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HOLMIUM LASER RETROGRADE ENDOURETEROPYELOTOMY

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Introduction & Objectives: To prospectively determine the intermediate outcome of the retrograde endoureterotomy in the management of ureteropelvic junction obstruction.

Material & Methods: Between September 2000 and July 2003, 25 retrograde endoureteropyelotomies were performed at two urological Centres in 24 patients due to primitive ureteropelvic junction obstruction (UPJO), bilateral in one case. Holmium laser endoureterotomy was conducted poster laterally under direct vision using a 7-8.5 Fr. semirigid ureteroscope and a 365-micron fiber at 1-1.4 J and 10-15 Hz. After the procedure a double J ureteral stent was inserted, to be left indwelling for 4 weeks. Imaging modalities were urography and diuretic renography, performed preoperatively, then 6 and 12 months after surgery. Outcomes were defined as follows: “complete success” as both relief of symptoms and radiologic resolution of obstruction; “partial success” as symptom disappearance, while “failure” was recorded in case of persistent pain and imaging abnormalities.

Results: All procedures were easy and uneventful, accomplished on a “one-day surgery” basis. At a median follow up of 41 months (range 30-63), complete success was achieved in 13 cases (52 %), partial success in 5 (20 %) and failure in 7 cases (28 %). Most failures (6 out of 7) occurred within two years after treatment.

Conclusions: Retrograde holmium laser endoureteropyelotomy is an effective and safe treatment for UPJO, associated with short hospital stay and intermediate term results comparable to other modalities. However, failures are not negligible, uniformly evident within the first two years after the operation. This could suggest how to set the follow up, in which diuretic renography plays a pivotal role.

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SAFETY AND SHORT-TERM EFFICACY OF LAPAROSCOPIC CRYOABLATION FOR RENAL TUMOURS ≥ 3 CM: A MULTICENTRE EUROPEAN REPORT

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Introduction & Objectives: Laparoscopic cryoablation has been used safely and effectively in the past for small (<3 cm) renal tumours. Landman et al. recently reported a high incidence of perioperative bleeding complications in a series of 15 patients with tumours >3cm in size, which raised concerns about the safety of cryoablation. We report our multicentre experience in this group of patients who have been considered to be poor candidates for needle ablation therapy.

Material & Methods: Details of patients undergoing laparoscopic renal cryoablation at 7 European centres were entered into a database prospectively. Procedures were carried out laparoscopically using laparoscopic ultrasound guidance and 17g cryoneedles or Ice Rods (Galil Medical, Israel). 80 tumours at least 3cm in size (range, 3.0 to 5.2; median 3.6) have been treated over a 4 year period. Over 80% of the patients had significant co-morbidity and were not considered good candidates for partial or radical nephrectomy. 25% had a single functioning kidney.

Results: A total of 20 perioperative complications, 7 major and 13 minor, occurred in 18 of 80 patients (22.5%). Major intraoperative complications included 1 nephrectomy and 2 partial nephrectomies for bleeding. Postoperatively, there was 1 hematoma requiring transfusion and 3 myocardial infarctions resulting in one death. Minor complications included chest infection (1), wound infection/hematoma (4), skin burn (1), fever (1), UTI (2) and ileus (4). Only 2 patients required transfusions. Overall, 4 major bleeding complications in 80 cases (5.0%) could potentially be attributed to the large tumor size.

Conclusions: Perioperative complications for laparoscopic renal cryoablation are higher in patients with tumours larger than 3 cm; however, major bleeding complications remain relatively uncommon with 17g needles. More care must be taken not to traumatize the ice ball during treatment, especially in exophytic tumours. Freezing to a target of -40 to - 60C and no lower may prevent cracking and therefore bleeding complications.

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LAPAROSCOPIC HIGH-INTENSITY FOCUSED ULTRASOUND FOR ENERGY ABLATIVE THERAPY OF SMALL RENAL TUMOURS

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Introduction & Objectives: High intensity focused ultrasound (HIFU) permits targeted homogeneous ablation of tissue. Objective of this clinical phase I study was to evaluate the feasibility of laparoscopic HIFU ablation of small renal masses in respect to homogeneity and extent of necrosis obtained with this technique.

Material & Methods: Between November 2006 and August 2007 16 kidneys with solitary renal tumours were treated with a newly developed 4.0MHz laparoscopic HIFU probe for targeted ablation of renal masses under ultrasonic control with a focal ablation zone of 3,5cm. In 3 patients a defined marker lesion was placed prior to laparoscopic radical nephrectomy. In 13 patients with a mean mass size of 25 mm (range 11–40) the tumor was completely ablated in curative intent, followed by laparoscopic partial nephrectomy in 12. One patient only had post HIFU biopsies and was followed-up radiologically. Specimens were studied by detailed and whole mount histology, including NADH stains.

Results: Mean HIFU insonication time was 22 (8 – 42) minutes, with power levels ranging between 30-38W, with a mean targeted volume of 10.2 (9-23) cm³. At histological evaluation marker lesions showed homogeneous thermal damage consistent with irreversible tissue damage within the targeted site. Of the 15 tumours removed after HIFU 10 showed complete, homogeneous ablation of the entire tumor. 2 had a 1 – 3 mm rim of viable tissue immediately adjacent to where the HIFU probe was approximated to the tumor. In one patient with borderline mass size a rim of 1-2mm distal to focal ablation zone could not be ablated. 1 tumor showed a central area of vital tissue of about 20% of its volume. There were no intra or postoperative HIFU related complications.

Conclusions: Laparoscopic HIFU provides a valuable alternative for treatment of renal masses <3cm. However, further studies to refine the technique are needed.

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LAPAROSCOPIC RENAL CRYOABLATION (LRC) OF SMALL RENAL MASSES: LESSONS LEARNED FROM 104 CASES IN A 7-YEAR EXPERIENCE

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Introduction & Objectives: The aim of our study was to prospectively analyse the outcome of patients with kidney masses treated with laparoscopic cryoablation over a 7-year period.

Material & Methods: Since September 2000, 104 patients (mean age 61.6 years; 78 male and 26 female) underwent LRC for TC or MRI documented renal masses. Mean lesion diameter was 22.0 mm (range 7-60 mm). Lesions were located in the right or left kidney in 56 and 48 patients respectively. The procedure was performed transperitoneally in 60 cases and in 44 patients retroperitoneoscopically, according to the tumour position and to possible previous abdominal surgery. Fifty-six patients (54%) had concomitant pathologies.

Results: The intra-operative mean diameter of the ice ball was 49.3 mm. All the procedures were successfully completed laparoscopically, except 3 cases that were converted into open surgery, two of them due to bleeding from the site of the cryoprobe insertion (one of them requiring radical nephrectomy). Mean surgical time was 202.6min (range 90-320 min) and mean intra-operative blood loss was 211.6 cc (range 10-3.200 cc). Pathological evaluation of the intra-operative needle biopsies documented renal cell carcinoma in 64 cases, 23 oncocytomas, 6 angiomyolipomas, 1 case of Xantogranulomatous pyelonephritis and 10 cases “indefinite” disease. Postoperative stay was 4.7 days (range 2-13). Postoperative complications were always treated conservatively and included 7 cases of transient fever, 2 cases of small perirenal haematomas, 1 case of pulmonary oedema, 9 significant blood losses and 1 case of gross haematuria. Delayed complication included 1 case of UPJ obstruction requiring open pieloplasty 8 month after surgery and open nephrectomy one year after surgery due to suspected recurrence of the disease. Six patients died during the follow-up, 5 due to previous illness and 1 patients due to worsening of cirrhosis one month after surgery. No patients died because of renal tumour. MRI scan on postoperative day one documented a mean lesion of 49.10 mm. Progressive reduction of the cryoablated lesion was visible in all patients with only a renal scar visible after 24 month follow-up. The renal pictures remain constant over time with 36 patients being followed up for 5 years and 11 patients for 7.

Conclusions: LRC of small renal masses confirms to be a safe, reproducible and minimally invasive technique. Follow-up in our series is encouraging and the data is going to confirm the role of this surgical technique as a feasible alternative to nephron sparing surgery, with low morbidity and optimal oncological outcome.