



## CASUISTIC PAPER

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# Open mesh repair of a voluminous recurrent inguinal hernia complicated by strangulation and intestinal obstruction

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## ABSTRACT

**Introduction.** Inguinal hernia is a common surgical pathology in Nigeria but a giant (voluminous) recurrent strangulated inguino-scrotal hernia causing intestinal obstruction is very uncommon. Such a hernia, when it is recurrent and becomes complicated with strangulation and dynamic intestinal obstruction, presents many difficulties in management.

**Aim.** To present the successful management of a case of a strangulated and obstructed giant recurrent inguinal hernia.

**Description of the case.** Here we present the case of 47 year old man who had intestinal resection and anastomosis with prolene mesh repair of the posterior wall for a strangulated recurrent large inguinal hernia using the technique of tension free sutured prolene mesh popularized by Lichtenstein

**Conclusion.** The patient recovered, was satisfied with his care and has been symptom free at 18 months of follow up. Giant recurrent hernias complicated by strangulated and intestinal obstruction are uncommon in Nigeria today, despite our resource-poor status. When they occur, tension free repair with sutured onlay prolene mesh after Lichtenstein, can be a useful and the best option with satisfactory results, as in the case reported.

**Keywords.** Inguinal hernia, recurrent, voluminous, strangulated, mesh repair

## Introduction

Globally, over one quarter of males will have inguinal hernia during their life time.<sup>1</sup> The prevalence of inguinal hernias in adults seems to be the same in both Western countries and countries in Africa at approximately 25% for males and 3% for females.<sup>2,3</sup> However, Africans tend to present late with large, or complicated hernias, and the

repair rate is significantly lower at less than 42%.<sup>4-6</sup> The voluminous type, which is defined as the extension of hernia sac to the midpoint of the inner thigh or beyond in the standing position, is rare but occasionally seen in the developing world where factors such as poverty, ignorance of conventional treatment options and phobia for surgery significantly contribute to delay in surgical intervention.<sup>2</sup>

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Giant inguinal hernia starts gradually as a neglected new or recurrent hernia.<sup>7,8</sup> It grows massively and affects the quality of life by interfering with activities like intercourse, walking, urination etc. It is prone to skin excoriation and ulceration.<sup>7</sup> The content varies widely, with the omentum, small intestine, and colon commonly reported.<sup>9</sup> The pancreas, kidney etc. have also been seen by some surgeons.<sup>10</sup> The content may incarcerate, obstruct or strangulate with increased morbidity and mortality.<sup>10</sup>

Inguinal hernia repair remains the most common operation performed by general surgeons all over the world.<sup>11</sup> Surgical procedures for inguinal hernia repair generally fall into three categories: open repair without use of mesh (i.e. sutured, e.g. Bassini, Darning, McVay, Shouldice, Desarda), open repair with a mesh (Lichtenstein, Plug and Patch), and laparoscopic repair with a mesh. The non-sutured "tension-free" open mesh repair is the mostly widely used technique in the world today. However mesh based repairs have not been fully embraced in resource-poor countries because of poor socio-economic status, non-affordability of patients, non-availability of mesh and laparoscopes and lack of appropriately trained staff in most centers. Therefore the traditional tissue based sutured techniques are still widely practiced.<sup>12,13</sup>

The repair of giant inguinal hernia poses an enormous challenge even among experienced surgeons, because there is loss of domain within the abdominal cavity which can lead to closure difficulty and subsequent increase in intra-abdominal pressure.<sup>7,14</sup> There is also a higher risk of recurrence owing to a large hernia defect.<sup>7</sup> The high risk of recurrence has made Lichtenstein technique of repair the most effective and preferred method of giant hernia repair.<sup>15,16</sup> This tension free method involves covering hernia defect with a mesh (foreign body).<sup>15</sup> Many surgeons are, however, skeptical about using this method in repairing strangulated hernia for fear of infection.<sup>17-20</sup>

Here we present the successful management of a case of a strangulated and obstructed giant recurrent inguinal hernia using the technique of tension free sutured prolene mesh popularized by Lichtenstein.

### Description of the case

A 47-year old man presented to our emergency department on account of a six day history of intermittent lower abdominal pain of increasing severity that became continuous in the last 8 hours. There was associated vomiting, abdominal distention and constipation. There was a huge right inguinoscrotal hernia which was first noticed 32 years ago. Initially, it was small in size at the groin, which was spontaneously reducible and gave no other symptom. It however progressively became massive and on presentation was very large, hanging down

the groin and upper right thigh. About 6 months prior to presentation it became incompletely reducible and occasionally painful. He had a bilateral inguinal hernia in his childhood which was repaired when he was 12 years old but the right recurred soon after repair. There was no chronic cough and no straining in passing urine and stool. He is a mason and recreationally partakes in weight lifting. He drinks alcohol and smokes cigarette and cannabis. He is married with children.

On examination, he appeared obese, sick, febrile (39.5°C) and dehydrated. His vital signs were deranged (respiratory rate of 30/minute, pulse rate of 104/minute, and blood pressure of 98mm Hg/60mm Hg). The abdomen was uniformly distended with bilateral groin scars and a huge right inguinoscrotal swelling, which was tense and tender (Fig 1). His penis was buried in the swelling. The prostate was enlarged and rectum was empty on digital rectal examination. A diagnosis of strangulated giant recurrent inguinoscrotal hernia causing dynamic small intestinal obstruction was made.

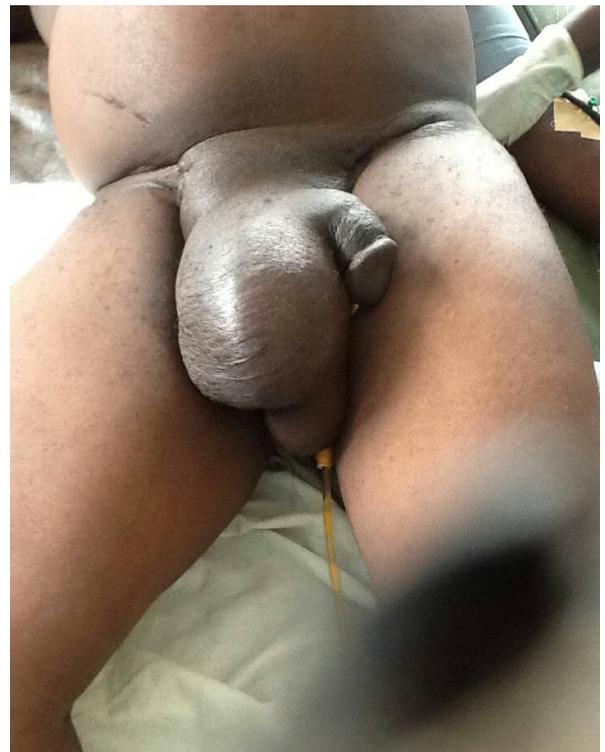


Fig. 1. Patient on the operating table

Immediate resuscitation with intravenous normal saline, intravenous antibiotics (ceftriaxone and metronidazole), nasogastric intubation and urethral catheterization, was commenced. Plain abdominal X-ray and abdominal ultrasound findings were suggestive of small intestinal obstruction. Laboratory investigations show hemoglobin concentration of 16.1g/dL and a white blood cell count of  $13.3 \times 10^9/L$  (neutrophilia). He was moved to the operating theatre for an emergency exploratory laparotomy after obtaining informed consent.

The surgery was done under general anesthesia and it commenced at exactly 6 hours of presentation. Imipenem and metronidazole were administered on induction of anesthesia. Right groin incision was used to minimize intra-peritoneal spillage.

Intraoperative findings include edematous but viable omentum, strangulated ileum; 30cm in length and 60cm from the ileocecal junction, and approximately 500 mL of serosanguinous fluid. Ileal resection and intestinal decompression then ilio-iliac anastomosis in two layers with 2/0 vicryl suture and partial omentectomy were done. Wound lavage with normal saline was also done.

The next task was to repair the hernia defect in the posterior wall of the inguinal canal which was very wide and it was repaired with onlay prolene mesh (Lichtenstein technique).<sup>3</sup> Incision was closed in 2 layers with nylon, continuous for external oblique and loose interrupted for skin.

Post operatively, the patient was nursed in the intensive care unit with intravenous imipenem (500mg 4 hours after surgery then 8 hourly for 72 hours), metronidazole (500mg 8 hourly for 72 hours), subcutaneous clexane (40mg daily for 7 days) and daily wound dressing with normal saline. On the third postoperative day, he began supportive mobilization. Bowel action returned on the fourth day, and was then commenced oral feeding on the following day. On the same 4<sup>th</sup> day post-operation, psychiatrist input was sought when the nurses reported he was unable to sleep during the night, for which he was placed on nitrazepam 5mg nocte for 2 weeks. His wound healed primarily and he was discharged home on the tenth day post-operation. Follow up visits at two weeks, six weeks, six months, one year and 18 months showed he was well and happy. He was referred to a urologist, on discharge, for evaluation of his enlarged prostate.

## Discussion

An inguinal hernia can grow to reach a giant size with time if not repaired early. Our patient had recurrent hernia which he neglected. Recurrence is the most frequent complication of hernia repair and patient seeking repair of their hernia should be made aware of this so that if it does occur, they can return to the hospital for appropriate action.<sup>21</sup> Our patient couldn't seek repair of his hernia when it was still small; this is common in developing world where finance is often a constraint. In addition, he most probably had lost confidence in orthodox treatment after the first repair failed. Strangulation is not a common complication of giant inguinoscrotal hernia owing to the large defect.<sup>22</sup> Many studies observed that the risk of hernia complication increase with age because of comorbidities such as COPD and bladder outlet obstruction (BOO). The

later was found in our patient although incidentally since he denied having any symptom suggestive of that (BOO).<sup>23</sup>

Recurrent hernias rarely grow large before causing symptoms due to fibrosis from previous surgery which makes the boundaries of the defect unyielding. In the case presented, we can assume that the initial repair at 12 years of life was a herniotomy with consequently minimal fibrosis to allow growth to a large size before strangulation.

The part of the intestine that frequently gets strangulated in inguinal hernia is the ileum as it has long mesentery, which is at risk of twisting.<sup>3</sup> In our patient, the ileum was involved. Partial omentectomy was added to the intestinal resection to reduce the volume of viscus to be returned to the abdomen. Patient was monitored closely after surgery in the ICU to detect early and vigorously manage any development of abdominal compartment syndrome which can lead to mortality. In this syndrome increased abdominal contents can lead to increased intra-abdominal and intra-thoracic pressures which can compromise respiration.

There is continuing controversy concerning the use of mesh in strangulated giant hernias because there is expected increase in the risk of surgical site infection.<sup>18-28</sup> In our patient the possibility of increased risk of surgical site infection was considered hence the escalated use of antibiotics from induction of anesthesia to 72 hours after surgery. We chose open mesh repair for this patient as the only option likely to succeed because tissue repair method would have been difficult and definitely would have recurred. Again we have neither the equipment nor the expertise for laparoscopic mesh hernia repair.

## Conclusion

Giant recurrent hernias complicated by strangulated and intestinal obstruction are uncommon in Nigeria today, despite our resource-poor status. When they occur, tension free repair with sutured onlay prolene mesh after Lichtenstein, can be a useful best option with satisfactory result, as in the case reported.

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