Trans-vaginal Sonographic Evaluation of Vesicovaginal Fistula

Saba Sohail, Kausar Jehan Siddiqui
Department of Radiology, Dow University of Health Sciences and Civil Hospital, Karachi.

Abstract

Objective: To determine the sensitivity of transvaginal ultrasound (TVUS) in the detection of vesicovaginal fistula (VVF).

Methods: The study included 15 patients with urinary incontinence suspected or diagnosed to be due to vesicovaginal fistula that were originally referred to the department for intravenous urography (IVU). Complimentary TVS was done with consent. Cases with stress incontinence and co-existent rectovaginal fistulae were excluded. Findings were compared against the cystogram, cystoscopy and surgical findings for determining the sensitivity, the last being taken as the gold standard.

Results: The fistula was visualized as a jet of echoes in real time from bladder to the vagina in all 15 cases. The location number and size corresponded with the surgical findings. The sensitivity of trans-vaginal scanning in diagnosing VVF was 100%, that of cystoscopy - 93% and of cystography - 60%.

Conclusion: In this series, the trans-vaginal scan findings correlated well with the surgical findings. It was less invasive and more tolerable than cystoscopy (JPMA 55:292;2005).

Introduction

A vesico-vaginal fistula (VVF) is an abnormal communication between the urinary bladder and the vagina resulting in an uncontrollable, involuntary leakage of urine per vaginum. This is a multi faceted morbidity that not only leads to complications such as local infection and vesical calculi formation, but also the continuous foul odour makes the sufferer a social outcast. Around the globe, the developing countries have an incidence of 1-2 VVF/1000 deliveries with 500,000 cases occurring annually. Although the exact incidence of the disorder in Pakistan is not known, 80-90% of the cases occur as obstetric complications. The evaluation of size, number and exact location of fistula is important before curative surgery is undertaken. Better pre-operative diagnosis allows better surgical planning.

The diagnostic array comprises the dye test; the conventional radiographic techniques such as intravenous pyelography, cystography, hysterography, apart from the non-radiographic techniques of colposcopy, cystoscopy and examination under anaesthesia. However IVP and cystogram may not show the genital abnormalities. The advanced but more invasive and/or costlier techniques include combined vaginoscopy-cystoscopy, subtraction MR fistulography, and endocavitary ultrasound through trans-rectal or more properly through trans-vaginal route with or without Doppler or contrast agents.

The objective of this study was to determine the sensitivity of gray-scale trans-vaginal ultrasound in the evaluation of VVF in our settings.

Patients and Methods

The study was undertaken from October 2003 to May 2004 at the Department of Radiology, DUHS/CHK. All the married females complaining of urinary incontinence suspected or diagnosed to be due to vesico-vaginal fistula originally referred for IVP or cystogram were excluded. Cases of stress incontinence, coexistent recto-vaginal fistula and those not consenting for TVUS were excluded. After informed verbal consent, the selected patients were subjected to complimentary trans-vaginal ultrasound, by either of the authors on Toshiba Just Vision-400 with aseptic precautions. Findings were compared against cystogram, cystoscopy and surgical findings. The last awes kept as gold standard against which the sensitivity of each technique was determined. Demographic variables, parity, duration of symptoms and the cause of fistula were noted. The sonographic findings recorded were the site, size, number and appearance of fistula tract.

Results

The mean age of patients was 22 years (range 18-35 years). The mean duration of symptoms till being examined was 2.4 years. The mean parity was 1.2 years, majority (86.6%, n=13/15) were primipara. The cause was unattended prolonged labour (more than one day) in 93% (14/15 cases) and only one case (7%) was due to Caesarian section. The fistula tract was spontaneously visualized as a jet of echoes coursing intermitently from the bladder to vagina and settling in the vault as an anechoic collection of fluid that trickled out of vagina (Figure 1). Single tract was seen in 12 patients and multiple tracts were visible in 3 patients. The tract led from the bladder base to vaginal vault in 13 cases and from trigone to vagina in 3 cases. The mean...
length of tract was 1.4 cms (range 1.2-2.5) and mean width was 7mm (range 5-12 mm).

The fistula was identified on trans-vaginal ultrasound in all 15 cases (100% sensitivity), in 9 cases on IVP/cystogram (sensitivity 60%), and in 14 cases on cystoscopy (93% sensitivity).

Discussion

The results to this study singularly point to the accuracy of trans-vaginal ultrasound in experienced hands. Besides there is redemonstration of the demographic features so well known to the care providers of this pathetic group of sufferers. The majority of ladies in this series were young primiparas. The saga described in 1990 by Du Sablon, as afflicting young primiparous women continues in 2004 with Wall et al. picturing the young women, married early at an average age of 15.5 years, being uneducated and poor as comprising the majority.

Regarding the imaging of this pathology, it is now believed that ultrasound examination can clearly visualize the fistula pretty well. Although Czaplicki et al. have categorically stated that demonstration of VVF by sonographic examination obviates the need for hysterography, Adetiloye et al. have identified that that size and multiplicity of these fistulae may render the sonographic examination alone to be poor against examination under anaesthesia. Difficulties may also occur if there is a small fistula in the presence of a vaginal anomaly or deformity.

As in the present series, where the sensitivity of cystogram was only 60%, Adetiloye et al. have demonstrated that local genital abnormalities may be missed by an IVP. This proves the point that the cystogram, usually done as part of the IVP, is inferior to the TVUS when an experienced operator performs the latter. Moreover, whether done alone or as part of the IVP, cystogram carries the risk of contrast medium reactions and radiation exposure. Cystoscopy is much more invasive and MR-fistulography is neither widely available nor affordable to this group of patients who could not afford to have proper antenatal and peripartum care. IVP may be reserved for evaluation of the upper urinary tract involvement only prior to surgery.

The main findings in this series were demonstration of the exact site, size and course of fistula. These were readily visible in this small cohort of patients and the same results have been observed by Volkmer et al. on Doppler ultrasound and described by Adetiloye as the ‘flat-tire sign’. The examination was well tolerated by all the patients as seen in the series by Volkmer et al. This also correlates well with other series describing the trans-vaginal ultrasound as a well-tolerated procedure.

The limitations of this study include a small number of patients and the use of gray-scale ultrasound only. The first was basically due to exclusion criteria and the second was due to non-availability of Doppler ultrasound in the concerned department on regular basis. Also the technique of ultrasonography has an important bearing on the accuracy of interpretation and results. It is therefore an operator-dependent procedure and the less experienced may not find it an easy alternative to the conventional cystogram.

Trans-vaginal scanning correlates well with surgical findings. It is well tolerated, less hazardous and more informative than other conventional investigations and should therefore be used more often than present.

References


