

# Cervical Carcinoma: Staging & Follow-Up

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Cervical cancer is the second most common cancer in women worldwide, predominant in developing countries including Central and South America, part of Africa and South Central Asia. The peak incidence is between 30 and 40 years. Cervical carcinoma is staged according to the International Federation of Gynecology and Obstetrics (FIGO) staging system. Recent revision of FIGO staging in cervical cancer encourages the use of imaging techniques if available to assess the important prognostic factors. In new FIGO staging there are three major changes that have important implications for MR imaging:

1. The use of diagnostic imaging techniques to assess the size of the primary tumor is now encouraged.
2. Stage IIA (tumors without parametrial invasion that involve less than the upper 2/3rds of vagina) has been subdivided into stage IIA1 ( $\leq 4$ cm) and stage IIA2 ( $\geq 4$ cm). This subdivision reflects recent prognostic data
3. Examination under anesthesia including a cystoscopy and proctoscopy is optional and no longer mandatory

The most important issue in staging of cervical cancer is to distinguish early disease (stages IIA1 and below) that can be treated with surgery from advanced disease (stage IIB or greater) that must be treated with radiation alone or combined with chemotherapy. The exception is stage IB2 in which the lesion is over 4cm in diameter, and is treated as for advanced disease. MRI is the best single imaging investigation that can accurately determine tumor location (exophytic or endocervical), tumor size, depth of stromal invasion and extension into the lower uterine segment. MRI is very accurate for evaluation of tumor size, usually within 0.5 cm of the surgical size in 70-90% of cases. This is particularly important in young women with small volume invasive cervical cancer who wish to preserve fertility, in whom a more conservative surgical procedure such as radical trachelectomy and lymphadenectomy can be performed. MRI is the best method for determining eligibility in terms of tumor size ( $< 2$ cm), cervical length ( $> 2.5$ cm) and distance of tumor from the internal cervical os ( $> 1$ cm).

Clinical assessment of parametrial and pelvic side wall invasion has a reported accuracy of only 29-53%. While an experienced clinician can usually detect gross parametrial invasion, early invasion usually goes undetected. MRI has a high accuracy of 88-97%, with specificity of 93%, for detecting parametrial invasion. The high negative predictive value (94%) of MRI in excluding parametrial invasion is important for selecting patients suitable for radical surgery. MRI also has a high negative predictive value (up to 100%) for excluding bladder and rectal invasion, thereby negating the need for cystoscopic or endoscopic staging procedures.

The MRI protocol should include axial SE T1WI with a large FOV and FSE T2WI in the axial and sagittal planes with a small FOV. Cervical tumors are best seen on T2WI. The sagittal plane allows evaluation of tumor extension into the body of the uterus and vagina. The axial oblique T2W FSE perpendicular to the long axis of the cervix is important in assessing parametrial invasion. Axial T1WI of the abdomen are also included to identify enlarged abdominal lymph nodes. The use of intravenous contrast medium is optional, as it does not improve staging accuracy compared to T2WI. The addition of DWI may increase reader's confidence.

## References

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