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IL2 : 招請講演 2**Laparoscopic Renal Surgery : Past, Present, and Future**

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INTRODUCTION

It has been just over 15 years since the inception of laparoscopic renal surgery in 1990. In that time, all forms of ablative and reconstructive renal surgery have been reliably and reproducibly performed laparoscopically at major medical centers throughout the world. In general, the approach is either retroperitoneal or transperitoneal (standard or hand-assist). The procedures can be divided into ablative and reconstructive. The former can be further subdivided into procedures performed for benign and malignant disease. For each area the current applications of the above procedures will be presented as well as the outcomes with respect to each procedures : effectiveness, efficiency, morbidity, and cost.

ABLATIVE : BENIGN DISEASE : Simple nephrectomy (standard, XGP, ADPKD, and donor)

Since 1990, thousands of laparoscopic simple nephrectomies have been performed for benign disease. In 1995, indications were extended to include donor nephrectomy ; by the year 2000, living related donors outnumbered cadaver donors in the U. S. A. for the first time, largely based on the widespread use of laparoscopic donor nephrectomy. Indications have also been broadened to include patients with autosomal dominant polycystic kidney disease and even patients with xanthogranulomatous pyelonephritis.

ABLATIVE : BENIGN DISEASE : Cyst decortication (simple, peripelvic, and autosomal polycystic kidney disease (ADPKD))

Simple renal cysts were among the earliest renal laparoscopic cases. Subsequently, indications were extended to perihilar cysts as well as cysts in patients with ADPKD. The success with peripheral and perihilar cysts has exceeded 90%, while in the latter effective pain relief has been obtained in upwards of 80% at 3 years follow-up.

ABLATIVE : BENIGN : Renal biopsy

Laparoscopic renal biopsy is a salvage procedure to be performed only when needle biopsy of the kidney is either contraindicated (e. g. morbid obesity, bleeding diathesis, etc.) or unsuccessful.

ABLATIVE : MALIGNANT : RENAL CANCER : Total and radical nephrectomy

As of 2004, over 1200 laparoscopic radical/total nephrectomies have been reported worldwide. Presently, the only absolute contraindication is significant caval involvement. Follow-up out to 10 years, reported in 2005, has shown similar disease free rates to open nephrectomy.

ABLATIVE : RENAL CANCER : Partial nephrectomy, wedge excision and cryoablation

Laparoscopic partial nephrectomy, wedge excision, and cryoablation have been developed at several institutions over the last decade. To date, over 700 of these procedures have been reported worldwide. Both warm and cold ischemia has been effectively employed ; follow-up out to 5 years has shown equivalent cancer specific survival to open nephron sparing surgery.

ABLATIVE : MALIGNANT : UPPER TRACT TRANSITIONAL CELL CANCER : Radical nephroureterectomy

The first laparoscopic nephroureterectomy was performed in 1991. In the past 5 years, over 400 cases have been reported in 10 separate series. Management of the distal ureter remains the most controversial area ; however, despite myriad techniques, wound or retroperitoneal seeding are distinctly rare events.

RECONSTRUCTIVE : URETEROPELVIC JUNCTION OBSTRUCTION : Pyeloplasty

Laparoscopic dismembered pyeloplasty (Anderson-Hynes), Foley Y-V plasty, and Fenger plasty have all been described. First reported in 1993, the pyeloplasty procedure has since been perfected with over 400 cases reported with similar outcomes to open repair. Robotic surgery has recently been applied for this indication.

RECONSTRUCTIVE : RENAL UROLITHIASIS : Pyelolithotomy, calyceal diverticulectomy, anatomic nephrolithotomy

Laparoscopic pyelolithotomy was first reported in 1994. In 2003, Gill and colleagues, extended laparoscopic stone surgery to include anatomic nephrolithotomy in two patients. Similarly, laparoscopic transperitoneal calyceal diverticulotomy and stone removal has been reported by several urologists beginning with Stoller. Overall, laparoscopy in stone patients is largely limited to those few patients in whom other, less invasive endourological methods have failed.

RECONSTRUCTIVE : RENAL PTOSIS : Nephropexy

Laparoscopic nephropexy was first reported in 1993. Since then myriad methods have been applied to 100' s of patients using both via a transperitoneal as well as retroperitoneal approach.

CONCLUSION :

Today at many centers, laparoscopy has largely replaced standard open surgery. Indeed, at our institution, less than 15% of renal surgery is performed using standard open techniques. It is anticipated, that by 2010, this state of affairs will become commonplace throughout the world and that at major laparoscopic centers, fewer than 5% of procedures will require open surgery.