OBJECTIVE
To compare intraprostatic spatial distribution of prostate cancer before and after a primary single session of whole gland robotic High Intensity Focus Ultrasound (HIFU) by Ablatherm for localized prostate cancer (PCa): ...a non homogeneous special distribution would help identify potential Ablatherm treatment limitations!

MATERIAL AND METHODS
Prostates were subdivided into 8 spatial areas: Apex/Mid/Base/ Seminal Vesicles, each Right/Left, to allow topographic study integration and standardisation of different diagnostic externally practised transrectal biopsy modes. For each staging- and follow up biopsy, 2 main criteria were registered in a prospective database: 1st, spatial location and 2nd, "mm cancer core length" within each biopsy. Tumor volume was defined and quantified by a "tumor volume score/area": (0 points = no PCa/<1mm; 1 point = PCa 1-3mm; 2 points PCa 4-6mm; 3 points PCa >6mm in biopsy). Data were analyzed from subjects with localized PCa (T1-3b) who underwent primary whole gland HIFU with Ablatherm (EDAP-TMS, Lyon-France) and had both baseline and follow up histological informations. 1,299 subjects representing 15,588 staging and control biopsies after first HIFU were included.

RESULTS
Patients with increasing PSA after HIFU underwent biopsy controls: 71.2% of the cases did not show histological evidence, in 28.8% of all whole gland treatments (T1-3b, N0, M0) recurrent/persisting PCa was evident after 1st HIFU. But tumor volume in these cases was reduced significantly by 66%. At diagnosis the average number of positive PCa affected biopsy cores was mean 2.91 compared to (mean) 1.08 for follow up biopsies. The "PCa volume score" (0-24), reflecting the intraprostatic PCa tumor volume was (mean) 5.16 (median 4.0) at diagnosis versus mean 1.75 (median 1.0) at follow up (P<0.001). Spatial staging preference for primary PCa was in mid-lateral area, less on apex or base. PCa distribution on both lobes was symmetric (RL) at staging and follow up.

DISCUSSION
This study’s observation does NOT support two recent theories: 1st: a "Right/Left difference in efficacy"; 2nd: "apical undertreatment". The "apical safety margin" is the distance from the first transverse plane of ablation lesions to the external sphincter (3.5mm): this is done with the intention to ablate the entire apical intracapsular prostate tissue by conductive heat without damaging the external sphincter. The observed uniformity of ablation from apex to base confirms the efficacy of this methodology.

CONCLUSION
There is no spatial preference for rPCa after HIFU by Ablatherm which could indicate specific Ablatherm HIFU application problems.

AFFILIATIONS and CONTACT
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