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# Total hysterectomy and anterior vaginal wall suspension for concurrent uterine and bladder prolapses: Long-term anatomical results of additional vault and/or posterior compartment prolapse repair

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ABSTRACT

*Objective:* To review the long-term results of an intraoperative decision to repair or not repair associated vault and posterior compartment defects after total hysterectomy (TH) and anterior vaginal wall suspension (AVWS) for uterine and bladder prolapses.
*Methods:* After gaining Institutional Review Board approval, the operative records of women receiving TH and AVWS concurrently with a minimum follow-up period of 6 months were reviewed. Two groups were identified: Group 1 (G1) underwent TH + AVWS and intraoperative apical and/or posterior repairs, and Group 2 (G2) had TH + AVWS alone. The definition of prolapse recurrence was Pelvic Organ Prolapse—Quantification ≥ Stage 2 and/or any reoperation for prolapse.
*Results:* From 1998 to 2009, a total of 94 women were evaluated. At the mean 3 years follow-up, the rates of overall prolapse recurrence following initial surgeries between G1 and G2 were 30% and 24%, respectively. Additional operative repair for G1 and G2 was 18.5% and 16%, respectively. The progression rate for both groups was < 8%. The overall success for G1 and G2 was 70% and 76%, respectively.
*Conclusion:* At long-term follow-up, nearly one in five apical recurrences in these two surgical groups was observed with stable results in the anterior compartment. The posterior compartment required the least surgical intervention.


## 1. Introduction

The association of bladder prolapse with uterine descent has long been recognized.[1] However, with office clinical examinations, the dominant prolapse may mask additional compartmental defects. A large cystocele component may compete with the uterus to be the "dominant" defect or vice versa when the uterus prolapses more. Most often, these undifferentiated prolapses are only conclusively staged intraoperatively under anesthesia, and data are lacking on the management of an intraoperative examination that differs from the office examination with differences in management from the literature.[2,3]

An even more perplexing situation develops when the planned hysterectomy and the anterior compartment have been completed, but the prolapse of apex and/or posterior compartments now becomes significant. In this situation, when a new diagnostic situation arises, is there an indication to change treatment and perform a concurrent prophylactic repair, or should one defer repair only when they become clinically significant? These decisions are not based on published evidence from the International Consultation on Incontinence or national guidelines owing to a paucity of data regarding long-term outcomes after prolapse repair with and without concomitant hysterectomy and/or an apical procedure.

Over the past decade, our team has encountered two types of situations intraoperatively in which (1) the degree of residual prolapse was major that additional apical and/or posterior repair was performed, or (2) prolapse was either absent or of low stage and no additional repair was performed. We reviewed the clinical outcomes of these two groups to determine if the intraoperative decision to withhold or pursue additional repairs resulted in adequate prolapse correction and/or prevented future need for additional repairs.

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## 2. Materials and methods

After obtaining approval from the Institutional Review Board of UT Southwestern Medical Center, we reviewed consecutive women who underwent concurrent total hysterectomy (TH) and primary cystocele repair with an anterior vaginal wall suspension (AVWS) technique in the Urology and Gynecology departments of our institution for symptomatic bladder and uterine prolapses. Inclusion criteria included age > 18 years with a minimum follow-up period of 6 months. Data were extracted from a prospective prolapse database and reviewed by a third party investigator (DL) who was a nonparticipant in these surgeries. Exclusion criteria included lack of follow-up data > 6 months. Pelvic organ prolapse was defined as per the consensus-based terminology issued jointly by the International Urogynecological Association/International Continence Society.[4]

Both surgical teams assessed patients at baseline for vaginal prolapse using the Pelvic Organ Prolapse—Quantification (POP-Q) classification[5] and a standing voiding cystourethrogram (VCUG) to objectively document urethral hypermobility and cystocele height.[6] Indications for surgery included: (1) bothersome symptoms and (2) POP-Q examination on valsalva with clinically significant apical prolapse (defined as point C $\geq -3$) and cystocele stage $\geq$2 (defined as point Ba $\geq -1$), and/or (3) cystocele Grades 2–3 on VCUG. Preoperative pelvic ultrasound was used to evaluate for uterine and/or adnexal pathology prior to determining the route of TH. Both operating surgeons were high-volume physicians with at least 20 years of clinical experience. All surgical procedures were performed in the same order, with hysterectomy being performed first, and the vaginal repair for the anterior compartment repair following. The hysterectomy approach (vaginal vs. open or laparoscopy) was dictated by uterine size, associated fibroids, decision to remove or preserve the ovaries, and patient as well as surgeon's preference.

### 2.1. Surgical technique

TH was performed by K.B. via one of three approaches: total abdominal hysterectomy (TAH), total vaginal hysterectomy (TVH), or laparoscopic vaginal hysterectomy (LAVH). All subsequent prolapse surgeries were performed vaginally by P.Z. With TAH, the modified Richardson technique of intrafascial hysterectomy was used.[7] For both TVH and TAH, the cardinal and uterosacral ligaments were plicated across the midline to obliterate the cul-de-sac.

For primary cystocele repair, the AVWS technique[8] using broad anchoring nonabsorbable sutures placed in a helical fashion beneath the anterior vaginal wall along the anterior vaginal wall from vaginal apex to bladder neck was utilized. These supporting sutures were then transferred suprapubically under finger guidance by a ligature carrier. Following cystoscopy with intravenous (IV) indigo carmine confirming no suture entry into the bladder or ureteric injury, these suspension sutures were tied over the tendinous portion of the rectus muscle, posterior to the pubic bone.

### 2.2. Intraoperative decision

Additional primary prolapse repairs with autologous tissue were performed following the intraoperative assessment of the lax vaginal compartments when the residual prolapse exceeded $\geq -1$ cm from vaginal introitus and/or presence of an enterocele > 3 cm depth at time of LAVH measured with a ruler from the vaginal cuff to the trough of the defect. Depending on the approach to the hysterectomy, the apical repair was performed either (1) vaginally with a high midline levator myorrhaphy[9,10] and enterocele closure with Moschowitz purse string technique using a nonabsorbable suture, or (2) abdominally with uterosacral ligament midline plication and enterocele closure with Halban technique. In both approaches, the vaginal vault was anchored to the repair with absorbable sutures using Mayo needle. Cystoscopy after the IV administration of IV indigo carmine was systematically performed after enterocele repairs to confirm ureteric integrity. Rectocele was repaired using standard vaginal posterior colporrhaphy technique via a midline vaginal incision.

### 2.3. Postoperative assessment

Clinical reassessment with POP-Q staging and standing VCUG was undertaken at 6 months postoperatively, and clinical examination yearly thereafter. For determination of prolapse recurrence and progression, data points at the last available clinical visit (postoperative) were compared with baseline (preoperative) information. We defined anatomical success as prolapse stage $\leq$ 1 based on VCUG (for anterior compartment) at 6 months postoperatively, and/or latest clinical examination. Standardized terminology on POP outcomes reporting issued jointly by the International Urogynecological Association/International Continence Society consensus, subdivided into primary prolapse surgery/different site, repeat surgery (i.e., repeat operation for prolapse arising from the same site), and surgery for complications, was used in this clinical audit.[11] Definition of prolapse recurrence was POP-Q $\geq$ Stage 2 and/or any reoperation for prolapse. Progression was defined as an increase in POP-Q classification of one or more stages in any uncorrected vaginal wall compartments compared to the baseline. Descriptive statistics were used for analysis of demographics and indications.

## 3. Results

Between 1998 and 2009, a total of 94 of 107 consecutive women had available data for analysis. Thirteen women (12%) were excluded from the study for lack of sufficient clinical data and/or inadequate duration of follow-up. Two surgical groups were identified. Group 1 (G1, $n = 27$) included patients who had additional primary prolapse repairs concurrent with the TH + AVWS procedure. Group 2 (G2, $n = 67$) underwent TH + AVWS alone. The mean

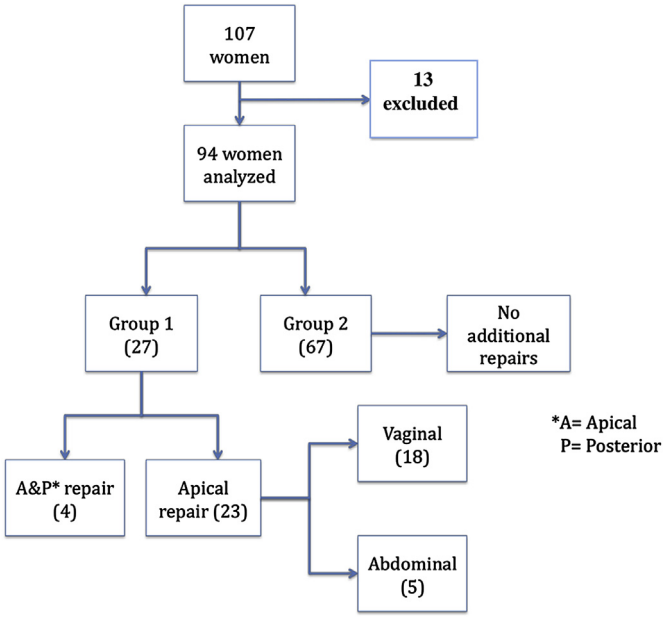


**Fig. 1.** Flowchart of two subgroup populations identified.