



Original Article

Incidence of Occult Inguinal Hernia Diagnosed with Ultrasound in Patients with Groin Pain

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ABSTRACT

Inguinal Hernia is one of the most common problems affecting the population coming with groin pain. **Objective:** To find the incidence of occult inguinal hernia diagnosed with ultrasound in patients with groin pain. **Methods:** Descriptive study was conducted at Gilani Ultrasound Centre. Data of 200 participants were designated done with suitable sample method. Data were analyzed by SPSS version 24.0. **Results:** Out of 200 male patients the Mean Age \pm SD ratio is 23.1 \pm 15.7. 38(19%) patients presented with pain bilaterally, left sided pain was presented in 43(21.5%) patients and right sided pain was presented in 119(59.5%) patients. In 25(12.5%) patients occult inguinal hernia was detected and in 175(87.5%) patients occult inguinal hernia was not detected. In 2(1%) patients occult inguinal hernia was detected bilaterally, in 6(3%) patients occult inguinal hernia was detected on left side and in 17(8.5%) patients it was detected on right side. The mean size of the defect on right side was 2.24 and on left side was 5.0. **Conclusions:** Study concluded that occult inguinal hernia detected in 12.5% patients and majority of them were young adults. Due to the sensitive nature of groin ultrasound, patients may be referred for it if the results of the clinical examination are inconclusive or negative.

INTRODUCTION

Groin pain is a relatively common ailment [1]. Inguinal hernia is the most frequent cause of it as well as the most prevalent type of abdominal wall hernia [2]. Pathologic protrusions of the peritoneal cavity are referred to as hernias [3]. So, inguinal hernias result when internal tissues of the abdomen push through a weak spot in the groin muscles. This can cause a bulging lump in your groin area and thus pain occurs. However, occult inguinal hernias are problematic hernias that are not palpable on evaluation [4]. Small inguinal hernias known as occult hernias are challenging to identify during a clinical assessment [5]. Early diagnosis and treatment of occult hernias is critical for symptom relief and improving patients' quality of life. The exact cause of inguinal hernia is unknown. However,

abdominal wall hernias are frequent, with an incidence of 1.7 % in people of all ages and 4% in people over 45. 75% of abdominal wall hernias are inguinal hernias; men have a lifetime prevalence of 27% and women have a lifetime prevalence of 3% [6]. The etiology of indirect inguinal hernias in adults as in infants is congenital [7]. Men are more likely than women to have inguinal hernias. An inguinal hernia can become more likely in some situations. Strenuous exertion carries a higher risk. Individual studies on varicose veins discovered associations with inguinal hernia. A history of hemorrhoids and a hiatal hernia were also identified as triggers. Many other factors such as weight, tobacco (number of cigarettes smoked and years smoked), and alcohol intake had no correlation with the

instances [8]. Development of inguinal hernias is also significantly influenced by a favorable family history [9]. When it comes to inguinal hernias, advanced age, longer duration of hernia, and irreducibility are possible causes for acute complications [10]. Complications of inguinal hernia comprise incarceration, bowel obstruction, and bowel strangling (which can be deadly), with elderly people having the highest risk. There is a possibility of an occult inguinal hernia when an inguinal hernia is present, on the other side [11]. Therefore, earlier detection of an inguinal hernia is compulsory. As it is difficult to diagnose occult inguinal hernia based entirely on a patient's clinical exam and previous history, imaging is essential before moving on to the next management stage. Imaging is helpful in identifying and characterizing different problems in groin region. Different imaging techniques, including ultrasound scans, herniograms, laparoscopy and MRI scans been employed for diagnosing groin pathologies [12]. Although MRI has been shown to detect hernias, it has not been proven to be very accurate. CT scans also produce conflicting results when it comes to hernia diagnosis. Laparoscopy is another method for diagnosing occult hernia and the occult contralateral hernia, but it is invasive as well [13]. Herniography is an invasive procedure that can result in problems such as hematoma and allergic responses [14]. Ultrasound has supplanted various imaging modalities in the diagnosis of groin pain in many areas [15]. This is mostly owing to the fact that ultrasound has a high diagnostic accuracy that is unmatched by other cross-sectional imaging modalities. The ability of ultrasound to provide a true real-time and dynamic evaluation, which is not feasible with the other cross-sectional imaging, is critical to its success. Because ultrasonography is a real-time examination, it can aid in the identification of hernias by demonstrating movement of any herniated contents or performing a Valsalva maneuver, or by examining the patient in an upright position, allowing for the protrusion of a difficult-to-identify hernia. Moreover, because of its superior inherent soft tissue contrast and resolution, ultrasound is a good choice for immediate scanning and dynamic evaluation of the patient's pain source [16]. It is less expensive and does not use ionizing radiation. Ultrasound has comparable sensitivity. It is non-invasive and can be performed in the office by the surgeon. As a result, it can be used again and again during a symptomatic episode [17]. Color Doppler ultrasound can differentiate between direct and indirect hernias with a sensitivity of 90% and a specificity of 86%. Even with a negative physical examination, ultrasound can detect hernias in patients and discover abnormalities apart from hernias (e.g., femoral artery aneurysm) [18]. When a hernia is clinically palpable, ultrasonography has a good

detection sensitivity and positive predictive accuracy. Inguinal hernias are a very constant complaint occurring in the males and the diagnosis is mainly dependent on the checkup by the surgeon. With this study we want to highlight the importance of USG in the patients with hernia which is not apparent on physical examination.

METHODS

It was a descriptive study which was conducted at Gilani Ultrasound Centre. A total of 200 male patients were included in the study. All patients gave informed consent, and formal ethics approval for the study was obtained. Inclusion criteria included Males of all ages were included and Patients without any visible defect. Patients who had visible hernias were excluded from the study. All patients were scanned supine in the relaxed state as well as during coughing and during a Valsalva maneuver. Ultrasound features of hernia included direct visualization of a hernia sac containing bowel (Fig. 1) or omentum; a positive cough/Valsalva impulse which was reducible. (Fig. 2) The ultrasound scans were performed by either experienced consultant radiologist or sonographer using a 5-8 MHz frequency linear transducer.

RESULTS

All the 200 consecutive male patients with complaints of groin pain presented for consultation in Gilani Ultrasound Centre were included in the study. Out of 200 male patients the Mean Age \pm SD ratio was 23.1 \pm 15.7 years. 38(19%) patients presented with pain bilaterally, left sided pain was presented in 43(21.5%) patients and right sided pain was presented in 119(59.5%) patients. In 25(12.5%) patients occult inguinal hernia was detected and in 175(87.5%) patients occult inguinal hernia was not detected (Table 1).

Occult Inguinal Hernia	Frequency (%)
Detected	25(12.5%)
Not Detected	175(87.5%)
Total	200(100.0%)

Table 1: Frequency Distribution of Occult Inguinal Hernia

The following table shows that out of 200 patients occult inguinal hernia was detected in 25(12.5%) patients and in 175(87.5%) occult inguinal hernia was not detected. In 2(1%) patients occult inguinal hernia was detected bilaterally, in 6(3%) patients occult inguinal hernia was detected on left side and in 17(8.5%) patients it was detected on right side. Table 2: Comparison shows the affected side on both side were detected in 2 patients with occult inguinal hernia and 36 patients with no occult inguinal hernia, affected on left side was detected in 6 patients with occult inguinal hernia and 37 patients with no occult inguinal hernia, on right side with 17 detected with occult inguinal hernia and 102 with no occult inguinal hernia.

Affected Side		Occult Inguinal Hernia		Total
		Detected	Not Detected	
Bilateral	Count%	2	36	38
	within Affected Side	5.3%	94.7%	100.0%
Left	Count%	6	37	43
	within Affected Side	14.0%	86.0%	100.0%
Right	Count%	17.	102	119
	within Affected Side	14.3%	85.7%	100.0%
Total	Count%	25	175	200
	within Affected Side	12.5%	87.5%	100.0%

Table 2: Percentage of affected side and occult inguinal hernia

The mean size of the defect on right side was 2.24 and on left side was 5.0. Table 3 shows the report in which we calculated the mean and standard deviation of defect detected in patients, in which mean of defect detected on right side was 2.24, standard deviation 3.455, left side mean was 5.0, standard deviation 3.22.

Occult Inguinal Hernia		Size (mm) - Left	Size (mm) - Right
Detected	Mean±SD	2.2400±3.45531	5.0800±3.22697
	N	25	25
	Median	.0000	6.3000

Table 3: Descriptive statistics of size detected on both sides.

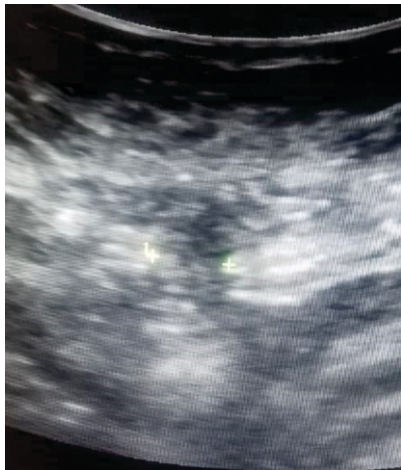


Figure 1: Transverse section showing occult inguinal hernia containing bowel.



Figure 2: Transverse section showing occult inguinal hernia on

Valsalva maneuver. Dotted line showing hernia sac.

DISCUSSION

Clinical evidence of a bulge that is reducible and exhibits an expansile cough impulse helps to identify groin hernias. When no symptoms exist, the identification is frequently made by ruling out any other potential origins of a bulge. The diagnosis and treatment of individuals with groin agony depend heavily on reliable imaging. Out of 200 male patients the Mean Age \pm SD ratio was 23.1 \pm 15.7 years. 38(19%) patients presented with pain bilaterally, left sided pain was presented in 43(21.5%) patients and right sided pain was presented in 119(59.5%) patients. In 25(12.5%) patients occult inguinal hernia was detected and in 175(87.5%) patients occult inguinal hernia was not detected. A study by Haanu Paajenen et al., [19]. was carried out on the prevalence of occult inguinal and spigelian hernias during laparoscopy for various details. This research sets out to measure the frequency of hernias occurring during laparoscopy for several other disorders. There were one hundred thirty-three females and sixty-eight males, with mean age of 53+ 14 years. Out of 201 patients, there were a total of 43 (21%) unanticipated hernias. Overall, there were more hernias in men than in women. (P .003). An indirect inguinal hernia was the most frequent occurrence in 27(13%) of the patients [15]. Unlike that study, the participants in ours were only male. Patients' ages ranged 23.1+ 15.7 years, on average. Occult inguinal hernia was identified in 25 out of 200 individuals. Inguinal hernias are thought to be more common in male infants with anatomical anomalies of the inguinal canal, according to various medical authorities [20]. According to research by Ruhl and Everhart et al., [2]. inguinal hernia is a common complaint in adults; therefore, more than one-fourth of adult men in the United States, should likely to have clinically ruled out inguinal hernia. In fact, inguinal hernias in men significantly rose in frequency as they aged. This situation is comparable to our findings in that inguinal hernias were more prevalent in younger people in our sample. In contrast, there were no inguinal hernias seen in the geriatric or older group. D.Light et al., [5] did research in 2005 on the Use of ultrasound to diagnose occult inguinal hernias. In the trial, which ran from January 2007 to August 2008, 297 individuals who showed up throughout the course of 18 months were enrolled. As a consequence of one hundred sixty-seven examinations' (56%) positive results for a hernia, one hundred sixteen patients go through surgery. Surgery revealed a hernia in eighty-five cases, while in the other thirty-one cases there was no hernia found. After 130 tests, 44% of them revealed no hernia. Six patients required surgery in spite of a negative ultrasound because of lingering pain and the identification of a hernia in five cases. Overall, it was shown that

ultrasound had a 94% sensitivity in relation to surgical outcomes. If ultrasound is utilized in conjunction with clinical judgement, its positive predictive value is 73%. In contrast to our findings, out of a total of 200 patients, 175 (87.5%) were negative for occult inguinal hernias, while 25 (12.5%) were positive. The positive predictive value of diagnostic ultrasonography for occult hernia was explored by M. Bradley et al., [13] in a study that was published in 2006. A total of one hundred thirteen patients were sequentially sent for ultrasonography exams with physically assumed occult hernias. 59 scans in total identified hernias, and 56 of these individuals underwent surgery. The surgical examination of the other three patients revealed no hernias, and two of them expressed no interest in having it fixed. With regard to 82 patients (or 70.6%), 59 of them had hernias, and an ultrasound was used to diagnose their symptoms. 98.3% of cases with a hernia turned out to be positive. In comparison, the findings of our study showed that, out of 200 patients, 38 (19%) patients had bilateral pain i.e., on both the left and right sides, 43 (21.5%) patients had pain on the left side, and 119 (59.5%) patients had pain on the right. 25 (12.5%) of the total number of patients had occult inguinal hernias, while 175 (87.5%) had no hernias. Adeeb Alam et al., [16] did a study in 2005 on the reliability of sonographic diagnosis in clinically occult groin hernias. The trial included 52 consecutive adults who had groin pain that was assumed to be coming from a groin hernia. A surgical center recommended them. A total of one hundred four groin were evaluated using ultrasound and herniography, and the existence or nonexistence of hernias was reported. A vaso-vagal reaction following herniography in one patient was the only adverse event that has been documented; it was treated with intravenous Fluid and atropine. Herniography revealed 32 groin hernias in 24 patients. 8 bilateral and 16 unilateral, or 30.8% of the total. In relation to our study, we discovered that ultrasonography was performed rather than herniography. There were two bilateral hernias out of the 25 hernias that were found, as well as hernias on the right (17) and left (6). 175 (87.5%) of the patients had no occult inguinal hernia. 2.24 mm of defects were identified on right side and 5.0 mm on left side, respectively.

CONCLUSIONS

Study concluded that out of 200 male patients occult inguinal hernia detected in 12.5% patients and majority of them were young adults. Due to the sensitive nature of groin ultrasound, patients may be referred for it if the results of the clinical examination are inconclusive or negative.

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