Laparoscopic-Assisted Vaginal Tape Procedures: 
*A Simplification of Vaginal and Abdominal Approaches to Pelvic Organ Prolapse and Uterine Preservation for the Urologist*

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With the expanding use of laparoscopic techniques in female urology, there has been a surge in interest for incorporating minimally invasive approaches to pelvic organ prolapse repair and uterine preservation procedures. These approaches have the potential to combine the success, versatility, and durability of the traditional open abdominal repairs with the minimal invasiveness and recovery afforded by vaginal approaches. The current experience with minimally invasive technology is obviating the complex traditional, as well as, newer large mesh-dependent transvaginal approaches with the recent return to intracorporeal abdominal approaches of laparoscopy.

We have recently introduced an innovative technique for laparoscopic-assisted vaginal tape vault suspension that is applicable to uterine support restoration for women desiring uterine preservation as part of their reconstructive repairs. Besides the obvious benefits in recovery time and incision size, one of the benefits of laparoscopy in pelvic surgery is the ability to visualize internal anatomy while working on an external structure. This principle was utilized in creating the laparoscopic-assisted vaginal tape vault suspension (slide 1), and subsequently, the creation of a uterine suspension procedure (slide 2). In these novel procedures, the surgeon, operating vaginally, passes a strip of synthetic mesh percutaneously under the lateral walls of the vagina using angled trocar needles while monitoring the needle’s passage both with vaginal inspection and laparoscopic visualization. In order to avoid bladder and bowel injury, as well as, to allow use of the technique in a uterine-sparing fashion, the mesh strips are passed along the lateral walls of the vagina. As shown, this allows the mesh to provide paravaginal support along the full length of the vagina, rather than just supporting the apex as in other sacrocolpopexy procedures; consequently, fewer concomitant transvaginal procedures such as perineal body, cystocele or rectocele repairs are required. This novel technique removes the technical barriers to considering the adoption of a laparoscopic approach to pelvic organ reconstructive support procedures and obviates the need of using laparoscopic robotic assistance to perform a traditional laparoscopic sacrocolpopexy procedure.

For many years uterine prolapse has traditionally been an indication for hysterectomy, apart from the presence or absence of any uterine disease, and remarkably, independent of the patient’s wishes. While hysterectomy was considered standard practice for correction of uterovaginal prolapse, recent changes have lead to its preservation as we have accepted the knowledge that the descent of the uterus is a consequence, and not the cause, of prolapse. Contemporary lifestyles, beliefs and perspectives of women with regards to sexual function and pregnancy have undergone profound changes, and many people who undergo surgery for genital prolapse want to preserve the uterus. Uterine preservation during prolapse surgery is not new, but few studies on uterus preservation have been reported and there are no clear indications for uterus sparing or removal in open or vaginal surgery for advanced prolapse. We have performed colposacropexy in women with and without hysterectomy for uterovaginal prolapse for many years with satisfactory results. However, in the treatment of uterovaginal prolapse, sacropexy with
uterus conservation may be associated with less operative and post-operative morbidity and similar long-term outcomes as hysterectomy with sacropecty. Thus, we are prospectively identifying eligible patients and offering them the chance to avoid hysterectomy and its associated morbidities in an attempt to study the benefits of laparoscopic-assisted uterine preservation when addressing uterovaginal prolapse. The findings of others in similar studies are revealing that uterine preservation may become the new standard in repairing uterovaginal prolapse and that the indications for concomitant hysterectomy will need to be better justified.

We have performed this procedure on over a 100 patients to date; analysis of the first 32 cases with a mean follow-up of 10 months revealed a mean total operating room time of 234 minutes. Concomitant repairs were infrequent, with 7 patients undergoing transvaginal posterior colporrhaphy or perineorrhaphy. No bowel or bladder injuries were noted; complications consisted of a DVT in one patient and a port site hernia in one patient. 2 patients (6.25%) required a transvaginal anterior colporrhaphy or cystocele for residual Stage I-II anterior wall prolapse. We are currently collecting long-term follow-up data including POP-Q scores and sexual function questionnaires. The initial results are very promising for this technique as a minimally invasive, safe, and easily learned procedure for post-hysterectomy and uterine-sparing applications.

A variety of laparoscopic techniques with a growing armamentarium of accessory technology such as robotics for facilitating the repair of POP and uterine preservation are available to the urologist. The current experience with minimally invasive technology is leading to advances that are obviating the traditional transvaginal approaches with the recent return to the current intracorporeal abdominal approaches of laparoscopy. The momentum of this movement continues to drive combinations of intra- and extracorporeal techniques as we progress to total extracorporeal approaches to the restoration of pelvic organ support. Novel techniques like the laparoscopic vaginal tape procedures represent the latest effort to meet innovative challenges in laparoscopic surgery, which is not to simply recreate the open procedure as seen in ancillary robotic or computer-assisted applications, but to use the unique advantages of laparoscopy to create improved procedures for our patients.