clinical trials. If significant local relapse is prevalent in the high dose region then dose escalation could be considered. Using this technique, PET-CT imaging during treatment may identify those patients more likely to relapse locally allowing earlier salvage therapy.

PO-0696
Adaptive strategy in preoperative RT for rectal cancer with Tomotherapy: boosting the dose to the shrinking tumor

Purpose/Objective: We previously showed that a moderately hypofractionated RT with Tomotherapy (41.4 Gy in 18 fractions) concomitant to oxaliplatin and 5-FU is effective and well tolerated and that rectal volume variations, assessed by daily MVCT performed by tomotherapy, are smaller and more stable during the second half of the treatment so that a margin of 0.5 cm around the rectum is sufficient to include more than 90% of its volumetric variations. These data, and the hypothesis that the residual tumor still visible on CT/MRI after 10 radiotherapy fractions and two cycles of chemotherapy, could represent a more radio-chemo resistant component of disease, suggest the adoption of adaptive tomotherapy approach in rectal cancer.

The aim of the study was to investigate the feasibility of preoperative adaptive radio-chemotherapy by delivering a concomitant boost to the residual tumour during the last 6 fractions of treatment.

Materials and Methods: Twenty-five patients with T3/T4N0 or N+ rectal cancer were enrolled. Concomitant chemotherapy consisted of Oxaliplatin 100mg/m² on days -14, 0, +14, and 5-FU 200mg/m²/day rectal cancer were enrolled. Concomitant chemotherapy consisted of Oxaliplatin 100mg/m² on days -14, 0, +14, and 5-FU 200mg/m²/day from day -14 to the end of radiotherapy (day 0 is the start of Radiotherapy). Radiotherapy consisted in the delivery of 41.4 Gy in 18 fractions (2.3 Gy/fraction) with Tomotherapy to the tumor and regional lymph-nodes (PTV) defined on CT/MRI imaging. After 9 fractions CT and MR were repeated for the planning of the adaptive phase: PTVadapt was generated by adding a 5mm margin to the residual tumour. In the last 6 fractions, a boost of 3.0 Gy/fr (in total 45.6 Gy delivered on the anal canal. Bilateral inguinal irradiation was planned surgery, patients should be chosen more carefully. Meanwhile, higher surgical technique was required on surgeon. Because of the small sample and the low quality of current studies, more clinical studies are still needed.

PO-0697
Salvage oesophagectomy after definitive chemoradiotherapy: current evidence

Purpose/Objective: To access the efficacy and safety of salvage oesophagectomy after failed definitive chemoradiotherapy for advanced esophageal cancer.

Materials and Methods: A systematically literature searches of Medline, Embase, ISI Web of Knowledge, Cochrane Library and China Biological Medicine Database were undertaken in October 2012. Clinical studies about salvage oesophagectomy were included without language or study design restriction. The studies of a sample less than 10 were excluded for inexperience of salvage oesophagectomy. Primary outcomes were survival and complication. The quality of including studies was accessed using the Oxford 2011 Levels of Evidence. Hazard ratios (HRs) for overall survival (OS) were combined with an inverse variance method based on logarithmic conversion. Odds ratios (ORs) and mean difference (MD) with 95% confidence intervals (CIs) were used to analyze dichotomous and continuous variables, respectively. All statistical analyses were undertaken in Review Manager 5.1 and random effect model was used.

Results: Ten studies (8 cohort and 2 uncontrolled studies) were included, the quality of included studies was poor. Overall 307 patients performed salvage oesophagectomy. The 1-, 3- and 5-years OS rates in salvage oesophagectomy group based on 265 patients were 66%, 41%, and 32%, respectively. Pooled analyses based on 2 studies demonstrated that salvage oesophagectomy was associated with longer survival than non-surgery treatment after local failure of definitive chemoradiotherapy, the HR of OS was 0.39(95%CI:0.24-0.65; p=0.0003); but when compared with planned surgery, meta-analyses based on 6 studies suggested that salvage oesophagectomy was associated with worse survival (HR=1.66, 95% CI:1.11-2.47; p=0.01), and higher in-hospital mortality (OR=2.99, 95%CI:1.67-5.35; p=0.0002), longer hospital stay (MD=8.35, 95%CI:1.84- 14.85; p=0.01), more anastomotic leak (OR=2.56, 95%CI:1.38-4.74;p=0.003), more wound infection(OR=1.98, 95%CI:1.10-3.59; p=0.02), more pulmonary event (OR=1.86, 95%CI:1.32-2.63; p=0.004).The primary prognostic factors for favorable survival after salvage oesophagectomy were complete resection (HR=3.76; p=0.0001) based on 5 studies and early tumor stage (HR=7.2; p=0.08) based on 3 studies. One including study reported that the outcome in patients with remnant tumors was poorer than in those with recurrence (p=0.01).

Conclusions: With the rare clinical evidence, salvage oesophagectomy was considered as a hopeful treatment after local failure of definitive CRT. But with more complication and higher surgical difficulties than planned surgery, patients should be chosen more carefully. Meanwhile, higher surgical technique was required on surgeon. Because of the small sample and the low quality of current studies, more clinical studies are still needed.

PO-0698

Purpose/Objective: To retrospectively evaluate efficacy and toxicity of radio-± chemotherapy (RT ± CT) in the management of anal canal carcinoma.

Materials and Methods: Data of patients (pts) with an histological diagnosis of anal canal carcinoma were reviewed. Local Control (LC) and the acute and late toxicity rates were the primary endpoints of the analysis. Secondary endpoints were listed in Table 1.

Results: From 02/1992 to 10/2010, 100 pts (M/F ratio: 17/83) were treated with curative RT with (58 pts) or without (42 pts) chemotherapy. Median age was 70 years (range: 33-91). According to the 2002 UICC Tumor classification, 13, 51, 14 and 22 tumors were staged as Stage I, II, III and IV respectively. 29% of the pts were N1-3 and 14 pts presented positive inguinal nodes. Following the clinical conditions, RT was delivered on the initial tumor site with (68%) or without (32%) pelvic irradiation (upper field border: L5-S1) with a standard fractionation (1.8/2Gy). Median dose on the pelvis was 45Gy (range: 36-54), while a median total dose of 60Gy (range: 38-70) was delivered on the anal canal. Bilateral inguinal irradiation was delivered in 70 pts, with a curative (13%, one groin N+ patient having received lymphadenectomy before RT) or a prophylactic (57%) goal, at a median dose of 36Gy (range:36-66.6Gy). Median LC time was not reached, while 5- and10-years LC rates were 73% and 67%, respectively. Overall acute and late G3-4 toxicity rates were 32% (particularly skin G3 toxicity, 30/32 pts) and 18% (particularly rectal G3 toxicity, 7/18 pts), respectively, with 22 pts having undergoing a colostomy, but with only 2 pts having received it to treat a G4 anal toxicity. All these pts received colostomy in the first 3 years after the end of the RT±CT. Spinich function was evaluated in the remaining 78 pts (with the Womack scale) and classified as a total continence or incontinence to gazes (score A-B) in 73 pts and a incontinence to liquid stools (score C) in 5 pts or total incontinence (score D) in 2 pts. Table 1 shows results of the univariate and multivariate analysis on the primary and secondary endpoints.

Table 1 shows results of the univariate and multivariate analysis on the primary and secondary endpoints.
Conclusions: RT±CT achieve good LC rates in anal canal cancer patients. In our experience, local response and LC statistically influenced the Cancer Specific Survival and the risk of systemic relapse. High acute skin toxicity rates probably impose to tailor volumes and techniques of irradiation following the patient and tumor characteristics (more tailored indications for inguinal RT).

PO-0699

Stereotactic body radiation therapy with real-time tracking for localized prostate cancer

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Purpose/Objective: Chemoradiation is worldwide considered the standard treatment of anal cancer, with a high rate of sphincter preservation, local control and survival. However, this strategy often leads to significant acute morbidity, playing a negative impact on clinical outcome. New technological advances could improve dose delivery and therapeutic index ratio. As IMRT allows simultaneous integrated boost (SIB) of higher RT doses to the gross tumor volume and lower doses to normal tissue, our purpose is to evaluate if this recently introduced technique can result in a better outcome in terms of tolerance and clinical results for patients affected by anal carcinoma.

Materials and Methods: Between February 2009 and October 2012, 31 patients, median age 62 years, with stage I (6 pts), II (6 pts), IIIA (8 pts), IIIB (11 pts) were treated with RT±CT. 19 patients underwent 2 courses of MMC and 5 FU (during the first and last week of RT); 3 pts received Capecitabine concurrent with RT; 3 pts received Cetuximab in combination with RT; 3 pts received Axitinib concurrent with RT; 3 pts received Bevacizumab concurrent with RT.

Results: All patients received the prescribed dose and none had treatment breaks due to acute toxicity, except for one, who refused to conclude treatment, receiving 50.6 Gy on CT1 in 23 fractions. For all patients, dose volumes results for CTVs are reported in the table.

Table 1: Clinical data with results of univariate and multivariate analysis

| Dose (Gy) | Mean ± SD | Max | Min
|-----------|-----------|-----|-----
| CTV2      | 38.4 ± 2.8 | 43 | 35.2
| CTV3      | 45 ± 0.1 | 45 | 45
| CTV4      | 51 ± 0.1 | 51 | 51
| CTV5      | 54.9 ± 1.9 | 54.9 | 54.9

Conclusions: IMRT with SIB achieves great homogeneity in the dose distribution and a significantly good sparing of the organs at risk, also shortening total treatment time. The combined chemo-radiotherapy also shows excellent results in terms of toxicity and local control.

PO-0700

StereoMedica body radiation therapy with real-time tracking for localized prostate cancer

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Purpose/Objective: Stereotactic Body Radiation Therapy (SBRT) take advantage of the prostate low a/b ratio to deliver a large radiation dose in few fractions. Recent technological developments, combined with modern understanding on prostate radiobiology have generated enthusiasm for hypofractionated regimens. We report our preliminary results with Cyberknife stereotactic radiosurgery in patients with clinically localized prostate cancer.

Materials and Methods: From July 2007 to October 2011, 107 patients with a median age of 75 (range 60– 86) years, a T1c – T2 b prostate cancer were treated with Cyberknife stereotactic radiosurgery at our institution. The majority of patients 59 (55%) were high risk patients using the NCCN criteria . Pre-treatment PSAs ranged from 1.75 to 23.88 ng.ml (median 7.4 ng.ml). Among the entire study cohort 7 of 19 high risks patients received androgen deprivation therapy (ADT), ADT was not administered to any low - intermediate risk patients A prescribed dose of 39 Gy in 4 fractions was delivered to the PTV, which was defined as the prostate (plus seminal vesicles in High risk patients) expanded 3 mm posteriorly and 5 mm elsewhere. Real-time intrafractional motion tracking was used. Biochemical control was assessed using the nadir+2 (Phoenix) definition.

Results: All patients were placed on A-blockade medication at the beginning of Cyberknife radiosurgery treatment. Acute side effects were generally mild and resolved shortly after treatment. No rtg grade 4 acute or late rectal/urinary complications was observed. 3 patients developed Grade 3 late urinary toxicity following repeated urological instrumentation, including cistoscopy and urethral dilatation. Four patients, one with prior Turp, experienced incontinence, one 9 months after treatment, two 12 months after treatment, one 27 months later. One patient experienced rectal incontinence 12 months after treatment. The actuarial median follow up is 30 months (range 12 - 60 months). The four years actuarial psa relapse free survival rate is 93.9% (CI: 88.0%-99.8%). To date 5 patients failed biochemically. One low risk patient revealed local relapse 30 months after Cyberknife treatment. One high risk patient developed bone metastases, in 2 intermediate and in 1 high risk patient we observed nodal metastases. All patients are alive except four died of unrelated causes.

Conclusions: Cyberknife SBRT produces excellent biochemical control rates at up to 4 years with mild toxicity and minimal impact on quality of life. Median PSA levels compare favourably with other radiation