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Role of DWI In Benign and Malignant Pelvic Pathologies in Female Keeping Histopathology as Gold Standard

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ABSTRACT

Objectives: evaluate the role of diffusion-weighted imaging (DWI) in benign and malignant pelvic pathologies in females keeping histopathology as the gold standard. **Study Settings:** Fauji Foundation Hospital, Rawalpindi, Punjab, Pakistan. **Duration of Study:** December 6, 2024 to June 6, 2025. **Data Collection:** A total of 448 female patients aged 18–65 years presenting for pelvic MRI were enrolled via non-probability consecutive sampling. After clinical evaluation, DWI was performed and results were compared to histopathology. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and diagnostic accuracy were calculated. Subgroup analysis was done based on age, BMI, menopausal and marital status, and mass origin. **Results:** DWI demonstrated high diagnostic performance with a sensitivity of 98.23%, specificity of 88.36%, PPV of 74.00%, NPV of 99.33%, and overall accuracy of 90.85%. Subgroup analyses confirmed consistent performance across demographic and clinical variables, with sensitivity and NPV exceeding 97% and 98% respectively in all groups. **Conclusion:** DWI is a highly sensitive and non-invasive imaging modality that reliably differentiates between benign and malignant pelvic masses in women.

INTRODUCTION

Pelvic mass lesions are widely observed in gynecological practice among women of diverse ages.[1] About 20% of women develop a pelvic mass at during their life time.[2-3] Pelvic masses in female cases have a extensive list of potential conditions,[4] including benign and malignant neoplasms and nonneoplastic diseases. Various pelvic masses are a complex diagnostic case, given their proximity to a different pelvic tissue and the overlap of distinct imaging markers among different diagnoses.[5] With the development in medical imaging, magnetic resonance imaging (MRI) has been used increasingly utilized in diagnosing of diseases. But sensitivity of MRI remains low inn comparison in the identification of benign and malignant tumours.[6]

Diffusion-weighted magnetic resonance imaging (DWI) reflects the characteristics of molecular diffusion.[7] With the development of magnetic resonance hardware and software, the clinical utility of DWI has broadened. DWI is a noninvasive technique, based on the measurement of water diffusion in tissues which provides information about tissue microstructures, plays a key role in tumor grading prior to surgery.[8] Because DWI is very sensitive to water molecular movement, it is not subject to respiratory movement, heartbeat and pulse, peristalsis and other effects, and has been successfully used in abdominal and pelvic imaging examinations, strengthening the utility and impact of MRI in the evaluation of female pelvic lesions.[9] Duarte et al. highlighted the most significant physiological and benign pathological conditions of the female pelvic regions that may exhibit restricted diffusion on DWI.[10]

A study on comparison of role of MRI and diffusion MRI in evaluation of pelvic masses of gynecological origin (uterine and ovarian) reported the prevalence of pelvic masses as 31.8% and the sensitivity, specificity, PPV, NPV and accuracy of DWI as 96.5 %, 89.1%, 94.3%,93.2%, and 93.1% taking histopathology as gold standard.[11]

METHODOLOGY

This cross-sectional validation study was conducted at the Fauji Foundation Hospital, Rawalpindi, Punjab, Pakistan, following approval from the institutional ethics committee and the College of Physicians and Surgeons Pakistan (CPSP). A total of 448 female patients aged between 18 to 65 years, presenting for MRI evaluation of pelvic pathology, were included in the study using non-probability consecutive sampling. Inclusion criteria required all participants to be female and within the specified age range, while patients with chronic systemic diseases such as complicated hypertension or diabetes, those with abnormal liver, kidney, or cardiac function, tumors in other organs, or a family history of cancer were excluded to avoid potential confounders.

All eligible participants provided informed written consent and were briefed on the purpose of the study and assured of confidentiality. Each patient underwent a detailed history, including age, parity, menopausal status, past gynecological history, and family history of malignancy. Routine laboratory investigations such as complete blood count, random blood sugar, liver function tests, and renal function tests were performed for all patients, followed by a transabdominal ultrasound examination to initially localize the pelvic mass.

Diffusion-weighted imaging (DWI) was conducted by a consultant radiologist with at least three years of post-fellowship experience. DWI scans were performed following standard protocols using high b values (>1000 sec/mm^2), and apparent diffusion coefficient (ADC) maps were generated. Masses were labeled as benign on DWI if they showed no significant signal on high b values and had corresponding normal ADC values. Conversely, masses were classified as malignant if they exhibited high signal intensity on values along with corresponding signal attenuation on ADC maps.

Following imaging, all patients underwent histopathological evaluation of their pelvic masses, considered the gold standard for diagnosis. Biopsy specimens were examined for cellular morphology and tissue invasion patterns, with benign lesions identified by uniform oval nuclei and characteristic epithelial patterns, while malignant lesions exhibited stromal invasion, irregular nests of cells, and features such as squamous or mucinous differentiation.

Data from both DWI and histopathology were recorded and compared to evaluate the diagnostic accuracy of DWI in differentiating benign from malignant pelvic pathologies. All data were entered and analyzed using SPSS version 25. Quantitative variables such as age, weight, height, BMI, and duration of disease were analyzed using mean and standard deviation. Categorical variables, including marital status, menopause status, DWI findings, and histopathological diagnosis, were presented as frequencies and percentages.

A 2×2 contingency table was constructed to calculate sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and overall diagnostic accuracy of DWI using histopathology as the reference standard. Post-stratification analysis was performed for potential effect modifiers such as age, origin of mass, marital status, and menopausal status to assess their influence on diagnostic accuracy outcomes.

RESULTS

Table 1 presents the demographic and clinical characteristics of 448 female patients who presented with pelvic pathologies. The age distribution shows that 43.8% of the patients were between 18 to 40 years old, while a majority of 56.3% were aged 41 to 65 years. The mean age of the study population was 42.02 years with a standard deviation of ±13.72 years. Regarding body mass index (BMI), 49.1% had a BMI between 18 and 30, and 50.9% had a BMI above 30, with an overall mean BMI of 25.48 ± 4.35. The majority of patients (72.8%) reported a disease duration of two months, while 27.2% had symptoms for one month. The average duration of disease was 7.89 ± 2.35 months. In terms of marital status, 85.9% of participants were married. Menopause status indicated that 61.4% were pre-menopausal and 38.6% were post-menopausal. When examining the origin of the pelvic masses, 57.8% were uterine in origin, and 42.2% were ovarian.

Table 2 illustrates the diagnostic performance of diffusion-weighted imaging (DWI) in differentiating benign from malignant pelvic pathologies, using histopathology as the gold standard. The contingency table shows that 111 cases were true positives (24.8%), where DWI correctly identified malignancy. There were 39 false positives (8.7%) where DWI incorrectly indicated malignancy in benign cases. On the other hand, only 2 false negatives (0.4%) occurred, and DWI correctly identified 296 benign cases (true negatives, 66.1%). Overall, 150 patients were labeled malignant by DWI, while 298 were considered benign. Histopathological findings confirmed 113 malignant and 335 benign cases out of the total 448. The diagnostic metrics derived from these results highlight the strength of DWI in clinical evaluation. Sensitivity was calculated at 98.23%, indicating a high ability to detect malignant cases. Specificity stood at 88.36%, reflecting the test's capability to rule out benign conditions. The positive predictive value (PPV) was 74.00%, and the negative predictive value (NPV) was notably high at 99.33%. The overall diagnostic accuracy of DWI in identifying pelvic malignancies in this study population was 90.85%.

In Table 3, we evaluated age Group 18–40 Years for diffusion-weighted imaging (DWI) demonstrated excellent diagnostic performance. Among 196 patients, 42 (21.4%) were histopathologically confirmed as malignant, and all of these were correctly identified by DWI (true positives), resulting in a sensitivity of 100%. Seventeen cases (8.7%) were false positives, meaning DWI incorrectly classified benign cases as malignant. The remaining 137 cases (69.9%) were true negatives, with no false negatives recorded. This yielded a specificity of 89.0%, a positive predictive value (PPV) of 71.2%, a negative predictive value (NPV) of 100%, and an overall diagnostic accuracy of 91.3%. Regarding age Group 41–65 Years: among older patients (n = 252), there were 71 (28.2%) malignant and 181 (71.8%) benign cases. DWI correctly identified 69 malignant cases (27.4%), with two false negatives (0.8%). It misclassified 22 benign cases as malignant (8.7%), while accurately identifying 159 benign cases (63.1%) as true negatives. These results translated to a sensitivity of 97.2%, specificity of 87.9%, PPV of 75.8%, NPV of 98.8%, and an overall accuracy of 90.5%, indicating strong performance in older age groups as well.

In Table 4, we evaluated BMI Group ≤ 30: (n = 220), DWI identified 56 (25.5%) true positives and 23 (10.5%) false positives. One false negative (0.4%) was recorded, while 140 (63.6%) were true negatives. Sensitivity was 98.3%, specificity 85.8%, PPV 70.9%, NPV 99.3%, and accuracy 89.1%. These figures indicate high sensitivity and NPV in this BMI group, though the specificity and PPV were slightly lower. For patients with BMI greater than 30 (n = 228), DWI detected 55 (24.1%) true positives and 16 (7%) false positives. One malignant case (0.5%) was missed, while 156 benign cases (68.4%) were correctly identified. Sensitivity was 98.2%, specificity 90.7%, PPV 77.5%, NPV 99.4%, and diagnostic accuracy stood at 92.5%. Notably, this subgroup had the highest specificity and overall accuracy among the BMI-based groups.

In Table 5: among married patients (n = 385), DWI detected 95 true positives (24.7%) and 33 false positives (8.6%). Only two false negatives (0.5%) occurred, while 255 (66.2%) were true negatives. The performance metrics were impressive: sensitivity 97.9%, specificity 88.5%, PPV 74.2%, NPV 99.2%, and accuracy 90.9%. This shows robust performance in married women, with excellent NPV and sensitivity. In the unmarried subgroup (n = 63), DWI demonstrated perfect sensitivity and NPV. It correctly identified all 16 malignant cases (24.4%) and had no false negatives. Six benign cases (9.5%) were wrongly identified as malignant, while 41 (65.1%) were correctly classified. The resulting sensitivity was 100%, specificity 87.2%, PPV 72.7%, NPV 100%, and accuracy 90.5%. Despite the small sample size, the performance was strong, especially in ruling out malignancy.

In Table 6: Among pre-menopausal women (n = 275), DWI correctly detected 65 malignant cases (23.6%) with one false negative (0.4%). There were 24 false positives (8.7%) and 185 true negatives (67.3%). Sensitivity and NPV were very high at 98.5% and 99.5%, respectively. Specificity was 88.5%, PPV 73.0%, and overall accuracy 90.9%. This indicates that DWI is a reliable diagnostic tool in pre-menopausal women, whereas in post-menopausal women: (n = 173), DWI correctly identified 46 malignant cases (26.6%) and misclassified one (0.6%) as benign. Fifteen benign cases (8.7%) were misdiagnosed as malignant, while 111 (64.2%) were accurately identified. The test showed a sensitivity of 97.9%, specificity of 88.1%, PPV of 75.4%, NPV of 99.1%, and accuracy of 90.8%, reflecting consistently high diagnostic performance even after menopause.

In Table 7: Regarding uterine masses: a total of 259 patients were evaluated. Out of these, 60 (23.2%) were histopathologically confirmed as malignant, and all were accurately identified by diffusion-weighted imaging (DWI), yielding a sensitivity of 100%. There were no false negatives. However, 24 patients (9.3%) were false positives—benign cases misclassified as malignant—while 175 cases (67.6%) were correctly diagnosed as benign (true negatives). The specificity was calculated at 87.9%, the positive predictive value (PPV) at 71.4%, and the negative predictive value (NPV) at 100%. The overall diagnostic accuracy of DWI for uterine-origin masses was 90.7%, indicating strong reliability, especially in excluding malignancy. Whereas for ovarian masses (n = 179), DWI correctly identified 51 out of 53 malignant cases (27%), while two malignant cases (1.1%) were missed (false negatives). Fifteen benign cases (7.9%) were incorrectly diagnosed as malignant (false positives), and 121 (64.0%) were true negatives. These findings translated into a sensitivity of 96.2%, specificity of 89.0%, PPV of 77.3%, NPV of 98.4%, and an overall accuracy of 91.0%. While slightly lower in sensitivity than uterine-origin masses, DWI still demonstrated excellent performance in detecting and ruling out malignancy in ovarian masses.

Table 1

Demographic and clinical information in females presenting with pelvic pathologies(n=448)

Variable	Category	Frequency	Percent
Age	18-40	196	43.8%
	41-65	252	56.3%
Mean age		42.02±13.72	
BMI	18-30	220	49.1%
	>30	228	50.9%
Mean BMI		25.48±4.35	
Duration of Disease (Months)	1 Month	122	27.2%
	2 Months	326	72.8%
Mean duration of disease(months)		7.89±2.35	
Marital Status	Married	385	85.9%
	Unmarried	63	14.1%
Menopause Status	Pre-menopausal	275	61.4%
	Post-menopausal	173	38.6%
Origin of Mass	Uterine	259	57.8%
	Ovarian	189	42.2%

Table 2

Role of DWI in Benign and Malignant Pelvic Pathologies in Female keeping Histopathology as Gold Standard

DWI		Histopathology		Total
		Malignant	Benign	
	Malignant	True Positive (a) = 111 (24.8%)	False Positive (b) = 39 (8.7%)	150 (33.5%)
	Benign	False Negative (c) = 2 (0.4%)	True Negative (d) = 296 (66.1%)	298 (66.5%)
Total		113 (25.2%)	335 (74.8%)	448 (100.0%)

Sensitivity=98.23%, specificity=88.36%, PPV=74%, NPV=99.33% and overall diagnostic accuracy=90.85%

Table 3

Role of DWI in Benign and Malignant Pelvic Pathologies in Female keeping Histopathology as Gold Standard according to age

Age(years)	DWI		Histopathology	
			Malignant	Benign
18-40		Malignant	True Positive (a) = 42(21.4%)	False Positive (b) = 17 (8.7%)
		Benign	False Negative (c) = 0	True Negative (d) = 137(69.9%)
	Total		**42 (21.4%)**	**154 (78.6%)**
	Sensitivity = 100%, Specificity = 89.0%, PPV = 71.2%, NPV = 100% and Accuracy = 91.3%			
41-65	DWI		Histopathology	
			Malignant	Benign

		Malignant	True Positive (a) = 69(27.4%)	False Positive (b) = 22 (8.7%)
		Benign	False Negative (c) =2(0.8%)	True Negative (d) = 159(63.1%)
	Total		**71 (28.2%)**	**181 (71.8%)**
	Sensitivity = 97.2%, Specificity = 87.9%, PPV = 75.8%, NPV = 98.8% and Accuracy = 90.5%			

Table 4

Role of DWI in Benign and Malignant Pelvic Pathologies in Female keeping Histopathology as Gold Standard according to BMI

BMI		Histopathology		
	DWI		**Malignant**	**Benign**
18.30		Malignant	True Positive (a) = 56(25.5%)	False Positive (b) = 23(10.5%)
		Benign	False Negative (c) = 1(0.4%)	True Negative (d) = 140(63.6%)
	Total		**57 (25.9%)**	**163 (74.1%)**
	Sensitivity = 98.3%, Specificity = 85.8%, PPV = 70.9%, NPV = 99.3% and Accuracy = 89.1%			
		Histopathology		
	DWI		**Malignant**	**Benign**
>30		Malignant	True Positive (a) = 55(24.1%)	False Positive (b) = 16(7%)
		Benign	False Negative (c) =1(0.5%)	True Negative (d) = 156(68.4%)
	Total		**56 (24.6%)**	**172 (75.4%)**
	Sensitivity = 98.2%, Specificity = 90.7%, PPV = 77.5%, NPV = 99.4% and Accuracy = 92.5%			

Table 5

Role of DWI in Benign and Malignant Pelvic Pathologies in Female keeping Histopathology as Gold Standard according to marital status

Marital status		Histopathology		
	DWI		**Malignant**	**Benign**
Married		Malignant	True Positive (a) = 95(24.7%)	False Positive (b) = 33(8.6%)
		Benign	False Negative (c) = 2(0.5%)	True Negative (d) = 255(66.2%)
	Total		**97 (25.2%)**	**288 (74.8%)**
	Sensitivity = 97.9%, Specificity = 88.5%, PPV = 74.2%, NPV = 99.2% and Accuracy = 90.9%			
		Histopathology		
	DWI		**Malignant**	**Benign**
Unmarried		Malignant	True Positive (a) = 16(24.4%)	False Positive (b) = 6(9.5%)
		Benign	False Negative (c) =0(0.0%)	True Negative (d) = 41(65.1%)
	Total		**56 (24.6%)**	**172 (75.4%)**
	Sensitivity = 100%, Specificity = 87.2%, PPV = 72.7%, NPV = 100% and Accuracy = 90.5%			

Table 6

Role of DWI in Benign and Malignant Pelvic Pathologies in Female keeping Histopathology as Gold Standard according to menopausal status

Menopausal status		Histopathology		
	DWI		**Malignant**	**Benign**
Pre-menopausal		Malignant	True Positive (a) =65(23.6%)	False Positive (b) = 24(8.7%)
		Benign	False Negative (c) = 1(0.4%)	True Negative (d) = 185(67.3%)
	Total		66 (24.0%)	209 (76%)
	Sensitivity = 98.5%, Specificity = 88.5%, PPV = 73.0%, NPV = 99.5% and Accuracy = 90.9%			
		Histopathology		
	DWI		**Malignant**	**Benign**
Post-menopausal		Malignant	True Positive (a) =46(26.6%)	False Positive (b) = 15(8.7%)
		Benign	False Negative (c) =1(0.6%)	True Negative (d) = 111(64.2%)
	Total		47 (27.2%)	126(72.9%)
	Sensitivity = 97.9%, Specificity = 88.1%, PPV = 75.4%, NPV = 99.1% and Accuracy = 90.8%			

Table 7

Role of DWI in Benign and Malignant Pelvic Pathologies in Female keeping Histopathology as Gold Standard according to origin of mass

Origin of mass	DWI	Histopathology		
Uterine			**Malignant**	**Benign**
		Malignant	True Positive (a) =60(23.2%)	False Positive (b) = 24(9.3%)
		Benign	False Negative (c) = 0(0.0%)	True Negative (d) = 175(67.6%)
	Total		**60 (23.2%)**	**199 (76.9%)**
	Sensitivity = 100%, Specificity = 87.9%, PPV = 71.4%, NPV = 100% and Accuracy = 90.7%			
Ovarian	**DWI**	**Histopathology**		
			Malignant	**Benign**
		Malignant	True Positive (a) =51(27%)	False Positive (b) = 15(7.9%)
		Benign	False Negative (c) =2(1.1%)	True Negative (d) = 121(64.0%)
	Total		**53 (28.1%)**	**126(71.9%)**
	Sensitivity = 96.2%, Specificity = 89.0%, PPV = 77.3%, NPV = 98.4% and Accuracy = 91.0%			

DISCUSSION

The present study evaluated the diagnostic performance of diffusion-weighted imaging (DWI) in differentiating benign from malignant pelvic pathologies in women, with histopathology as the gold standard. Our findings demonstrate that DWI achieved a sensitivity of 98.23%, specificity of 88.36%, positive predictive value (PPV) of 74.00%, negative predictive value (NPV) of 99.33%, and overall diagnostic accuracy of 90.85%. These results affirm DWI's role as a highly sensitive and reliable tool for preoperative differentiation of pelvic masses.

Several prior studies have evaluated DWI in similar clinical contexts. Hazem Mahmoud Abdelmonem Hashish[12] reported a sensitivity of 94.7%, specificity of 88.5%, and accuracy of 92.5% using ADC values for gynecologic tumors, which closely mirrors our findings and further validates the robust diagnostic performance of DWI when interpreted in conjunction with quantitative measures. Similarly, Mahmoud Mohamed Abd Elhameed[13] found that DWI outperformed conventional MRI with a sensitivity of 93.6%, specificity of 90%, and PPV of 95% in characterizing female pelvic masses. These values support our result of high sensitivity and accuracy and confirm DWI's added diagnostic value.

Dawlat A. Abd El-Mageed,[14] in a prospective study on ovarian tumors, reported 100% sensitivity but a lower specificity of 78.6%, attributed to misleading signals in benign lesions such as teratomas and abscesses. Our study noted a similar trend, with false positives constituting 8.7% of cases, particularly in lesions with overlapping imaging features. This emphasizes the need for cautious interpretation, ideally supported by ADC quantification. Ahmed Elsammak[15] also reinforced the utility of ADC mapping, demonstrating that the integration of DWI with ADC values significantly enhances diagnostic accuracy in endometrial pathologies compared to conventional imaging alone. This underscores the importance of functional imaging in evaluating tissue microstructure, a principle reflected in our imaging protocol. From a broader imaging perspective, Essa Alhashlan[16] found that MRI surpassed CT in soft tissue characterization of pelvic masses, supporting the selection of MRI (with DWI sequences) as the imaging modality of choice in gynecologic evaluations. Our findings further highlight that adding DWI can substantially increase the specificity and diagnostic confidence of MRI alone.

Interestingly, Ismail Basaran[17] emphasized that even visual qualitative assessment on DWI significantly improves diagnostic differentiation between benign and malignant endometrial lesions, advocating for routine DWI integration in gynecologic MRI protocols. Our study used both qualitative and semi-quantitative DWI interpretation (based on high b-value signal and ADC changes), aligning with this recommendation. Yan Zhuang[18] contributed valuable insight into ovarian tumor characterization, reporting that malignant tumors had significantly lower ADC values and higher exponential ADC (eADC) compared to benign ones ($p < 0.001$). These findings support the DWI signal patterns observed in our ovarian subgroup, where the diagnostic accuracy reached 91.0%, sensitivity 96.2%, and specificity 89.0%.

Stephanie Nougaret[19] and Shigenobu Motoshima,[20] in their respective reviews, both emphasized DWI's importance in gynecologic oncology, especially for staging, treatment response monitoring, and identifying tumor recurrence. Our study supports this broader clinical applicability, particularly given the high NPV (99.33%), which makes DWI a powerful tool to confidently exclude malignancy and avoid unnecessary interventions. Pooja et al[21] who compared MRI with histopathological examination (HPE) in adnexal masses, reported that MRI identified 26% malignant, 47% benign, and 27% non-neoplastic lesions with high correlation to HPE Our study also reflected a benign predominance (74.8%) and confirmed that DWI can accurately categorize such masses when interpreted with histologic confirmation. Pruthvi Malikireddy[22] and Joseph H. Yacoub[23] both discussed the importance of combining anatomical and pathological correlations in pelvic mass imaging, noting that DWI plays a vital role in narrowing differential diagnoses when standard imaging is inconclusive. This was reflected in our study's ability to reduce diagnostic ambiguity, particularly in complex or cystic lesions. Hassan Douis,[24] though focusing on skeletal pelvic lesions, provided an important perspective: while DWI had low sensitivity, it offered relatively high specificity, making it a useful adjunct in lesion characterization. This is consistent with our observation that DWI had a specificity of 88.36%, performing particularly well in ruling out benign lesions.

Lastly, Shenaz G. A. Saifi,[25] who evaluated sonography in pelvic masses, reported a sensitivity of 87.5%, specificity of 70%, PPV of 92.1%, and NPV of 58.3%. While ultrasound remains a valuable first-line modality, its relatively low NPV highlights the need for more accurate follow-up imaging like DWI, especially when malignancy is suspected. Our subgroup analyses (age, BMI, marital and menopausal status, and mass origin) showed that DWI maintained consistently high diagnostic metrics across all categories, with sensitivity remaining above 97% and overall accuracy above 90%. This suggests that DWI is a robust imaging modality, unaffected by demographic or physiological variations.

In summary, our findings, together with existing literature, strongly support the use of DWI as an effective and reliable imaging modality for the assessment of female pelvic pathologies. However, its integration with conventional MRI sequences and ADC quantification remains essential to minimize false positives and improve overall specificity. Future research may benefit from larger multicenter cohorts and comparative studies involving AI-assisted DWI interpretation to further enhance diagnostic precision.

CONCLUSION

Our study demonstrates that diffusion-weighted imaging (DWI), when interpreted alongside apparent diffusion coefficient (ADC) mapping, is a highly effective, non-invasive tool for differentiating benign from malignant pelvic pathologies in women. With a sensitivity of 98.23%, specificity of 88.36%, and an overall diagnostic accuracy of 90.85%, DWI proved reliable across all age groups, BMI categories, menopausal statuses, and mass origins. These findings reinforce DWI's role as a valuable adjunct to conventional MRI, enabling early and accurate diagnosis while minimizing the need for invasive procedures. Routine incorporation of DWI in pelvic imaging protocols is strongly recommended to enhance diagnostic confidence and improve clinical decision-making in gynecologic practice.

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