

Laparoscopic Surgery in Urology

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Hammad Ather (Sindh Institute of Urology and Transplantation, Civil Hospital, Karachi.)

The last decade of the present century has seen tremendous progress in the development of minimally invasive surgery. These alternate surgical methods clearly provide two advantages; i) decreased post-operative complications resulting from less mechanical disruption of tissue planes and ii) decreased hospital stay, helping to ease the pressure on in-patient beds and early return to work there by contributing to the overall national economy. Two disadvantages, however, are i) increased operative time and ii) delay or absence in appearance of methodologically sound, prospective controlled trials to independently assess the new technology. Tremendous enthusiasm attached with this innovative surgical tool resulted in this type of surgery. Laparoscopy arrived in Urology about six years back. Two factors that influenced the rapid growth of this procedure was the need to decrease post-operative hospital stay and minimize post-operative complications by preventing physiological changes associated with conventional open surgical methods. Since its humble beginning as a diagnostic tool, laparoscopy in Urology, has made great strides. It is now used for almost all ablative and reconstructive urologic procedures.

Clinically established laparoscopic urologic procedures include pelvic lymphadenectomy, varicolectomy simple nephrectomy and adrenelectomy in the ablative category, whereas bladder neck suspension in the reconstructive field. Other ablative procedures which are now increasingly performed but, as yet, are not a first choice laparoscopic ally include renal cyst excision, orchiectomy, radical nephrectomy, nephroureterectomy, partial nephrectomy, retroperitoneal lymphadenectomy, vesical diverticulectomy, cystectomy and radical prostatectomy.

The reconstructive category include orchiopexy, nephropexy, pyeloplasty, ureterolysis, ureteroureterostomy, ureterolithotomy and construction of ileal conduit. Live donor nephrectomy, urethral sling and continent urinary diversion are still considered to be in the laboratory phase.

Pelvic lymphadenectomy is the most frequently performed laparoscopic surgery in the adult urologic practice¹. Presently, it is indicated in patients with prostate cancer planned for retropubic prostatectomy with a high risk of nodal metastasis. PSA (greater than 40 ng/ml), TRTJS, histological type (Gleason grading of 8 or more) and a negative CT guided biopsy are few pre-operative parameters indicating laparoscopic pelvic lymphadenectomy. Rarely, it is also performed in the staging of bladder, penile, urethral² and cervical cancers³. Pelvic lymphadenectomy is performed either as a limited transperitoneal or extraperitoneal procedure or by extended transperitoneal approach using 4-5 ports. Varicolectomy is most commonly performed for male factor infertility³ and rarely for orchalgia and decreased testicular size in adolescents. It gained popularity due to the easy technique. First laparoscopic varicolectomy was reported by Sanchez-de-Badojoz et al⁴ in 1990. It is performed via 3 or 4 port transperitoneal route. Unilateral or bilateral varix ligation can be done taking 105 and 167 minutes respectively, complications are rare and results are comparable with embolization or open surgery.

The first laparoscopic nephrectomy was performed on 25th June, 1990 at Washington University, Barnes Hospital⁵. Since then, about 300 cases have been reported in literature⁵. This followed development in the technique of tissue entrapment and rapid morcellation. Although, most clinical conditions necessitating simple nephrectomy are amenable to laparoscopic nephrectomy, those, that render kidney hypotrophic are most easily performed. Although, most are carried out by a 5-post-transperitoneal approach, but anentirely retroperitoneal approach has also been used. The latter technique is improved by the development of laparoscopic retroperitoneal balloon dilatation by Gaur

in⁶. The long operating time for laparoscopic nephrectomy (355 min versus 165 for open nephrectomy) is compensated by short hospital stay and consequent early return to full usual activities (3.7 days versus 1 month respectively).

Laparoscopic adrenalectomy is indicated in non-malignant small adrenal lesions (less than 6 cm) like pheochromocytoma, Cushing's primary aldosteronism, non-active adenoma and other unspecified benign lesions⁷. Guazzani et al⁸ in 1994, compared 15 patients in each group of laparoscopic and open adrenalectomy. They concluded that though laparoscopically performed adrenalectomy has longer operative time (170 min. versus 100 min. respectively) but there is lesser blood loss (100 ml versus 450 ml), earlier resumption of work (9.7 days versus 16 days) and amelioration of hypertension in all patients.

Bladder neck suspension is the only clinically established laparoscopic reconstructive urologic procedure performed presently. It is indicated in low grade (1-2) uncomplicated stress urinary incontinence and is performed using either a transperitoneal or an extraperitoneal approach.

McDougall et al⁸ in a randomised, prospective study compared laparoscopic bladder neck suspension with Raz vaginal needle suspension. He concluded that the results of the two procedures are comparable in the laparoscopy providing the advantage of short hospital stay, decreased post-operative analgesic requirements and shorter convalescence. In this tumultuous time, surgeons are sailing from a "tried and tested" World to an uncharted Sea. This on one hand is fraught with "dangers of new techniques" if used unscrupulously and on the other, promises the dream world of non-invasive surgery with no patient morbidity. Laparoscopy in Urology has come to stay with each passing day more and more procedures are included in the clinically established category and are compared to open surgical counterparts in prospective randomised trials.

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