

75 Uterine and Cervical Cancer

Endometrial carcinoma is predisposed by the development of endometrial hyperplasia and polyps, MRI being of little utility in distinguishing benign and malignant varieties of the latter. Both benign and malignant polyps are of variable SI, the latter identifiable only by myometrial invasion. Submucosal fibroids may appear similar but arise from the myometrium and display uniformly low SI unless degenerative. MRI may be performed if ultrasonographic evaluation of endometrial hyperplasia is not possible. Normal myometrial thickness is less than 5 mm in postmenopausal women and 8 mm in the proliferative (16 mm secretory) phase of premenopausal women. Cystically dilated high SI glandular structures on T2WI are often present in hyperplastic endometrium and do not typically enhance. Findings of endometrial hyperplasia are indistinguishable from those of endometrial carcinoma on MRI with only myometrial invasion proving the latter—the most common invasive carcinoma of the female genital tract. Treatment is guided by grade, but early staging is performed with MRI due to accurate depiction of zonal anatomy on T2WI. Stage 1A lesions, as in **Fig. 75.1**, are manifest as endometrial thickening without junctional zone disruption. On **(A)** coronal T2WI, a low SI lesion (*white arrow*) involves the right side of the endometrium. A hypointense lesion is present on **(B)** axial T1WI without depiction of the zonal anatomy. The junctional zone, disrupted in 1B lesions, in the **(A)** T2WI is clearly intact, thus establishing the stage as 1A. If distinction between the junctional zone and myometrium is poor, as in adenomyosis or postmenopausal patients, contrast-enhanced T1WI aids in diagnosis by depicting areas of absent early-phase myometrial enhancement, corresponding with endometrial carcinoma. Axial contrast-enhanced T1WI in **Fig. 75.1C** exhibits

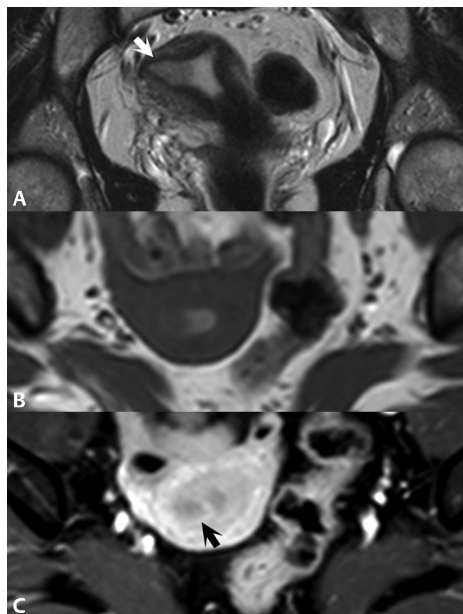


Fig. 75.1 (A–C)

the hypointense carcinoma (*black arrow*) confined to the endometrium. On delayed images, such tumors appear hyperintense to myometrium, similar to fibroids. The distinction between stage 1B and 1C disease is crucial, the latter correlating with a high probability of extrauterine and lymphatic disease. MRI reliably identifies stage 1C lesions, confined to but involving greater than one half of the myometrium, by their complete disruption of the junctional zone. MRI similarly depicts involvement of the endocervical canal (2A) or cervical stroma (2B). The former manifests as endocervical canal widening, whereas the low SI of the normal stromal ring is interrupted in the latter. On contrast-enhanced T1WI stage 2B lesions manifest as a hypointense lesion in the stroma. True invasion of the endocervical canal rather than mere extent of a polypoid lesion must be demonstrated. Invasion of the parametrial fat constitutes a stage

2B lesion or higher. In the absence of rectal mucosal or bladder wall involvement stage 3 lesions involve the uterus, adnexa, or peritoneum (3A), the vagina (3B), or paraaortic or pelvic lymph nodes (3C). Urinary bladder wall and rectal mucosal invasion constitute stage 4A lesions; distant metastases or involvement of other lymph nodes indicate 4B disease. Nodal involvement is best detected on precontrast T1WI as lymph nodes measuring greater than 1 cm in short axis diameter.

MRI is preferred for the staging of cervical carcinoma. Stage 0 or carcinoma in situ is not reliably detected, whereas stage 1A lesions, seen on T2WI as hyperintensity against the low SI cervical stroma, are well seen as microinvasive lesions confined to the cervix. Stage 1B lesions, as in **Fig. 75.2A**, are greater than 5 mm in depth or 7 mm in transverse extent. **(A)** Sagittal T2WI illustrate the intact, low SI stroma of the anterior cervical labium interrupted only by a high SI Gardner cyst. The low SI of the posterior labium is replaced by hyperintense mass without containing low SI stromal capsule. The carcinoma in **Fig. 75.2B** is a stage 2A lesion, involving the upper two-thirds but not the lower third (i.e., stage 3A) of the ventral vaginal wall (*white arrow*). Parametrial invasion, reflected by hyperintensity on T2WI constitutes a stage 2B lesion, whereas pelvic sidewall invasion signifies a stage 3B lesion. Postradio chemotherapeutic edema can masquerade as tumor involvement of these structures in its hyperintensity on T2WI. Distant metastases or involvement of the rectal or bladder mucosa constitute stage 4 lesions. The latter case is illustrated in the sagittal T2WI of **Fig. 75.2C** with heterogeneously hyperintense cervical tumor infiltrating the upper third of the vagina and interrupting the low SI bladder wall (*white arrow*). A similar appearance is present on the axial contrast-enhanced T1WI of **Fig. 75.2D**, where the irregularly enhancing tumor protrudes into the bladder wall. Contrast enhancement of cervical cancer is variable, but contrast-enhanced T1WI may greatly aid in evaluating the extent of an invasive cervical carcinoma.

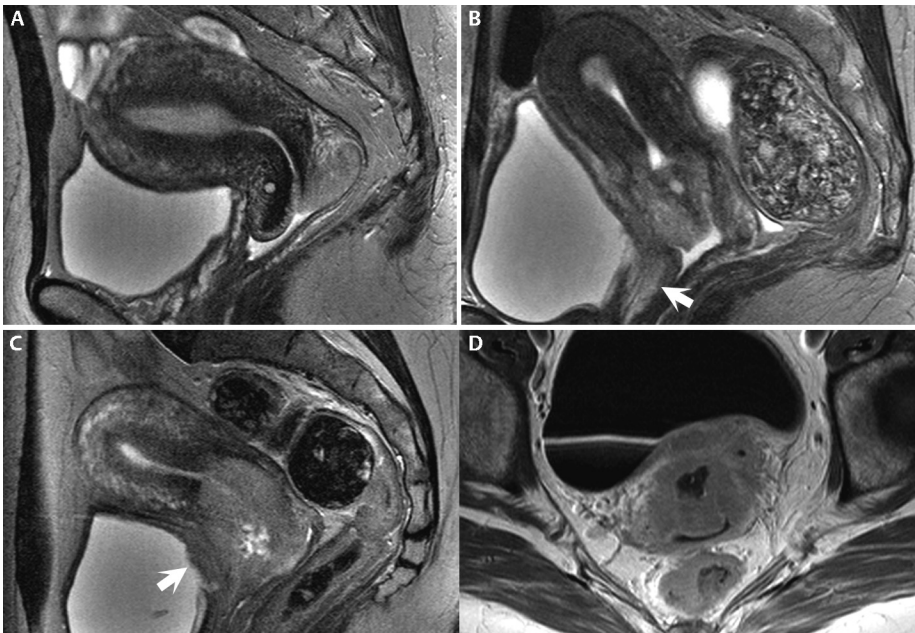


Fig. 75.2 (A-D)