International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Exploring the Role of MRI in Cervical Carcinoma Staging: A Case Series Approach

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Abstract: ***Cervical carcinoma is a significant cause of morbidity and mortality among women globally, with its diagnosis and management relying heavily on imaging techniques. Radiological evaluation plays a crucial role in the staging, treatment planning, and monitoring of cervical cancer. Magnetic resonance imaging (MRI) is considered the gold standard for local staging, providing detailed soft tissue contrast that allows for accurate assessment of tumor size, local invasion, and lymph node involvement. MRI is highly sensitive for detecting cervical tumor invasion into adjacent structures, hereby we discuss various cases of cervical carcinoma which came in our department.***

Keywords: cervical carcinoma, MRI, tumor staging, radiological evaluation and lymph node involvement

1. Introduction

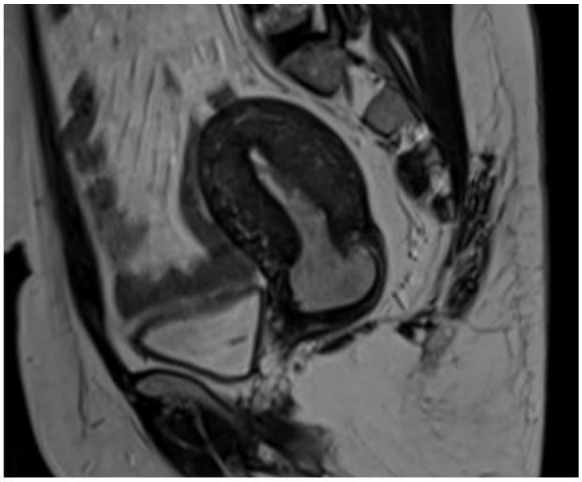
Cervical carcinoma, primarily caused by persistent infection with high - risk strains of human papillomavirus (HPV), is one of the most common cancers affecting women worldwide. Early detection through routine screening, such as Pap smears and HPV testing, plays a pivotal role in reducing mortality. However, for patients with invasive cervical cancer, accurate staging and treatment planning are critical to improving outcomes. Radiological imaging is integral in this process, providing vital information regarding tumor extent, regional lymph node involvement, and distant metastasis.

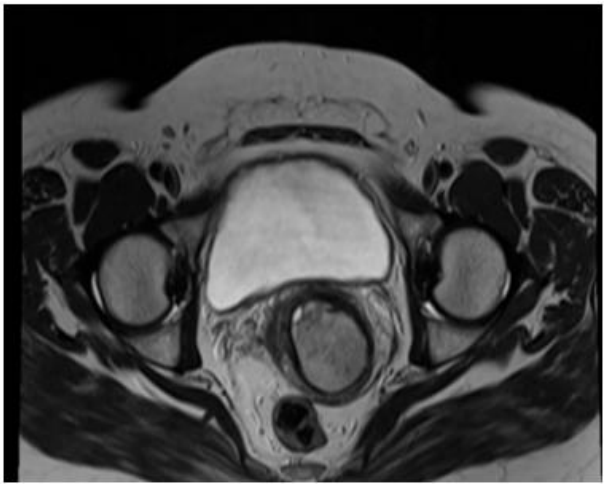
Imaging modalities, such as magnetic resonance imaging (MRI), computed tomography (CT), and positron emission tomography (PET), are essential in assessing cervical carcinoma at various stages of the disease. MRI is the preferred technique for local staging, offering superior soft tissue contrast and the ability to evaluate tumor invasion into surrounding structures. CT and PET, often used in conjunction, are key for detecting distant metastasis and assessing lymph node status, which is crucial for determining prognosis and therapeutic approach. This introduction highlights the importance of radiological evaluation in the clinical management of cervical carcinoma. Imaging helps guide treatment decisions, predict patient outcomes, and monitor for recurrence.

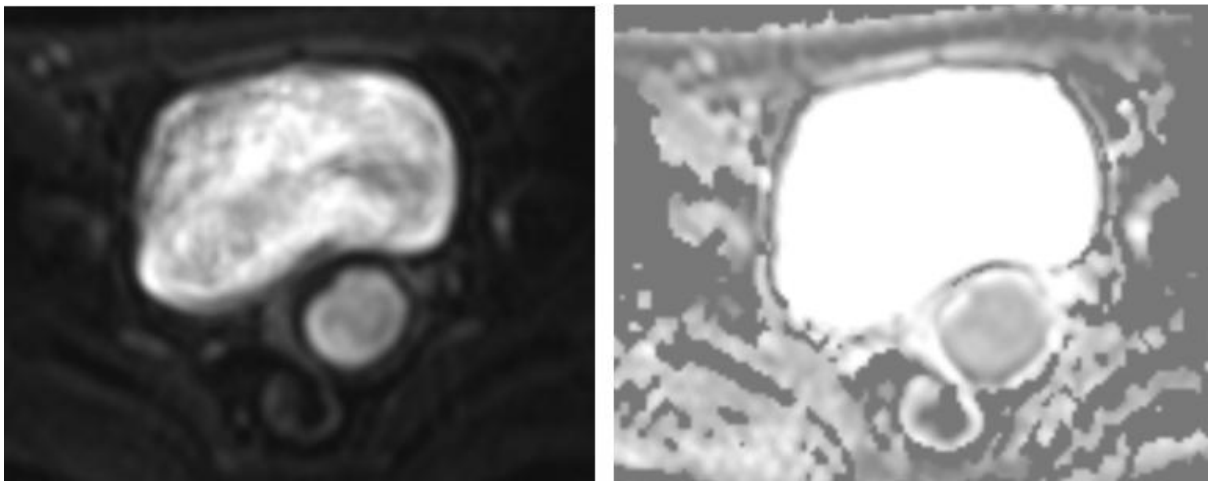
2. Discussion

Case 1

A 44- year - old female presents with complaints of abnormal vaginal bleeding and irregular spotting between periods, persisting for the past three months. She also reports pelvic pain and mild lower back discomfort. The patient denies any significant changes in bowel or urinary habits, as well as weight loss or fatigue. The patient has been referred for further imaging and biopsy to confirm the diagnosis and to assess the extent of the disease. Our study showed stage – **I B2 disease.**



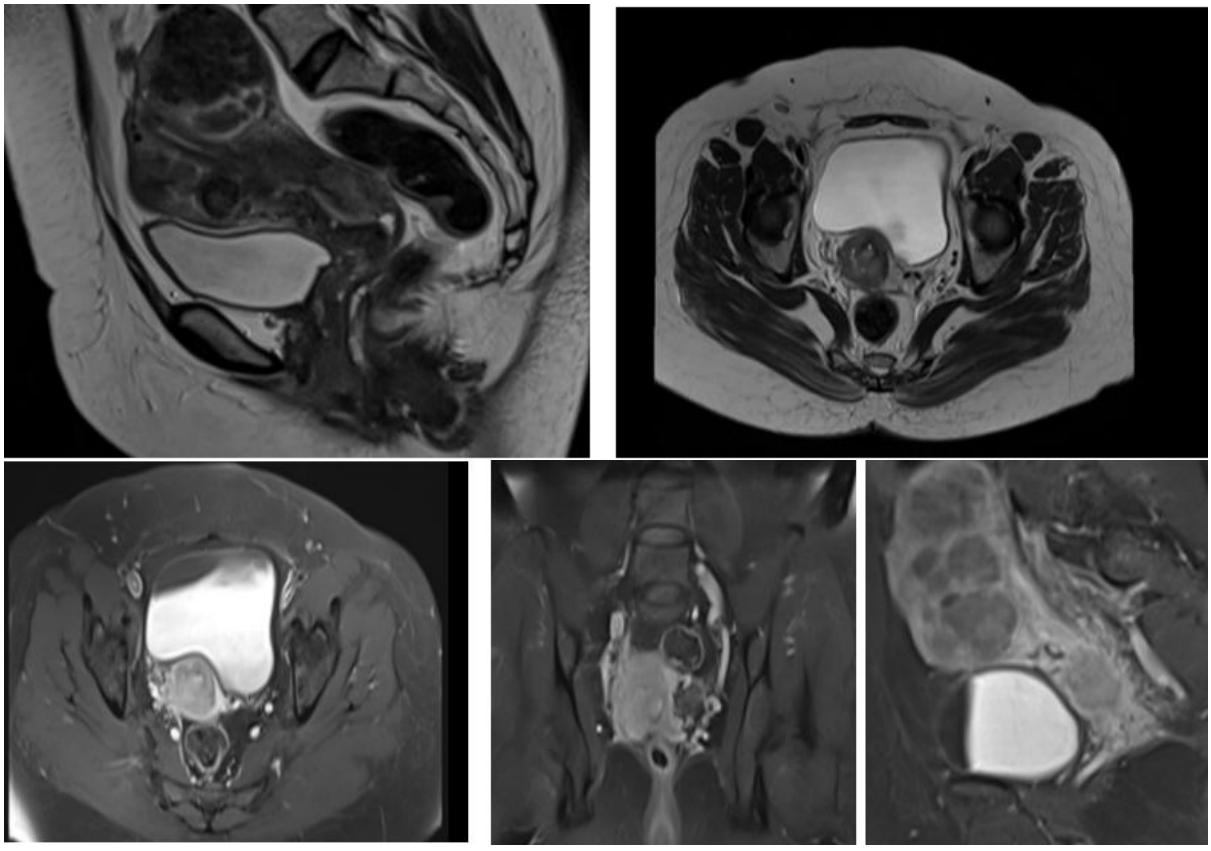




Case 1: T2 axial and sagittal images shows a pedunculated mass distending to the endocervical canal with involvement of cervical stroma. Corresponding DWI and ADC sequences shows areas of restricted diffusion

Case 2

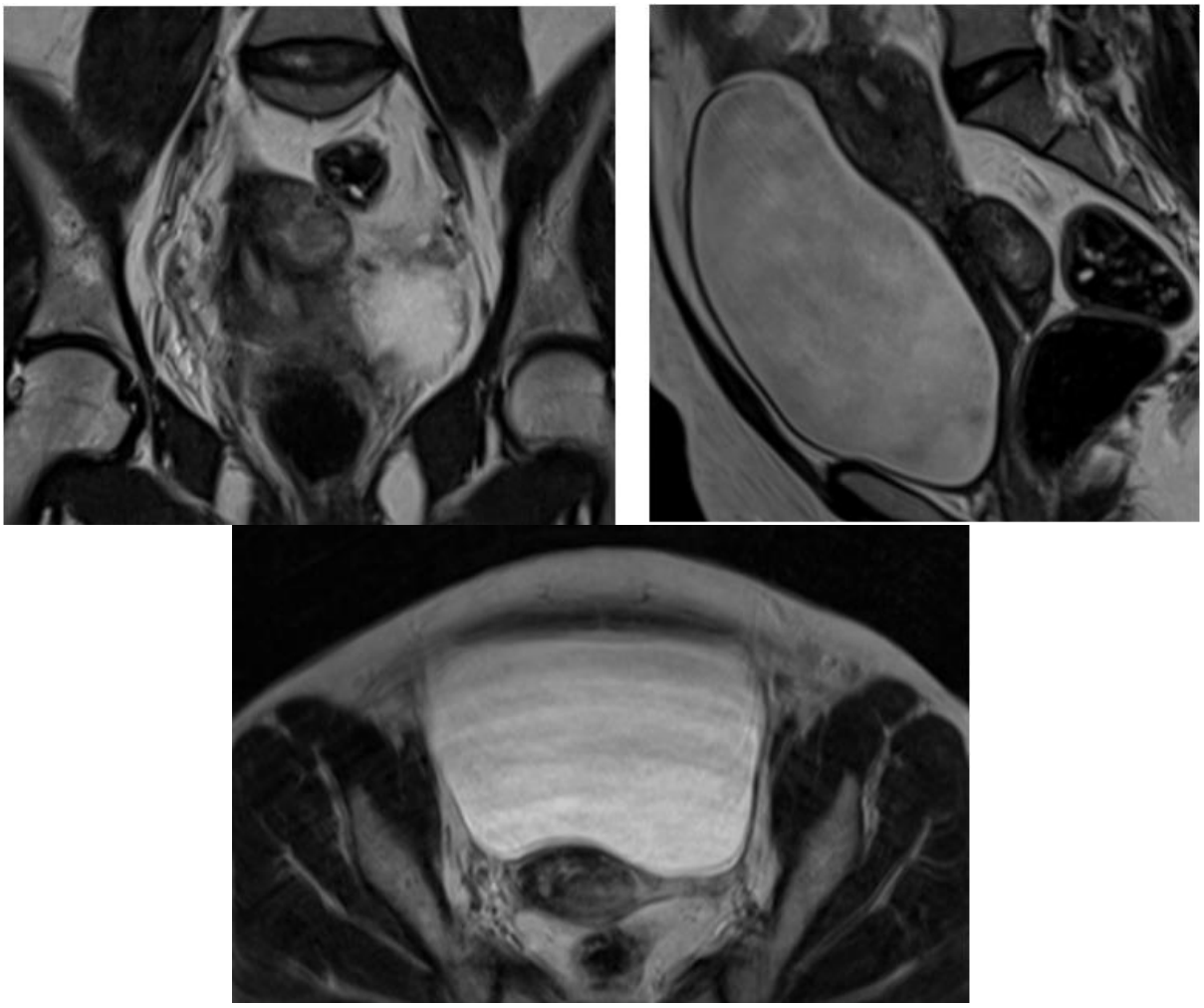
50 Years old female came with complaints of bleeding per vagina for the past four months the patient is referred for MRI for parametrial invasion and staging. Our study showed **stage IIB**



Case 2: There is asymmetrical circumferential enhancing wall thickening noted involving the posterior lip of cervix which appears isointense on T1 and isointense to hyperintense on T2 sequence. Loss of cervical stromal hypointensity. Posterolaterally the lesion is seen invading the right parametrium. Inferiorly the lesion is seen extending upto the external OS with no evident involvement of vaginal wall. Multiple intramural fibroids are detected incidentally.

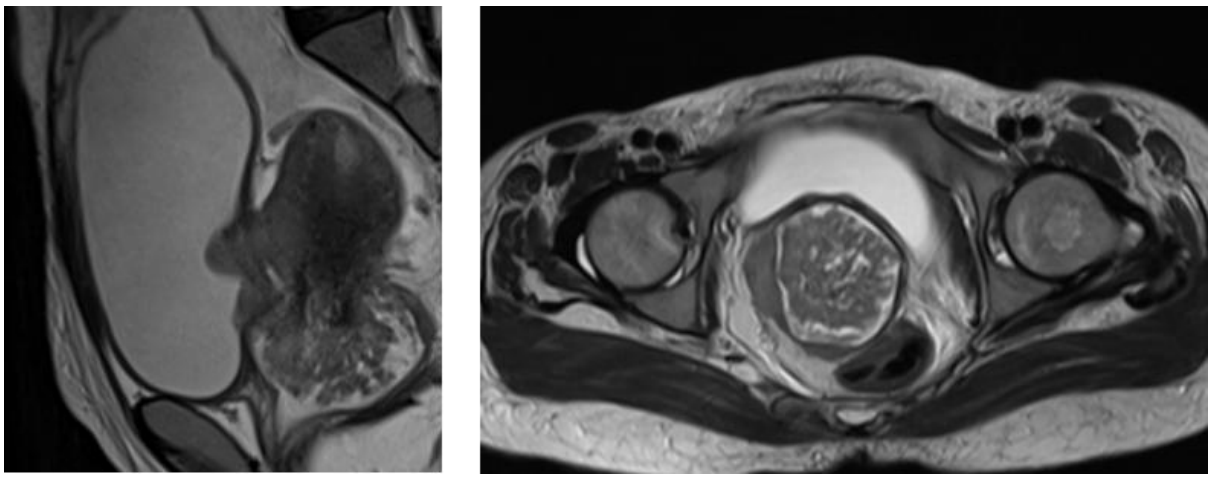
Case 3

A 38 year old female came with complaints of low back pain and referred for ultrasound, ultrasound shows echogenic mass in the cervix, correlative MRI showed heterogenous mass in the cervix in the posterior lip – **stage II B**

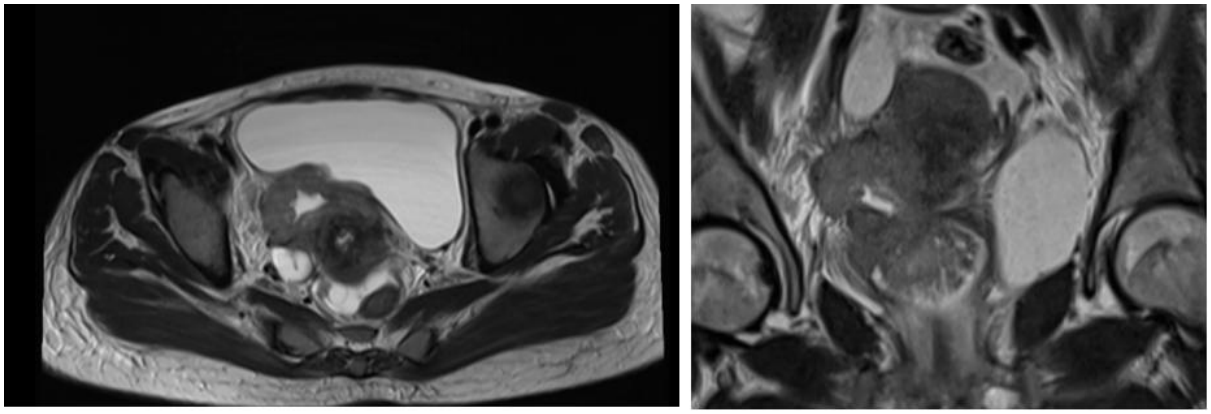


Case 3: Heterogenous mass in the cervix in the posterior lip with parametrial invasion – stage IIB

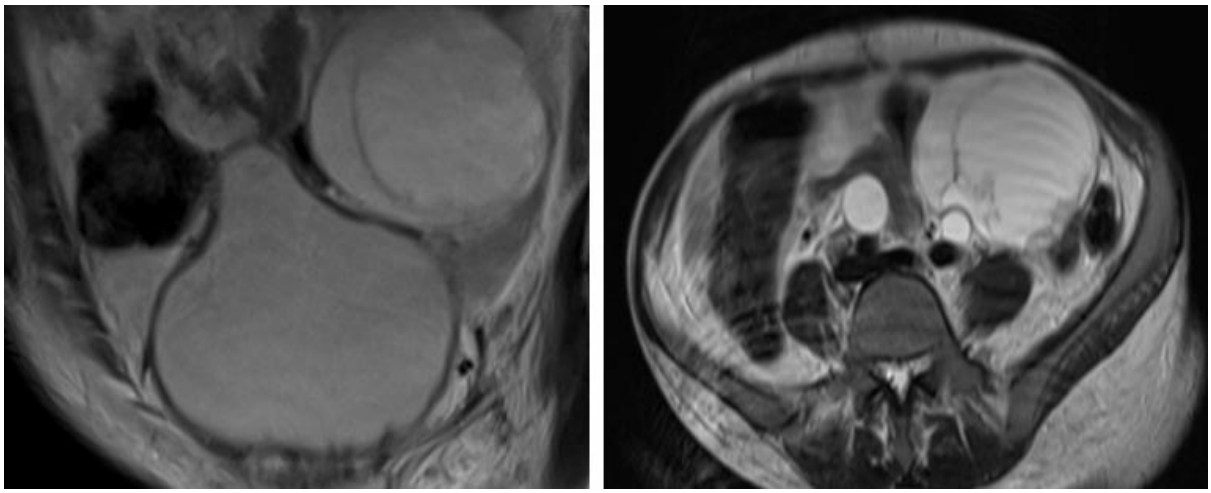
Case 4:
33 - year - old female came with complaints of white discharge for the past two years. Biopsy was done for the patient suggesting malignancy - **Stage: IV B**



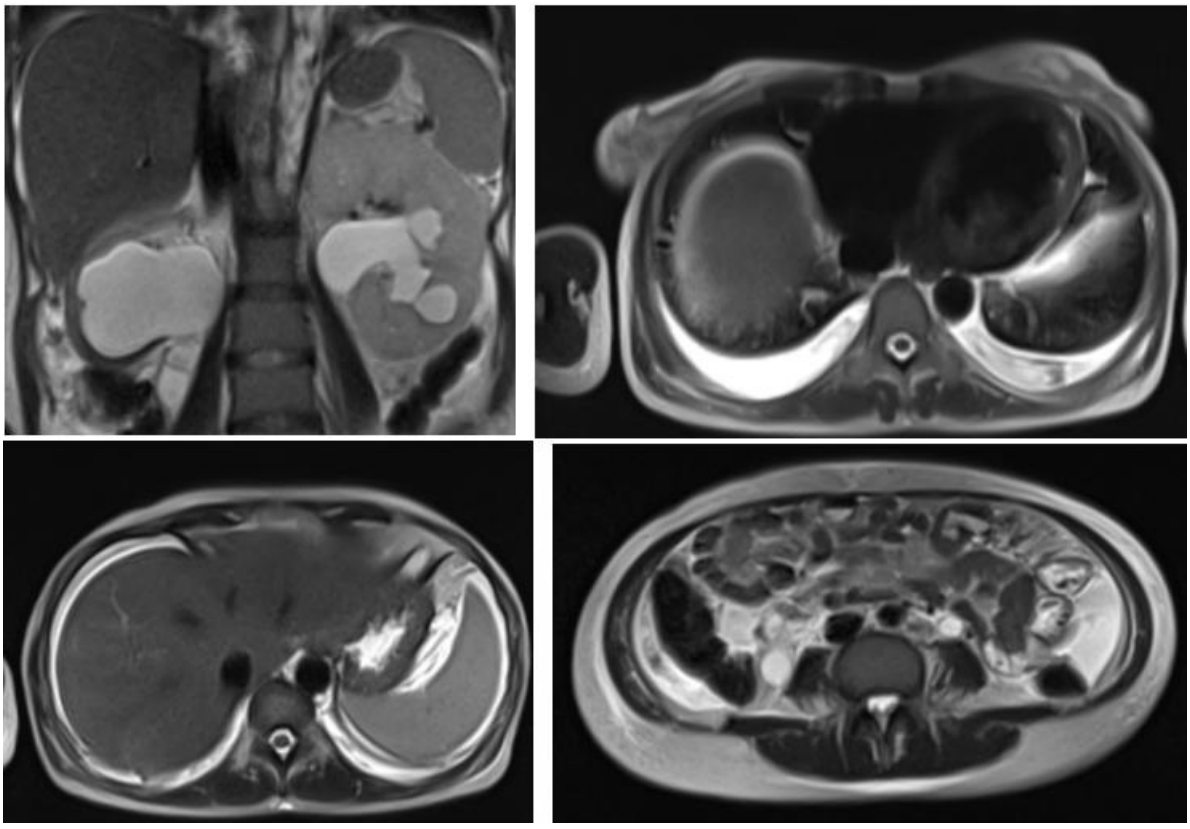
Circumferential thickening noted involving the cervix and endocervical canal which is seen invading the posterior wall of the urinary bladder



T2 axial and coronal images show the cervical mass seen compressing the ureter causing dilatation



T2 coronal and axial images shows well defined round complex cystic lesion with peripheral solid components noted arising from left ovary. The lesion seen compressing the left ureter causing dilatation - likely suggestive of ovarian metastasis from carcinoma cervix



On abdominal screening shows grade IV hydronephrosis on both sides with evidence of bilateral pleural effusion on both sides and ascites

3. Results

CASES	STAGING
1	IB2
2	IIB
3	IIB
4	IVB

4. Conclusion

Cervical carcinoma MRI staging is a critical process in assessing the extent of the cancer and determining the most appropriate treatment approach. The MRI staging conclusion usually includes details such as tumor size, spread to nearby tissues, involvement of lymph nodes, and any distant metastasis.

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