிட்டுள்ள மருத்துவஆய்வின் விவரங்கள் எனக்கு விளக்கப்பட்டது. நான் இவ்வாய்வில் தன்னிச்சையாக பங்கேற்கிறேன். எந்த காரணத்தினாலும்எந்த சட்ட சிக்கலுக்கும் உட்படாமல் நான் இவ்வாய்வில் இருந்து விலகிக்கொள்ளலாம் என்றும் அறிந்து கொண்டேன்.

இந்த ஆய்வு சம்பந்தமாகவோ அதை சார்ந்த மேலும் ஆய்வு மேற்கொள்ளும்போதும் இந்த ஆய்வில் பங்கு பெறும் மருத்துவர் என்னுடைய மருத்துவ அறிக்கையை பார்ப்பதற்கு என் அனுமதி தேவையில்லை என்பதை அறிந்து கொள்கிறேன். இந்த ஆய்வின் மூலம் கிடைக்கும் முடிவை பயன்படுத்திக்கொள்ள மறுக்கமாட்டேன்.

இந்த ஆய்வில் பங்குகொள்ள ஒப்புக்கொள்கிறேன். இந்த ஆய்வை மேற்கொள்ளும் மருத்துவ அணிக்கு உண்மையுடன் இருப்பேன் என்று உறுதியளிக்கிறேன்.

பங்கேற்பவரின் கையொப்பம் சாட்சிகளின் கையொப்பம்

இடம்: இடம்:

தேதி: தேதி:

பங்கேற்பவரின் பெயர் மற்றும் விலாசம்:

ஆய்வாளரின் கையொப்பம்

INFORMATION TO PARTICIPANTS

Investigator **:** Dr. H.MOHAMED SHAHID

Name of the Participant:

COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT

You are invited to take part in this research study**.** We have got approval from the IEC**.** You are asked to participate because you satisfy the eligibility criteria**.** We want to compare the success rate of two approaches of Obturator Nerve Blocks in Transurethral Resection of Bladder Tumour surgeries**.**

What is the Purpose of the Research?

For Transurethral Resection of Bladder Tumour surgeries with mass lesions involving lateral wall, Obturator Nerve block performed after Spinal anaesthesia.

1. To assess the ease and reliability of different approaches used for Obturator Nerve Block
2. To find out the complications, if any

Benefits:

To know which approach is more successful and associated with least complications

Discomforts and risks:

This intervention has been shown to be well tolerated as shown by previous studies**.** And if you do not want to participate you will have alternative of setting the standard treatment and your safety is our prime concern.

Time :

Date :

Place :

Signature / Thumb

Impression of Patient

Patient Name:

Signature of the Investigator : _____

Name of the Investigator : _____

INFORMATION SHEET

We are conducting a study on **COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT** in Madras Medical College.

We are selecting certain patients and if you are found eligible, we may be using your clinical details in such a way so as to not affect your final report or management.

The privacy of the patient in the research will be maintained throughout the study. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared.

Taking part in the study is voluntary. You are free to decide whether to participate in the study or to withdraw at any time; your decision will not result in any loss of benefits to which you are otherwise entitled.

The result of the special study may be intimated to you at the end of the study period or during the study. If anything is found abnormal, which may aid in management or treatment.

Signature of Investigator: Signature of Participant:

Date :

நோயாளி தகவல் தாள்

சிறுநீர்ப்பை கட்டி அறுவை சிகிச்சையில் ஆப்டுரேட்டர் நரம்பு உணர்வுநீக்க ஊசியினை அகட்டுப் பகுதி மற்றும் கீழ் இடுப்புப் பகுதி வழியாக கொடுத்தலைக் குறித்த வெற்றிவிகித ஒப்பீடு

COMPARISON OF SUCCESS RATE OF INGUINAL APPROACH VERSUS CLASSICAL PUBIC APPROACH FOR OBTURATOR NERVE BLOCK IN PATIENTS UNDERGOING TURBT

நோயாளிகளுக்கான தகவல்:

உங்களை இந்த ஆராய்ச்சியில் பங்கு கொள்ள அழைக்கிறோம். நாங்கள் உங்களுக்கு கொடுக்கும் இந்த படிவத்தில் உள்ள விவரங்களைக் கொண்டு நீங்கள் இந்த ஆராய்ச்சிக்கு உட்படலாமா அல்லது நிராகரிக்கலாமா என்பதை நீங்களே முடிவு செய்யலாம். மேலும் உங்களின் சந்தேகங்களையும் எங்களிடம் கேட்கலாம். நீங்கள் எங்கள் ஆராய்ச்சிக்கு தகுதி உள்ளவராகும் பட்சத்தில், சென்னை, இராசீவ் காந்தி அரசு பொது மருத்துவமனையில் நடைபெறும் இந்த ஆராய்ச்சியில் உங்களை பங்கெடுத்துக்கொள்ள செய்வோம்.

ஆராய்ச்சியின் நோக்கம்:

சிறுநீர்ப்பை கட்டி அறுவை சிகிச்சையின்போது மின்சார வெட்டியை பயன்படுத்தும்போது மூர்க்கமான மடக்குதசை இழுப்பு ஏற்பட வாய்ப்புகள் அதிகம். இதனால் சிறுநீர்ப்பை ஓட்டையாதல், இரத்தநாள சிதைவு மற்றும் பல சிக்கல்கள் ஏற்படலாம். இதனை தண்டுவடம்வழி உணர்வுநீக்கம் (SPINAL ANAESTHESIA) அல்லது முழு மயக்கம் (GENERAL ANAESTHESIA) ஆகியவற்றால் தடுக்க இயலாது. இதற்காக ஆப்டுரேட்டர் நரம்பு உணர்வுநீக்க ஊசி அவசியமாகிறது. இந்த ஊசியினை அகட்டுப் பகுதி (OBTURATOR APPROACH) அல்லது கீழ் இடுப்புப் பகுதி (INGUINAL APPROACH) வழியாக கொடுக்கலாம்.

இந்த ஆராய்ச்சியின் மூலம், இவ்விரு வழிகளில் அதிக வெற்றி விகிதத்தை, எவ்வழி தருகிறது என்பதை நாம் அறியலாம்.

PROFORMA

DATE: ROLL NO:

NAME:

AGE: SEX: IP NO:

SAB LEVEL OF BLOCK:

DIAGNOSIS:

ASA PHYSICAL STATUS:

SURGICAL PROCEDURE DONE:

Ht: CVS:

Wt: RS:

PRE OP ASSESSMENT:

HISTORY: Any Co-morbid illness

H/O previous surgeries

APPROACH:

MEASURES OF STUDY OUTCOME:

Number of attempts made :

Adductor muscle contraction during operation :

Performance time :

Failed block (Yes / No) :

COMPLICATIONS IN INTRA OPERATIVE PERIOD:

OBTURATOR NERVE BLOCK - PUBIC APPROACH												
NAME	**AGE**	**SEX**	**HEIGHT**	**WEIGHT**	**ASA CLASSIFICATION**	**SAB LEVEL**	**PREVIOUS SURGERIES**	**APPROACH**	**NUMBER OF ATTEMPTS**	**PERFORMANCE TIME**	**ADDUCTOR SPASM DURING SURGERY**	**NEEDLE DEPTH**
SAKTHIVEL	56	M	162	64	II	T8	NIL	PUBIC	1	2 MINS	NIL	7
MARUDU	70	M	174	67	II	T10	NIL	PUBIC	2	1 MIN	NIL	6
SENTHIL	66	M	169	56	II	T8	NIL	PUBIC	1	2 MINS	NIL	5
KRISHNAMOORTHY	64	M	166	79	II	T8	OPEN CHOLECYSTECTOMY	PUBIC	3	2 MINS	NIL	8
SANKAR	55	M	160	71	II	T10	NIL	PUBIC	1	1 MIN	NIL	6
RAJENDRAN	69	M	164	62	II	T8	NIL	PUBIC	2	3 MINS	NIL	8
KUMAR	53	M	162	68	II	T8	NIL	PUBIC	1	2 MINS	NIL	6
SUKUMAR	60	M	166	57	II	T10	NIL	PUBIC	1	2 MINS	NIL	5
RAMACHANDRAN	68	M	155	50	II	T8	NIL	PUBIC	2	1 MIN	NIL	6
MANICKAVEL	51	M	168	60	II	T10	EVERSION OF SAC	PUBIC	1	3 MINS	NIL	4
ARUN	34	M	173	77	I	T8	NIL	PUBIC	FAILED		NIL	NIL
MAHENDRAN	48	M	169	73	I	T10	NIL	PUBIC	1	1 MIN	NIL	5
ARUNACHALAM	67	M	174	72	III	T10	NIL	PUBIC	1	2 MINS	NIL	6
PAPATHI	50	F	172	60	I	T10	PUERPERAL STERILIZATION	PUBIC	2	4 MINS	NIL	7
SHANMUGAM	60	M	166	68	II	T6	HERNIOPLASTY	PUBIC	2	3 MINS	NIL	5
KRISHNAN	62	M	177	87	II	T8	NIL	PUBIC	1	4 MINS	NIL	6
GOPAL	55	M	160	60	I	T10	NIL	PUBIC	3	2 MINS	NIL	8
CHELLAMAL	64	F	163	66	II	T10	NIL	PUBIC	2	3 MINS	NIL	5
BALU	57	M	169	73	II	T10	NIL	PUBIC	2	3 MINS	NIL	5
VENKATESAN	42	M	168	80	II	T10	NIL	PUBIC	FAILED		YES	NIL
NARAYANAN	69	M	162	70	II	T10	NIL	PUBIC	1	4 MINS	NIL	7
BALASUBRAMANI	70	M	159	48	II	T10	NIL	PUBIC	1	3 MINS	NIL	6
MALLIGA	60	F	161	59	II	T8	NIL	PUBIC	1	4 MINS	NIL	6
GANESAN	58	M	170	79	I	T10	NIL	PUBIC	3	2 MINS	NIL	8
CHELLADURAI	64	M	154	49	I	T8	UMBILICAL HERNIA REPAIR	PUBIC	FAILED		YES	NIL
VADIVEL	67	M	149	50	II	T10	NIL	PUBIC	2	1 MIN	NIL	6
JEEVANATHAM	60	M	153	53	III	T10	NIL	PUBIC	1	3 MINS	NIL	5
VEERABADRAN	68	M	163	58	II	T8	NIL	PUBIC	1	2 MINS	NIL	5
DEVI	52	F	170	70	II	T8	THYROIDECTOMY	PUBIC	1	2 MINS	NIL	5
ABDUL RAZZAQ	63		161	69	II	T10	NIL	PUBIC	2	4 MINS	NIL	7

OBTURATOR NERVE BLOCK - INGUINAL GROUP													
NAME	**AGE**	**SEX**	**HEIGHT**	**WEIGHT**	**ASA CLASSIFICATION**	**SAB LEVEL**	**PREVIOUS SURGERIES**	**APPROACH**	**NUMBER OF ATTEMPTS**	**NUMBER OF ATTEMPTS**	**PERFORMANCE TIME**	**ADDUCTOR SPASM DURING SURGERY**	**NEEDLE DEPTH**
KRISHNAN	52	M	166	60	I	T10	NIL	INGUINAL	1	1	3 MINS	NIL	2
KUPPUSAMY	70	M	172	70	III	T8	NIL	INGUINAL	1	2	8 MINS	NIL	3
MUTHU	58	M	168	53	II	T10	NIL	INGUINAL	1	1	2 MINS	NIL	2
VIJAYALAKSHMI	62	F	161	63	II	T8	NIL	INGUINAL	1	3	8 MINS	NIL	2
KARUPAIAH	64	M	178	60	II	T10	NIL	INGUINAL	FAILED	1	2 MINS	NIL	
KUMAR	30	M	168	92	I	T8	NIL	INGUINAL	2	2	7 MINS	NIL	3
MADHAVAN	55	M	172	66	II	T10	NIL	INGUINAL	1	1	2 MINS	NIL	2
MANIKANDAN	58	M	170	57	II	T8	NIL	INGUINAL	2	1	3 MINS	NIL	3
FATHIMA	63	F	166	68	II	T10	NIL	INGUINAL	1	2	5 MINS	NIL	3
MANIVANNAN	58	M	170	59	II	T10	RIGHT HYDROCOELE	INGUINAL	2	1	1 MIN	NIL	4
KANNAN	70	M	169	60	II	T8	NIL	INGUINAL	FAILED	FAILED		NIL	
CHELLAIAH	68	M	159	50	III	T10	APPENDICECTOMY	INGUINAL	1	1	2 MINS	NIL	3
MURUGAN	54	M	155	49	I	T10	NIL	INGUINAL	1	1	2 MINS	NIL	3
KARTHIKEYAN	59	M	167	78	II	T10	NIL	INGUINAL	2	2	5 MINS	NIL	4
MUNIYAN	60	M	175	62	II	T10	NIL	INGUINAL	2	2	2 MINS	NIL	3
SINGARAM	69	M	169	65	II	T8	NIL	INGUINAL	1	1	3 MINS	NIL	5
MADHAN	36	M	173	98	I	T10	NIL	INGUINAL	FAILED	3	8 MINS	NIL	
FATHIMA	63	F	166	68	II	T10	RIGHT TURBT	INGUINAL	FAILED	2	3 MINS	NIL	
MARIAMMAL	64	F	161	68	II	T8	PUERPERAL STERILZATION	INGUINAL	1	2	7 MINS	NIL	3
SRINIVASAN	63	M	171	63	II	T10	RIGHT HERNIOPLASTY	INGUINAL	2	FAILED		NIL	4
RAJATHI	58	F	160	61	II	T10	NIL	INGUINAL	FAILED	1	2 MINS	NIL	
SUBRAMANI	70	M	178	68	II	T10	NIL	INGUINAL	1	1	2 MINS	NIL	4
NATARAJAN	55	M	160	54	II	T10	NIL	INGUINAL	1	1	4 MINS	NIL	2
MADHAN	52	M	178	96	II	T8	NIL	INGUINAL	1	3	9 MINS	NIL	3
KARUNANIDHI	69	M	173	53	III	T10	NIL	INGUINAL	FAILED	FAILED		nil	
GUNASEKARAN	48	M	180	66	II	T10	RIGHT EVERSION OF SAC	INGUINAL	1	2	6 MINS	NIL	2
CHANDRAN	51	M	158	55	II	T10	NIL	INGUINAL	1	1	2 MINS	NIL	3
KUBERAN	57	M	166	60	II	T10	NIL	INGUINAL	1	1	3 MINS	NIL	3
MARIAPPAN	64	M	167	75	II	T8	NIL	INGUINAL	FAILED	1	1 MIN	NIL	
MUTHU	66	M	176	69	II	T10	NIL	INGUINAL	FAILED	2	5 MINS	NIL	