

High Uterosacral Vaginal Vault Suspension: A Technique to Repair Enterocele and Apical Prolapse

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Abstract

Aim: The purpose of this study was to review retrospectively the functional and anatomic outcomes of women who underwent vaginal repair of enterocele and vault prolapse with the use of an intraperitoneal suspension of the vaginal vault to the uterosacral ligaments in conjunction with fascial reconstruction of the anterior and posterior vaginal wall.

Result: Twenty five women with advanced symptomatic posthysterectomy vault prolapse underwent a standard transvaginal uterosacral suspension of the vault to correct their prolapse between january 2014 and april 2016. Anatomic results were assessed by standardized examination from 6 months to 3 years after the operation. Functional results were assessed subjectively and with standard quality of life questionnaires. The average age of the women was 55 years. There was no intraoperative difficulties. 16% patients required blood transfusion. there was no urinary complication. Improvement of symptoms was seen in all patients. 92% patients were satisfied with the procedure.

Conclusion: Uterosacral suspension of the vaginal apex is a simple method for correction of vault prolapse with good functional outcome and less complications.

Keywords: Vault prolapse, uterosacral suspension

I. Introduction

The international continence society defines post-hysterectomy (apical) vaginal prolapse as descent of the vaginal cuff scar below a point that is 2 cm less than the total vaginal length above the plane of the hymen [1]. Baden et al., showed the condition to follow 11.6% of hysterectomies performed for prolapse and 1.8% of those performed for other indications. [2]. Vaginal vault prolapse is a complication following hysterectomy with negative impact on women's quality of life due to associated urinary, anorectal and sexual dysfunction. A clear understanding of the supporting mechanism for the uterus and vagina is important in making the right choice of corrective procedure. Management should be individualised, taking into consideration the surgeon's experience, patients age, comorbidities, previous surgery and sex life. Although several surgical procedures have been described, randomised controlled studies specifically addressing post-hysterectomy vaginal vault prolapse are limited and most reports are based on case series. The concept of utilizing the uterosacral ligaments to support the vaginal cuff and correct an enterocele is nothing new: as early as 1957, Milton Mccall described what became known as the Mccall culdoplasty, in which sutures incorporated the uterosacral ligaments into the posterior vaginal vault to obliterate the cul-de-sac and suspend or support the vaginal apex at the time of vaginal hysterectomy [3]. Later, in the 1990s, Richardson promoted the concept that, in patients who have pelvic organ prolapse, the uterosacral ligaments do not become attenuated, instead, they break at specific points. Shull and colleagues took this idea and described how utilizing uterosacral ligaments to support the vaginal cuff can be performed vaginally—by passing sutures bilaterally through the uterosacral ligaments near the level of the ischial spine.[4]

Potential Advantages Of A High Uterosacral Vaginal Vault Suspension Are That:

- a) It provides good apical support without significantly distorting the vaginal axis, making it applicable to all types of vaginal prolapse
- b) Intraperitoneal passage of sutures can be a lot cleaner and simpler than passing sutures, or anchors, through retroperitoneal structures, such as the sacrospinous ligament.[5]

II. Aim

The purpose of this study was to review retrospectively the functional and anatomic outcomes of women who underwent vaginal repair of enterocele and vault prolapse with the use of an intraperitoneal suspension of the vaginal vault to the uterosacral ligaments in conjunction with fascial reconstruction of the anterior and posterior vaginal wall.

III. Materials And Method

Twenty five women with advanced symptomatic posthysterectomy vault prolapse underwent a standard transvaginal procedure to correct their prolapse between January 2014 and April 2016. Anatomic results were assessed by standardized examination from 6 months to 3 years after the operation. Functional results were assessed subjectively and with standard quality of life questionnaires.

Perative Procedure

- A) The most prominent portion of the prolapsed vaginal vault is grasped with two Allis clamps.
- B) The vaginal wall is opened up and the enterocele sac is identified and entered. When appropriate traction is placed downward on the uterosacral ligaments with an Allis clamp, the uterosacral ligaments are easily palpated bilaterally.
- C) Delayed absorbable sutures have been passed through the uterosacral ligaments on each side, after careful palpation.
- D) Each end of the previously passed sutures is brought out through the posterior peritoneum and the posterior vaginal wall. (a free needle is used to pass both ends of these delayed absorbable sutures through the full thickness of the vaginal wall.)
- E) Anterior colporrhaphy is begun by initiating dissection between the prolapsed bladder and the anterior vaginal wall.
- F) Anterior colporrhaphy is complete.
- G) Vagina is appropriately trimmed and closed with interrupted or continuous delayed absorbable sutures. Delayed absorbable sutures that were previously brought out through the full thickness of the posterior vaginal wall are then tied; doing so elevates the prolapsed vaginal vault high up into the hollow of the sacrum.

Observation And Results

The study was carried on 25 patients who presented with post hysterectomy vault prolapse. The age of the patient was from 35 – 70 years with mean age 55 years. 15 patients (60%) had vault prolapse after abdominal hysterectomy while 7 patients (40%) presented with post vaginal hysterectomy vault prolapse. 64 % (16 of 25) patients underwent hysterectomy at rural hospitals compared to 36% who were operated at urban centres. The mean time elapsed from the previous surgery was 29 months with the shortest being 6 months and the longest 50 months. Clinical examination was re-conducted for the presence of enterocele (n = 9), cystocele (n = 17), rectocele (n = 20), genuine stress incontinence (n = 3). Based on the quality of life, complaints, history and clinical examination- a questionnaire proforma was filled for each patient. Mean operating time was approximately 52 minutes, the surgery being prolonged in two cases where enterocele sac was difficult to dissect due to fibrosis as in longstanding cases of neglected prolapse. Intraoperative difficulties encountered **were not much annoying**: 3 cases (12%) had omental and 2 (8%) had small gut adhesions on the vault.

Amount of intra operative blood loss was between 400 to 850 ml (more loss in cases where dissection in the right plane was difficult); blood transfusion was required in 3 (12%) of the cases during surgery or post-operatively. In the post-operative period 2 patients (8%) had vomiting on the 2nd day, another 2 had fever. None of the patients had urinary complications in the post operative period. 22 (88%) patients were discharged 7 days after surgery, 3 had complaints of weakness and were discharged on day 10 postoperative period. Follow up for the first 6 months revealed improvement of symptoms in all the patients. 23 (92%) were satisfied with the surgery while 2 patients complained of mild discomfort in the lower abdomen. No major complications were reported within one year of follow up except for dyspareunia in 2 patients. 10 patients were lost for follow up after 2 years while rest of the patients on regular follow-up confirm the success of the procedure as none of these have reported recurrence of the symptoms with satisfactory quality of life.

IV. Discussion

The incidence of vault prolapse is uncertain but appears to be increased five fold after vaginal hysterectomy [6]. In our study majority of patients presented with post abdominal hysterectomy vault prolapse (60%). Most of these were operated at rural settings where coexisting pelvic floor defect was overlooked, also vault prolapse prevention was not done during hysterectomy. Preexisting pelvic floor defect prior to hysterectomy is the single most important risk factor for vault prolapse. Various surgical techniques have been advanced at hysterectomy to prevent vault prolapse. Studies have shown the McCall's culdoplasty under direct visualisation to be superior [7]. Correction of apical defect remains a surgical challenge: suspension of the vaginal apex is the keystone of surgical repair for pelvic organ prolapse. There are many surgical procedures to treat post-hysterectomy vaginal vault prolapse and may be either through vaginal or abdominal approach [8]. Anterior and posterior vaginal wall repair along with obliteration of the enterocele sac are inadequate for post-hysterectomy vaginal vault prolapse: this standard repair operation does not support the vaginal vault and risks vaginal narrowing and shortening and thus dyspareunia [9]. The established surgical options lie between a

vaginal sacrospinous fixation or abdominal procedure such as sacrocolpopexy or vault suspension operation [6]. Most gynaecologists believe the uterosacral ligaments are compromised in the first place, for prolapse to occur, and for this reason will prefer sacrospinous fixation, while some suggest that the uterosacral ligaments are not weakened, but instead break at specific points resulting in enterocele and vault prolapse.

The later school of thought believe that the uterosacral can be used, even in severe prolapse by identifying the distal portion of breakage and anchoring the vagina high above this point to the uterosacral ligament using an intraperitoneal approach [10]. A meta-analysis of transvaginal uterosacral ligament suspension reported successful apical outcome in 98%, with median follow-up of 25 months [11]. Success in the anterior and posterior compartments were 81 and 87%, respectively. In our study 92% patients were satisfied with the procedure. Barber et al. followed up of 46 women, after vaginal uterosacral suspension over a mean period of 15 months and showed 90% had resolution of prolapse symptoms and improvement in the stage of prolapsed [12]. Complications include ureteric injury, which can be as high as 10.9%, bladder injury, urinary tract infection, blood transfusion and small bowel injury [12,13,14]. In this study none of the patients had ureteric injury, placing sutures in the infero-medial portion of the uterosacral ligament at the level of the ischial spine, which has been shown in anatomical studies to be the position furthest from the ureter and vascular structures decreases the chances of ureteric injury [15]. Intra-operative cystoscopy with visualisation of ureteric efflux is recommended to confirm ureteral patency following suture placement. The other established surgical options lie between a vaginal sacrospinous fixation or abdominal procedure such as sacrocolpopexy or vault suspension operation [6]. Complications of sacrospinous fixation included blood loss, bladder injury, rectovaginal haematoma and vaginal pain and that of sacrocolpopexy- blood loss, bladder injury, incisional hernia, mesh rejection, wound infection [16].

In another study sacrospinous fixation was associated with significantly more intraoperative blood loss, longer catheterisation and hospital stay with more sexual dysfunction [17]. Moreover, it has a high failure rate [16, 18] with significantly higher incidence of recurrent vault prolapse and recurrent stress incontinence in the vaginal group [19]. Iliococcygeous suspension is a safe and simple procedure and can be done without any vaginal incision by placing a monofilament permanent suture into the muscle through the vaginal wall either unilaterally or bilaterally. Shull et al reported a 95% cure rate of vault prolapse following iliococcygeous suspension; however, he also found a 14% rate of prolapse at other sites during the follow-up period [20] a randomized controlled trial comparing iliococcygeous suspension with sacrospinous fixation demonstrated similar outcomes [21]. The great variety of techniques described indicate that there is disagreement about the ideal route or procedure to be adopted [8] as comparative study data is lacking. The goal of surgery should be the restoration of vaginal vault support, as well as correction of all pelvic floor defects in order to have the best anatomical results [22,23].

V. Conclusion

Suspension of the vaginal cuff to the proximal uterosacral ligaments with site specific repair of other associated endopelvic fascial defects provides excellent anatomical and functional correction of vault prolapse.

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Operative Photographs



Preoperative



Dissection Of The Uterosacrals
(Shown By Black Arrows)



Postoperative