The aim of this study is to evaluate feasibility, acute and late toxicities and cosmetic results with a long follow-up.

Material and Methods: Methods and materials: From January 2005 to December 2013 a total of 445 patients were enrolled in the study, implanted during surgery and treated using a microSelectron-HDR brachytherapy Unit. The median age of the patients was 65 years (range 48-88 years). All those enrolled had an infiltrating ductal carcinoma in the absence of an extensive intraductal component and with clear surgical margins. Sentinel node biopsy was positive in 19,9% of patients and the 76,7% of patients have had estrogen therapy, 15,9% have had adjuvant chemotherapy. In the 95.75 of patient the histology was ductal infiltranting carcinoma, in the 51% of cases the stage was T1b, in the 35% was T1c. Adjuvant chemotherapy was given to 15,9% of patients and hormone therapy to 76,7% of patients. The reference dose is taken as 85% of the mean basal dose. A reference dose of 35 Gy (3.5 Gy in two fractions per day) was delivered to 17% and a dose of 32 Gy (4 Gy in two fractions per day) to 83%. The average time of overall treatment was five days (76,8% in 4-5 days and 23,2% in 6-7 day); the difference is due to festivity and hospital provenience. Catheters were implanted (average of 14) guided by templates in most cases with distance between holes of 16 mm, in a double or triple-plane arrangement in 99% of patients. The mean volume surrounded by the prescription-isodose was 69,2 cc (range 13-129 cc). The treatment plans were evaluated in terms of skin dose, natural dose-histogram, quality (mean 2,15 - range 1-3.04) and uniformity (mean 2.53 and range 1-3.54) index.

Results: Results: The average overall treatment time is five/six days starting from implant commencement. The incidence of acute and late toxicities are given in Table I. Cosmetic results were excellent/good in 81% of patients. In a follow-up of 96 months we observed a local control of 7,7% and in 1,5% metastatic disease.
Table II. Acute and late toxicities.

toxicity	*acute*	*late*
Erythema, grade III	4,1	
Dehiscence	4,4	
Reversible oedema	4,1	
Infection	2,7	
Sieroma	3,4	
Fever	3,1	
Highly pigmented skin		8,4
Telangiectasia		5,6
Moderate fibrosis		8
Medium fibrosis		2
Scarring Keloids		0,4
Fat necrosis		1,7

Conclusion: Conclusions: The initial data demonstrates that an interstitial perioperative brachytherapy implant is a feasible method of treatment with good tolerance and good cosmetic results.

Poster: Brachytherapy track: Gynaecology

PO-0956
Audit of 100 consecutive cervical cancer patients treated with HDR CT guided brachytherapy

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Purpose or Objective: To assess the outcome of patients treated with CT guided HDR brachytherapy for cervical cancer

Material and Methods: The records for 100 consecutive patients treated in our centre were reviewed. All patients prior to treatment had a biopsy for diagnosis, and a staging pelvic MRI and whole body PET scan. Treatment comprised of EBRT to a dose of 45Gy in 25 fractions given to the pelvis ± para-aortics with concurrent cisplatin chemotherapy. The brachytherapy was delivered in 3 fractions using a ring and tandem applicator with CT planning of each individual fraction and using information from a pre-implant planning MRI. The aim is to achieve HRCTV d90 of >80Gy whilst staying within the published parameters for the OARs. The outcomes in terms of survival and pattern of relapse were recorded and correlated with the HRCTV d90 and volume, and the dose to the OARs. The unpaired t-test and pearson correlation coefficient were used with 2-tailed significance testing level of 0.05.

Results: The median follow up was 32 months with a median age at time of treatment of 44 years (21 – 85 years). Most patients were diagnosed with squamous cell carcinoma (77) or adenocarcinoma (17), 3 patients had an adenosquamous carcinoma and there were 4 cases with unusual histological findings of small cell, serous papillary (2) or neuroendocrine carcinomas. At the time of follow up 78 patients are alive, 21 died from disease and 1 died from unrelated causes. The median time to relapse was 8 months (range 1-23 months). There were 2 cases of isolated pelvic central recurrences, 11 cases of pelvic and distant metastases and 8 cases with only distant disease. The median d90 was 83.9Gy and the mean HRCTV volume was 32.3cm3 (range 9.0 – 83.9cm3). There was a statistically significant difference in d90 between patients with relapse v.s. no relapse ($t= 2.49$, $p=0.019$) and there was a strong negative correlation between the HRCTV volume and the d90 ($r= -0.48$, $p<0.0001$). The median doses to the OARs: rectum 60.3Gy (46.8 – 74.1Gy), sigmoid 66.9Gy (46 – 76.5Gy), small bowel 59.1Gy (43.7 – 75Gy) and bladder 75Gy (51.4 – 93.9Gy). There were 3 cases with grade 3-4 toxicity that could be related to the brachytherapy: 1 vesico-vaginal fistula, 1 recto-vaginal fistula, and 1 post treatment hydronephrosis.

Conclusion: CT guided cervical brachytherapy allows the delivery of adequate radiation doses to the HRCTV as shown by our acceptable local control and toxicity rates. The pattern of distant disease in the majority of relapses indicates that despite optimal staging investigations and adequate radiation doses to the HRCTV, distant undetected microscopic disease will still determine the outcome in a proportion of cases.

PO-0957
Focal boost to GTV in interstitial and intracavitary cervical brachytherapy - a feasibility study

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Purpose or Objective: Image guided plan optimisation with MRI and CT for interstitial and intracavitary brachytherapy is an established technique in treating cervical cancer. The purpose of this current study is to assess the feasibility of boosting the dose to GTV(BT) to 140% of the HRCTV prescription dose, while keeping critical structure dose volume histograms within tolerance.

Material and Methods: 14 MRI/CT guided treatment plans were analysed in this study. Patients were treated using either Vienna-style ring applicator or Fletcher-style applicator, with or without interstitial catheters. The median age of the patients was 51.5 years (range 25-80.2 years). One patient had FIGO Stage IB cancer, 10 had stage IIB cancer and 3 had stage IIIB cancer. All received IMRT external beam