

Charles A. Armstrong · Kevin G. Cooper

Sacrospinous mesh colpopexy: a new technique for vaginal suspension

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Abstract A novel new approach to correct vaginal vault prolapse using a Prolene mesh sling suspended between both sacrospinous ligaments is described. The technique utilises reusable equipment and the mesh repair is easily extended to repair posterior vaginal wall defects concurrently.

Keywords Vaginal suspension · Vaginal vault prolapse · Sacrospinous mesh colpopexy

Introduction

A novel new approach to correct vaginal vault prolapse using a Prolene mesh sling suspended between both sacrospinous ligaments is described. The technique utilises reusable equipment and the mesh repair is easily extended to repair posterior vaginal wall defects concurrently. Sacrospinous colpopexy has, since its description in 1968 [1], become a commonly used procedure for the treatment of vaginal vault prolapse after hysterectomy. There is some controversy as to whether the abdominal route or the vaginal route results in optimum success [2, 3]. Many studies, however, show high success rates with sacrospinous fixation [4, 5, 6, 7], and there are many benefits of the vaginal route, particularly in terms of operating time and postoperative recovery [3]. There have been a number of modifications to the original procedure, with variable degrees of apparent improvement [4, 6] or perceived ease of operating [8].

Sacrospinous fixation is most commonly performed unilaterally, with good results [9], but also has been described bilaterally [10]. Good apposition of the vaginal vault to the ligament is essential, as is the eradication of

co-existing enterocele, preventing vaginal evisceration following sacrospinous fixation [11]. An inherent problem with traditional sacrospinous suspension is that while the sacrospinous ligament is an undoubtedly strong anchor point, the vaginal submucosa to which the other end of the permanent suture is attached is not. The result is that in a proportion of patients the sutures tear through the vaginal attachments and vault prolapse recurs. This is especially likely to occur in the more active patients, where greater forces are exerted through the vaginal fixation points. In an effort to eliminate this problem we have adapted the technique of sacrospinous colpopexy by incorporating a polypropylene mesh, which acts as a sling between the sacrospinous ligaments to which the vaginal vault can be secured at various points. An extension of mesh down the post wall can easily be included for treatment of co-existing rectocele. A description of the procedure developed by the second author follows.

Materials and methods

A conventional sacrospinous procedure is commenced, as described by Carey et al. [5]. A Littlewoods clamp is placed at the vaginal apex and adjusted to determine the optimum suspension point [7]. The posterior vagina is opened in the midline, extending high towards the vault. The epithelium is dissected laterally on both sides as is standard in rectocele/enterocele repair, and the pararectal space/ischiorectal fossa is developed bilaterally towards the ischial spines. Care should be taken to mobilise the rectum medially, particularly on the left side, and coccygeus muscle fibres are pushed upwards to expose the lower border of the ligament. A Gore-tex (CVO) suture is passed through the inferior border of the right and left sacrospinous ligament, 1–2 cm medial to the ischial spine, using a Miya hook [12]. The suture loop is pulled through using a nerve hook to approximately half its length and held, allowing the Miya hook to be removed. The loop is then cut so that two separate sutures are created on each side, which are then attached to the lateral arms of the mesh. Often the procedure will be combined with a posterior repair, and therefore the mesh will be “T” shaped, including a long broad stem to facilitate the repair of the posterior wall (Fig. 1). If only resuspending the vault, the mesh would comprise only a rectangular strip of approximately 8 to 10 cm by 1.5 cm. The central portion of the mesh is tacked to vaginal vault submucosa at four separate points at least using a 2–0 vicryl suture as shown in Fig. 1. The upper third of the vagina is closed with a continuous

There were no competing interests.

C. A. Armstrong · K. G. Cooper (✉)
Department of Obstetrics and Gynaecology,
Aberdeen Royal Infirmary Foresterhill,
AB25 2ZD Aberdeen, Scotland
e-mail: Kevin.Cooper@arh.grampian.scot.nhs.uk
Tel.: +44-1224-554800

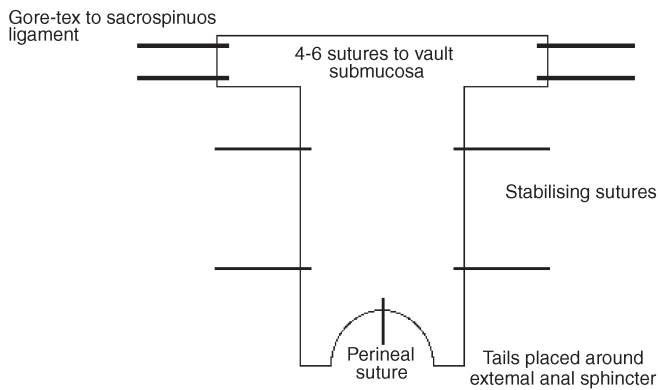


Fig. 1 Polypropylene mesh with Gore-tex suture points and vicryl tacking points shown

locking vicryl suture before elevating the vault; otherwise it is difficult to access for closure. The Gore-tex sutures are then tied on each side, approximating the end of the mesh arms onto the sacrospinous ligaments, thus raising the mesh and the attached vault back to its correct anatomical position. With the vault now suspended, the “stem of the T” of the mesh if undertaking posterior repair can be positioned. The mesh is tacked at one or two points at each side to the fascia overlying the obturator internus to prevent migration, and the tails of the stem are placed into the spaces dissected around the external anal sphincter. The midpoint of the lower end of the stem is tacked to the perineal body. Care should be taken when tacking the mesh to ensure that the edges are inverted to reduce the risk of mesh erosion through the vaginal skin. The remainder of the vagina is then closed routinely. Antibiotic prophylaxis is administered routinely and catheterisation is routine for 24 h.

Results

To date over 30 SMS procedures have been performed for vaginal vault prolapse following hysterectomy, over 60% with concomitant posterior wall extension. Operating times have varied between 26 to 58 min. Perioperative antibiotic prophylaxis is used in all cases. No complications have occurred during the procedure, although care is required to ensure that the Miya hook does not penetrate the rectum or damage the pudendal neurovascular bundle. Two patients have required small areas of mesh to be removed. The first was for a small area of mesh erosion through the lower left posterior vaginal wall identified at the 3-month follow-up. The second presented 6 months post-procedure with an uncomfortable horizontal ridge found under the lower third of the posterior vaginal wall as a result of the mesh detaching from the perineal body and retracting. Another patient had persistent, intractable buttock ache that abated once the sacrospinous sutures were released 5 months postoperatively. Unfortunately, the mesh became infected as a consequence of the second procedure, and a third operation was required to remove it completely.

Buttock pain is an immediate postoperative problem for all patients undergoing sacrospinous suspension, but resolves over a 2-week period with anti-inflammatory analgesia. Persistent pain particularly with radiation down the leg can represent entrapment of the lower fibres of the

sciatic nerve, which can happen if the Miya hook is placed close to the upper border of the ligament. No other post-operative complications were reported or identified at follow-up 3 months post-procedure, and all women had a well-supported vault with good functional vaginal length and capacity. One-year follow-up for all patients is planned with formal POP-Q grading and patient-completed questionnaires, which once completed will be reported.

Discussion

The use of this mesh sling enables anatomical reconstruction of the vaginal vault, maximising functional vaginal length, as vaginal skin is not excised. The upper vagina is restored towards the hollow of the sacrum over the levator plate, hence increases in intra-abdominal pressure force the upper vagina back against the sacrum, rather than back down through the vagina itself. This surgical approach has the added advantage of allowing concurrent repair of posterior wall defects by extending the mesh. The technique utilises existing reusable equipment and widely available Prolene mesh; hence costs are kept to a minimum.

References

1. Richter K (1968) Die chirurgische Anatomie der vagiaefixatio sacrospinialis vaginalis: Ein Beitrag zur operativen Behandlung des Scheidenblindsasch prolapses. *Geburtshilfe Frauenheilkd* 28:321–327
2. Benson JT, Luents V, McClellan E (1996) Vaginal versus abdominal reconstructive surgery for the treatment of pelvic support defects: a prospective randomized study with long-term outcome evaluation. *Am J Obstet Gynecol* 175:1418–1422
3. Maher CF, Qatawneh AM, Dwyer PL, Carey MP, Cornish A, Schluter PJ (2004) Abdominal sacral colpopexy or vaginal sacrospinous colpopexy for vaginal vault prolapse: a prospective randomized study. *Am J Obstet Gynecol* 190:20–26
4. Maher CF, Murray CJ, Carey MP, Dwyer PL, Ugoni AM (2001) Iliocygeus or sacrospinous fixation for vaginal vault prolapse. *Obstet Gynecol* 98:40–44
5. Carey MP, Slack MC (1994) Transvaginal sacrospinous colpopexy for vault and marked uterovaginal prolapse. *BJOG* 101:536–540
6. Cruickshank SH, Muniz M (2003) Outcome study: a comparison of cure rates in 695 patients undergoing sacrospinous ligament fixation alone and with other site-specific procedures—a 16-year study. *Am J Obstet Gynecol* 188:1509–1515
7. Kearney R, DeLancey JOL (2003) Selecting suspension points and excising the vagina during Michigan four-wall sacrospinous suspension. *Obstet Gynecol* 101:325–330
8. Watson JD (1996) Sacrospinous ligament colpopexy: new instrumentation applied to a standard gynaecologic procedure. *Obstet Gynecol* 88:883–885
9. Nichols DH, Milley PS, Randall CL (1970) Significance of restoration of normal vaginal depth and axis. *Obstet Gynecol* 36:241–246
10. Cespedes RD (2000) Anterior approach bilateral sacrospinous ligament fixation for vaginal vault prolapse. *Urology* 56:70–75
11. Farrell SA, Scotti RJ, Ostergard DR, Bent AE (1991) Massive evisceration: a complication following sacrospinous vaginal vault fixation. *Obstet Gynaecol* 78:560
12. Miyasaki FS (1987) Miya hook ligament carrier for sacrospinous ligament suspension. *Obstet Gynecol* 70:286–268