image outcome than the surgically treated OCC patients. Education was also an independent factor for BIS. In OCC patients, facial skin sacrificed, mouth angle sacrificed, maxillectomy, and mandibulectomy were significantly associated with BIS. Using multivariate analysis, inferior maxillectomy and segmental mandibulectomy were the independent poor prognosticators of body image outcome in OCC patients.

Conclusion: The radical surgery for head and neck cancer patients has a significant impact on body image, especially those with facial bone destruction. These findings could be used to guide psychosocial interventions targeting body image disturbance for patients with head and neck cancer.

PO-0635
Dose to the masseter muscle and risk of trismus after chemoradiation for advanced head & neck cancer
S. Verheijen1, O. Hamming-Vrieze1, M. Jonker1, E. Lamers1, S.A.C. Kraaijenga2, L. Van der Molen3, J.B. Van de Kamer1, M.W.M. Van den Brekel1, W.D. Heemsbergen1, S. Verheijen1
1Netherlands Cancer Institute, Radiation Oncology, Amsterdam, The Netherlands
2Netherlands Cancer Institute, Head and Neck Oncology & Surgery, Amsterdam, The Netherlands

Purpose or Objective: Head and neck cancer patients treated with chemoradiation are at risk for developing trismus (reduced mouth opening). Trismus is often a persisting side-effect and difficult to manage. It impairs eating, speech and oral hygiene, affecting quality of life. Although several studies identified the masseter muscle (MM) as one of the main organs at risk, currently this structure is rarely considered during treatment planning. Prospective studies for chemoradiation are lacking. The aim of our study was to quantify the relationship between radiation dose to the MM and development of radiation-induced trismus in an IMRT-VMAT population.

Material and Methods: The 93 patients in this study participated in a prospective preventive exercise program to preserve oral functioning between 2006-2013. All received concomitant high-dose chemotherapy during VMAT- or IMRT-radiotherapy (70 Gy in 35 fractions). Tumor locations were mainly oropharynx (37%) and hypopharynx (33%). Maximum intercisor mouth opening was measured before and approximately 10 weeks after the end of treatment. Bilateral delineations of the MM were available from 2 retrospective studies. Patients were excluded if trismus was present at baseline, or if gross tumor infiltration of the MM was present on CT evaluation. Evaluated outcomes were trismus (mouth opening < 35 mm) and decrease in mouth opening. Logistic regression (using maximum likelihood) was performed.

Results: At the first evaluation, 6-12 weeks post-treatment, fourteen patients had developed radiation-induced trismus (15%). On average, mouth opening decreased with 4.1 mm, or 8.2 % relative to baseline. Mean dose to the ipsilateral MM was a stronger predictor for trismus than mean dose to the contralateral MM, as indicated by the lowest -2 log likelihood (Table 1). Figure 1A shows the correlation between the ipsilateral mean masseter dose and the relative decrease in mouth opening, with trismus cases indicated in red. No trismus cases were observed in 33 patients (35%) with a mean dose to the MM < 20 Gy. The risk of trismus in the other 60 patients (65%) increased with higher mean doses to the ipsilateral MM. Figure 1B shows the fitted NTCP curve as a function of the mean dose, with a TD50 of 55 Gy. The risk of trismus in the other 60 patients (65%) increased with higher mean doses to the ipsilateral MM. Figure 1B shows the fitted NTCP curve as a function of the mean dose, with a TD50 of 55 Gy. The risk of trismus in the other 60 patients (65%) increased with higher mean doses to the ipsilateral MM. Figure 1B shows the fitted NTCP curve as a function of the mean dose, with a TD50 of 55 Gy. The risk of trismus in the other 60 patients (65%) increased with higher mean doses to the ipsilateral MM. Figure 1B shows the fitted NTCP curve as a function of the mean dose, with a TD50 of 55 Gy. The risk of trismus in the other 60 patients (65%) increased with higher mean doses to the ipsilateral MM. Figure 1B shows the fitted NTCP curve as a function of the mean dose, with a TD50 of 55 Gy. The risk of trismus in the other 60 patients (65%) increased with higher mean doses to the ipsilateral MM. Figure 1B shows the fitted NTCP curve as a function of the mean dose, with a TD50 of 55 Gy. The risk of trismus in the other 60 patients (65%) increased with higher mean doses to the ipsilateral MM.

Conclusion: The risk of trismus can be established with the mean dose to the ipsilateral masseter muscle. The majority of head and neck cancer patients could benefit from dose reduction to the masseter muscles to prevent trismus, especially patients with a mean dose to the ipsilateral masseter > 20 Gy. Further development of a NTCP model could identify dose objectives to guide treatment planning.

Table 1. Results of univariate logistic regression analysis.

<table>
<thead>
<tr>
<th>Dose parameter</th>
<th>-2 LLH</th>
<th>RR per 10 units</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ipsilateral Masseter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume &gt; 20 Gy (%)</td>
<td>66.5</td>
<td>1.5</td>
<td>0.004</td>
</tr>
<tr>
<td>Volume &gt; 40 Gy (%)</td>
<td>69.8</td>
<td>1.4</td>
<td>0.004</td>
</tr>
<tr>
<td>Mean dose (Gy)</td>
<td>65.3</td>
<td>2.3</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Contralateral Masseter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume &gt; 20 Gy (%)</td>
<td>66.5</td>
<td>1.4</td>
<td>0.002</td>
</tr>
<tr>
<td>Volume &gt; 40 Gy (%)</td>
<td>70.6</td>
<td>1.5</td>
<td>0.007</td>
</tr>
<tr>
<td>Mean dose (Gy)</td>
<td>68.2</td>
<td>2.2</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Figure 1. % decrease in mouth opening (A), NTCP for trismus & actual incidence with 1 SE (B), both as function of mean dose to the ipsilateral masseter muscle.

PO-0636
Safety profile support efficacy of gingival clonidine tablet to prevent severe oral mucositis in HNC
1Institut Gustave Roussy, Département de Radiothérapie, Villejuif, France
2Vall d’Hebron University Hospital, Department of radiotherapy, Barcelona, Spain
3Centre de Haute Energie CHE, Department of radiotherapy, Nice, France
4University of Connecticut Health Center, Section of Oral Medicine MC1605, Farmington- CT, USA
5Centre Hospitalier Universitaire Vaudois, Service de Radio-Oncologie, Lausanne, Switzerland
6Bács-Kiskun Megyei Kórház Szegedi Tudományegyetem Általános Orvostudományi Kar Oktató Kórház Onkoradiológiai Központ-, Radiología, Kecskemét, Hungary
7Universitätsklinikum Leipzig Klinik für Strahlentherapie und Radioonkologie, Leipzig, Germany
8Hospital Carlos Haya, Radiation Oncology Dept, Malaga, Spain
9Onxeo, Clinical Department, Paris, France
10Clinique François Chénieux, Oncology and radiotherapy, Limoges, France
11Complejo Hospitalario de Navarra, Radiotherapy, Pamplona, Spain
12Onxeo, Clinical Department, Paris, France
13Onxeo, Clinical Dept, Paris, France
14Universitätsklinikum Freiburg Klinik f. Strahlentherapie, Section Head Clinical Studies, Freiburg, Germany

Purpose or Objective: Oral mucositis (OM) is the most frequent and severe acute toxicity of chemoradiotherapy (CRT) in head and neck cancer (HNC) patients. In preclinical...
studies, topical clonidine shown activity in reducing NF-kB activation and incidence of severe OM (SOM). In a randomized double blind, placebo-controlled study, a novel mucosal adhesive buccal tablet (MBT) containing clonidine reduced the incidence of SOM in HNC patients being treated with CRT. We now report overall survival (OS), tolerability and systemic exposure of clonidine of study subjects.

**Material and Methods:** Clonidine MBT 50µg (n=56), 100µg (n=65) or matching placebo (n=62) were applied to the gum once daily 1-3 days prior to RT and then daily until the end of CRT (1.8-2.2 Gy/d, 5 times/week combined with a platinum based CT). AEs, vital signs and gingival tolerance by Silness-Loe index (global score from 0 to 9) were assessed twice a week; xerostomia and sedation (visual scale from 0 to 10) were evaluated once a week. Blood and saliva samples for clonidine levels were collected Q2 weeks. OS data will be collected until 2 years after last patient last visit. Patients received a median cumulative radiation dose of 66 Gy [min: 4; max: 78]. SOM was reported in 60% [95%CI: 47%; 72%] of placebo patients, 43% [95%CI: 29%; 57%] in clonidine 50µg MBT (p=0.063) and 48 % [95%CI: 35%; 61%] in clonidine 100µg MBT (p=0.169).

**Results:** All grade AE incidence was 91% in clonidine MBT groups and 98% in placebo group (p=0.10). No difference in heart rate and blood pressure was reported between groups. Reversible hypotension AEs were reported in 7% clonidine MBT 50µg patients, 6% clonidine MBT 100µg and 2% placebo-treated patients (p=ns). Sedation score slightly increased in all groups between week 1 and week 6 (overall from 1.5 ±2.3 to 3.0 ±2.3) and was similar between groups (p=ns). Xerostomia grade ≥ 2 increased to 41% in clonidine MBT 50µg, 31% in clonidine MBT 100µg and 42% in placebo patients (p=ns). The mean plasma/saliva concentrations of clonidine were 0.087/154.2 ng/mL in clonidine MBT 50µg and 0.134/301.1 ng/mL in clonidine MBT 100µg. With a median follow-up of 15 months, the median 1year-OS of 89.3% [95%CI: 73.9; 95.8] placebo and 89.7% [95%CI: 80.4; 94.8] clonidine MBT.

**Conclusion:** Clonidine MBT daily applied to the gum throughout CRT reduced the incidence of SOM and was well tolerated in HNC patients undergoing postoperative CRT. No significant systemic effects of clonidine were reported in the phase 2 study probably due to its low systemic levels.

**PO-0637**

**RCT pilot study of Therabite vs wooden spatula in amelioration of trismus in H&N cancer patients**

R. Lee1, S.N. Rogers1, A.L. Caress2, A. Molassiotis3, R. Edwards4, D. Ryder5, P. Sanghera6, C. Lunt7, T. Yeo7, N. Slevin*

1The Christie, Research and Development, Manchester, United Kingdom
2University Hospital Aintree, Maxillofacial Unit Directorate, Liverpool, United Kingdom
3University of Manchester, School of Nursing and Midwifery, Manchester, United Kingdom
4The Hong Kong Polytechnic University, Cancer & Supportive Care, Hong Kong, China
5Bangor University, The Bangor Health Economics Unit, Bangor, United Kingdom
6University of Birmingham, Clinical Oncology, Birmingham, United Kingdom
7The Christie, Clinical Oncology, Manchester, United Kingdom

**Purpose or Objective:** Specific objectives of the study were (i) to assess whether prophylactic exercise intervention prevented the worsening of jaw tightening that would be expected following radiotherapy (ii) to assess whether the Therabite® or wooden spatulas intervention improved patients’ QOL as measured using validated questionnaires; (iii) to assess issues around power for sample size calculations, compliance and practical aspects of running a full RCT in this group of patients and (iv) whether the intervention reduced the level of post-treatment clinical management/health care utilisation required by mouth cancer patients.

**Material and Methods:** All patients had some sense of subjective jaw tightening prior to study entry. Measurements of jaw opening and QOLs were taken pre and post radiotherapy 3 and 6 months. Patients were instructed to follow the 5-5-30 regimen daily, for 6 months. (5stretches, 5times, 30 second hold).

**Results:** 37 patients with stage 3/4 oral/oropharyngeal cancers were randomised to receive the therabite device and 34 the wooden spatulas for jaw exercises. The study has shown that mouth openings had increased on average in both groups following the exercise intervention. There was no statistically significant difference between the two interventions. There were problems with compliance. Lessons learnt from the semi structured telephone interviews, (15 patients) which would aid compliance included: (1) Allow patients to have more of a say in the exercise regimen it reduce to 3 times a day. (2) Allow patients to take a variable break (up to 6 weeks) from the exercises when side effects of radiotherapy are at their worst. Mucositis, soreness and pain in mouth being reported during last few weeks and 4 weeks post radiotherapy. (3) More regular contact with the patients for encouragement and support. The study was designed to give an indication about the benefits of exercises and to inform feasibility to conduct a larger study.

**Conclusion:** Prophylactic exercises during and after radiotherapy treatment can ameliorate trismus for stage 3 and 4 oral/oropharyngeal cancers. Keyword: Trismus, Radiotherapy This abstract presents independent research funded by the National Institute for Health Research (NIHR) under its Research for Patient Benefit (RfPB) Programme (Grant Ref No: PB-PG-0610-22317). The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health. Sponsor: The Christie NHS Foundation Trust

**PO-0638**

**Adaptive dose painting by numbers for head and neck cancer: interim analysis of a randomised trial**

F. Duprez1, J. Daisne2, D. Berwouts3, W. De Gersem1, I. Goethals4, A. Olteanu1, J. Schatteman1, T. Vercauteren1, W. De Neve5

1Universitair Ziekenhuis Gent, Radiotherapy, Gent, Belgium
2Clinique et Maternité Sainte-Elisabeth Namur, Radiotherapy, Namur, Belgium
3Universitair Ziekenhuis Gent, Nuclear Medicine, Gent, Belgium

**Purpose or Objective:** A prospective randomized multi-centre phase II trial comparing standard IMRT (S-IMRT) to 3-phase adaptive dose painting by numbers (DPBN) for head and neck cancer (HNC) is currently recruiting patients. Unlike the fact that the initial dose prescription was derived from a phase I trial, we observed an unacceptable rate of late mucosal ulceration using this dose prescription in the DPBN group. This made us change the dose prescription in two steps. This interim analysis reports on acute and late toxicity and local (LC), regional (RC) and distant control (DC) in almost half of the patients to be included.

**Material and Methods:** From 2011, Q3 to 2015, Q3 53 patients received primary radio(chemo)therapy for HNC. We report on 45 patients who have ended therapy for 3 months. Patient, tumor and treatment characteristics can be found in Table 1