

terms of non-cancer related mortality. The role of negative surgical margin has been widely debated. Intraoperative frozen section analysis has been shown to be unreliable, expensive, time-consuming and not well correlated to final pathology. The goal of the present study was to assess the correlation of intraoperative ex-vivo ultrasonographic (US) evaluation of resection margin to definitive pathology in patients undergoing PN.

Materials & Methods: An observational study was carried out in our 2 institutions from February 2008 to October 2010. Patients undergoing PN for T1-T2 renal tumors were included. Ex vivo US evaluation was performed. Considering availability of US engine, not all consecutive eligible patients were included. PN was undertaken either by open surgery or laparoscopic access in a standardized technique. The "minimal healthy tissue margin" technique was applied. Once resected, the specimen was kept in a saline solution and US determination of tumor margins was performed. Sequential images were captured in order to evaluate the whole capsule.

Results: Twenty-two patients (9 women, age 63±11 years[46-78]) were included in the present analysis. Open or laparoscopic PN was performed in 19 and 3 patients, respectively. Intraoperative ex-vivo US showed negative surgical margin in all cases except one, needing a complementary renal parenchyma resection. US duration ranged from 1 to 4 minutes, with a median time of 1 minute. Definitive histological analysis confirmed the presence of 3 angiomyolipoma, 15 clear cell carcinoma (11 pT1a,3 pT1b,1 pT2), 3 chromophobe carcinoma (1 pT1a,1 pT1b,1 pT2) and 1 pT1a type II papillary tumor. Mean tumor size was 3.4±2.1 cm [0,6-7,2]. Final pathology revealed R0 margins in all cases.

Conclusions: Intraoperative ex-vivo US evaluation of resection margin in patients undergoing PN is feasible, time-efficient, well correlated to definitive pathological examination, and should be evaluated in further prospective trials.

93 ASSESSMENT OF SURGICAL MARGINS BY QUICK-STAINING CYTOLOGY IN NEPHRON-SPARING SURGERY

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Introduction & Objectives: Nephron-sparing surgery is an established curative approach for the treatment of patients with T1 renal cell carcinoma (RCC). The thickness of the surgical margin remains a subject of constant discussion. The standard procedure includes the performance of histological frozen section, which at our institution requires approximately 20 to 30 minutes.

Materials & Methods: In this prospective study we evaluated an alternative procedure to the frozen section. We compared a quick-staining cytology, obtained by touch preparation of the tumour basis with the frozen section result and the final histology. The RCC was enucleated with a macroscopically normal parenchymal rim of 3-5 mm and sent to the pathology lab where an imprint of the enucleated specimen and a frozen section were analyzed.

Results: From 08/2006 to 08/2010 48 patients with a mean age of 62.6 (25- 83) years underwent 54 nephron-sparing surgeries for kidney tumours. The mean diameter of the tumours was 2.6 cm. The mean follow-up was 20.8 (3-120) months. The histological surgical margins were positive in 7/54 (12.9%) and the cytology was positive in 8/54 (14%). Of the 8 tumours with a positive cytology, 6 (75%) had a positive margin in histology. Of the 46 tumours with a negative cytology, 45 had a negative margin in histology. The sensitivity of the cytology was 85% with a positive predictive value (PPV) of 75%, the specificity was 95.7% with a negative predictive value (NPV) of 97.8%. In 2/54 (3.7%) a local recurrence was observed. One of the 2 patients had a positive intraoperative cytology but a negative histology, the other had both tests positive. 5/48 patients (10.4%) died but not of a cancer related death.

Conclusions: The intra-operative cytology is a rapid, sensitive and highly specific method to determine surgical margins. It reduces diagnostic time and could be a good alternative to the intra-operative frozen section.

94 SELECTIVE ARTERIAL EMBOLIZATION FOR PSEUDO-ANEURYSMS AND ARTERIAL-VEIN FISTULA OF RENAL ARTERY BRANCHES

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Introduction & Objectives: Our purpose was to describe the presentation, endovascular management, and functional outcomes of 15 patients with renal arterial pseudoaneurysm following open and laparoscopic partial nephrectomy.

Materials & Methods: An institutional Review Board approved, Health Insurance Portability and Accountability Act-compliant retrospective review of a prospectively maintained database revealed that 7 of 1,160 patients who had open partial nephrectomies and 8 of 301 who had laparoscopic partial nephrectomies were diagnosed with a pseudoaneurysm of a renal artery branch between 2003 and 2010. Some were associated with arteriovenous fistula.

Results: Diagnosis of pseudoaneurysm was made a median of 14 days after surgery. Gross hematuria was the most frequent symptom. Median estimated glomerular filtration rate measurements made at the preoperative evaluation, postoperatively, on the day the vascular lesion was diagnosed, postembolization, and at the last follow-up were 62 mL/min/1.73m², 55 mL/min/1.73m², 55 mL/min/1.73m², 56 mL/min/1.73m², and 58 mL/min/1.73m², respectively. Median follow-up was 7.8 months. All patients underwent angiography and superselective coil embolization of one or more pseudoaneurysms with or without arteriovenous fistula. Eleven had immediate cessation of symptoms. Four patients had persistent gross hematuria after the procedure; 2 were managed with bedside care, 1 required a repeat embolization with thrombin, which was successful, and the remaining patient had coagulopathy and underwent a radical nephrectomy for persistent bleeding.

Conclusions: Pseudoaneurysms and arteriovenous fistulas of renal artery are rare complications of partial nephrectomy. Presentation is often delayed. Superselective coil embolization is a safe, minimally invasive treatment option that usually solves the clinical problem and preserves renal function.

95 FACTORS INFLUENCING THE DEVELOPMENT OF PERITUMORAL CAPSULE FORMATION AND PROGNOSTIC IMPACT OF CAPSULE PENETRATION AFTER MINIMAL PARTIAL NEPHRECTOMY FOR CLEAR CELL RCC

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Introduction & Objectives: To analyse peritumoral capsule thickness, searching for any correlation with the main pathological variables and to evaluate the prognostic impact of capsule penetration on local and systemic recurrence in patients treated by NSS for clear cell RCC with negative surgical margins.

Materials & Methods: Between 2005 and 2007, 115 consecutive patients with single sporadic clear cell RCC had NSS performed as "minimal" partial nephrectomy. Peritumoral capsule status, its thickness, pericapsular tumor lymphocytic infiltration (TIL) and main pathological variables were carefully analyzed. Peritumoral capsule thickness was measured at the four corners of the sampling.

Results: Mean peritumoral capsule thickness at the inner and at the outer poles of the tumor (SD, median, range) were 412 µm (250, 350, 20-1511) and 385 µm (253, 358, 20-1770), respectively. In 35 cases (21%) a TIL was present. Overall, in 68 (59.1%) cases the peritumoral capsule was intact and free from neoplastic penetration (PC-) while in 47 (40.2%) there were signs of penetration. Overall, 29.6% had capsular penetration on the parenchymal side (PCK). Whereas, 11.3% had peritumoral capsule invasion on the perirenal fat tissue side (PCF). At univariate analysis, thickness of tumor capsule did not significantly correlate with capsular involvement neither with main pathological variables nor with TIL. The capsule thickness measurements were significantly different among the four evaluated points in each single tumor, showing a decreasing thickness from the parenchymal pole to the perinephric pole (p<0.0008). Overall, at a mean (median, range) follow up of 44 months (46, 25-69), 5-year cancer-specific and progression-free survival were 91.7% and 89.5%. We stratified progression-free survival according to the side of capsular penetration (PCK vs. PCF) and compared the results to those of clear cell RCC with PC-. The 5-year progression-free survival for tumors PC-, PCK and PCF was 97%, 96.2% and 48.5% (p<0.0001; PC- vs. PCF p<0.0001; PCK vs. PCF p=0.0002). The multivariate model showed PCF to be the sole significant independent predictor of progression-free survival.

Conclusions: The capsule thickness presents significant variations among the four evaluated anatomical corners in each single tumor, with a greater development in the inner pole, thus hypothesising a specific role of healthy parenchyma for its formation. PCF is a significant predictor of worse outcome and the sole independent prognostic factor at the multivariate analysis. Patients with clear cell RCC with PC-, as well as those with PCK, had an excellent prognosis and these pathological features could be possibly add to prognostic nomograms if proved statistically significant in larger series with longer follow-up.

96 PARTIAL NEPHRECTOMY AND ANATOMICALLY CHALLENGING CASES: IS IT WORTHWHILE?

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Introduction & Objectives: Nephron sparing surgery is considered effective and safe, with cancer specific survival of 87-90%. Partial nephrectomy is used for removal of renal tumours and small peripheral masses. However literature on this subject is rare with regards to central renal tumours and those in anatomically challenging positions. Use of this procedure for this has only been described in 2 major series within the UK. However, PN is underutilized particularly in anatomically challenging cases. We aim to determine the efficacy of this procedure for anatomically challenging cases, i.e. those with the tumour in the central or hilar location.