

### Near infrared light usage during partial nephrectomy

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Over the past two decades, the incidence of the kidney cancer has increased by 2% worldwide. The number of young people with kidney cancer has unfortunately increased. 90-95% of renal malignancies are so called Renal-cell carcinoma (RCC). Currently, more than 50% of cases of kidney cancer are discovered incidentally in instrumental studies. RCC treatment is surgical removal of the tumor. Current guidelines recommend PN as the treatment of choice for the majority of patients diagnosed with a small renal mass. PN should always be done (if technically possible) in patients with renal cell carcinoma in a solitary kidney, if bilateral tumors are present, in chronic renal insufficiency or for patients with hereditary renal cell carcinoma. However, leaving a positive surgical margin remains one of the risks associated with nephron-sparing surgery, because this can lead to cancer recurrence. It is noteworthy that the recurrence rate of cancer in patients with positive diagnosis in removed specimen was 16%, whereas in the case when diagnosis give of negative answer the recurrence was 3%. Using NIR, we can diagnose exact margins of the cancer and in few minutes achieve negative margins and decrease the risk of recurrence. As a result, in the case revealing positive margins the surgeon will be able to remove the additional portion and will achieve negative margins. The method will be extremely fast and accurate, it takes only few minutes and thereby much less time in comparison with express histo-morphological examination. A different, much fast, safer and cheaper method than existing ones (histo- morphology, MRI and structured light microscopy), will be developed.