### ABSTRACT SUBMISSION FORM

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<th>CHIARA TENCONI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mailing address (including province/state, country, postal/zip code)</td>
<td>Chiara.Tenconi @istitutotumori.mi.it</td>
</tr>
<tr>
<td>Institution/organization</td>
<td>Medical Physics Unit, Fondazione IRCCS Istituto Nazionale dei Tumori, Milan, Italy</td>
</tr>
<tr>
<td>Position</td>
<td>PhD</td>
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### PRESENTATION TITLE

**DIFFUSION-WEIGHTED MAGNETIC RESONANCE IMAGING DURING BRACHYTHERAPY OF LOCALLY ADVANCED CERVICAL CANCER: PRELIMINARY RESULTS**

### AUTHOR(S)

A. Cerrotta¹, A. Barcellini¹, C. Tenconi², B. Pappalardi¹, E. Mazzarella², A. Laffranchi³, G. Calareso³, C. Fallai¹, M. Carrara², E. Pignoli², A. Messina³

1) Radiotherapy 2 Unit, Fondazione IRCCS Istituto Nazionale dei Tumori, Milan, Italy; 2) Medical Physics Unit, Fondazione IRCCS Istituto Nazionale dei Tumori, Milan, Italy; 3) Department of Radiology, Fondazione IRCCS Istituto Nazionale dei Tumori, Milan, Italy

**Presenting author:** CERROTTA ANNAMARIA (mail: cerrotta @istitutotumori.mi.it)

### ABSTRACT

**Purpose:** To investigate the change in DWI volume and ADC during brachytherapy (BT) of locally advanced cervical.

**Materials & Methods:** 30 consecutive patients with locally advanced cervical squamous cell carcinoma and clear cell carcinoma were retrospectively evaluated. All patients were treated with a combination of Volumetric Modulated Arc Therapy (VMAT) delivered using 6-MV photon beams (with concurrent weekly 40 mg/m² CDDP) followed by high-dose rate BT (HDR BT). BT treatment planning was performed on MRI images using 7 Gy per fraction prescribed to high risk clinical target volume (HR-CTV) given in 4 fractions with 192Ir-High dose rate.

MRI was acquired at 1.5 T and MRI protocol consisted of T2-weighted imaging (T2WI) obtained in 3 orthogonal planes and DWI. Diffusion-encoding gradients were applied at b values of 0, 50, 400 and 800 s/mm². A radiologist with more than 10 years of experience in pelvic MRI, manually outlined a ROI on T2WI and DWI image and the ADC maps of each section was automatically generated by the software.
Results: Preliminary results obtained from the analysis of the first 17 patients showed that the median percent ADC change between first (BT1) and last BT (BT4) was 21.4% and the ADC change was lower in responder patients (median 0.092, DS 0.117) than in patients with progression or partial response (median 0.395, DS 0.204). Larger DWI volume at the time of BT1 seems to be related with local persistence of disease.

Conclusions: Preliminary evaluations disclosed that DWI parameters (during BT) may be useful prognostic biomarkers for clinical outcomes in cervical cancer patients. Data is still ongoing.