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Conservative Surgical Management of Uterine Prolapse Using Mersilene Tape Sling, Case Series and Literature Review

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ABSTRACT

Uterine Prolapse/Pelvic Organ Prolapse (pop), is a common complaint in women presenting in outpatient gynecology clinics. It occurs when pelvic floor muscles and ligaments stretch and weaken because of multiple childbirth, obesity, or age. This weakening of the support structures allows the uterus to move out of its normal position and drop into the vagina. The mainstay of treatment for symptomatic prolapse is surgical. Sling operations repair prolapse by reinforcing damaged suspensory ligaments, whereas mesh sheet operations block organ prolapses. Different modalities of sling surgery are reported in the literature.

The purpose of this case series is to show the benefit of abdominal suspension operation using Mersilene tape sling for conservative surgical management of uterine prolapse in women during reproductive life. The technique is simple and Mersilene tape is safer than mesh which carries serious complications.

Methods: Retrospective case records analysis was performed of total 20 patients who had abdominal sling surgery with Mersilene tape for management of second and third degree uterine prolapse, at Maternity Hospital, King Saud Medical City, Riyadh, Saudi Arabia from 1996 – 2022. The parity varies from para 1 to para 8 and the follow-up was different among patients from one month postoperatively until 15 years.

The procedure is to support uterus by Mersilene tape. The tape is attached to uterosacral ligament and cervix posteriorly, then pulled in between broad ligament leaves retroperitoneally and fixed with non-absorbable black silk sutures on the lower anterior aspect of rectus sheath (Figure 1).

Results: All patients had follow-up after one month of the operation had successful correction of their prolapse with no complications. Thirteen patients had followed up till one year with no recurrence. One patient had followed up after two years while she was pregnant and delivered by caesarean section with no complications or recurrence. One patient had followed up at gynecology clinic for postmenopausal complaint after 15 years of surgery and was found to have no recurrence of uterine prolapse. However, 5 patients had no show after the first month of postoperative follow up.

Conclusion: Abdominal sling surgery using Mersilene tape for conservative surgical management of second and third degree uterine prolapse is worth to be done for young women with uterine prolapse or older one who want to preserve their uterus. It has high success rate with less time consuming and negligible blood loss, in addition to preserving fertility in women during reproductive life. This technique is easier and carries less complications than

posterior sling to sacral promontory. Moreover, Mersilene tape is a safe alternative to mesh which carries serious complications.

Keywords: Conservative surgical management second and third degree uterine prolapse; Abdominal sling surgery; Mersilene tape; posterior cervix and Uterosacral ligament; Rectus sheath.

INTRODUCTION

Pelvic prolapse is a loss of support for the organs in the pelvis including bladder, uterus, or rectum. The primary cause of pelvic organs prolapse (pop) is weak cardinal/uterosacral ligaments and for stress urinary incontinence weak pubourethral ligament.[1]

There are various stages of uterine prolapse: **stage I:** The cervix of uterus has begun to descend but is still in the vagina, **Stage II:** The cervix of the uterus has descended to the vaginal opening. **Stage III:** The cervix of the uterus has begun to breach through the vaginal opening. **Stage IV:** The cervix of the uterus has fully descended through the vaginal opening.[2]

Uterovaginal prolapse is one of the commonest complaints in female population presenting to gynaenecology clinic especially of underdeveloped countries.[3] Options of treatment of pelvic organ prolapse; are either conservative or surgical. Conservative treatment includes physiotherapy and pessary insertion which usually fails and has very low compliance. Surgical treatment options include vaginal hysterectomy with anterior and posterior colpoperineorrhaphy, Manchester's repair is the option when the uterus needs to be conserved. Abdominal suspension procedure is an alternative option, which is a technique that it is not only helpful in preserving uterus, but also gives satisfaction to the preservation of fertility as well. It has an advantage over vaginal hysterectomy, in old patients as it saves the patient from prolonged anesthesia and has less morbidity rate.[4]

In the evolution of conservative operations for prolapse, many sling operations were described that soon became very popular because of their simplicity and effectiveness. Initially body connective tissue was used but later native fascia was replaced by synthetic sling like Mersilene which gives lifelong support.[5]

This case series reports conservative surgical management of second and third degree uterine prolapse in women during reproductive life by using Mersilene tape as sling to support uterus by fixing uterosacral ligament and supravaginal cervix posteriorly to the rectus sheath anteriorly.

MATERIAL AND METHODS

The case records of 20 patients who had been managed by this technique were reviewed. All the patients had second or third degree uterine prolapse with variable length of the cervix.

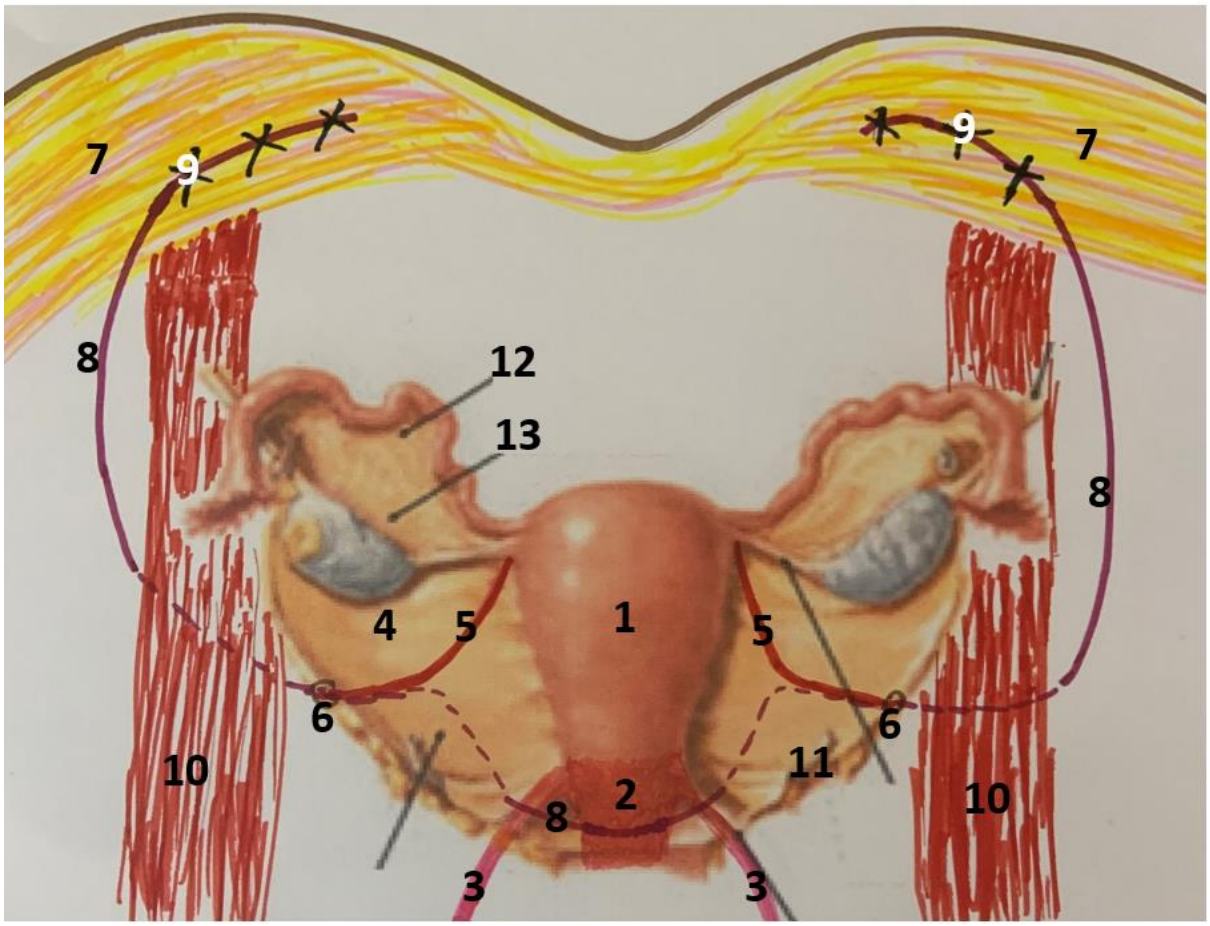
All these patients were young during reproductive life the youngest was 24 years and the eldest was 43 years. They were of various parity from para 1 to para 8, but none of them was nulliparous.

All patients had previous vaginal deliveries, one of them had one prior caesarean section. Most of the patients had various grades of cystocele and rectocele. However, none of them had stress urinary incontinence.

SURGICAL TECHNIQUE

Procedure was done under spinal anesthesia; patients were placed in semi lithotomy position. Abdomen was opened through Pfannenstiel incision and peritoneal cavity was opened. Internal organs were inspected. Procedure started by pulling the uterus upwards by an assistant to avoid injury to uterine artery or ureter by the forceps. Then

stitch was done by Mersilene tape needle at the cervix posteriorly just below the attachment of uterosacral ligament, which is included in the stitch, both needles were cut. Then the course of round ligament was identified and followed up till its passage through internal inguinal ring, rectus muscle is pulled medially, long artery forceps is passed to penetrate at the area of internal inguinal ring into broad ligament within its leaves, the artery forceps is pushed in between the leaves of broad ligament retroperitoneally. Broad ligament pierced at the level of uterosacral ligament by the forceps and the tip of Mersilene tape is grasped by the forceps and pulled within broad ligament leaves, the tape pulled out of pelvis at the level of internal inguinal ring then turned medially and held by a forceps, the same technique is done on the contralateral side. A senior assistance examined the patient vaginally to decide the correct level of the cervix inside vagina, Mersilene tape length is adjusted, and the extra length is cut then the tape fixed to the lower anterior aspect of rectus sheath with interrupted stiches of non-absorbable sutures (black silk No.1). Abdominal wall closed as usual manner, rectus sheath closed with vicryl stitches continuously above the level of silk stiches and skin closed with vicryl subcuticular (see Figure 1).



1. Uterus
2. Cervix
3. Uterosacral ligament
4. Broad ligament
5. Round ligament
6. Internal inguinal ring
7. Rectus sheath
8. Mersilene tape
9. Silk sutures
10. Rectus muscle
11. Ureter
12. Fallopian tube
13. Ovary

RESULTS

Uterine prolapse was found to be more among women with high parity. The technique is easy and there were no intra-operative or post-operative complications in all cases. Blood loss was negligible. Post-operative recovery was uneventful for all patients, and they were discharge on next day with appointment for follow up at gynecology clinic after one month.

Follow up after one month was possible for all patients while one year follow up was possible for 13 patients, they had no complaint and vaginal examination revealed successful correction of their uterine prolapse.

One patient had followed up after two years while she was pregnant and delivered by caesarean section without complications. One patient had followed up to Gynecology Clinic for postmenopausal symptoms after 15 years of the operation and found to have no recurrence of uterine prolapse. Five patients had no show after the first month of surgery.

Table 1: Patients profile: Age in Years (Total number of patients 20)

20 – 25 years old	26 -30 years old	31-35 years old	36 – 40 years old	41-45 years old
1	1	6	10	2

Table 2: Parity

Nulliparous	**P1**	**P2-4**	**P5-8**
0	3	1	16

DISCUSSION

The mainstay of treatment for symptomatic prolapse is surgical. The aims of surgical correction of POP are relief of symptoms, restoration of normal vaginal anatomy, preservation of coitus, fertility, and urinary and anal continence. The surgical options can be either vaginal or abdominal, laparoscopic, or open. Options for surgical treatment include anterior or posterior colporrhaphy with or without vaginal hysterectomy plus or minus sacrospinous fixation. Other recognized surgical procedures include the placement of surgical mesh, either abdominal sacrocolpopexy (laparoscopic or open) or vaginal mesh insertion. Mesh, as an option for conservative vaginal surgery, is now avoided due to the potential complications, most notably erosion into the bladder, rectum, or vagina.[5]

With the controversy surrounding the use of mesh, a variety of surgical treatment options should be considered. Such alternative treatments include the use of surgical sling procedures, which have been used widely in Indian practice for the treatment of POP for over 60 years.[5] There are different modalities of sling surgery were reported in the literature.

In this case series we report conservative surgical management of second and third degree uterine prolapse in women during reproductive age by using Mersilene tape as sling which successfully corrected uterine prolapse.

The advantages of this technique are that; it is easy to perform, with negligible blood loss, less time consuming. There is no risk of bladder injury or irritation later. Mersilene tape is placed retroperitoneally in between broad ligament leaves so, there is no risk of bowel entrapment. Moreover, there is no risk of cutting Mersilene tape in

subsequent caesarean section as the tape is attached to the cervix posteriorly and the black silk sutures can be seen clearly at the anterior lower part of rectus sheath.

Moreover , using Mersilene tape as sling, which is a synthetic, strong material is better than using native flap of the patient who has weak connective tissue .This anterior approach where Mersilene tape is attached anteriorly to rectus sheath is much easier technique, it provides dynamic support to uterus and safer than posterior sling to sacral promontory which has the risk of injury to sigmoid colon, ureter, or genitofemoral nerve.[6] The use of rectus sheet flap as sling was reported in some series.[2,7]

Mesh, as an option for conservative vaginal surgery, is now avoided due its potential complications, most notably erosion into the bladder, rectum, or vagina.[8]

Polypropylene pelvic mesh (PP) is a synthetic mesh made of PP polymer used to treat pelvic organ prolapse. Its use has become highly controversial due to reports of serious complications as chronic pain and mesh exposure. As a result, PP mesh for the treatment of pelvic organs prolapse has been banned in multiple countries, currently with no alternative available, the development of a pelvic mesh using advanced materials including emerging graphene-based nanocomposite materials was proposed.[9]

Comparative study between the use of polypropylene mesh and Mersilene tape in sacrohysteropexy showed that Mersilene tape is a safe alternative to polypropylene mesh with comparable efficacy and less complications.[10]

Reasonable application of mesh and avoiding mesh complications are still the most concerned topics in POP research. Although clinical research, surgical improvement, biological mesh, and bioengineering technology have shown promising results, it is still urgent to carry out clinical transformation application research.[11]

The cost difference between mesh and mersilene tape should be considered particularly in low-income countries.

CONCLUSION

Conservative surgical management for second and third degree uterine prolapse for women during reproductive age by using Mersilene tape to sling supravaginal cervix posteriorly and uterosacral ligament to rectus sheath anteriorly through broad ligament leaves retroperitoneally is a simple technique with less time consuming and negligible blood loss.

It has high success rate with no reported complications among patients in this series. The technique is easier and carries less complications than posterior sling to sacral promontory.

On the other hand, Mersilene tape is a stronger sling than the patient's native tissue which is a weak support, and it is a safe alternative to mesh which carries serious complications.

This technique is worth to be performed for conservative surgical management of uterine prolapse in women during reproductive life or older patient who wants to preserve their uterus.

Further future studies of different modalities of sling procedures may replace mesh use.

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