

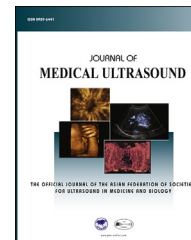


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ORIGINAL ARTICLE

Use of Ultrasonography in Clarifying the Etiology of Anal Pain

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KEYWORDS

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anorectal tumors,
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Abstract *Introduction:* Anal pain is defined as pain originating from the anal canal or the perianal area that can be attributed to a variety of medical problems. The current study's aim was to evaluate the role of combined endoanal, transperineal, and in married women, transvaginal ultrasound in clarifying the etiology of anal pain among our patient study group. *Methodology:* A total of 180 patients presented to our radiology department complaining of anal pain and were examined using transperineal, endoanal, and in women, transvaginal ultrasound aided with three-dimensional capability. The final diagnosis was reached, according to the surgical results and the histopathology reports in cases diagnosed with anorectal neoplasms and perianal masses.

Results: A total of 100 patients were diagnosed with perianal fistulas. Twenty-five cases presented with anal abscesses. In four cases, pilonidal sinus extended to the perianal spaces. Three cases had hidradenitis suppurativa, 13 cases showed occult anal sphincter defects, two cases had anorectal neoplasms, and one case was diagnosed with soft tissue ependymoma overlying the coccyx. Three cases were diagnosed with perianal soft tissue masses. One case was detected with recto vaginal fistulas, 10 cases showed thick internal anal sphincter, two cases had perianal cysts, and one case had perianal hematoma. Two cases showed hemorrhage in Douglas' pouch, and one case had pelvic collection sequelae of perforated pelvic appendicitis. Three cases had pelvic endometriosis; one case was detected with missed contraceptive device in the rectum. Three cases were diagnosed with prostatitis and two cases with prostatic abscesses. Two cases had prostatic carcinoma and one case had prostatic sarcoma.

Conclusion: The combined approaches of endoanal, transperineal, and in women, transvaginal ultrasound aided with three-dimensional capability proved highly valuable in clarifying the etiology of anal pain in our study group.

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Conflicts of interest: The author declares that he has no conflict interest.

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Introduction

Anal pain is defined as pain originating from the anal canal or the perianal area, which can be caused by a variety of medical problems. Anal fissure is the most common cause of anal pain, occurring in the poorest area of perfusion in the anal canal associated with increased resting anal pressure, and the diagnosis is based on the patient's history and gentle external examination [1]. Anorectal abscesses occur commonly because of blockage of the anal crypts with subsequent infection of the cryptoglandular tissue; anorectal abscesses can be perianal, submucosal, intermuscular, ischioanal, or perirectal [2]. Perianal fistula, the progression of an abscess that did not heal completely, is defined as an inflammatory tract with an internal opening in the anal canal wall and external opening in the skin. Perianal fistulas can be intersphincteric, transsphincteric, extrasphincteric, or suprasphincteric [3]. Perianal hematoma is a collection of blood in the perianal area caused by a ruptured vein or an external hemorrhoid. Other causes of anal pain include thrombosed piles, pruritus ani, Crohn's disease, fecal impaction, proctitis, solitary rectal ulcer syndrome, anorectal malignancy, and chronic idiopathic anal pain syndromes that include proctal-gia fugax, levator ani syndrome, and coccygodynia [4].

Imaging plays a significant role in clarifying the cause of anal pain when the diagnosis is not clinically evident. Endoanal ultrasound is used to evaluate the anal sphincters and the intersphincteric plane. Magnetic resonance imaging provides high-resolution images to evaluate the anal canal walls and the perianal spaces [5]. Defecography, in which fluoroscopy is used to evaluate the mechanism of defecation and the dynamics of the anorectum and the pelvic floor, helps clinicians evaluate rectal outlet obstruction, rectal incontinence, rectal intussusception, and rectocele [6]. Other investigations include endoscopy (anoscopy—proctoscopy and sigmoidoscopy) and examination under general anesthesia.

Aim of the study

The aim of the current study was to evaluate the use of combined transperineal, endoanal, and in females transvaginal ultrasound aided with three-dimensional (3D) capability in clarifying the etiology of anal pain among the patients in our study group.

Methodology

Patients complaining of anal pain, whether acute or chronic onset, were included in the current study, according to the following inclusion criteria: patients showing normal results with clinical examination, endoscopy, and defecography.

Patients with a suspected clinical diagnosis and brought up for further imaging assessment were observed to evaluate the disease severity and extensions.

Patients with anal pain were excluded from the study: These were patients with confirmed diagnosis with clinical examination, endoscopy, or defecography and who required no further imaging assessment—including patients with anal fissures, thrombosed piles, pruritus ani, and rectal intussusception. Also excluded were patients with no

detectable ultrasound abnormality and were diagnosed clinically to have chronic idiopathic anal pain syndromes.

A total of 180 patients were included in the current study, consisting of 110 men and 70 women. Their age ranged from 1 year to 70 years (mean age, 32 years). The duration of symptoms ranged from 2 days to 20 months.

All were examined in the radiology department of our institute from March 2015 to October 2016. All were examined with transperineal ultrasound using a linear probe of frequency 5–12 MHz, a multifrequency endoanal probe, and—for married women—with endovaginal probe of frequency 5–9 MHz. All probes were supplemented with 3D capability using Sonoace x8 ultrasound machine (Medison, Seoul, Korea).

All patients examined in the left lateral decubitus position with the hip and knee joints flexed; for the female patients, an additional transvaginal ultrasound was performed in the dorsal lithotomy position.

The patients were examined with 2D and 3D transperineal ultrasound to assess the perianal region for the presence of abscesses, the extrasphincteric course of fistula tracts, and the side branches, and to assess the presence of perianal sinuses, masses, or cysts.

Endoanal ultrasound was performed to assess the anal sphincters and the intersphincteric planes. In females, an additional transvaginal ultrasound was performed that enabled clinicians to evaluate the anal sphincters and the perianal spaces.

3D image reconstruction with multiplanar image analysis in three orthogonal planes and volume rendering was performed.

All findings were recorded and analyzed. All results were compared with the surgical results and histopathology reports of anorectal neoplasms and perianal soft tissue masses as reference standard.

Results

A total of 180 patients presented to our radiology department complaining of anal pain. They were examined by an experienced radiologist, who performed perineum ultrasound. The results of the ultrasound examination were compared with the patient's diagnosis, which was made based on the surgical results, and the histopathology reports in cases diagnosed with anorectal neoplasms and perianal masses (Table 1).

Perianal fistula. One hundred patients were diagnosed with perianal fistula (Figure 1); these included 60 cases with trans-sphincteric fistulas, 30 cases with intersphincteric fistulas, four cases with extra sphincteric fistulas, three cases with suprasphincteric fistulas, and three cases with submucosal fistulas. Ultrasound clarified the etiology in 97 cases (97%); in three cases, the diagnosis was not certain and ultrasound findings revealed mildly distended intersphincteric plane, and these were later proved (at surgery) to be intersphincteric fistulas. The type of fistula was wrongly diagnosed in five cases: three cases with high transsphincteric fistulas, a case with extrasphincteric fistula, and a case with suprasphincteric fistula—representing an estimated percent accuracy of 95% in detecting the type of fistula.

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