Conclusions: A high proportion of patients experienced a local relapse alone following treatment suggesting that radiotherapy alone without chemosensitisation does not achieve high rates of local control. The use of alternate approaches such as brachytherapy to provide a local boost may have merit and warrants further investigation. Despite this, there are some patients who achieve respectable relapse free survival and overall survival, but others where a palliative approach might be more appropriate. Further work needs to be done to understand the factors influencing patient outcomes following definitive radiotherapy. Further refinement in patient selection will follow with better understanding of radio-genomic profiling.

EP-1208
Accelerated Intensity Modulated Radiotherapy with SIB in anal cancer: outcomes of a retrospective trial
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Purpose/Objective: To evaluate toxicity and outcomes of patients with anal canal cancer treated with hypofractionated radiotherapy schedule and a Simultaneous Integrated Boost with Helical Tomotherapy.

Materials and Methods: From March 2009 to March 2014 41 patients were treated with simultaneous integrated boost-intensity modulated radiotherapy and concurrent chemotherapy for anal canal squamous carcinoma. Two clinical target volumes were delineated, radiotherapy dose was adapted to disease stage: 50.6 Gy and 41.4 Gy in 23 fractions in T1N0, 52.8 Gy and 43.2 Gy in 24 fractions in T2N0 and 55 and 45 Gy in 25 fractions in all patients with N+ and/or ≥T3, prescribed to Planning Target Volume 1 and Planning Target Volume 2 respectively. The most common chemotherapy regimen was 5-fluorouracil and mitomycin based.

Results: The median age was 63 years (range 32-84). 5, 10, 11 and 14 patients were respectively in stage I, II, IIIA and IIIB. A complete response was achieved in 34/38 (89.4%) patients evaluable for outcomes, one partial response in 1 patient, inoperable persistence of disease was observed in 1 patient and progressive disease in 2 patients (local and metastatic respectively). Acute grade 3 skin and grade 3 gastrointestinal toxicity was reported in 5% and 7.3% of patients, respectively; treatment breaks due to toxicity were required in 7.3% of patients. With a median follow up of 20 months, the 2-year overall survival and disease free survival were 90.4% and 92.3%.

Conclusions: In our experience, intensity modulated radiotherapy with simultaneous integrated boost is feasible and allows the obtainment of excellent results data in terms of overall survival, local control and toxicity without several breaks due to acute toxicity.

EP-1209
The role of radiochemotherapy in the management of anal cancer: a single institution experience
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Purpose/Objective: The purpose of this study was to retrospectively assess the clinical outcome in anal cancer patients treated with curative intent chemo-radiotherapy in terms of local control (LC), distant metastases-free survival (DMFS) and overall survival (OS).

Materials and Methods: From January 2002 to December 2012, 125 patients were treated for anal carcinoma in our Department of Radiotherapy in Policlinico S. Orsola-Malpighi, Bologna. The treatment consisted of 3DCRT on the pelvis (median dose: 45 Gy / 1.8 Gy) with concurrent chemotherapy (5-fluorouracil and Mitomycin-C). After a clinical response evaluation patients received a boost 2-3 weeks after the end of the 3D-CRT by either pulsed dose rate brachytherapy (80% of the patients, mean dose: 18.5 Gy) or without any interruption by external beam radiotherapy (20%, mean dose 16.4 Gy) in patients with contraindications to brachytherapy.

Exclusion criteria for brachytherapy were: initial diffusion of cancer > 2/3 of circumference of anal canal, initial extended diffusion at the perianal skin, presence of a residual >5 cm in longitudinal or >1.5 cm in deepth after 3DCRT (first course) and the clinical contrindication for anesthesia. LC, DMFS and OS were analyzed using Kaplan-Meier method. A comparison of the survival curves was performed using long rank test (univariate analysis).

Results: Males were 31 (25%), females 94 (75%). Median age was 61 years (range 37-94 years), elderly patients (over 65 years-old) were 53 (42%). Tumor stage was T1 in 18 patients (14%), T2 in 45 patients (36%), T3 in 41 patients (33%), T4 in 21 patients (17%). Nodal stage was N0 in 71 patients (57%), N1 in 29 (23%), N2 in 13 (10%). The histology was squamous-cell carcinoma (78%) and non squamous-cell carcinoma (22%). HIV+ e HPV+ patients were 7 (6%) and 2 (2%), respectively. Median follow-up was 43 months (range: -132 months). The 5-year LC rate was 83%. No significant association between 5-year LC and clinicopathologic factors (age, T stage, N stage, histology, and HIV status) was recorded (p: NS). The 5-year DMFS was 93%. N stage was significantly correlated with 5-year metastasis free survival (p<0.05). The 5-year OS was 73.5%. T status was significantly associated with 5 year OS (p = 0.035).

<table>
<thead>
<tr>
<th>Patient</th>
<th>5-year Local Control</th>
<th>5-year Disease Free Survival</th>
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<tr>
<td>F1</td>
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<tr>
<td>F4</td>
<td>84%</td>
<td>95%</td>
<td>94%</td>
</tr>
<tr>
<td>N0</td>
<td>80%</td>
<td>86%</td>
<td>83%</td>
</tr>
<tr>
<td>N1</td>
<td>80%</td>
<td>84%</td>
<td>79%</td>
</tr>
<tr>
<td>N2</td>
<td>77%</td>
<td>89%</td>
<td>84%</td>
</tr>
</tbody>
</table>

Conclusions: Our results confirmed that radiochemotherapy
provides an excellent LC. However, despite good local control we observed a crude distant metastasis rate of 25% in N2 disease, suggesting a need for novel chemotherapeutic approaches to improve systemic control in these patients. OS was significantly influenced by T staging (p=0.035), suggesting the need for dose escalation in patients with higher T-stage (cT3-T4). Therefore, further studies are warranted to evaluate if dose escalation to bothgross tumor and areas of potential nodal spread can improve LC and OS.

EP-1210
Treatment and outcomes with intra-luminal oesophageal brachytherapy at the Leeds Cancer Centre from 2010 to 2014
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Purpose/Objective: Intra luminal brachytherapy (ILBT) is utilised for oesophageal cancer as a palliative treatment with the aim to improve and maintain patients’ swallowing function and delaying or avoiding the need for an endoluminal oesophageal stent. It is utilised as a boost treatment following external beam radiotherapy in patients’ deemed unsuitable for definitive chemoradiation or high dose external beam treatments; or as salvage treatment for those with relapsed disease more than 6 months from external beam treatment. Treatment was delivered either as a single 8 Gy dose to the PTV or 14-16 Gy in 2 fractions a maximum of 1 week apart. In this retrospective analysis, we evaluate the outcomes of patients treated with ILBT in West Yorkshire over a 4 year period.

Materials and Methods: Information collected from entries in the Leeds oesophageal brachytherapy database and patient pathway manager (clinical data software). Data on basic patient/tumour demographics, date of treatment, dose/fractionation schedule of treatment, brachytherapy dosimetric data, toxicity profile, swallowing assessment before and after treatment and date of subsequent oesophageal stent (if needed) was reviewed. All ILBT treatments were 3D CT conformal planned.

Results: A total of 33 patients have been treated between April 2010 and August 2014. The median performance status was one. 21 patients (64%) had a single treatment. Most treatments (76%) were given as boost following 30 Gy in 10 fractions of external beam radiotherapy. 27% of patients required subsequent oesophageal stent insertion for palliation of critical dysphagia. The median overall survival was 211 days whilst the median stent free survival was 204 days. 6% of patients had documented grade 3 RTOG toxicity, related to dysphagia. There were no treatment related bleeding or perforation events. The median PTV volume was 38.3 cm3 with the median maximum diameter for each PTV 38.0 mm. Mean PTV V100 was 81.9% (+/- 15.2%, 1SD), and V200 of 38.1% (+/- 13.2%, 1SD). Mean PTV D90 was 6.4 Gy (+/- 1.5 Gy, 1SD) and Mean GTV D90 was 7.2 Gy (+/- 1.3%, 1SD) for each fraction. The spinal cord mean D2cc (maximum dose for 2cc volume of spinal cord) was 1.1 Gy (+/- 0.5 Gy, 1SD) whilst the mean D0.1 cc was 1.5 Gy (+/- 0.6 Gy, 1SD).

Conclusions: Intra luminal oesophageal brachytherapy is a safe and effective method of delivering palliative radiotherapy for patients with oesophageal cancer where other radical treatments are deemed inappropriate. It is well tolerated and can delay or eliminate the need for oesophageal stents for symptomatic dysphagia. Further study in to the role of using sequential ILBT with removable stents to maintain swallowing function is required.

EP-1211
A systematic review of novel neoadjuvant treatment intensification of locally advanced rectal cancer
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Purpose/Objective: Standard treatment for locally advanced rectal cancer is neoadjuvant fluoropyrimidine-based chemoradiotherapy (CRT) followed by total mesorectal excision. Research has been focused on intensifying neoadjuvant treatment. This systematic review evaluated Phase II treatment intensification trials.

Materials and Methods: A systematic search of the PubMed, EMBASE, MEDLINE and the Cochrane Library databases was performed from January 2004 to September 2014 for all published Phase II trials of neoadjuvant treatment intensification in locally advanced rectal cancer. Eighty-one eligible Phase II trials were identified from 474 articles. For each trial, clinical, methodological and statistical components were assessed.

Results: Ninety-one experimental arms from 81 trials were identified. Median number of patients recruited per trial was 50 (range: 8-279) over a median recruitment period of 26 months (range: 4-108). Eighty-three arms studied CRT intensification: 36 (36.6%) additional cytotoxic, 10 (11.0%) additional biological agent, 3 (3.3%) additional radiosensitiser, 16 (17.6%) radiotherapy dose intensification, and 18 (19.8%) a combination of agents. Neoadjuvant chemotherapy was added in 22 experimental arms (14 arms alongside CRT intensification): 7 (7.7%) additional cytotoxic, 1 (1.1%) additional biological agent and 6 (6.6%) a combination of agents.

Only nine trials were randomised of which five had a standard control arm. Twenty studies did not report a sample size calculation and only 44 (54.3%) studies stated their statistical trial design. Fifteen differently defined primary endpoints were stated in 73 studies. Seventy-six trials recruited both AJCC stage II and III disease. MRI local staging was mandated in 35 trials while the circumferential resection margin was assessed in only 10 trials. Only 31 of the 81 studies were rated to have a good overall statistical design and compliance. No meta-analysis could be performed due to trial heterogeneity.

Conclusions: The very small number of randomised phase II trials, the lack of agreement regarding useful primary end points and the poor clinical trial design quality are major concerns. These factors are likely to be a major contributor