

ENDOUROLOGY & LAPAROSCOPY

Trends toward laparoscopic nephrectomy at a community hospital

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Purpose: For proper indications at university hospitals laparoscopic nephrectomy is often considered the standard of care. At community hospitals past surveys have not demonstrated this change. We describe the changing practice patterns of performing laparoscopic nephrectomies in indicated patients at our community hospital. We reviewed our data on monitoring our training program.

Materials and Methods: A retrospective chart review was performed of 381 consecutive complete nephrectomies performed at our institution from February 2000 to December 2003, including 62 live donor nephrectomies. Patient age, pathological size, operative time, estimated blood loss, duration to solid food intake and duration of hospitalization were compared between open nephrectomy and laparoscopic nephrectomy groups using the Wilcoxon 2-sample test. Surgical practice and surgeon characteristics were also described.

Results: Patients who underwent laparoscopic nephrectomy demonstrated superior postoperative recovery with earlier return to solid diet and shorter hospitalization. The 2 groups were similar in regard to major complication rates. The number of laparoscopic nephrectomies increased annually, while the number of open nephrectomies decreased. The number of laparoscopic urologists increased annually. More importantly laparoscopic urologists performed an increasing number of nephrectomies, while nonlaparoscopic urologists faced a decrease in the number of nephrectomies performed. There appeared to be little evidence of hand assisted laparoscopic nephrectomy as a bridge to learning standard laparoscopic nephrectomy.

Conclusions: Our training paradigm has safely and effectively trained community urologists to perform laparoscopic nephrectomies. Laparoscopic nephrectomy is now considered a standard treatment option along with conventional open surgery and it should be offered to the patient in the medical setting. Although fellowship trained urologists can certainly add expertise to any program, community based hospitals do not have to depend on them.

Editorial Comment

Since Claymann and colleagues described the first laparoscopic radical nephrectomy (LRN) in 1991, the technology and techniques have evolved. Currently, LRN is considered the standard treatment option for renal cancer patients. Although academic investigators have documented the advantages of this minimally invasive procedure and its variations in surgical technique, interestingly, there is little data from the community surgeons' side. This manuscript demonstrates the feasibility, safety and learning curve of this surgical approach in the community setting.

The increase of laparoscopic cases from 8 in 2000 to 52 in 2003 that the authors described revealed a significant annual increase of nephrectomies (open, laparoscopic donor and radical) with less time of hospitalization and resumption of solid food intake without increasing the rate of complications.

The practice includes general, oncological and laparoscopy fellowship trained urologists. Even the urologists that did not receive formal fellowship training were able to take the minimally invasive approach utilizing the hand assist device.

Clearly this data shows that laparoscopic nephrectomies will be widely accepted as treatment of renal cancer and transplantation for potential donors in the community setting.

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Laparoscopic skills training using a webcam trainer

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Purpose: Many sophisticated and expensive trainers have been developed to assist surgeons in learning basic laparoscopic skills. We developed an inexpensive trainer and evaluated its effectiveness.

Materials and Methods: The webcam laparoscopic training device is composed of a webcam, cardboard box, desk lamp and home computer. This homemade trainer was evaluated against 2 commercially available systems, namely the video Pelvitrainer (Karl Storz Endoscopy, Culver City, California) and the dual mirror Simuview (Simulab Corp., Seattle, Washington). The Pelvitrainer consists of a fiberglass box, single lens optic laparoscope, fiberoptic light source, endoscopic camera and video monitor, while the Simuview trainer uses 2 offset, facing mirrors and an uncovered plastic box. A total of 42 participants without prior laparoscopic training were enrolled in the study and asked to execute 2 tasks, that is peg transfer and pattern cutting. Participants were randomly assigned to 6 groups with each group representing a different permutation of trainers to be used. The time required for participants to complete each task was recorded and differences in performance were calculated. Paired t tests, the Wilcoxon signed rank test and ANOVA were performed to analyze the statistical difference in performance times for all conditions.

Results: Statistical analyses of the 2 tasks showed no significant difference for the video and webcam trainers. However, the mirror trainer gave significantly higher outcome values for tasks 1 and 2 compared to the video ($p = 0.01$ and < 0.01) and webcam ($p = 0.04$ and < 0.01 , respectively) methods. ANOVA indicated no overall difference for tasks 1 and 2 across the orderings ($p = 0.36$ and 0.99 , respectively). However, by attempt 3 the time required to complete the skill tests decreased significantly for all 3 trainers (each $p < 0.01$).

Conclusions: Our homemade webcam system is comparable in function to the more elaborate video trainer but superior to the dual mirror trainer. For novice laparoscopists we believe that the webcam system is an inexpensive and effective laparoscopic training device. Furthermore, the webcam system also allows instant recording and review of techniques.

Editorial Comment

The lack of well defined training to optimize the learning curve for laparoscopic procedures is still a challenge. The old saying, see one, do one, teach one, does not seem to apply to laparoscopy, as the authors mentioned. The study evaluated dry lab training for laparoscopic skills using established tasks with different types of trainers: 1) Pelvitrainer (\$2,095) 2) Simuview (\$300), and 3) a homemade webcam system (\$30). Forty two participants without prior laparoscopic training were asked to execute 2 basic tasks: 1) peg transfer (task 1) and 2) pattern cutting (task 2). The participants were randomly assigned to different groups. The time required for participants to complete each task was recorded and differences in performance were calculated. Although the Simuview was effective, it showed significantly worse performance time compared to the other 2 systems,

since it did not provide magnification. The authors concluded that the homemade laparoscopic trainer offers easy setup and use with comparable quality to the fancier pelvic trainers allowing the user to record and play back sessions for personal review or to have a distant proctor assisting via the Internet.

Unquestionably, better educational and training tools need to be developed to decrease the learning curve and minimize complications in laparoscopic surgery. Certainly virtual simulation models as well as training programs and centers are in need not only to grant the initial training but also to provide assistance in the clinical setting.

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IMAGING

Significance of the pseudocapsule on MRI of renal neoplasms and its potential application for local staging: a retrospective study

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Objective: The purpose of our study was to evaluate the role of MRI in showing a pseudocapsule for local staging of renal tumors, and its potential application to select patients for partial surgery.

Materials and Methods: Eighty tumors (73 renal cell carcinomas [RCCs] and seven oncocytomas) were preoperatively evaluated by MRI. MRI findings were assessed with a special focus on perinephric fat and pseudocapsule. Correlations were performed with pathologic staging after surgery.

Results: At pathology, a pseudocapsule was recognized in 79 cases. Twenty-three RCC were staged pT3a (21 clear cell; two papillary). MR images exhibited a pseudocapsule in 90% of cases as a hypointense rim surrounding the tumor on T2-weighted images. MRI findings concerning isolated analysis of the pseudocapsule for differentiating stage T1/T2 from T3a were sensitivity: 86%, 50%; specificity: 95%, 92%; positive predictive value: 95%, 33%; negative predictive value: 88%, 92%; and accuracy: 93%, 89%, for clear cell and papillary types, respectively. For stage T3a, with both abnormalities of the pseudocapsule and perirenal fat, results were, for overall RCC sensitivity: 84%; specificity: 95%; positive predictive value: 91%; negative predictive value: 91%; and accuracy: 91%.

Conclusion: The identification of the pseudocapsule offers an additional value for local staging by MRI. The presence of an intact pseudocapsule is a sign of lack of perinephric fat invasion. It is more likely to predict that the tumor can be removed by partial surgery.

Editorial Comment

The identification of a well defined pseudocapsule around a small tumor has recently been considered a very important finding for the local staging of a possible renal cell carcinoma. As we know this pseudocapsule represents a narrow area of fibrosis and normal renal parenchyma, which is displaced by the slow growing tumor. The demonstration of a well defined pseudocapsule by helical CT indicates that in the majority of