



## Benefice of virtual microscopy on prostatic biopsy cores examination

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### Abstract

**Introduction:** Pathological examination of biopsy cores provides critical features in the management of prostatic adenocarcinomas. We evaluated the benefit of virtual microscopy in pathological examination of biopsies cores in prostatic adenocarcinomas.

**Materials and methods:** 1800 prostate needle biopsies from 150 consecutive patients were digitized using Olympus BX51 scan. Initial histological data were reviewed by two independent pathologists (PC and EC). Total length of biopsy cores, number of positive biopsy cores, length of tumour by biopsy cores, percentages of tumoral invasion on total biopsy cores, and percentage of Gleason 3/4/5 cancer were measured. Total Gleason score was attributed according ISUP 2005. Optically reviewed data were compared with digits numerical findings. Preliminary results are reported on 840 biopsy cores (70 patients).

**Results:** Mean age was 61.2 (from 48 to 75). PSA varied from 2ng/mL to 28ng/ml, with a mean value of 8ng/mL. Twelve biopsy cores were available for each patient. After digitisation and centralized reviewing of the biopsies, the median number of cores involved with prostate cancer was similar (3.5 per patient). When comparing optical and numeric measurement, total length of biopsies and total length of tumour infiltration on biopsy cores showed no significant difference (respectively 39.5 mm and 12.7 mm for optical, versus 40.2 mm and 12.65 mm for numeric measurement). The mean standard deviation between the total tumoral length invasion optically or numerically measured was 2.74 mm. For a single biopsy, the mean variation between optical and digitalized measurement of tumoral infiltration was 0.83mm. Compared with the numerical reviewing, optical examination underestimated Gleason grading in 27%. It overestimated the Gleason scoring in 11% of cases.

**Discussion:** Concerning tumoral core lengths, numerical analysis allow minor adjustment in pathological findings. Variations in Gleason grading are relevant with data already published in the literature concerning reproducibility of pathologic findings. Nevertheless, our results suggest that digitalisation of prostate biopsy cores offers more precision for Gleason grading. Digitisation of prostate biopsy cores in the management of prostate adenocarcinomas must be evaluated on larger series.