

## Original Article

# Transient Femoral Nerve Palsy Following Ilioinguinal Nerve Block for Inguinal Hernioplasty

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### ABSTRACT

**Background:** Elective inguinal hernia repair in young fit patients is preferably done under ilioinguinal nerve block anesthesia in the ambulatory setting to improve throughput, save cost, and increase patient satisfaction. A rare complication of ilioinguinal nerve block is transient femoral nerve palsy (TFNP). **Objectives:** The aim of this study is to examine the incidence of TFNP among adults undergoing ambulatory inguinal hernia repair under ilioinguinal nerve block. **Patients and Methods:** Patients 18 years and older in the American Society of Anesthetists classes I and II who underwent ambulatory inguinal hernia repair over a 3-year period under ilioinguinal nerve block only were assessed for evidence of TFNP. All patients had power on the ipsilateral limb checked 30 min before and 1 h after the procedure. TFNP was considered present if there was sensory loss over the anterior aspect of the thigh, weakness of extension at the knee joint, or reduction in power of the ipsilateral limb. **Results:** One hundred and twelve patients were involved in the study; 90 (80.3%) males and 22 (19.6%) females with the mean age of 45.7 years. All had normal power (Grade 5) in the ipsilateral limb before instituting the nerve block. Postoperatively, 3 (2.6%) patients had grade 4 and recovered normal power over a 2–6-h period and were subsequently discharged. **Conclusion:** TFNP is a rare complication of ilioinguinal nerve block which delays patient discharge postambulatory hernioplasty.

**KEYWORDS:** *Inguinal hernia, nerve block, transient femoral nerve palsy*

## INTRODUCTION

Inguinal hernia is frequently repaired using ilioinguinal nerve block in the ambulatory setting. This practice is not only cost-effective but also safe and of excellent quality with low morbidity.<sup>[1,2]</sup> We consider the technique of ilioinguinal nerve block most appropriate for repairing uncomplicated unilateral and bilateral groin hernias because it eliminates the fear of general or neuraxial anesthesia and reduces the cost of the repair which are factors that may contribute to delayed presentation and purchase of groin hernia surgery. The consequence of delayed presentation and operation in Sub-Saharan Africa is enormous; with obstructed or strangulated groin hernia with attendant heightened morbidity and mortality.<sup>[3,4]</sup>

Ilioinguinal nerve block can be placed blind, under direct vision, or under ultrasound<sup>[5]</sup> guidance. Transient femoral nerve palsy (TFNP) is an uncommon

complication that may follow ilioinguinal nerve block irrespective of the technique of placement and could delay same-day discharge or cause the ambulatory patient to be admitted, either of which events negates the principles of ambulatory surgery. To improve the practice of ambulatory surgery and increase the number of patients presenting for and purchasing groin hernia repair under nerve block, there is a compelling need for increased awareness of this rare complication among hernia surgeons. This will prevent premature discharge of patients who still require monitoring.

## Setting

A surgical unit in a tertiary health institution in Nigeria.

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## Study type

This was a prospective observational study done over a 3-year period.

## Inclusion criteria

Patients in the American Society of Anesthetists (ASA) I and II, aged 18 years or older, and residing within an hour drive from the hospital, presenting with uncomplicated inguinal hernia, and willing to undergo ambulatory inguinal hernioplasty under ilioinguinal nerve block.

## Exclusion criteria

Patients with obstructed or strangulated hernias, in the ASA III or IV, residing more than an hour from hospital, those who opted not to have ambulatory hernia repair, allergy to xylocaine, and patients whose repair was done under general anesthesia.

## PATIENTS AND METHODS

Patients satisfying the inclusion criteria were recruited into the study after ethical approval to conduct the study was obtained. They underwent ambulatory Lichtenstein repair using polypropylene or composite mesh under surgeon administered blind ilioinguinal nerve block with 1% xylocaine (plain for hypertensives and with adrenalin for normotensives) after having been assessed for the fitness to undergo the procedure by the authors. A minimum of full blood count and urine analysis was done for each patient.

The anterior superior iliac spine (ASIS) and pubic tubercle (PT) were landmarks for administering the anesthetic agent. The block was placed 2-cm medial to the ASIS in three planes; 5 ml was administered subdermally along the length of the incision with a size 23-gauge needle. The agent was delivered, whereas the needle is being advanced and the same procedure repeated in the subcutaneous tissue. At the sub-aponeurotic layer, the agent was initially deposited radially 2 cm medial to ASIS, and then along the length of the incision. The genital branch of the genitofemoral nerve was blocked 2 cm lateral to the PT. The effectiveness of the block was checked in 3 and 5 min with a toothed dissecting forceps. Supplementary doses of the agent were given to a maximum total volume of 30 ml.

No sedatives were administered to the patients to avoid interference with the assessment for muscle power. Intramuscular sodium diclofenac 75 mg was administered intraoperatively into the contralateral gluteal muscle.

A 5–6-cm oblique incision was made from the PT, extended laterally, and hemostasis secured. The external oblique aponeurosis was opened along its line and an

upper and lower leaves created, and the cord lifted free. The hernia sac was dissected from the cord, transfixed, and ligated. The mesh was shaped to fit the anatomy of the created space and fixed to the lateral aspect of the rectus sheath, inguinal ligament inferiorly, and the reflected external oblique aponeurosis superiorly. The lateral aspect of the mesh is slit to wrap around the cord fixed, and the wound was closed.

All patients had power on the ipsilateral limb checked by the assistant surgeon and recorded 30 min before and 1 h after the procedure. TFNP was considered present if there was postoperative sensory loss over the anterior aspect of the thigh and weakness of extension at the knee joint or reduction by one point in power of the ipsilateral limb. All patients diagnosed with TFNP were admitted and reassessed 2–6 h after surgery for persistence or resolution of the deficit in power. They were discharged if symptoms resolved, and reexamined at 1 week in the clinic by the same assistant surgeon.

## RESULTS

One hundred and twelve patients were involved in the study; 90 (80.3%) males and 22 (19.6%) females with a mean age of 45.7 years. All underwent unilateral inguinal hernia repair using the Lichtenstein technique and had power grade 5 in the ipsilateral limb before instituting the nerve block.

Postoperatively, 3 (2.6%) male patients had sensory loss over the skin of the anterior thigh and grade 3–4 power in the affected limb and were admitted for observation. All recovered normal power over a 2–6-h perioperatively and were subsequently discharged. At 1-week, there was normal power. One patient had grade 4 power in the contralateral lower limb before and after the procedure; he volunteered a history of a stroke and was not listed as TFNP.

## DISCUSSION

Inguinal hernia is a major burden in much of Sub-Saharan Africa<sup>[6]</sup> and likely significantly contributes to economic deprivation of patients by preventing them from engaging in a form of economic activity.<sup>[7]</sup> Inguinal hernia repair rate is very low in Africa, and the hernias are often very large at presentation with a higher tendency to obstruction and or strangulation when compared to disease in European.<sup>[6]</sup> There is an urgent need to increase access to surgical care for this easily treated disease in Africa.

Current practice for open inguinal hernia repair recommends ambulatory operation under nerve block technique.<sup>[8]</sup> Ambulatory repair of inguinal hernia is

efficient, safe, and of low cost; it carries minimal risk and postoperative complications.<sup>[9]</sup> These features of ambulatory care make it an ideal approach to encouraging more persons with treatable minor and intermediate high-volume surgical diseases in resource-poor and surgically underserved countries of Africa to seek and obtain the quality care. Most NHS hospitals have attained or exceeded a 75% target of elective operations, including inguinal hernias, being done on as ambulatory procedures.<sup>[10]</sup>

The blind block has the disadvantages of wrong positioning of the needle tip with consequent deposition of the agent away from the nerve leading to failed block, injury to nearby structures, and peritoneal placement of the agent.<sup>[11,12]</sup> Ultrasound-guided block obviates these disadvantages and reduces the volume of the local anesthetic agent required to achieve a block.<sup>[13]</sup>

TFNP is a result of the injected local anesthetic agent tracking along tissue planes to accumulate around the femoral nerve. Its onset depends on the speed with which the agent accumulates around the femoral nerve.<sup>[14,15]</sup> The femoral nerve is the principal motor supply to the quadriceps and other muscles of the anterior compartment of the thigh which are involved in flexing the thigh at the hip and extending the leg at the knee joint.<sup>[16,17]</sup> Paralysis of the nerve supply to these muscles limits limb extension and prevent the patient from mobilizing and may result in falls with fractures which carry severe medicolegal implications.

With the increasing trend by hernia surgeons in Africa to repairing inguinal hernias by nerve block, we expect the incidence of TFNP likely to increase.<sup>[18]</sup> Our experience has caused us to commence ambulatory nerve block inguinal hernia repair early in the list so that patients who develop TFNP can be adequately monitored to the recovery of the palsy and subsequently discharged same day and avoid unplanned admission which defeats the aim of ambulatory surgery.<sup>[19]</sup>

We did not consider it unusual that all the patients who developed TFNP in our study were males because inguinal hernias are more common in males,<sup>[20]</sup> and we employ a larger volume of the local anesthetic agent for repairing inguinal hernias in males compared to females for technical reasons. We are yet to encounter TFNP in the few males who underwent ambulatory bilateral inguinal hernia repair with local nerve block but could reasonably assume that their small number contributes to this observation.

A major limitation of the study is the small number of patients involved, from which a valid conclusion may not be drawn. Larger multicenter studies will be required

to conclude on the incidence of TFNP in patients who received local nerve block during ambulatory inguinal hernioplasty in Nigeria.

## CONCLUSION

TFNP following ilioinguinal nerve block for inguinal hernia repair is rare and necessitates additional period of postoperative observation. Early commencement and completion of ambulatory hernioplasty list afford the time to recovery from this complication, if it occurs, avoids overnight admission and encourages patient satisfaction.

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## Conflicts of interest

There are no conflicts of interest.

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