15 females, 44 were between 1 and 15 years and 9 were between 17 and 53 years old. All had the primary surgery elsewhere, 26 also had postoperative radiation therapy at other institutions, 25 of these were referred for recurrences. The 27 patients who had initial radiation therapy at MSKCC were admitted after 1970. All patients had the histological diagnosis confirmed at MSKCC.

Of the 26 patients that had their initial radiation therapy elsewhere 24 died, 23 after treatment of recurrence at MSKCC and one patient with basal cell nevus syndrome 12 years after initial treatment. Of the 27 who received initial radiation therapy at MSKCC 13 are alive, 11 disease free. All 6 patients with metastatic disease at first treatment are dead. Thus, of the 21 patients with localized disease treated at MSKCC, 11 are alive disease free with follow up from 1 to 5 years. The most common site of recurrence was in the posterior fossa. (20 patients). Six patients had recurrence at the cribriform plate.

These results are examined with respect to the R/T technique, dose and chemotherapy. Sites of recurrence and patterns of failure are recorded. and this information is used in developing the techniques employed in the Radiation Therapy Department of MSKCC at present.

COMPUTER OPTIMIZATION FOR THE COMBINING OF ELECTRON AND PHOTON BEAMS

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Electron beam capability is expanding rapidly in radiation treatment centers. With the physical characteristics of rapid dose fall-off at depths depending on energy, electron beam provides a useful treatment modality. To further improve on the dosimetry, combining an electron beam with a photon beam or another electron beam of different energy is frequently done.

This mixture of beams will improve not only the uniformity of tumor dose but decrease the normal tissue dose. When all depths, electron and photon beams availability and weightings are considered the problem of optimization can be significant. A computer program has been written to optimize the mixing of electrons and photons, with regard to specified tumor doses at half centimeter intervals from skin surface to ten centimeter depth. An inactive terminal is utilized to achieve rapid input and treatment plan comparisons.

To check the efficacy of the system, fifty head and neck cases were reviewed and comparisons made between actual treatment used and the computer devised plan.