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Title	ANTERIOR VERSUS POSTERIOR SACROSPINOUS LIGAMENT SUSPENSION: LONG-TERM ANATOMIC AND FUNCTIONAL EVALUATION
Aims of Study	We compared long-term vaginal anatomy and sexual function following sacrospinous vaginal vault suspension (SSVVS) by either the conventional posterior SSVVS technique, or the "anterior" SSVVS, which evolved in an effort to better preserve vaginal caliber, length, and midline orientation
Methods	A repeated measures cohort study included 168 consecutive patients who underwent either posterior or anterior SSVVS between 7/90 and 2/97. Posterior SSVVS (n=92) was performed through a posterior vaginal incision, facilitating the conventional pararectal dissection towards the ligament. Anterior SSVVS (n=76) involved an anterior vaginal incision, perforation into the right retropubic space, and dissection of a wide ipsilateral paravaginal defect from the level of the bladder neck to the ischial spine, accommodating the vaginal vault. Two Gore-tex (OO) pulley sutures anchored the undersurface of the anterior vaginal cuff (anterior SSVVS), or posterior vaginal cuff (posterior SSVVS), along the sacrospinous ligament medially and laterally. A single primary surgeon supervised all cases. Postoperative evaluation included a standardised pelvic examination based on the pelvic organ prolapse quantitative (POP-Q) system, and a visual analog symptom questionnaire completed before each examination.
Results	At baseline, no differences were found between the anterior and posterior SSVVS groups in mean age (68 vs 66, p=0.06), parity, HRT use (43% vs 43%), prior vaginal reconstructive or incontinence surgery, or rates of grade 3-4 prolapse of any type. Anterior SSVVS patients had fewer prior abdominal hysterectomies (24% vs 38%, p=0.05), and a lower mean weight (144 vs 152#, p=0.05). At the time of SSVVS, the anterior group had higher rates of concomitant vaginal hysterectomy (46% vs 25%, p=0.001) and enterocele repair (76% vs 55%, p=0.0001). There were, however, no differences between the anterior and posterior groups in rates of anterior colporrhaphy (93% vs 93%), posterior colporrhaphy (93% vs 98%, p=0.16), paravaginal repair, needle suspension, or suburethral sling placement. The mean time interval to follow-up pelvic examination was longer in the posterior group (53mos vs 39mos). Anatomically, mean total vaginal length was slightly greater following anterior SSVVS (9.08cm vs 8.33, p=0.002). There was no measurable difference between the anterior and posterior groups in mean maximal dilator size (2.8cm vs 3.0cm, p=0.24). Similarly, the frequency of upper vaginal narrowing overlying the fixation sutures was roughly equal following the anterior and posterior techniques (23% vs 26%, p=0.46). Sexual outcomes were assessed in 144 women: 76 following conventional SSVVS, and 57 following anterior SSVVS (39.3mos). In the anterior and posterior groups, respectively, 33% and 37% were sexually active before surgery, 0% and 13% reported dyspareunia at baseline. At long-term follow-up, 8% in each group reported dyspareunia. Of these dyspareunia cases, two women in each SSVVS group reported new-onset dyspareunia, one had coexisting severe vaginal atrophy, another had a recurrent grade 3 cystocele, and another had a recurrent grade 3 enterocele. In contrast, five women, all in the conventional SSVVS group, reported dyspareunia at their initial visit, and relief following surgery. Multivariate logistic regression analysis was performed to identify any predictors for postoperative dyspareunia; neither the SSVVS technique, colporrhaphy, presence of preoperative dyspareunia, or recurrent grade 3-4 prolapse, were statistically predictive according to this analysis. Among other subjective outcomes measured, 'abdominal pressure' symptoms were reduced in 31% of women in each group, following surgery. 'Abdominal pain' was increased in 8.7% of patients following anterior and 8.1% following posterior SSVVS (p=0.84), decreased pain was reported by 17% after anterior SSVVS, and 13% after posterior SSVVS (p=0.52). 'Back pain' was reportedly better in 25% following posterior SSVVS, and worse in 13%, not significantly different from 36% and 16% following anterior SSVVS (p=0.23). Finally, according to the POP-Q examination, recurrent anterior vaginal relaxation was more common after posterior SSVVS (Aa -2.47 vs -1.77, p=0.001, Ba -2.47 vs -1.65, p=0.005). However, recurrent anterior prolapse did not correlate significantly with the above functional or subjective outcomes.
Conclusions	The anterior SSVVS technique provides a useful alternative for transvaginal vault suspension. Because the procedure involves dissection into the retropubic space, and eliminates the need for a posterior vaginal incision, we have found this modification particularly beneficial for patients undergoing transvaginal suburethral sling placement, with concomitant anterior and apical support defects. Subjectively, it has been our observation that the anterior SSVVS positions the vaginal vault in a wider anatomic space, and straighter axis towards the ligament, in comparison to the relatively narrow and lateral pararectal space occupied by the upper vagina following conventional SSVVS. With the outcome measures chosen for this study, only a slight increase in vaginal length was demonstrated. Both upper vaginal caliber and sexual function appear well-preserved using either technique. Anterior SSVVS also resulted in significantly less recurrent anterior vaginal wall prolapse, compared with the conventional technique.