

Case Report

# A Busoga Hernia: A Rare Case Report in India

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## Abstract

Inguinal hernia stands as a prevalent surgical concern, often addressed either through elective procedures or as emergencies by surgeons. The indirect hernia has high propensity to bowel obstruction due to narrow constrictive ring. Direct hernia is comparatively safe from complications owing to the larger defect. Busoga hernia (BH), alternatively referred to as Gill-Ogilvie hernia, represents a seldom-seen variation of direct inguinal hernia affecting the conjoint tendon. This hernia type arises due to a weakness in the conjoint tendon and tends to manifest more frequently among young athletes. Some authors described herniation in the weakened conjoint tendon secondary to rigorous training, kicking, running and sharp turn. Busoga hernia (BH) represents an uncommon subtype of direct inguinal hernia, characterized by a heightened risk of strangulation of its contents. This risk is attributed to an exceptionally narrow neck under constant tension within a resilient fascial sling. BH may migrate into labia majora in female and rarely migrate to the scrotum in male. We encountered a case involving a male patient aged 64 years who arrived with a small painful inflammation in his right groin. Surgical exploration under general anesthesia, revealed a 1cm defect in the medial aspect of the conjoint tendon. Subsequent procedures included herniotomy and herniorrhaphy, wherein the hernial contents consisted of pre-vesical fats and a portion of the urinary bladder. Surgeons must possess a thorough understanding of the anatomy of the inguinal region to effectively manage situations with confidence. The postoperative recovery period progressed satisfactorily with good outcomes. Patient is under regular follow up.

## Keywords

Busoga, Direct Inguinal Hernia, Gill-Ogilvie, Funicular, Herniotomy, Herniorrhaphy, Strangulation, Hesselbach's Triangle

## 1. Introduction

Hernia, derived from Latin meaning rupture, refers to an abnormal protrusion of an organ or tissue through a structural defect. It often manifests in various body regions, notably in the abdomen. Around 75% of abdominal hernias manifest in the groin area, with Busoga hernia representing a mere 2.5% of all inguinal hernias. The conjoint tendon, also known as the inguinal aponeurotic falx or Henle's ligament, is located in the lower abdominal region and originates from the shared aponeurosis of the internal oblique and transverse abdominis muscles. It attaches to the crest of the pubic bone along the

pectineal line, positioned just below the superficial inguinal ring. Innervation for the conjoint tendon is provided by the ilioinguinal nerve (L1), reinforcing the inner aspect of the posterior wall within the inguinal canal. Embryonically derived from the hypomeron, it serves a pivotal function in fortifying a susceptible region within the abdominal wall. Deterioration of the conjoint tendon may lead to the development of a direct inguinal hernia, such as the Busoga hernia (BH).

Busoga hernia, a specific type of direct inguinal hernia

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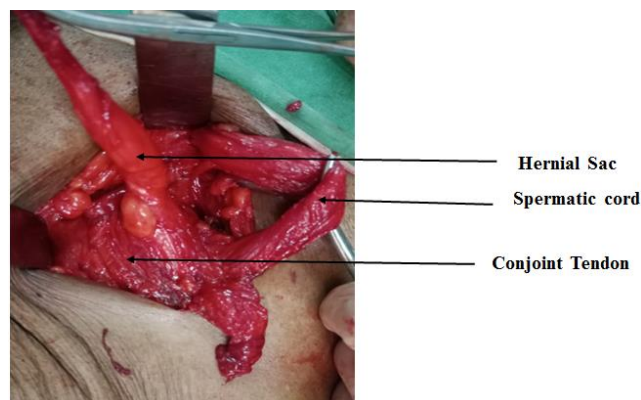
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prevalent in the Busoga region of Uganda and certain other African areas like Ghana and South Sudan [1], predominantly affects women and seldom men. Usually, it encompasses prevesical fat, occasionally accommodating a segment of the urinary bladder, and rarely the omentum and intestine. The Busoga hernia protrudes via a small opening in the medial section of the conjoint tendon or the transversalis fascia, cranially positioned to the pubic tubercle. Its constriction is attributed to a tense fascial sling, making it susceptible to strangulation. Although complete herniation of a large bowel loop through the defect is infrequent, strangulation usually involves only part of the intestinal circumference, termed a Richter's hernia [6]. Historical literature mentions cases of Ogilvie's hernia dating back to 1939 by Gill et al. [3, 13]. A similar clinical entity was described as Busoga hernia by Elena et al., noting its prevalence among individuals from the Busoga region of Uganda [16]. Tension-free hernioplasty is widely regarded as the optimal surgical intervention for inguinal hernias, including Busoga hernia, as it reduces the likelihood of recurrence. Nevertheless, statistical data regarding this subtype of hernia and its complication rates are limited. Here, we present a typical case of Busoga hernia in an Indian male patient aged 64 years and describe its tension-free physiological repair.

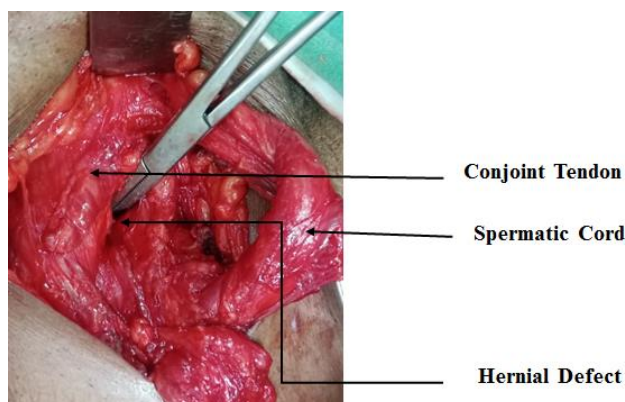
## 2. Case History

A male patient aged 64 years arrived at our facility clinic with a dull achy pain and a small swelling in the right groin area. He had no significant medical or surgical history, and all initial tests like CBC, LFT, KFT, lipid profile, serum electrolytes and chest X-Rays PA view and ECHO-2D came back normal. Upon examination, there was slight tenderness over the swelling in the right groin, and the swelling could be partially reduced. Clinical examination indicated an obstructed right inguinal hernia. After necessary preparations and obtaining informed consent, the patient underwent emergency exploration of the right groin swelling under general anesthesia. A surgical incision was made on the right inguinal region, followed by the opening of the right inguinal canal. The sac containing the right spermatic cord was lifted from the floor of the canal and separated from the cord structure. A large sac, positioned medially emerging through a defect in conjoint tendon was discovered [Figure 1]. Herniotomy revealed prevesical fat and a portion of the urinary bladder, with no presence of an indirect sac. The posterior wall of the right inguinal canal was intact except for a well-defined 1x1cm defect in the medial aspect of the conjoint tendon, located cranially to the pubic tubercle [Figure 2]. The hernia contents were returned to the abdominal cavity, and the sac was ligated [Figure 3]. The posterior wall was reinforced with an appropriately sized polypropylene mesh. The patient underwent a smooth recovery and was discharged on the 5th day post-surgery with a satisfactory outcome. Stitches were removed on 8th postoperative day. Currently, the patient is

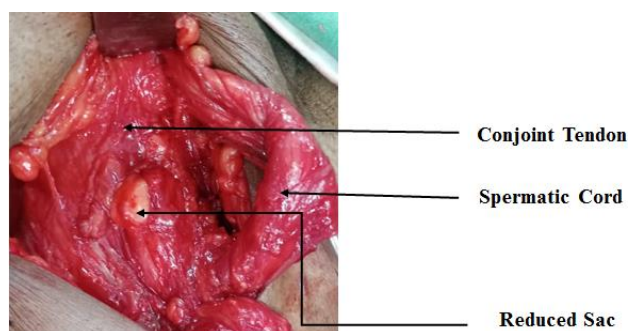
under regular follow up.



**Figure 1.** Hernial sac arising from a defect in conjoint tendon.



**Figure 2.** Well defined defect in medial aspect of conjoint tendon.



**Figure 3.** Reduced sac into the defect in conjoint tendon.

## 3. Discussion

Hernia is a frequently overlooked medical condition characterized by the protrusion of tissue or organs through weakened muscle areas. Surgeons frequently encounter hernias in their clinical practices, with approximately 75% of abdominal wall hernias occurring in the groin [2]. Among these, inguinal hernia repair stands as one of the most commonly performed surgical procedures. Busoga hernias are rare

occurrences. Inguinal hernia, the most prevalent type, is a common surgical issue affecting over 200 million people globally, with more than 40,000 deaths attributed to its complications annually worldwide. In the USA alone, there are over 700,000 inguinal hernia surgeries performed each year. Inguinal hernias present a wide spectrum of scenarios. Approximately 30% of cases remain asymptomatic, and up to 50% of individuals are unaware of their hernia [14]. Some cases present with emergent symptoms unrelated to the hernia, as hernia repair is typically an elective procedure unless strangulated or obstructed. So, in most of these situations, it couldn't be identified by surgeon's eye [2]. During embryogenesis at the 6<sup>th</sup> week of gestation, myotomes merge with the somatopleure to form the ventral and dorsal walls of the thoracoabdominal wall, known as the hypomerion and epimerion, respectively. The external oblique, internal oblique and transversus abdominis muscles all arise from the same source, the lateral portion of the hypomerion, along with their aponeuroses. Conjoint tendon (Henle's ligament) considered the lateral portion of the aponeurosis, is formed from the internal oblique and transversus abdominis muscles and is a derivative of the hypomerion. In inguinal hernia repair procedures such as McVay, Bassini, and Shouldice, careful consideration of the conjoint tendon is paramount. Suturing through the conjoint tendon is conducted to reinforce any weakness in the floor of the inguinal canal. The conjoint tendon aids in supporting abdominal contents during increased intra-abdominal pressure and acts as a barrier in the inguinal canal, preventing herniation. Formed by the fusion of the aponeurotic parts of the internal oblique and transverse abdominis muscles, the conjoint tendon holds significant surgical importance during inguinal hernia repair. Weakness in the conjoint tendon can result in a subtype of direct inguinal hernia known as Busoga hernia or Gill-Ogilvie hernia, typically observed in young, athletic males with robust musculature [6, 7].

Busoga hernia (BH) is a distinct subtype of direct inguinal hernia named after the Busoga region in Uganda, where it is prevalent [11]. It constitutes approximately 2.05% of all inguinal hernias and arises due to weakness in the conjoint tendon, which forms the medial aspect of the posterior wall of the inguinal canal and reinforces the medial aspect of Hesselbach's triangle [4, 9]. This weakness leads to a manifestation of direct herniation recognized as Busoga herniation or Gill-Ogilvie hernia, characterized by the herniation of extraperitoneal fat, structures, or peritoneal contents through a small defect in the conjoint tendon [4-6, 15]. BH was initially documented in Uganda by Eckhart and Claxton, with Cole reporting a lower incidence in Nigeria [5]. Similar hernias were also observed in the United Kingdom by Gill and Ogilvie, although reports from Asian countries have been scarce [4]. BH poses a risk of strangulation due to its narrow fascial neck, potentially leading to gangrene in the sac. Hancock noted that 60% of strangulated hernias in the Busoga district's Jinja area were of this type [6]. Zivanovic's study suggested that "Busoga hernia" may have an acquired origin

based on a genetically predisposed pelvic configuration, with a steep slope of the inguinal ligament observed in patients with this hernia [11, 12]. The lower border of the internal oblique muscle and its aponeurotic part is typically slightly above the level of the aponeurotic arch of the underlying transversus abdominis muscle, and in most cases, it does not participate in the formation of the conjoint tendon. Therefore, Busoga hernia passes through the plane of the transversus aponeurosis without involving the internal oblique. On the other hand, the usual direct hernia passes through the weakness of the muscles and fascia of the inguinal canal. A raised intra-abdominal pressure may be associated with advancing age [8]. Diagnosis is often made intraoperatively based on the sac passing through the transversus abdominis component of the conjoint tendon and the presence of Musculo-tendinous fibers on either side of the neck of the sac, although imaging modalities such as MRI and ultrasonography can be helpful [4]. BH typically presents as a small hernia containing small gut, often of the Richter variety, and may lack a peritoneal sac, with only the urinary bladder or extraperitoneal fats being herniated. Management of BH is generally similar to that of inguinal hernias, prioritizing the identification of the sac, meticulous dissection to avert unintentional injury to the hernial contents, and efficient closure to strengthen the weak wall [14]. Notably, there are no documented case reports of BH in individuals of Indian origin, underscoring the importance of reporting such cases.

## 4. Conclusion

Reporting of the Busoga hernia is important due to its infrequent encounter in certain geographical areas. Busoga hernia represents an intriguing variant of the direct inguinal hernia, closely associated with the conjoint tendon. Its occurrence appears to be linked to certain ethnic groups and genetic factors. This hernia type is rarely encountered, presenting a diagnostic challenge for surgeons. Surgeons must remain vigilant regarding the possibility of encountering atypical and rare contents during the surgical exploration of inguinal hernias. Its clinical importance stems from the heightened risk of strangulation due to its narrow neck. Prompt repair upon diagnosis is crucial to mitigate potential adverse effects. In uncertain cases, diagnostic laparoscopy or laparotomy is recommended [10]. Both mesh and non-mesh repair approaches are likely to yield comparable outcomes.

## Author Contributions

Raj Ranjan Kumar is the sole author. The author read and approved the final manuscript.

## Consent

An informed written consent was obtained from patient for publication.

## Ethical Approval

Exempted by our institution.

## Conflicts of Interest

The authors declare no conflicts of interest.

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