

Diagnostic Accuracy of Ultrasound in Detection of Bladder Masses Keeping Cystoscopy as Gold Standard.

Introduction:

Bladder cancer is one of the most common urological malignancies worldwide, with painless hematuria

being the predominant presenting symptom. Cystoscopy is considered the gold standard for diagnosis,

but it is invasive, costly, and not always feasible in resource-limited settings. Ultrasound, being

noninvasive and widely available, is frequently used as an initial imaging modality.

Objective:

To evaluate the diagnostic accuracy of ultrasound in detecting urinary bladder masses, using cystoscopy

and histopathology as the reference standards.

Methods:

This prospective crosssectional diagnostic accuracy study was conducted in the Departments of

Radiology and Urology, Rehman Medical Institute, Peshawar, from September 2024 to March 2025.

Ninety-three patients aged ≥ 18 years presenting with painless hematuria or dysuria were included. All

underwent gray-scale ultrasound of the kidneys, ureters, and bladder, followed by cystoscopy and,

where applicable, transurethral resection of bladder tumor (TURBT) with histopathology. Diagnostic

accuracy parameters of ultrasound were calculated against cystoscopy/histopathology.

Results:

The mean age of participants was 69.6 years, with 81 males (87.1%) and 12 females (12.9%). Ultrasound

detected bladder masses in 29 patients. Cystoscopy confirmed masses in 32 cases. Ultrasound

demonstrated a sensitivity of 87.9%, specificity of 98.3%, positive predictive value of 96.7%, and

negative predictive value of 93.7%.

Conclusion:

Ultrasound is a valuable, noninvasive, and cost-effective modality for the initial evaluation of patients

with suspected urinary bladder masses. Although it cannot replace cystoscopy, its high sensitivity and

specificity support its role as a first-line investigation, particularly in resource-limited settings. Keywords:

Keywords: Bladder mass, Ultrasound, Cystoscopy, Diagnostic accuracy, Hematuria