VF-49

THE CREATION OF THE UNIVERSITY OF WASHINGTON VIRTUAL TURP TRAINING SIMULATOR

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Introduction: The skill to perform TURP remains important, while the number of TURPs residents perform during residency diminishes. We demonstrate our progress in creating and a virtual reality simulator for transurethral resection of the prostate. We illustrate our approaches to creating visual, auditory and tactile realism as well as capturing metrics.

Methods: A virtual polygonal model of the urethra, prostate, bladder and the loop was created de novo. Texture maps were used to "skin" the polygonal model and to simulate bubbles and bleeding. Instrumentation and interaction were accomplished by securing a tracking device to an iglesias and inside a camera shell. Cutting and coagulation are controlled with a Bovie footpedal through an interface box. Cutting and chips are simulated by pushing the polygonal model. Bleeding textures were generated from an in-vitro model of the lower genitourinary tract. Fluid flow is controlled with stopcocks. Auditory realism is achieved through looping audio footage. Force-feedback is achieved with a vibration motor and a SPIDARÉ force-feedback system. All actions, motions and forces are logged and organized during the simulation task.

Results: Visual, auditory and tactile realism have been achieved using the above-mentioned techniques. The use of texture maps provides a feeling of "presence" as they provide a realistic faáade to the polygonal anatomy. Our simulator allows for practicing working in a 3-dimensional space given two-dimensional visual cues using tracking devices on a real resectoscope. The trainee can also deal with issues related to cutting, fluid flow management and hemostasis interactively and realistically in a variety of scenarios. We are able to provide useful objective feedback as to how the trainee is progressing by logging important metrics.

Conclusions: We hope to preserve the "art of TURP" through the creation of this endoscopic simulator.

VF-50

UROLOGIC APPLICATIONS OF FLOSEAL, A NOVEL HEMOSTATIC AGENT

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Introduction: Hemostasis can be a challenging problem to control laparoscopically as intracorporeal suturing may be too slow or cumbersome and currently available tissue glue is expensive and difficult to prepare. We demonstrate our use of FloSeal Matrix (Fusion Medical Technologies, Inc, Mountain View, CA), a gelatin-based hemostatic sealant as an alternative to current techniques.

Materials and Methods: FloSeal Matrix is a combination of a bovine gelatin-base with a bovine derived thrombin. Its preparation, as demonstrated is easily and rapidly performed. The cost is a fraction of currently popular fibrin glue formulations. FloSeal is demonstrated in a variety of open and laparoscopic procedures including laparoscopic radical prostatectomy and laparoscopic partial nephrectomy. It is applied via a simple 10F appicator tip and pressure is maintained for 2–4 minutes over the matrix.

Results: FloSeal was highly effective in stopping bleeding in a bloody surgical field. It demonstrates a significant advantage over current technology which relies on a dry surgical field for adequate hemostasis. We observed excellent hemostasis quickly in situations which would have normally required significantly more effort.

Conclusions: FloSeal Matrix demonstrated superior efficacy in attaining timely hemostasis with difficult surgical bleeding. It can be prepared within minutes and delivered rapidly to the site of surgical bleeding. The cost is a fraction of comparable available technology.

VF-51

RETROPERITONEAL LAPAROSCOPIC ADRENAL SPARING SURGERY FOR REMOVAL OF ADRENAL ADENOMA.

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Introduction and Objective:

To report the retroperitoneal adrenal sparing technique in management of adrenal adenoma to our Knowledge this is the first report of laparoscopic retroperitoneal removal of adrenal adenoma, leaving adrenal gland in place.

Methods:

A 42 years old female with hypertension was diagnosed with a right adrenal mass found in MRI. Preoperative evaluation was consistent with adldosterone producing adenoma. A retroperitoneal approach was elected and 3 trocar sites was used for laparoscopic surgery. Upper pole of right kidney was exposed and above it a golden yellow color mass about 2 cm was seen within adrenal gland. Using suction irrigation probe and laparoscopic scissor, blunt and sharp dissection was used to enucleate adenoma from adrenal gland easily which was removed using endocatch bag. No intraoperative or postoperative complication was noted. Pathology report was adrenal adenoma. Patient's hypertension was cured without using any antihypertensive medication upon 2 months follow up period. Biochemical abnormalities became normal following removal of adrenal adenoma.

Conclusion:

Adrenal adenomas can removed via retroperitoneal approach leaving adrenal gland in place. This approach can decrease the time of laparoscopic surgery and can be considered less invasive avoiding peritoneal cavity and leaving adrenal gland in place.

VF-52

HAND ASSISTED LAPAROSCOPIC LIVE DONOR NEPHRECTOMY: INITIAL HUNGARIAN EXPERIENCE.

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Introduction: The laparoscopic live donor nephrectomy is fairly advantageous for the donors compared to the open operation. Despite of the technical difficulties it has become the method of choice in more and more centers worldwide.

Materials and methods: Authors present their initial experience in Hungary with the hand assisted laparoscopic live donor nephrectomy. Up to January, 2002 four patients has been operated on. For left side nephrectomy the surgeon's left hand is inserted into the abdomen through a 6–7 cm upper median laparotomy. Pneumoperitoneum is maintained by disposable "Hand-port" device. To decrease the warm ischemic time as much as possible two separate vascural staplers were used for the renal artery and vein. The previously completely dissected kidney were removed immediately through the laparotomy.

Results: The average operative time was 190 (170 to 210) minutes, the warm ischemic time was 77 (70 to 85) seconds, the postoperative hospital staying was 5 days. Intra- or postoperative complications has not occurred. The kidneys has started urine production in the recipients immediately after revascularisation.

Conclusion: On the basis of the review of the literature and their initial experience the laparoscopoc live donor nephrectomy is considered as a feasible and safe method and advantageous for the donors. The hand assistance significantly shortenes the operative time and makes the procedure more safe. On the other hand it requires the same incision than the purely laparoscopic procedure but shortenes the learning curve as well. In the future increasing number of donors might be expected because of the lower morbidity of the laparoscopic method.