ABDOMINAL TECHNIQUES FOR SURGICAL MANAGEMENT OF VAGINAL VAULT PROLAPSE

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ABSTRACT

Objective	*To evaluate and compare the short and long term safety and effectiveness of different abdominal techniques for surgical management of vaginal vault prolapse.*
Study design	*Observational Cross sectional study.*
Place & Duration of study	*Department of Obstetrics and Gynaecology Unit II, Bahawal Victoria Hospital, Bahawalpur, from January 2001 to December 2008.*
Methodology	*A total of 80 cases were divided into four Groups (20 patients in each). In Group A, patients were managed by sacrocolpopexy with polypropylene (Prolene) mesh, Group B had sacrocolpopexy with autologous rectus sheath, Group C underwent high uterosacral ligament suspension and Group D had vault suspension with an autologous fascial sling of rectus shealth. All cases were analyzed regarding their complaints, clinical examination, investigations and follow up.*
Results	*No recurrence occurred in group A, as compared to 10%, 20% and 15% in Group B, C and D respectively. No patient from Group A reported with incisional hernia as compared to 10%, 5% and 10% in Group B, C and D. Operative time was less in Group A as compared to Group B but longer as compared to Group D and almost same as in Group C. The complaint of low persistent backache remained same in Group A and B (30%) as compared to 35% in Group C and D. Least blood loss was observed in Group A.*
Conclusions	*Sacrocolpopexy is gold standard procedure for treatment of vault prolapse. If it is performed with prolene mesh best results are expected.*

Key words *Vault prolapse, Sacrocolpopexy, Autologous rectus sheath sling, Prolene mesh.*

INTRODUCTION:

Vaginal vault prolapse follows 11.6% of hysterectomies performed for prolapse and 1.8% for other benign diseases.[1] The incidence increases with time since operation and with increased life expectancy, the number of cases presenting with post-hysterectomy vaginal vault prolapse is set to rise. Hysterectomy is the commonest major gynaecological operation performed[2,3] The condition is distressing to the patient who may experience vaginal bulge, urinary and / or bowel symptoms, backache, and limitation of movement and sexual dysfunction. These problems reduce the quality of life for elderly patients and are restricting for younger and more active ones.

The surgeon who faces a patient with vaginal vault prolapse is dealing with a complex and intriguing challenge. The surgeon needs to be well versed and flexible in order to choose the most appropriate operative approach to achieve optimal results for an individual patient. Many different vaginal and abdominal procedures have been described to treat vault prolapse. There is no consensus on most effective approach. Somewhat surprisingly, the abdominal route appears to produce better long terms results specially the decreased incidence of recurrence.[4] Moreover, a range of clinical conditions can suggest an abdominal approach for

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vaginal vault prolapse surgery. These include, but not limited to; those who need normal functional vagina for sexual activity, marked foreshortened vagina, one with very hypertrophied vagina, obligate need for adenexal access, prior unsuccessful vaginal attempts, pelvic bony architectural limitations and high risk for surgical failure (eg athletism, obesity, chronic obstructive pulmonary disease). Here we present the comparison of different abdominal techniques for surgical correction of vaginal vault prolapse.

METHODOLOGY

The study was conducted at Obstetrics and Gynaecology unit II, Bahawal Victoria Hospital affiliated with Quaid-e-Azam Medical College Bahawalpur. The case records of all the patients of vault prolape which were maintained during the eight year study (2001-2008) were retrieved. A total of 80 patients were divided into four groups. Group A (20 patients) were managed by sacrocolpopcxy with prolene mesh, Group B (20 patients) had sacrocolpopexy with autologous rectus sheath, Group C (20 patients) underwent high uterosacral ligament suspension, Group D (20 patients) had vault suspension with an autologous fascial sling of rectus sheath. All cases were analyzed regarding their complaints preceding operations, clinical examination, investigations, treatment and follow up.

In Group A, patients were placed in a modified lithotomy (moderate Trendelenberg) position and vagina was packed with gauze. The abdomen was entered via a transverse or longitudinal incision as appropriate, and any adhesions were divided to reach the vaginal vault which was held with Allis forceps. Bladder and rectum wall dissected if needed. A transverse incision was made in the peritoneum overlying the vault, exposing the pubocervical and rectovaginal fascia. A longitudinal incision was made over the anterior surface of sacral one, exposing the anterior longitudinal ligament. Posterior wall peritoneum reflected and bisected starting from the anterior surface of sacrum to transverse incision over the vault, with care to avoid injury to presacral vessels, right common iliac vessels, ureters and sigmoid colon. The vaginal pack was withdrawn at this stage. A piece of prolene mesh was attached to the vaginal vault with prolene No.1. Broad attachment of mesh with vaginal vault avoid subsequent mesh avulsion and failure.[5] The mesh was then attached to anterior longitudinal ligament overlying sacrum 1, without being too tight. This helped in maintaining a horizontal, rather than an upright direction of the upper vagina on standing. The bisected posterior peritoneum was sutured with catgut No. 2/0.

In Group B, abdomen opened by transverse or longitudinal incision, as appropriate. Rectus sheath visualized. A strip of rectus sheath about 2 cm width and 7-10 cm long, removed. It was kept in normal saline. The remaining procedure was the same. The strip of rectus was tied, one end with vault and other end with anterior longitudinal ligament overlying sacrum, one with prolene No1, then buried retroperitoneally.

In Group C high uterosacral ligament suspension was done. After the abdominal wall had been opened and the bowel packed away, the remnants of the uterosacral ligaments were identified and tagged with prolene No. 1 near the ischial spine. The ureters were identified bilaterally. The enterocele was addressed by obliteration of cul-de-sac (abdominal MacCall's culdoplasty). Plication of uterosacral ligaments created a firm durable ridge in the hollow of the sacrum to which vaginal vault could be suspended. The peritoneum over the vaginal apex was then opened and the endopelvic fascia identified and re-approximated to form a continuous covering of endopelvic fascia over the vaginal epithelium. Longitudinally placed sutures with prolene No.1 were passed through the ridge of uterosacral ligaments, down the cul-de-sac to the edge of the rectovaginal fasica, into the vaginal vault, and finally through the edge of pubocervical fascia. Tying of sutures elevate the apex of vagina to uterosacral ligaments and re-approximate the pubocervical fasica with rectovaginal fascia.

In Group D, the women were placed in Lloyd-Davis position. A Pfannensteil incision performed and the dissection continued down to the rectus sheath in which a horizontal incision was made approximately 15 cm in length. The left limb of the sling approximately one cm in width was then harvested from the lower edge of the aponeurosis starting at the right lateral end of the rectus sheath incision and ending at the left lateral end of the incision where the sling was left attached. The right limb of the sling was then taken from the upper edge in the same way. The peritoneal cavity was opened and the external oblique and transversalis muscle pierced by a pair of forceps containing the sling at the lateral border of rectus abdominus on each side. The tips of these forceps were passed through the peritoneum in the region of the internal inguinal ring and then passed to the lateral angles of the vaginal vault in a similar manner to Gilliam's ventrosuspension. The vaginal vault was elevated from below with two fingers spread widely apart and the slings attached at the point of maximum mobility with a non – absorbable suture (Prolene No.1) The excess fascial sling on one side was used to reinforce the top of the vault and the extra from the other side to reinforce the back. The space below the slings lateral to the vaginal vault on the pelvic side walls was closed using the peritoneum and the remnants of the round ligaments to eliminate the risk of bowel herniation. The enterocele, if present

was addressed by obliterating the cul-de-sac via abdominal MacCall's culdoplasty .The defect in the aponeurosis was repaired.

In all the four groups anterior and posterior vaginal wall repairs, if needed, were done before the abdominal procedures. For recurrence the patients were followed for 2 years.

RESULTS:

A total of 80 cases of vault prolapse were analyzed. The age range was 40 to 75 years (table I). Operative time was less in Group A as compared to Group B but longer as compared to Group D and almost same in Group C (table II). Least blood loss was observed in Group A as compared to B, C and D. None of our patients showed mesh erosion. No recurrence of vault prolapse was seen in Group A (100% long term effectiveness) as compared to 10%, 20% and 15% in Group B, C and D respectively. No patient from Group A reported with incisional hernia as compared to 10%, 5% and 10% in Group B, C and D. The complaint of low persistent backache, remained same in Group A and B (30%) as compared to 35% in Group C and 45% in Group D (table III).

Table I: Age

Age in years	Group A (20)	Group B (20)	Group C (20)	Group D (20)	Total
40-49	6	7	6	5	24
50-59	9	8	8	6	31
60-75	5	5	6	9	25
Total	20	20	20	20	80
Mean	54.50	54.00	55.00	57.00	55.81
Standard Deviation	7.54	7.88	7.95	8.34	7.87

Table II: Operative Time

Operative Time	Group A	Group B	Group C	Group D
Range	1.0-1.5 hours	1-5-2.5 hours	1.0-1.5 hours	0.75-1 hours
Mean	1.22	2.00	1.23	0.83
Standard deviation	0.16	0.28	0.14	0.14

Table III: Low Persistent Backache

Low Persistent Backache	Group A	Group B	Group C	Group D	Total
Yes	6 (30%)	6 (30%)	7 (35%)	7 (45%)	26
No	14(70%)	14 (70%)	13 (65%)	13 (55%)	54
Total	20	20	20	20	80

DISCUSSION:

Pelvic organ prolapse affects millions of women. Currently the lifetime risk of undergoing prolapse or incontinence surgery in France is one in 11; and 30% of these women will require repeat prolapse surgery and 10% will require repeat continence sugary.[6] Vault prolapse results from the lack of suspensory support from the pelvic side walls and the uterosacral cardinal ligament complex. This support can be weakened by the childbirth (neuromuscular damage or direct trauma) or by global pelvic connective tissue remodeling from increased elastase or collagenase activity and previous hysterectomy.[7] The incidence of surgical repair for vault prolapse is increased in any women who had a prior hysterectomy and even further increased in women who have had a hysterectomy for prolapse.[8] MacCall's culdopaltsty has been recognized as a preventive measure of vault prolapse during vaginal or abdominal hysterectomy.[9] Numerous operations have been described (vaginal, abdominal and laparoscopic) now

a days, not only to improve symptoms of prolapse, but also to restore sufficient vaginal length to preserve coital function. Surprisingly the abdominal route appears to produce good long term results. Any number of reasons may apply like

- The traditional surgical procedure for vaginal management of total vault prolapse - sacrospinous ligament fixation distorts the axis of vagina.
- Native tissue are not as strong as synthetic materials.
- In vaginal and paravaginal repair, the extensive periurethral dissection required can damage fine branches of pudendal nerve that innervate and control the urethral sphincter. Such extensive dissection is not required from abdominal approach.
- In vaginal approach, it can be difficult to gain adequate exposure high in the retroperitoneum to re-attach the endopelvice fascia of vaginal apex to the arcus at its origin just distal to the ischial spine.

In our study, we reviewed all the four abdominal procedures. We found that abdominal mesh sacrocolpopexy (Group A) has long term effectiveness of 100% as no patient from this group reported with recurrence of vault prolapse. None of the patients in group A had incisional hernia and only 6% showed persistent low backache. Estimated blood loss and operative time were also less as compared to sacrocolpopexy with rectus sheath strip. These results are comparable to Gilleran JP study who showed that at mean follow up of 23 months none of their patients showed recurrence after mesh sacrocolpopexy. [10] Chaudhary SM also showed the same results after sacrocolpopexy with prolene thread versus rectus sheath strip.[11]

Our study showed highest recurrence (20%) of vault prolapse after high uterosacral ligament suspension (in Group C) as reported by Andre SW (18% recurrence).[12] It is also recommended by Irvin W that high uterosacral ligament suspension is less successful in complete vault prolapse.[4]

In our study, the patients who underwent vault suspension using an autologous fascial sling of rectus sheath showed shorter operative time, required less skill, with recurrence rate of 15% and incisional hernia in 10% cases only. We suggest that this simple procedure can be opted in those centers where skilled surgeons for sacrocolpopexy are not available. A retrospective analysis done by Barrington JW showed that rectus sheath fascial sling is safe, simple and effective abdominal operation for vault prolapse.

CONCLUSIONS:

Sacrocolpopexy with prolene mesh provides excellent reduction of vault prolapse without significant complications. However, where experts for sacrocolpopexy are not available, surgeon should consider performing vaginal vault suspension using an autologous fascial sling of rectus shealth.

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