THE LEARNING CURVE OF 5-ALA-INDUCED PHOTODYNAMIC DIAGNOSIS OF BLADDER CARCINOMA
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Introduction: The false-positive rates for the detection of bladder cancer by photodynamic diagnosis (PDD) vary largely between institutions (4-53%). A learning curve for fluorescence cystoscopy might result in these divergent outcomes.

Objective: The aim of this study is to investigate the difference in false-positive rates between resecting urologists and to evaluate the learning curve of PDD assisted transurethral resection of bladder tumors (TURBT).

Material and Methods: The selected data consists of 280 patients, 434 5-ALA induced PDD procedures and 1457 biopsies. Tumors were resected and biopsies were taken from suspicious areas, under guidance of white light endoscopy (WLE) and 5-ALA (aminolevulinic acid) induced fluorescence cystoscopy. The number of false-positive biopsies was measured over time in the PDD procedures performed by 5 different urologists (Urologist 1-5).

Results: Urologist 1 took 37% more biopsies (p<0.001), 42% more tumors (p=0.005) and 46% more false positives (p<0.001) compared to urologists 2, 3, 4 and 5 combined. The learning curve of the resecting urologists in this study shows a decrease in the number of false-positives up to 12-18 months after the first PDD procedure. The false-positive rate between 12-18 months of surgeon 1 is significantly lower compared to the other periods, 28% versus 45% (p=0.007).

Conclusions: The resecting urologist may be an important factor for the quality of standard and photodynamic diagnosis assisted TURBT. Learning curve programs concerning the use of photodynamic diagnosis might be required with experienced surgeons accompanying those with less experience.