

Among treatment failures, 51 (30.4%) were at the central pelvis, 31 (18.4%) at the pelvic side wall, 76 (45.2%) with distant metastases, and 10 (5.9%) with unspecified sites.

Sites of distant metastases included: bone, 28; lung, 24; liver, 11; abdominal carcinomatosis, 11; supraclavicular lymph nodes, 10; mediastinal lymph nodes, 2; brain, 1; and abdominal wall, 1 case.

Treatment failure rates were 25% (10/40) in patients aged 30 and less, 14% (30/214) in 31-40 year olds, 21.2% (58/273) in 41-50 year olds, 14.7% (42/286) in 51-60 year olds, and 16.3% in those over 60 years old. There was no significant difference between age groups ($p < 0.1$).

Tumor size ($p = 0.0001$) and histologic cell type ($p = 0.0001$) correlated significantly with frequency of treatment failure. For cases with tumor size less than 1 cm, incidences of treatment failure were 3% (5/168), for 1.1-3 cm, 14.2% (74/521); for 3.1-4.0 cm, 29.3% (54/184); for 4.1-5.0 cm, 23.4% (12/64); and for those with tumor size over 5 cm, 46.3% (19/41). For maximal tumor diameter, whether at 1, 2, 3, 4, or 5 cm, the frequencies of treatment failure above versus below the cut-off value were significantly different.

There were 209 cases with stage IIA disease: 139 were postmenopausal and 70 premenopausal. There were 19 treatment failures in postmenopausal patients and 27 failures in premenopausal patients. Menstrual status did not correlate significantly with treatment failure ($p = 0.20$) for stage IIA patients. Tumor size also had no significant impact on treatment failure in both the postmenopausal ($p = 0.13$) and premenopausal ($p = 0.24$) groups of patients.

Treatment failure rates were 16.2% (138/850) for squamous cell carcinoma (SCC), 16.4% (10/61) for adenocarcinoma (AC), 15.8% (9/57) for adenosquamous carcinoma (ASC), and 73.3% (11/15) for small cell undifferentiated carcinoma and carcinosarcomas. ($p < 0.0001$)

Histologic cell types did not correlate significantly with treatment failure rates when the small cell undifferentiated carcinomas and carcinosarcomas were excluded from analysis ($p = 0.6$).

Histologic grade was significantly associated with treatment failure only for squamous cell carcinomas. Among 323 cases with documented histologic grading, the frequency of treatment failure in SCC was 38.2%

(13/34) for grade I, 19.8% (51/258) for grade II, and 29.0% (9/31) for grade III ($p = 0.03$). The treatment failure rate for AC was 14.3% (3/21) for grade I, 26.7% (4/15) for grade II, and 22.2% (2/9) for grade III ($p = 0.6$). The treatment failure rate for ASC was 40% (2/5) for grade I, 25.0% (3/12) for grade II, and 20.0% (1/5) for grade III ($p = 0.7$).

Depth of invasion correlated significantly with treatment failure ($p < 0.0001$). For cases with invasion less than 5 mm, the treatment failure was 2.0% (3/150), for 6-10 mm 16.7% (36/216), for 11-15 mm 28.3% (60/212), and for cases with depth of invasion of 16 mm and above 34.8% (55/158). There were 249 cases in which the depth of invasion could not be evaluated.

There was a highly significant correlation between the presence of positive lymph nodes and treatment failure ($p < 0.0001$). The patients with negative lymph nodes had a treatment failure of 11.7% (92/785), while those with positive lymph nodes had 38% (76/200).

The treatment failure rate in patients with positive surgical margins was 44.1% (30/68) and for those with negative surgical margins 15% (138/917).

Capillary-lymphatic space (CLS) involvement correlated significantly with treatment failure rate ($p = 0.004$). For patients with CLS involvement, the treatment failure rate was 26.8% (80/298), whereas for those without CLS involvement, it was 17.1% (50/292). There were 395 cases in which CLS involvement could not be evaluated during retrospective review.

Parametrial extension correlated significantly with treatment failure ($p < 0.0001$) in that positive parametrial involvement elevated the treatment failure rates from 14.8% (134/907) to 43.6% (34/78).

On multivariate analysis, lymph node involvement ($p = 0.0002$), tumor size ($p = 0.001$), depth of invasion ($p = 0.004$), positive surgical margins ($p = 0.005$), histologic types ($p = 0.03$), and parametrial involvement ($p = 0.03$) correlated significantly with treatment failure; whereas CLS involvement ($p = 0.2$), clinical stages ($p = 0.4$), and uterine extension ($p = 0.9$) did not. Those factors that correlated significantly with treatment failure also did so with the disease-free interval (DFI) on multivariate analysis, except for parametrial involvement.

Only lymph node involvement ($p = 0.0005$) and positive surgical margins ($p = 0.07$) correlated signifi-