DOSIMETRIC EVALUATION OF TWO DIFFERENT BRACHYTHERAPY TECHNIQUES FOR INOPERABLE UTERINE CERVIX CANCER

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Objective:

To evaluate an alternative brachytherapy technique for inoperable uterine cervix cancer, without increasing the risk of toxicity and trying to achieve the same local control of the disease.
Material and methods:

- Comparative study was undertaken in order to two different high-dose rate intracavitary brachytherapy applicators to be compared: intrauterine tandem/ring applicators and vaginal cylinder.
- Presribed doses were 7 Gy at point A for tandem/ring applicators and 7 Gy at 10 mm from the top of the cylinder applicator.
- Doses delivered to the rectum, bladder and sigmoid colon were kept below the tolerance limits. Volumes covered by the 100% isodoses, (V100), were compared.
Material and methods:

- Analyzed were 40 patients, treated in University Clinic of Radiotherapy and Oncology - Skopje in period from May to July 2016, all with locally advanced cervical cancer and realized percutaneous definitive chemoradiotherapy.
- In 13 of them (32.5%) intracavitary brachytherapy was made with tandem/ring applicators (tandem being 4 sm long) and prescribed dose of 7 Gy at point A.
- The remaining 27 patients (67.5%) due to lack of conditions for tandem/ring application, brachytherapy treatment was implemented with vaginal cylinder and prescribed dose 7 Gy at 10 mm from the top of the applicator.
Tandem/ring applicators

Vaginal cylinder
Results:

- In order to obtain net tissue which is included in 100% isodose volume, the volumes of cylinder applicators and ring buildups were excluded from the treated volume.
- The 100% tissue volumes formed in tandem/ring applications and cylinder applications were on average 50.64 cc and 34.80 ss respectively after they were diminished on average by 7.04 cc and 12.90 cc respectively.
- Because the process of finding tissue volume for the cylinder applications had several steps the uncertainty in determining this volume was 1.24%.
- Comparing 100% isodose volumes we can conclude that their means differ at the 0.05 level of significance, p value being less than 0.001.
Conclusion:

- Vaginal applicator may not be used as an alternative therapy technique for patients affected by uterine cervix cancer who does not allow application of tandem/ring applicators.

**Keywords:** Cervical cancer, intracavitary brachytherapy, dosimetry
Thank you