Impact of vaginal cuff brachytherapy in operated patients with high-risk early stage cervical cancer

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Objective

To evaluate local control and survival of high risk cervical cancer patients submitted or not to vaginal cuff brachytherapy in the post-operative setting.

Patients and Methods

- Retrospective cohort
- Patients treated from 2010 to 2017
- Eligibility criteria:
 - Confirmed histological diagnosis of cervical cancer
 - Treatment: surgery and adjuvant radiotherapy with or without chemotherapy.

Vaginal cuff brachytherapy (VCB): indicated according to the radiation oncologist discretion (Figure 1).

Figure 1. Example of VCB procedure: vaginal cylinder applicator (left). Axial and sagittal computed tomography views with the cylinder in place, and brachytherapy isodose lines.

Yellow = bladder; Brown = rectum; Blue = sigmoid; Red = bowel.

Table 1. Patients' characteristics according to delivery of vaginal vault brachytherapy or not.

Patients characteristics	Brachytherapy		p
	No N = 20 (25.3%)	Yes N = 59 (74.7%)	
Age > 50 years	6 (30%)	29 (49.1%)	0.136
Histology			
Squamous cell carcinoma	12 (60.0%)	45 (76.3%)	0.259
Adenocarcinoma	8 (40.0%)	13 (22.0%)	
Other	0 (0%)	1 (1.7%)	
Histological grade 3 or 4	8 (40.0%)	22 (37.3%)	0.829
FIGO stage			
I-IIa	19 (95.0%)	54 (91.5%)	0.409
IIb-IV	1 (5.0%)	5 (8.5%)	
Tumor size > 4 cm	7 (35.0%)	19 (32.2%)	0.818
Presence of lymph vascular invasion	9 (45.0%)	38 (64.4%)	0.261
Positive Margins			
Total	2 (10%)	17 (28.8%)	0.089
Vaginal	2 (100%)	4 (21.0%)	
Circunferencial	0 (0%)	15 (79.0%)	
Oncologic surgery	15 (75.0%)	48 (81.4%)	0.541
Concurrent chemotherapy	13 (65.0%)	38 (64.4%)	0.962

Results

79 patients

Median age at diagnosis: 47.5 years (26-77)

Brachytherapy: 59 (74.7%).

- VCB and no-VCB groups: no significant differences (Table 1)
- Vaginal recurrence was lower in the brachytherapy group, but with no significance (p = 0.065) (Table 2).

Table2: Recurrences according to VCB or no-VCB groups

Events	Brachytherapy		p
	No N = 20 (25.3%)	Yes N = 59 (74.7%)	
Any recurrence	5 (25.0%)	8 (13.6%)	0.233
Vaginal recurrence	3 (15.0%)	2 (3.4%)	0.065
Pelvic recurrence	4 (20.0%)	4 (6.8%)	0.090
Distant recurrence	2 (10.0%) paraortic	4 (6.8%) paraortic 2 (3.4%) visceral	0.643
Death	3 (15.0%)	5 (8.5%)	0.403

Survival

- Median follow-up: 45 months
- Mean overall survival: 85.1 months
- Mean disease-free survival: 83.8 months

No variables were correlated with overall survival.

The only factor positively correlated to disease-free survival was VCB (Figure 2).

Figure 2. Disease-free Survival by delivery or not of VCB.

Conclusion

VCB was associated with a reduced recurrence rate in the post-operative setting of high-risk early stage cervical cancer patients.