required further antibiotic therapy to resolve the infection. Univariate analysis demonstrated 3 variables that had a significant correlation with post-op wound infection; alcohol consumption (p=0.01), cN stage of tumour (p<0.01), and pre-op albumin levels (p=0.012). None of the other variables were significant

Table 1: Patient Characteristics

Characteristics		All Patients	% of Total	Total Infections	% Infections	p value
Total Patients	n	26	-	15	58%	-
Age						
	n	26	-	15	-	
	>60yrs	17	65%	10	59%	
	<60yrs	9	35%	5	56%	
	Age [mean]	61	-	-	-	0.145[a]
Gender						
	n	26	-	15	-	
	Male	24	92%	14	58%	
	Female	2	8%	1	50%	0.677[b]
Diabetes						
	n	25	-	15	-	
	No	22	88%	14	64%	
	Yes	3	12%	1	33%	0.781[b]
Smoking						
	n	22	-	13	59%	
	No	1	5%	0	0%	
	Yes	21	95%	13	62%	
	Pack Years [mean]	33	-	-	-	0.412[c]
Alcohol						
	n	20	-	15	75%	
	No	4	20%	2	50%	
	Yes	16	80%	13	81%	
	Units/wk [mean]	46	-	-	-	0.01[c]
BMI						
	n	20	-	11	55%	
	<20	5	25%	3	60%	
	20-25	10	50%	4	40%	
	>25	5	25%	4	80%	
	BMI [mean]	23	-	-	-	0.319[b]
Albumin [pre-op]						
	n	25	100%	15	60%	
	<3.2g/dl	10	40%	9	90%	
	>3.2g/dl	15	60%	5	33%	
	Albumin [mean]	32	-	-	-	0.012[b]

a - t test
b - Fisher exact test
c - Mann-Whitney U test

Conclusions: The infection rate post-salvage laryngectomy was 58%. It occurred within a very high-risk patient cohort and was within the range quoted in the current literature literature which ranges between 40-61%. The antibiotic prophylaxis protocol, appears to have a significant impact on the rate of infection. This should modified in order to reduce the rate of post-operative infection and its efficacy should be re-evaluated.

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IMPACT OF RADIATION THERAPY ON LOCOREGIONAL CONTROL IN MERKEL CELL CARCINOMA OF THE HEAD AND NECK

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Purpose: Merkel cell carcinoma (MCC) is a rare form of skin cancer of neuroendocrine origin that has been described as the most aggressive cutaneous malignancy. MCC has a high propensity for local recurrence, as well as regional and distant metastases. Currently, there is no consensus on the appropriate mode of treatment for MCC owing to its rarity and the lack of patients for a randomized, prospective trial to compare different modalities. The real benefit of adjuvant radiation therapy in MCC is unclear. Aim of this study is to analyze retrospectively results of surgery followed by adjuvant radiotherapy for non metastatic MCC.
Materials: Retrospective analysis was performed. Twenty-two patients (sixteen female and six male) were treated for non metastatic MCC between February 2000 and June 2.009 in Department of Radiation Oncology. The median age at presentation was 75 years; three patients were aged 55-60 years, three were aged 61-70, eight were aged 71-80 and eight were over the age of 80 years. Tumors stage (Yiengpruksawan classification) were: stage I (skin disease alone) : 14 patients and stage II (regional lymphadenopathy): 8 patients. Tumor was located in head and neck (22 patients). Treatment consisted of surgery of the primary (17 patients) and lymphadenectomy (5 patients). Surgery was microscopically complete in 64 % of patients, with positive margins in 36% of patients. Radiotherapy was given in the tumor bed in all patients to a median total dose of 57 Gy (2 Gy per fraction). Lymph node areas were irradiated in 14 patients to a median total dose of 50 Gy (2 Gy per fraction).
Results: Minimum follow-up was 12 months ; no patient was lost to follow-up. 12 of 22 patients; 54,55%; (IC 95%: 33,74% - 75,35%) had a relapse (mean time before recurrence, 5.7 months: 2 weeks - 20 months). Local recurrence was observed in 3 patients; 13,64%; (IC 95%: 0,50% - 28,50%), lymph node recurrence was observed in 4 patients; 18,18%; (IC 95%: 1,95%-34,05%) and 5 patients; 22,73%; (IC 95%: 5,41- 40,59) had both local and regional lymph node recurrence. In 8 patients; 36,36%; (IC 95%: 15,94 - 56,06) systemic metastases developed. Site of the primary tumor (in or out of the head and neck region) was not associated with any difference in the outcome.
Conclusions: MCC is an aggressive skin cancer with high incidence of both local and lymph node recurrence and distant metastases, despite local treatment combining surgery and adjuvant radiotherapy. Prospective evaluation of adjuvant radiation in MCC is warranted.

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INDUCTION DOCETAXEL AND S-1 FOLLOWED BY CONCOMITANT RADIOTHERAPY WITH LOW-DOSE DAILY CISPLATIN IN LOCALLY ADVANCED HEAD AND NECK CARCINOMA

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Purpose: To assess the efficacy and safety of induction chemotherapy with docetaxel (40 mg/m^2 d1) and S-1 (40 mg/m^2 bid d1-14) (DS), and radiotherapy with concurrent daily cisplatin (6 mg/m^2) (PX) in locally advanced head and neck carcinoma (LAHNC).
Materials: Fifty patients with LAHNC [stage III or IV (M0)] arising from the oral cavity, larynx, oropharynx, hypopharynx, or nasopharynx received two cycles of induction chemotherapy with DS, followed by seven cycles of PX.
Results: All patients had stage IV. The most common site of the primary tumor was the oropharynx (34%). Fourty three (86%) of 50 eligible patients completed DS. The most frequent grade 3-4 hematologic toxicity was neutropenia (14%). The median relative dose intensity (RDI) of docetaxel and S-1 was 1.0 (range, 0.12-1.0) and 1.0 (range, 0.50~1.0), respectively. Fourty one of 43 patients who completed DS started PX, all within 3 to 4 weeks after the start of the second cycle of DS. The most common grade 3 nonhematologic toxicity of PX was mucositis (20%). Thirty-one of 40patients received full doses of cisplatin (78 % compliance). Best response to DS and following completion of PX was partial response in 60% and complete response in 47%, respectively. With a median follow-up of 13.2 months, 2-year progression-free survival and overall survival was 86.2% and 87.3%, respectively.
Conclusions: Administration of DS before PX chemoradiotherapy resulted in high response rate with good tolerability, and did not compromise subsequent chemoradiotherapy. Sequential treatment approach using this induction regimen and PX chemoradiotherapy was feasible and efficacious.

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MEDULLARY THYROID CANCER (MTC) : RESULTS OF TAILORED TREATMENT.

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Purpose: MTC is a relatively rare disease, surgery is the main step of treatment. Calcitonin is a specific marker in the serum. MRI and PET have made possible to localize the occult recurrence and treat patients more selectively.
Materials: From 1965 to December 2009, 53 consecutive PaTientS (PTS) (37 women, 16 men) were treated in our Institute for MTC. Analysis of treatment, results, complications, prognostic factors (T, N, M, calcitonin, CEA) recurrences and survival. PTS had a total thyroidectomy and central neck node dissection + lateral if suspicious nodes (sonography or MRI). After incomplete resection or lymph node involvement with capsular rupture, postoperative external radiation was applied.
Results: Median age was 54.5 yrs. Stage distribution was St I : 6 ; St II : 15 ; ST III : 26 ; St IV : 4 ; unknown : 2. Fourteen PTS were referred after incomplete surgery done elsewhere, additional hemithyroidectomy was performed in 4 PTS, total thyroidectomy in 49 PTS ; 42 PTS underwent lymph node dissections ; 10 PTS had postop. complications : recurrent unilat. nerve paralysis (4) ; hypoparathyroidism (3) ; deep venous thrombosis (1) ; Horner syndrome (1), paresia (1). Postop. Radiation was applied to 18 PTS, chemotherapy to 3 PTS.There were 22 deaths among which 12 due to MTC, 3 due to other causes, 7 unknown cause. Median F.U. for PTS alive : 10.1 yrs (0.4 to 21.7). Overall survival at 5 and 10 yrs were 73 % (CI : 95 % : 60 86 %) and 55 % (CI : 95 % : 40 70 %) respectively. Predictive factors for worse survival were : ST > II (HR = 2.87, CI 95 % : 1.10 7.49), lymph node invasion (HR = 2.73 . Cli 95 % : 1.04 7.20), external radiation (HR = 4.23, CI 95 % : 1.71 10.69). Ten PTS with normalised calcitonin (< 15) are alive NED, whereas in 38 PTS with persistently elevated calcitnonin the survival was compromised (logrank test on survival curves : p = 0.02). Nevertheless 21 PTS are alive for

long periods (median 12.4 yrs, r : 2 to 22 yrs) with persistently elevated calcitonin levels. In 5 out of 9 PTS with this elevated calcitonin, 18-FDG PET and or octreo-PET could localize tumoral tissue, 2 of those PTS had successful salvage surgery, 3 other PTS had disseminated metastases.
Conclusions: In the past hyper radical surgery has been advocated for MTC, but nowadays novel tools : MRI and PET (5FDG or/ and octreotid) are able to provide useful localization of tumoral deposits, that could be surgically removed selectively. This tailored treatment should improve the survival and lessen the morbidity. Elevated calcitonin levels after initial treatment is a sign of persistent disease but the PTS can survive for prolonged periods and should be carefully monitored and treated.

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MODIFICATION OF TNM USING PET-CT FOR RADIOTHERAPY PLANNING IN HEAD AND NECK CANCER

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Purpose: Evaluate the change of TNM classification based in findings of PET-CT used for radiotherapy (RT) planning in head and neck cancer.
Materials: The study included 22 patients with head and neck cancer treated in 2009-2010, who underwent ^{18}F-FDG PET-CT for RT treatment. It was performed an visual and semi-quantitative image analysis by a nuclear medicine physician blinded to the clinical staging provided by the radiation oncologist with clinical examination and radiological images. Average age 62 years (range 34-75). Location: oral cavity 5(22,7%), nasopharynx 5(22,7%), oropharynx 4(18%), hypopharynx 6(27,3%) and larynx 2(9%). Histologic type: epidermoid carcinoma 16(72,7%) and lymphoepithelioma 6(27,3%). Clinical stage pre PET-CT: I 1(4,5%), II 1(4,5%), III 3(13,6%), IV-A 14(63,6%), IV-B 3(13,6%). Histologic grade: well differentiated (GI) 2(9%), poorly differentiated (GIII) 7(32%) and undetermined grade (GX) 13(59%).
Results: In 10(45,4%) a difference pre and post PET-CT was found; 8(36,3%) were previously overstaged and 2(9,1%) understaged. The mean SUV max was 23,7 (range 9,7-43,3) and depending on histologic grade the mean SUV max was: 17,7 for GI; 21,7 for GIII and 25,8 for Gx. The mean SUV max was 24 for epidermoid carcinoma and 25 for lymphoepithelioma. Staging changes were assessed in primary tumor, nodal involvement and distant metastases. Changes were assessed in 8(36,3%) for primary tumor staging (T): 1(4,5%) was understaged (from T3 to T2) and 7 (31,8%) overstaged (3 T2 to T4, 1 T2 to T3, 1 T1 to T2 and 2 T3 to T4). Changes in nodal staging (N) were seen in 10(45,4%): 5(22,7%) were previously understaged (1 N2c to N2a; 1 N2b to N2a; 2 N2c to N1 and 1 N3 to N2c) and another 5(22,7%) overstaged (1 N2b to N2c; 1 N2b to N3; 1N0 to N1;1N0 to N2b and 1 N1 to N2c). In 4 pts (18,1%) were found distant metastases, changing the intention of the treatment.
Conclusions: The use of PET-CT in radiotherapy treatment planning is useful in accurate the disease staging, help to a better definition of the treatment fields and can change the intention of the treatment.

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PATTERN OF FAILURE AND HISTOPATHOLOGICAL FEATURES IN PATIENTS WITH POSITIVE POSTRADIATION PLANNED NECK DISSECTION

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Purpose: To report patterns of failure and histopathological predictors in head and neck cancer (HNC) patient with positive histology at planned neck dissection (PND) following definitive radiotherapy (RT) with or without chemotherapy.
Materials: We reviewed all newly diagnosed mucosal HNC patients who underwent a PND in our institution from 1998 to 2007. PND was defined as a neck dissection (ND) performed within 18 weeks after RT without clinical evidence of persistent primary disease or distant metastases (DM). ND as a part of salvage procedure for uncontrolled locoregional disease was excluded. All positive PND (PND+) specimens were pathologically confirmed. Uni- and multi-variate analyses were performed to identify predictors of PND positivity and outcomes. In the PND+ cohort, we further investigated the frequency and predictive value of histopathological features. Time-to-event outcomes were calculated from the date of PND.
Results: A total of 194 PNDs [50 PND+, 144 PND negative (PND-)] were eligible for this study. The median interval between RT completion and PND was 12.2 weeks. The primary sites were 139 oropharynx, 19 hypopharynx, 10 larynx, and 26 unknown primary. The initial N was N1 (9), N2 (150) and N3 (35). Older age (continuous variable), hypopharynx site, T3-4 classification, and N2c-N3 categories were predictors for positive PND (all p<0.05) on univariate analysis, but only the first 2 variables remained significant on multivariate analysis (both p=0.01). Median follow up was 4.8 years. The PND+ cohort had lower 5-year overall survival (OS) (33% vs. 77%, p<0.01) compared to the PND-. PND+ cases had much higher DM rate (44% vs. 11%, p<0.01) with moderately lower local control (LC) (86% vs. 96%, p<0.01). The regional control (RC) rate was similar (94% vs. 99%, p=0.07). Extracapsular extension/soft tissue deposit (ECE/STD) was a common feature apparent in 27 (54%) PND+ specimens. Positive or extremely close (<1mm) margin, level 4/5 nodal involvement, ECE/STD, and lymphovascular invasion (LVI) were all adverse predictors for OS on univariate analysis (all p<0.05) but only ECE/STD and LVI remained significant on multivariate analysis. 13/14 PND+ cases with a positive or <1mm margin had died while there was no difference in rates of death between those with margins between 1-4 mm vs. >= 5 mm (p=0.30) (Table 1).

Table 1. Frequency and predictive value of histopathological features for 50 PND+ patients

	Category	Rate of Death (%)	Univariate Analysis p value [HR]	Multivariate Analysis p value [HR]
Level 4/5 node	Positive	15/16 (94%)	**p=0.005** [HR: 2.8 (1.4-5.7)]	p>0.050
ECE/STD	Yes	21/27 (78%)	**p=0.010** [HR: 2.8 (1.4-5.7)]	**p=0.010** [HR: 2.8 (1.3-5.9)]
LVI	Yes	11/13 (85%)	**p=0.002** [HR: 3.3 (1.5-7.0)]	**p=0.002** [HR: 3.4 (1.6-7.3)]
Resection Margin	Positive	5/6 (83%)		
	<1 mm	8/8 (100%)		
	1 mm	1/3 (33%)		
	2 mm	2/4 (50%)		
	3 mm	1/3 (33%)		
	4 mm	1/3 (33%)		
	≥5 mm	13/23 (57%)		
Margin Status	Positive vs. Other		**p=0.004** [HR: 4.5 (1.6-12.4]	p>0.050
	Positive & <1 mm vs. ≥1 mm		**p<0.001** [HR: 4.5 (2.1-9.6)]	p>0.050
	Positive & ≤1 mm vs. > 1 mm		**p=0.001** [HR: 3.5 (1.6-7.4)]	p>0.050
	1-4 mm vs. ≥5 mm		p=0.298 [HR: 2.1 (0.5-8.3)]	p>0.050

Abbreviations: PND+: positive planned neck dissection; LVI: lymphovascular invasion; ECE/STD: extracapsular extension/soft tissue deposit; HR: hazard ratio

Conclusions: Older age and hypopharynx patients are more likely to have positive PND. ECE/STD and LVI correlate with reduced survival for PND+ patients. Close margin appears not to impact on survival greatly excepting those with extremely close (<1 mm) resection margin. Positive PND is associated with lower survival, predominantly attributed to significantly increased DM rather than reduced LC and RC.

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PRELIMINARY EXPERIENCE WITH HELICAL TOMOTHERAPY USING SIMULTANEOUS INTEGRATED BOOST (SIB) IN NASOPHARYNX CANCER

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Purpose: Conventional RT is associated with high doses to sensitive normal structures and adverse effects on quality of life in patients with head and neck cancer. Complex PTVs and dose tolerance are limiting factors for dose prescription and potential dose-escalation. Tomotherapy is a novel technique which allows the delivering of image-guided intensity modulated radiation therapy (IG-IMRT) that could result in a better dose distribution and could improve normal tissue tolerance. We report our initial experience in the treatment of nasopharynx cancer with helical tomotherapy (HT) using a simultaneous integrated boost.
Materials: Between March 2009 and July 2010,12 patients in stage IIb-IV with nasopharynx carcinoma were treated with CTRT;11 patients were males and 1 female, with a median age 56 years. Three course of induction CT before combining CTRT were given to 8 pts with bulky local or regional disease. Five patients underwent 3 courses of 5-FU and CDDP bolus (weeks 1-4-7) alternated with 3 courses of radiation (weeks 2-3, 5-6,8-9) and 7 patients received concurrent CDDP 1-21-43. Radiotherapy was delivered by a simultaneous integrated boost (SIB) technique. The prescribed doses were 66 Gy to CTV1 (primary tumor and pathologic nodes), 60 Gy to CTV2 (primary tumor, pathologic nodes with surrounding areas at high risk) 54 Gy to