Ex-Vivo Ultrasonographic Control of Resection Margins During Partial Nephrectomy

Introduction and Objective: Surgery is the gold standard treatment for localized renal cancer. Partial nephrectomy (PN) shows equivalent oncologic results and lower non-cancer related mortality compared to radical nephrectomy. Even if the role of negative surgical margins is debated, it seems better to be completed. Intraoperative fresh frozen section analysis is, in our institution, unreliable, expensive, time-consuming and not well correlated to final pathological examination. The goal of the present study was to assess the feasibility of an ex-vivo ultrasonographic (US) evaluation of resection margins performed by the senior urologist and its correlation to definitive pathology in patients undergoing PN.
Material and Methods: An observational study was carried out in our institution from July 2011 to March 2012. Patients undergoing PN for T1-T2 renal tumors were included. PN was undertaken via a lombotomy in a standardized technique. The “minimal healthy tissue margin” technique was applied. Ex vivo US evaluation was performed by the senior urologist: the specimen was kept in 0.9% saline and an US determination of tumor margins was performed by evaluating the whole capsule. Then the specimen was sent for histological analysis.
Results: Twenty-six patients (10 women, age 61±9 years) were included. PN could be performed in all patients with no complication. Ex-vivo US showed negative surgical margins in 23 cases and positive margins in 2 while it could not be done in 1. Final histological analysis revealed negative margins in all except 1 case. Sensitivity and specificity were 100% and 96% respectively. Mean US duration was 1.2 [0.5-2] minute. Mean tumor size was 3.5 ± 1.8 [1.5- 8] cm and margin size was 2 ± 1.7 [0.5-7] mm.
Conclusion: Intraoperative ex-vivo US evaluation of resection margins in patients undergoing PN is feasible, time efficient, seems to be well correlated to definitive pathological examination and should be evaluated in further prospective trials.