

# Diagnosis of Inguinal Bladder Hernias: Current Role of Sonography

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## Abstract

Compared with digestive or omental hernias, inguinal bladder hernias (IBHs) are less common. When they do occur they are usually small and asymptomatic and hence as such they do not cause any clinical problem. However when volume increases, problems can arise, often requiring surgical intervention. The vesical component in hernia pathology must be detected as it ensures conservation of the vesical wall at herniorrhaphy. Since the advent of high-frequency equipment, ultrasonography has become the essential method of diagnosing vesical hernias as it is widely available. Ultrasound is the modality of choice to pinpoint IBH in the differential diagnosis of inguinoscrotal swellings. It should be preferred to other imaging techniques because it is non-traumatic, cost-effective and saves time. We are reporting a case of inguinal bladder hernia detected with sonography in an adult patient.

**Key words:** Bladder, Hernia, Ultrasonography

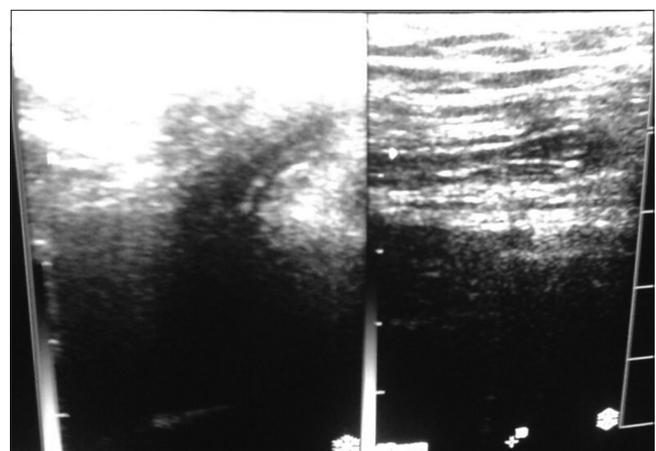
## INTRODUCTION

Inguinal bladder hernias (IBHs) are rare. When they do occur, they are usually small and asymptomatic and hence as such they do not cause any clinical problem. When volume increases, problems arise, often requiring surgical intervention. The vesical component in hernia pathology must be detected as it ensures conservation of the vesical wall at herniorrhaphy. Ultrasound (US) is the modality of choice to pinpoint IBH in the differential diagnosis of inguinoscrotal swellings. It should be preferred to other imaging techniques because it is non-traumatic, cost-effective and saves time.

## CASE REPORT

A 60-year-old male patient was referred to the US department for evaluation of a left inguinal bulge. Using

a 5-2 MHz curvilinear probe (Sonalisa 32) at the pelvis level, we noticed that the left anterosuperior angle of the bladder was drawn toward the ipsilateral inguinal area (Figures 1 and 2). Using a high-frequency (7-5 MHz) linear transducer the inguinoscrotal area was further examined. It demonstrated an ovoid, anechoic mass which was depressible and surrounded by a thick even



**Figure 1:** Examination of the inguinoscrotal area by means of a high-frequency (7-5 MHz) linear transducer showing an oblong, depressible, anechoic mass limited by a few millimeters thick even wall

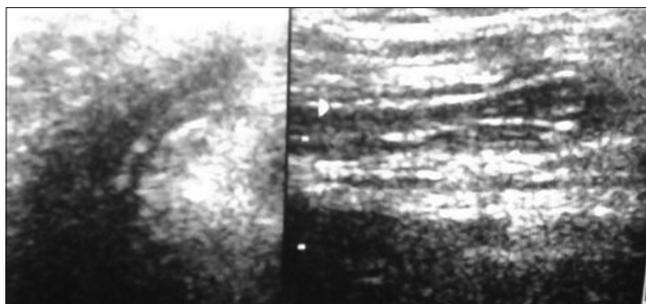
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**Figure 2: Close relation and continuity between the left vesical angle and fluid filled mass**

wall (Figures 1 and 2). The fluid-filled mass was in close relation to and continuous with the left vesical angle. A provisional diagnosis of vesical hernia was suspected and was confirmed by operative findings. Operative findings confirmed the diagnosis of inguinal herniation of bladder.

## DISCUSSION

Compared with digestive or omental hernias, IBHs are less common. Bladder herniation occurs in an acquired direct inguinal hernia with the bladder pulled into hernia together with a sheath of peritoneum, which forms its sac. The bladder is involved in only 1 to 4% of groin hernias.<sup>1</sup> The figure is higher and could be more than 10% in patients older than 50.<sup>2,3</sup> According to the opinion of Mazketli *et al.* this could be an overestimation. In a series where 675 operations were done in cases of inguinal hernias, they found a single case of vesical herniation.<sup>4</sup> Massive IBHs, described as those where more than 50% of the bladder has left the pelvic position, are extremely rare, <120 cases having been reported in the literature.<sup>5</sup> In the 14 century vesical hernias were described by the French surgeon Guy de Chauliac.<sup>6</sup> They appear in 75% of the cases at the inguinal level.<sup>5</sup> They are frequently unilateral on the right side with 70% male predominance.<sup>7</sup> Bilateral instances have also been described. Second in frequency come crural vesical herniation (23%), occurring mainly in female patients.<sup>5</sup> Exceptional localizations make up the last percents namely obturator foramen, linea alba, ischio-rectal fossa, incisional site or post-traumatic tear area.<sup>2,6</sup> IBHs are classified into three subgroups according to their relationship with the peritoneum.<sup>8</sup> 30% of all are extra-peritoneal, very rarely they are totally intra-peritoneal while most cases (60%) are paraperitoneal with the herniated bladder only partly accompanied by peritoneum. The relative position of the bladder to the peritoneum is very important. The peritoneal tissue can hide an adjacent vesical wall and thereby lead to unintentional injury to the bladder during the repair operation.<sup>3,5,9</sup> Loss of bladder muscle tone and slackening of the abdominal wall are two main factors contributing to the formation of a bladder hernia.<sup>5,6,8</sup> The presence of a

sub vesical obstruction or a bladder neoplasm enhances the hernia formation specially in obese patients and in patients with local trauma or incisional scar.<sup>3,5,6,8</sup> Patients exposed to tamoxifen could also be more frequently affected by IBHs.<sup>6</sup> Vesical hernias are usually asymptomatic for a long time since they remain small.<sup>2</sup> They are first suspected when indirect symptoms linked with a prostatic obstruction appear i.e. frequency, nocturia, dysuria.<sup>2</sup> Mery's syndrome, also known as two-stage micturition, occurs pretty late and can lead to perforation.<sup>9</sup> The ipsilateral ureter can be pulled and deviated leading to obstruction and hydronephrosis. Since the phenomenon hardly ever affects both sides, acute kidney failure remains an exception.<sup>4</sup> Neoplastic degeneration is also encountered very rarely.<sup>4,10</sup> The various common differential diagnosis of inguinoscrotal swellings are easily ruled out on US. Hernias of the digestive tract show presence of intestines with intraluminal air and peristaltic movements. Omental hernias and pre-inguinal lipomas are characteristically hyperechoic.<sup>3</sup> Other causes of anechoic inguinoscrotal swellings like hydroceles, herniated vesical diverticula and giant cysts of the epididymis and spermatic cord are also easily distinguished using US by presence or absence of a clear wall and by their anatomic relationships.<sup>3,4,6,11-13</sup> Intravenous urography and cystography are not the best choice in examining IBHs because of their low level of sensitivity. In supine position the density of the contrast medium causes it to remain in the dependent part of the bladder and prevents it from flowing into the hernia.<sup>2</sup> Indirect signs like ipsilateral ureteral displacement, small volume of the bladder and incomplete visualization of the bladder base have been described but they may not be conspicuous.<sup>5,6,11</sup> Upright positioning of the patient together with a voiding test are the only techniques to demonstrate the presence of a hernia by forcing the contrast medium to flow into it as a result of higher intravesical pressure.<sup>6,11</sup> US is nowadays the first-choice diagnostic imaging modality for IBHs as it is completely atraumatic and cost-effective. With the advent of high-frequency transducers with the excellent resolution, it is possible to accurately demonstrate a vesical hernia as a soft anechoic mass with a wall, which is connected to the bladder.<sup>3,9</sup> It is also possible to distinguish a direct herniation from an indirect one using color Doppler to locate the lateral or medial position, respectively, of the inferior epigastric vessels.<sup>14-16</sup> The presence of hydronephrosis or a possible outlet obstruction can also be easily ascertained on US. Contrast-enhanced computed tomography (CT) scans can also accurately demonstrate vesical hernias specially after the bladder has been insufflated with gas.<sup>2,10</sup> Just like US, it helps study a subvesical problem and quantifies hydronephrosis.<sup>9</sup> CT is however considered to be disproportionately expensive.

## CONCLUSION

Although the incidence of vesical hernia is not high, preoperative identification of IBH is essential, to prevent iatrogenic trauma. IBHs should, therefore, be systematically ascertained mainly in older patients presenting symptoms of prostatic obstruction. US proves to be the first choice of diagnostic imaging technique. It not only permits a differential diagnosis of inguinoscrotal swellings, but also studies the anatomic relationships most accurately and immediately displays distal abnormalities without being expensive at all.

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