

## Cervical Cancer: State of the Art and Future Directions

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Considered a public health problem in the world, cervical cancer mainly affects women in developing countries, where the incidence is up to twice that observed in developed countries. In Brazil, for example, the estimated incidence for 2012 is 17,540 new cases (17/100,000 women) [1].

The main risk factor associated is HPV infection, which has a large latency period. These features enabled the emergence of quite effective prevention strategies like vaccination and Pap smear campaigns. While developed countries have shown a dramatic reduction in the incidence of this cancer (eg, in the United States the incidence fell from 32.6/100,000 women in the late 1940s to 8.3/100,000 women in the mid-1980 [2]), in developing countries the reality is different: the difficulty in ensuring the success of prevention strategies associated with the epidemiological characteristics keep high the incidence of this cancer.

The main stage systems of this cancer are clinical (both FIGO and AJCC), although some researchers advocate the benefit of pre-treatment laparotomy. Results of this strategy are not yet convincing, and there is no significant impact on overall survival [3]. Still in the surgical access context, the biopsy of sentinel node has gained ground with encouraging results [4].

When diagnosed at early stages, the tumor is still a matter of controversy as to the most appropriate treatment: radical surgery or radiotherapy. Although in recent years the use of radiotherapy as a single modality has fallen, none of the two approaches seems to have advantage over the other with regard to tumor control and survival [5-7]. The choice is related to the institution, oncological team and characteristics of the lesion and patient. Whatever the strategy, the ideal choice should involve the active participation of a multidisciplinary staff.

When the stage is advanced, the controversy appears to reduce: radiotherapy and chemotherapy have a key role, since the parametrial extension can greatly compromise the outcome of the surgery. Several randomized studies have shown better results adding radiosensitizing chemotherapy to radiotherapy [8-10]. Adding brachytherapy (LDR or HDR) is essential to ensure adequate coverage of tumor dose. However, it is necessary to observe some details to ensure a low toxicity profile. In this context, we highlight the use of three-dimensional technique and the help of other resources such as ultrasound imaging.

### Future Directions

The systemic recurrence is still a big issue in this pathology, and although some progress has occurred in recent years, there is still no permanent solution in sight. The locoregional relapse has been countered with the impending technological development. In this context, the use of image-guided therapy, usage of images with better definition of the target volume (such as MRI) and improvement in softwares of image fusion allow therapeutic optimization: it promotes a better understanding of radio-induced toxicity and dose distribution. In other words, this better understanding of the relationship between the dose distribution and clinical outcomes will allow dose escalation with less toxicity. Furthermore, future studies will definitively establish the role of IMRT and better use of PET in radiotherapy delineation.

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