preservation and avoids permanent colostomy. Aim of this work was to give an overview on up-to-date technical possibilities and clinical results of the brachytherapy boost treatment in anal canal cancer.

Material and Methods: A literature review was performed and synthesized with personal experience on the field. Special focus was taken on image guided (image adapted) interstitial brachytherapy methods. Investigated imaging guidance possibilities include the use of 3D transrectal ultrasound, MRI- and CT imaging. Preplanning and real-time planning methods are discussed. The role of FDG-PET in target definition as well the role of LDR, PDR and HDR brachytherapy methods were analyzed in relation to clinical results. Outcome and toxicity data were reviewed according to different dose levels and techniques.

Results: Modern external beam technology (IMRT) improves the results of radiotherapy w/o chemotherapy, FDG-PET seems to be superior to CT in visualization of the primary tumor. Image fusion (PET/MRI/CT) can improve the results of a single imaging method; however, 3D transrectal ultrasound represents the most appropriate local imaging for target definition. Radiation dose is associated with local control in locally advanced anal cancer: higher dose and shorter overall treatment time (>54 Gy within 60 days) improve the results. Most of the studies report local control (LC) rates with anal function preservation at five years of >80% in small tumors and ~65-70% in T3/4 disease. Nodal stage is the most significant factor influencing overall survival (~66% at 5 years). PDR appears to be able reproducing the good continuous LDR treatment results. Image guided/adapted HDR brachytherapy boost complementary to IMRT w/o chemotherapy results in moderate decrease of late radiation proctitis data. Usually, brachytherapy boost reduce severe acute toxicity of high-dose IMRT and offer a low late toxicity rate (18% G3/G4). Controlled QoL investigations showed slightly better but not significant differences in toxicity of HDR boost compared to IMRT boost - in advantage of brachytherapy.

Conclusions: Interstitial brachytherapy boost complementary to external beam treatment is an effective dose escalation method in function preservation therapy of anal canal cancers. Total dose level and total treatment time are important factors for the outcome. Modern, image guided and adapted brachytherapy technology compared to careful patient selection has the potential to reduce late toxicity and preserve function.

SP-0123
Modern brachytherapy, an option for head and neck cancers.

Indications, techniques and results.

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Introduction: After a golden age (1980-1990) with a lot of publications and presentations of Head and Neck (HN) cancers and LDR manual brachytherapy this area has become an increasing silent area of brachytherapy (BT).

This happened despite of the following:

- Good historical data with high local control rate (LC) and preservation of function and anatomy.
- New emerging technologies (PDR and HDR) with perfect radiation protection and improved patient care
- Improved 3D CT-based dose planning with possibilities for dose optimization.

Materials and Results: Since 1994 PDR BT has been routinely used in our hospital as a modern substitute for LDR in the treatment of H&N cancers. We present our experience in four different indication groups with examples:

A) Mono brachytherapy for cancer of the Lip (PDR 60Gy for 6 days) where we found a 5-year LC of 95 %. In other T1-T2 Squamous or Basal cell Carcinomas in the H&N region treated by interstitial or surface applications we found a 90% LC rate.
B) Boost brachytherapy (PDR 35 Gy for 3,5 days) of Base of Tongue (BOT) cancer (≥3 cm T3-T4) we obtained 89% LC after 5 years. A lot of other areas for BT boost in H&N cancers are also of interest.
C) Reirradiation of local recurrences. No systematic data available.
D) Adjuvant brachytherapy after marginal or non-radical surgical resection. No systematic data available. The combined procedure is feasible in our experience and should be further investigated in the future.

Discussion and conclusions: In our experience modern machine afterloading with PDR is at least as effective as classical LDR BT. Systematic data on HDR BT in H&N cancers is sparse but probably is similar in effect.

Modern BT will improve patient care and dose planning. Long time follow up with high patient numbers is crucial to study these relatively rare tumour sites. International pooled data analyses organized by the ESTRO H&N working group are being planned.

Theoretical education (an ESTRO course) and practical training (at several European training sites organized by ESTRO) in modern H&N cancer brachytherapy are essential for the future development of this area.

SYMPOSIUM: EU PROJECTS 1

SP-0124
ULICE- particle therapy behind ULICE

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The ULICE project - Union for Light Ion Centers in Europe - started in 2009 and is now in its final phase. In the ULICE community a discussion on how to go ahead exploiting the scientific results got from the project research activities is open. The most important output will be the creation of a European Hadron Therapy Research Board. This structure will be a multi-centres research organisation willing to go beyond ULICE. Taking advantage of the network of communication and research, both clinical and pre-clinical, constructed during the course of the project, it should be feasible to continue with exchange of experiences, enhance clinical and translational research between current, and future, European Hadron Therapy Centers, all of them being partners of the ULICE consortium.

Mentioned multi-centre international setting can really urge radio-oncology and hadron therapy in particular to raise a shared clinical evidence.

The main tasks of the building up European Hadron Therapy Research Board will be 1) to guide the design, implementation, operation and continuous evaluation of a prospective multi-centre database for patients treated in a defined consortium of centres with carbon ions, proton advanced photons; 2) to guide the design, performance and results of database oriented research; 3) to design, to decide and to follow up on multi-centre phase I, II, and III clinical studies performed in the carbon-ion centres alone or in combination with photon and/or proton facilities; 4) to link translational research from various areas of interest and research groups to ongoing and projected clinical trial and database orientated research.

The activities of this European Hadron Therapy Research Board will be linked to all relevant clinical radiotherapy research organisations and networks on the international/ national/regional level in European member states and regions which focus on hadron and advanced photon radiotherapy research.

SP-0125
MEDRAPET: Education and training in medical radiation protection: the experience from the MEDRAPET project

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MEDRAPET (MEDical RadiationProtection Education and Training, MEDRAPET) is a European Commission project aimed to improve the implementation of the Medical Directive’s provisions related to radiation protection education and training of medical professionals in the EU member states. The professional organizations involved include the European Society of Radiology (ESR) as a coordinator, the European Federation of Organizations for Medical Physics (EFOMP), the European Federation of Radiographer Societies(EFRS), the