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STABLE AND COMFORTABLE AFTERLOADING CERVIX APPLICATOR

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The incidence of cervical carcinoma is gradually decreasing in developed countries, however, this type of carcinoma is the most common malignancy in many underdeveloped and developing countries. Radiation therapy, combination of intracavitary and external irradiation, is the principal modality of treatment except for in situ and stage I lesions. However, even in stage I disease the results with radiation therapy alone are comparable with surgical results. Forty-two per cent of deaths from cervical carcinoma are due to persistent local disease or local recurrence (JIMENEZ et coll. 1979) and 20 per cent develop complications from the treatment (ALERT et coll. 1980). Therefore, improvement of the treatment techniques is needed, especially at the intracavitary irradiation to achieve maximum tumor control with minimum complications.

After having used different afterloading cervix applicators, it appeared appropriate to design a new applicator in an attempt to minimize the patient's discomfort by improving the patient's mobility and at the same time achieve stable positioning of the applicator throughout the intracavitary irradiation. In the afterloading applicators introduced by HENSCHKE (1960) and FLETCHER (1973) the tubes leading to the ovoids lie lateral to the tandem and diverge from it both inside and outside the vagina. This design was meant to spread the ovoids as desired by closing the diverging lateral tubes outside the vagina. However, this horizontal configuration of the tandem and the lateral tubes leading to the ovoids often leads to rotation of the whole applicator

when the patient's thighs are brought together, especially when they inadvertently turn on their sides in their sleep. This means the ovoids instead of lying in the lateral fornices are shifted into anterior and posterior fornices leading to increased bladder and rectal dose and decreased point A dose. This results in increased local recurrence and complications. The applicator now described is designed to prevent such rotation irrespective of the patient's position and thus proper dose distribution is achieved resulting in better tumor control and less complications.

Description of the apparatus. In the new afterloading applicator the ovoids lie in the lateral fornices like in the other applicators, however, the tubes outside the vagina leading to the ovoids lie anterior and posterior and parallel to the tandem (Figure). This vertical configuration of the tandem and the tubes leading to the ovoids not only prevents rotation of the whole applicator when the patient's thighs are close together, but it further stabilizes the applicator. This also enables the patients to turn on their sides during intracavitary irradiation without causing rotation of the applicator.

The tandem has a locking device which holds the tubes in vertical plane with the tandem outside the vagina and enables lateral movements of the ovoids. This locking device can also be slid over the tandem to change the position of the ovoids in relation to the tip of the tandem depending on the length of the

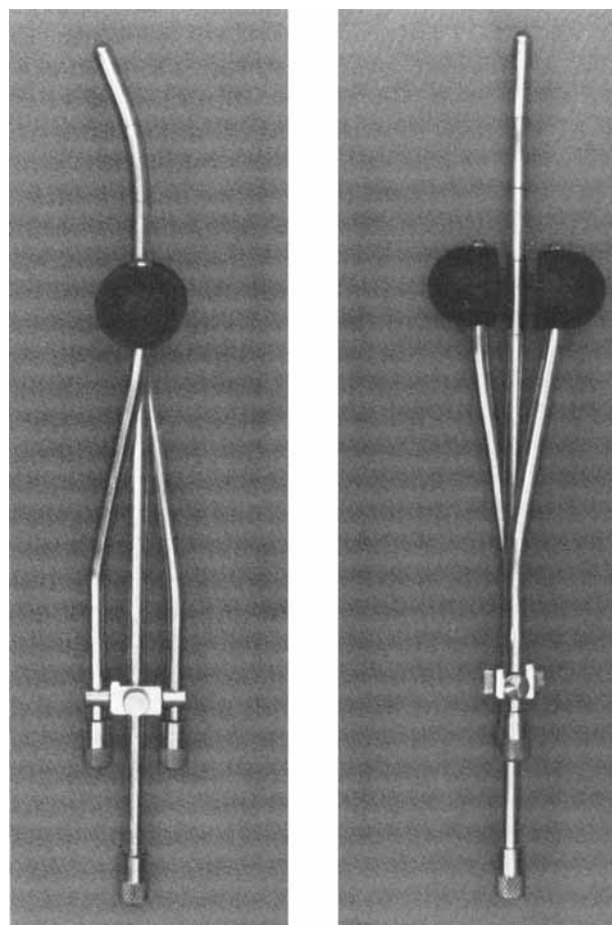
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uterine cavity. The lateral displacement of the ovoids as well as the anterior and posterior displacement of the bladder and rectum, respectively, is achieved by inflating a 30 ml 30 French Foley balloon threaded onto the tandem (KUMAR et coll. 1977).

Procedure. All the patients are staged after pelvic examination including cystoscopy, proctoscopy and dilatation and curettment under general anesthesia. If the cervix is small and symmetric with centrally located os and the disease is in an early stage, the application is performed at the time of the staging procedure under general anesthesia. If the cervix is irregular and bulky or if the tumor is extending onto the fornices, external irradiation is initiated first to reduce the tumor mass so that optimum positioning of the applicator is achieved. After the tumor mass is satisfactorily reduced in size with external pelvic irradiation, the intracavitary application is done. For this procedure the patients are not anesthetized but a laminaria is used to dilate the cervical canal 24 hours before the applicator is placed in position. The patient is placed in lithotomy position and the external genitalia are prepared with an ordinary disinfectant and draped. A 5.3 mm (16 French) 5 ml Foley catheter is introduced into the bladder and inflated with contrast medium and attached to a bag. The laminaria is removed and the uterine cavity is sounded and a 10 mm (30 French) 30 ml Foley catheter is threaded onto the tandem to the required length. Under direct vision the tandem is introduced into the uterus until the cut end of the Foley catheter comes in proximation with the external os. Then the speculum is removed and the ovoids are introduced into the lateral fornices and locked onto the tandem. A single suture is applied to the labia majora to prevent the applicator slipping out. Now the 30 ml Foley balloon is inflated with contrast medium until the patient complains of slight fullness in the vagina. A.p. and lateral pelvic films are exposed to control the position of the applicator and for dosimetry.

Comments

Over the last 12 months intracavitary applications have been performed in 18 patients with cervical carcinoma using the new applicator. All the patients could turn around freely in the bed during their confinement which made the intracavitary irradiation much more comfortable. The movements of the



Lateral and a.p. views of the applicator. The lower halves of the tubes leading to the ovoids lie anterior, posterior and parallel to the tandem. The ovoids are lateral to the tandem.

patients did not cause rotation of the applicator because of the vertical configuration of the tubes. The use of laminaria eliminates repeat general anesthesia for cervical dilatation if the application is not done during the staging procedure. Spreading of the ovoids and anterior and posterior displacement of the bladder and rectum, respectively, is achieved more uniformly and up to the limits that the vaginal wall can stretch by inflating the 30 ml balloon of the 10 mm Foley catheter threaded onto the tandem. Overstretching of the vaginal walls, which sometimes occurs when the packing is performed under general anesthesia, is avoided because the application is done without general anesthesia and the patient herself can tell when to stop inflating the balloon. For the patient's comfort and stability of the applicator throughout the intracavitary irradiation, this design of the afterloading cervix applicator is found more satisfactory.

SUMMARY

A new afterloading cervix applicator is described. A stable positioning of the applicator is achieved throughout the irradiation.

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