WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 7.523
Volume 7, Issue 2, 674-685. Research Article ISSN 2277 – 7105

INNOVATIVE TECHNIQUE OF LAPAROSCOPIC SACROCERVICOPEXY

***[1]Gp Capt J.C. Sharma, MD, DNB and [2]Dr. Rupa Talukdar MD**

[1]HOD Obs & Gyn, A F Hospital, Jorhat, Assam.

[2]HOD Obs & Gyn, Cantonment General Hospital, S Delhi Cantt. New Delhi.

Article Received on
26 Nov. 2017,

Revised on 15 Dec. 2017,
Accepted on 05 Jan. 2017

DOI: 10.20959/wjpr20181-10635

***Corresponding Author**
Gp Capt JC Sharma, MD, DNB
HOD Obs & Gyn, A F Hospital, Jorhat, Assam.

ABSTRACT

Aim: To study the effectiveness of an innovative technique devised for performing sacro-cervicopexy procedure and provide necessary support to uterine prolapse with very economical material – no 5 Ethibond suture [Poly ethylene terephthalate]. **Material and method:** Women with prolapsed uterus were selected, prolapse of central compartment with a Pelvic Organ Prolapse Quantitative (POP-Q) stage 2. A graft was prepared aseptically with no 5 Ethibond suture in the operation theatre before commencement of surgery. The presacral space, including the common iliac arteries and the middle sacral vessels, identified. The incision in the peritoneum began from the presacral area at sacral promontory and was carried caudally into the elvis, lateral to the rectosigmoid, and medial to the right uterosacral ligament. Anteriorly uterovesical peritoneal fold was opened laterally into the broad ligament. The needle with the graft is passed from posterior aspect of left broad ligament through a avascular window close to the uterus. The needle is now taken in front of the uterus and then passed through a avasular window in the right broad ligament. The needle is then passed through the graft thus putting a reef knot; anchoring around the cervix. Then the uterus is pulled upto desirable elevated uterine position by vaginal manipulation. The suture anchors the graft to the anterior longitudinal ligament of the sacral promontory. **Results:** The post operative recovery was very smooth and the descent of the uterus was corrected. Post -surgery follow up for two years revealed very high patient satisfaction and no recurrence of prolapse. **Conclusion:** The innovative technique of sacrocervicopexy is effective and economical and very satisfactory to patient.

KEYWORDS: Sacrocervicopexy, laparoscopic, innovative technique.

INTRODUCTION

Pelvic organ prolapse (POP) is the "the descent of one or more of the anterior vaginal wall, posterior vaginal wall, the uterus (cervix), or the apex of the vagina (vaginal vault or cuff scar after hysterectomy)".[1] Multiple etiological factors have been implicated including ageing, obesity, pregnancy, and childbirth, as well as genetic factors and menopause.[2-5]

Prolapse of the pelvic organ in women is a common condition and a major cause of gynecological surgery with a risk of having an operation for prolapse may be 11% during lifetime.[6-8]A number of pelvic surgeries has been designed and tried over the ages to provide relief and restore the anatomy of the pelvic floor, to preserve vaginal axis, length, and function in terms of urologic, bowel and sexual functions, with minimal morbidity and recurrence rate. Prolapse of vaginal vault is the main long-term complication of most pelvic surgery, including total hysterectomy with the incidence of vaginal vault prolapse approximately 11.6% following past surgery for prolapse and 1.8% for other benign diseases.[9,10]

A Cochrane review[11] has opined that abdominal sacrocolpopexy being most effective procedure and is presently considered to be the gold standard for the treatment of prolapse of vaginal vault. Vaginal prolapse repair is considered to have a short surgical recovery time but recurrence is high along with shortening of vaginal length.[11-14] Laparoscopic approach to sacrocolpopexy aims to provide the best combine outcome of abdominal sacrocolpopexy with decreased morbidity similar to vaginal procedures.[15] The sacrocolpopexy procedure — performed by interposing a synthetic mesh between the vaginal cuff and the bone—is effective but has a risk of mesh erosion rate ranging from 0.8% and 9%.[12,4,15]

A variety of material is used for pelvic repair procedures such as:-

i) Autologous matearrials - rectus fascia and fascia lata;
ii) Allograft materials- consist of fascia. The donors are screened for infectious diseases before the grafts undergo cleaning, freeze drying, and gamma irradiation to eradicate any infective or immunogenic material.
iii) Xenografts- grafts from animals, mainly porcine and bovine, have been used in pelvic floor surgery. These materials undergo extensive processing after harvesting to decellularize them and render them non-immunogenic.

iv) Range of synthetic polypropylene meshes have been used. These are are classified as type 1, 2, 3, or 4 according to their mesh size, where 1 is macroporous (>75 μm), 2 is less than 10 μm, 3 is microporous with microporous compartments, and 4 is nanoporous (<1 μm).

In practice, the materials need to be robust to withstand surgical handling and provide support to the point of insertion for its successful use. Therefore, a realistic material for this application would be the one that is degradable, provokes acute inflammatory response, undergoes tissue remodeling, permeable to cells and is mechanically robust at point of implantation. But such ideal material is yet to be found for day to day surgical use. Large pore polypropylene meshes are been preferred presently.

Ethibond excel suture is a nonabsorbable, braided, sterile, surgical suture composed of Poly ethylene terephthalate (PET). It is prepared from fibers of high molecular weight, long-chain, linear polyesters having recurrent aromatic rings as an integral component. The suture uniformly coated with polybutilate or poly {oxy-1, 4 butanediyloxy (1, 6-dioxo-1, 6 hexanediyl)}is highly adherent coating and is relatively nonreactive nonabsorbable compound which acts as a lubricant to mechanically improve the physical properties of the uncoated suture by improving handling qualities as contrasted to the braided, uncoated fiber.[16,17] The suture is routinely used in orthopedic surgery for closure of wounds, repair of fascia, muscles, tendons, ligaments, joint capsules, and cerclage or tension band of certain fractures.

AIM

To study the effectiveness of innovative technique devised for performing the sacro-cervicopexy procedure and provide necessary support to uterine prolapse with very economical material – no 5 Ethibond suture [Poly ethylene terephthalate].

MATERIAL AND METHOD

Women with prolapsed uterus were selected with inclusion criteria - age between 35 and 60 years, sexually active, symptomatic prolapse of central compartment with a Pelvic Organ Prolapse Quantitative (POP-Q) stage 2 associated or not with anterior or posterior compartment prolapse, normal Papanicolaou test, no chronic systemic disease, no current pregnancy including ectopic pregnancy, no concurrent use of systemic corticosteroids, and no active pelvic or abdominal infection. Fitness for anaesthesia obtained. The procedure was explained to the patient.

Surgical technique

A large pore graft is prepared aseptically with the no 5 Ethibond suture in the operation theatre before commencement of surgery. Surgery is performed under GA in semilithotomy with trendelenburg position which allows both vaginal and laparoscopic access. The bladder was catheterised and uterine manipulator was inserted vaginally for ease of manipulation Pneumoperitoneum with CO2 was created using a Veres needle, and a 10-mm trocar was inserted into the umbilicus, two 5-mm trocars were placed lateral to the inferior epigastric vessels on each side of abdomen.

ACTUAL SURGICAL TECHNIQUE: The presacral space, including the common iliac arteries and the middle sacral vessels, were identified. The right adnexa was kept away from surgical field. All vital pelvic structures including ureter and vessels were identified.

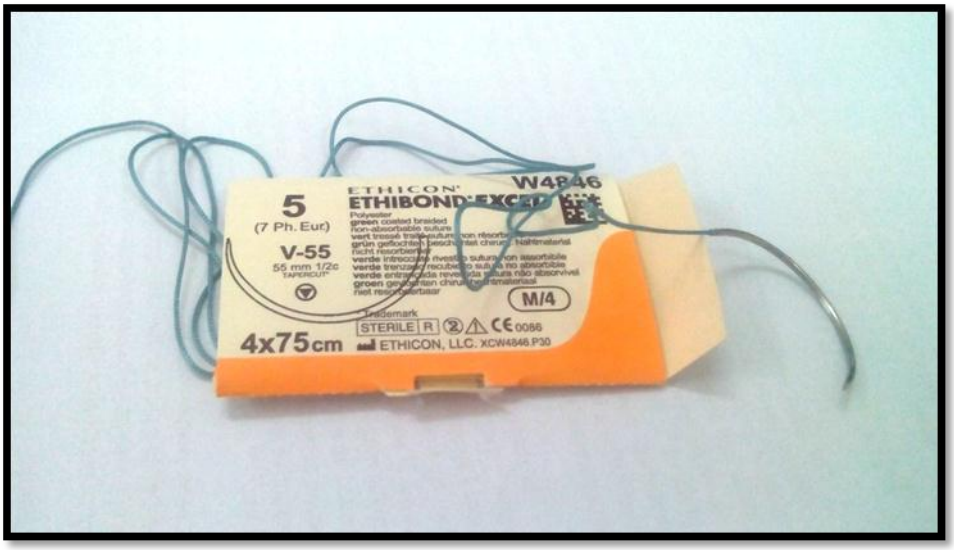

Fig. 1: No 5 Ethibond non absorbable suture - 75 cm long.

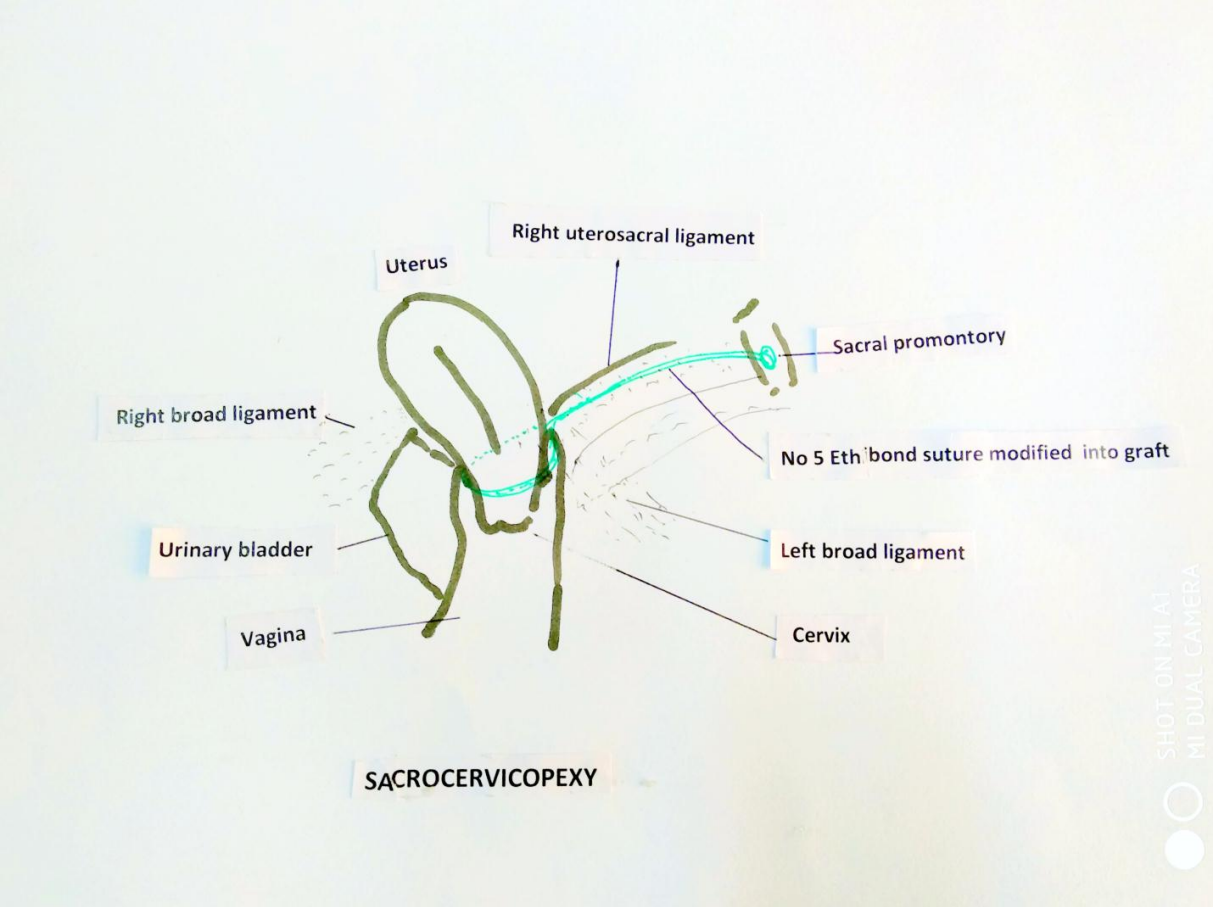

Fig 3: Diagrammatic representation of surgery.

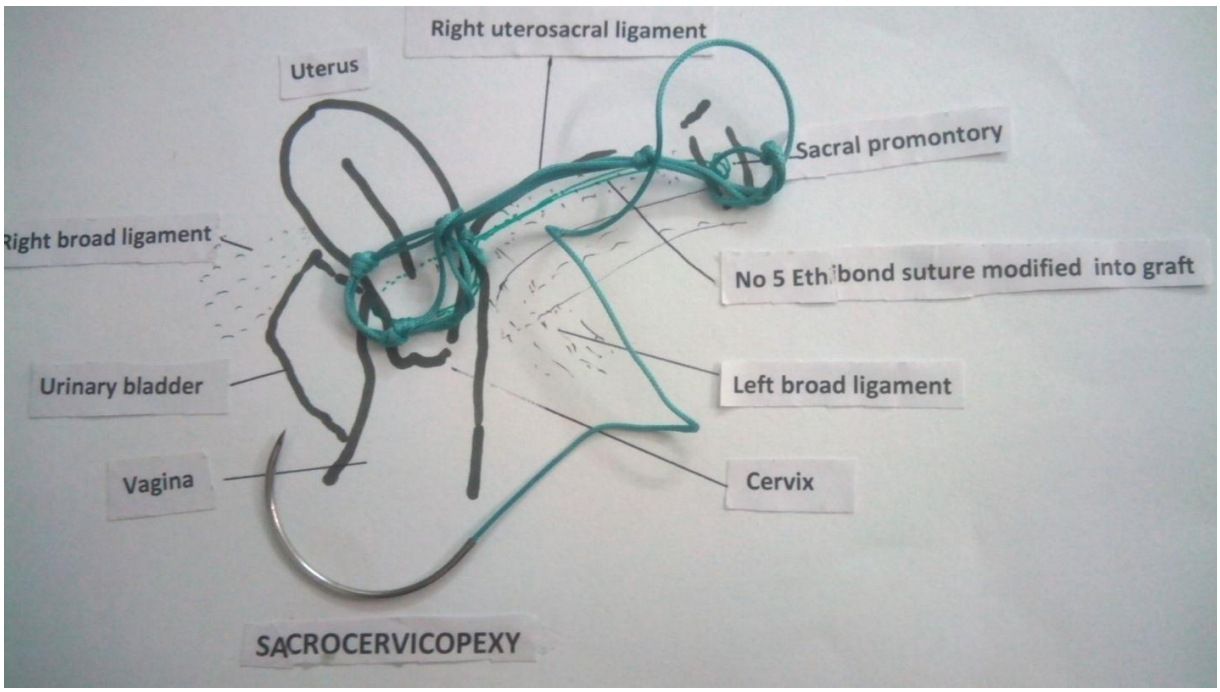

Fig. 4: No 5 Ethibond suture modified as graft and also used in anchoring; no additional mesh is required.

Under GA in semilithotomy with trendelenburg position, the bladder was catheterized and uterine manipulator was inserted vaginally for ease of manipulation. Standard laparoscopy entry was made, five ports were created –umbilical for camera and two 5-mm trocars were placed lateral to the inferior epigastric vessels on each side of abdomen. The presacral space, sacral promontory including the common iliac vessels were identified. The right adnexa was kept away from surgical field. The peritoneum was elevated over the sacral promontory and incised. The anterior longitudinal ligament in the presacral space was visualized and cleared off loose fibrofatty tissues.

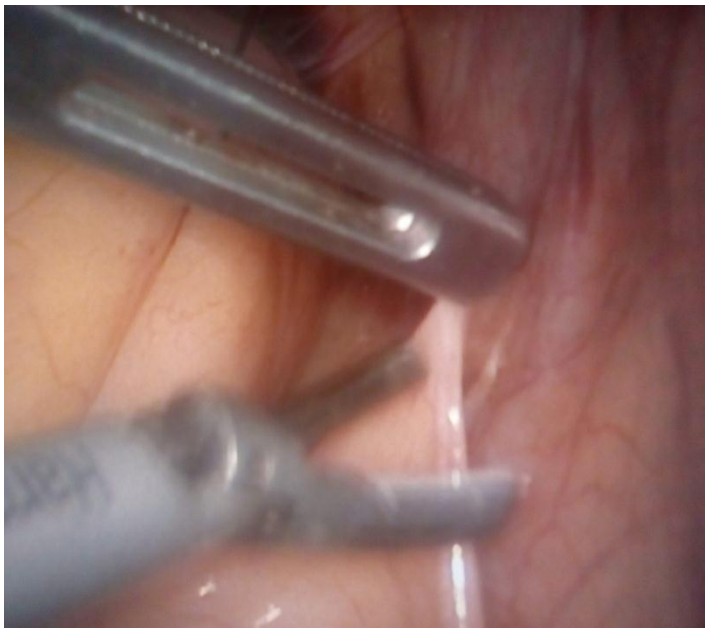

Fig. 5: Peritoneum over sacral promontory.

A longitudinal space is created medial to right uterosacral ligament from sacral promontory to posterior surface of cervix to house the graft.

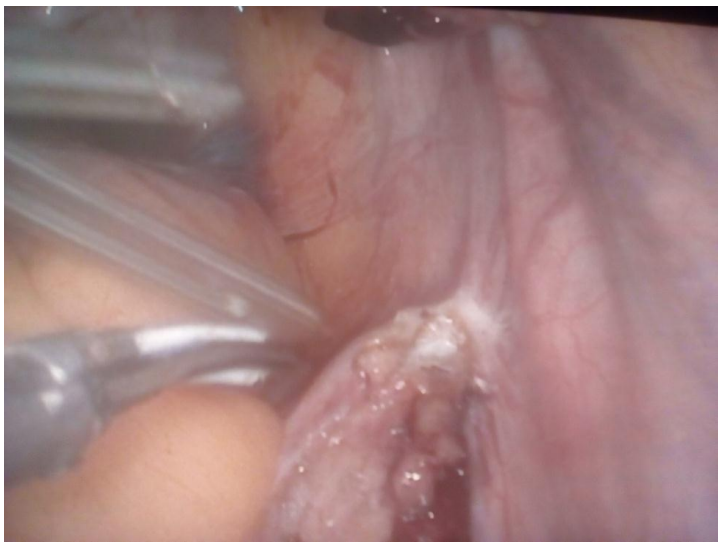

Fig. 6: The incision extended to the posterior aspect of cervix.

Anteriorly, uterovesical fold of peritoneum was opened carefully avoiding bladder injury. Dissection was extended bilaterally into the broad ligaments.

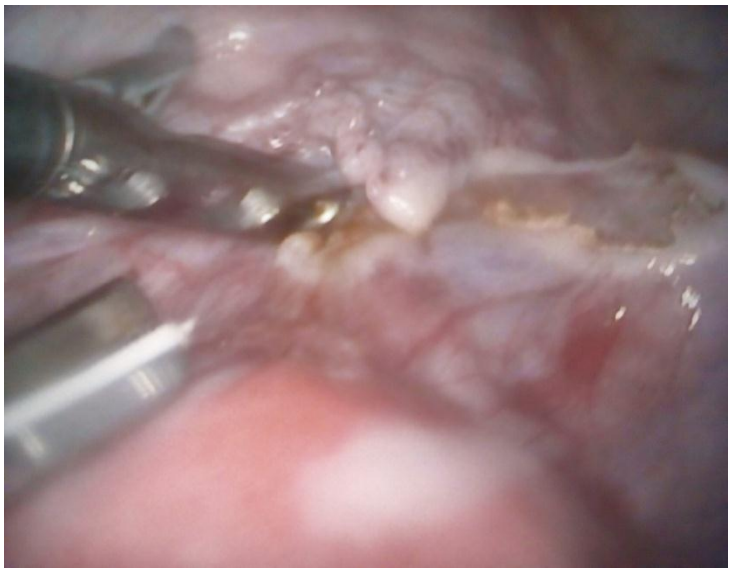

Fig. 7: The incision extended laterally into broad ligament.

The needle with the graft was passed from posterior aspect of left broad ligament through a avascular window lateral to the uterus. The needle was then taken in front of the uterus and then passed through a avasular window into the right broad ligament to emerge in the dissected posterior aspect of it.

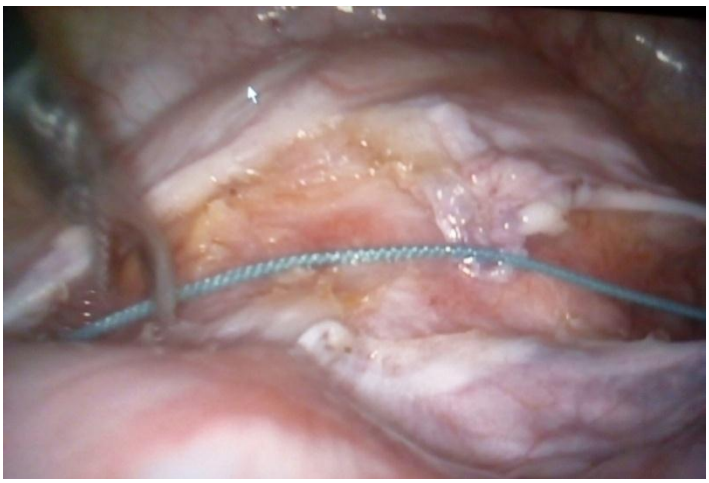

Fig. 8: The graft was passed from posterior aspect into anterior to cervix.

The needle was thae passed through the mesh thus putting a reef knot (noose), anchoring around the cervix loosely.

The graft is placed in the space created along the medial aspect of the right uterosacral ligament and was pulled simultaneously while the uterus is kept in desirable elevated position with the vaginal uterine manipulator. The needle was passed through the anterior longitudinal ligament of the sacral promontory to make a good anchoring then tied securely.

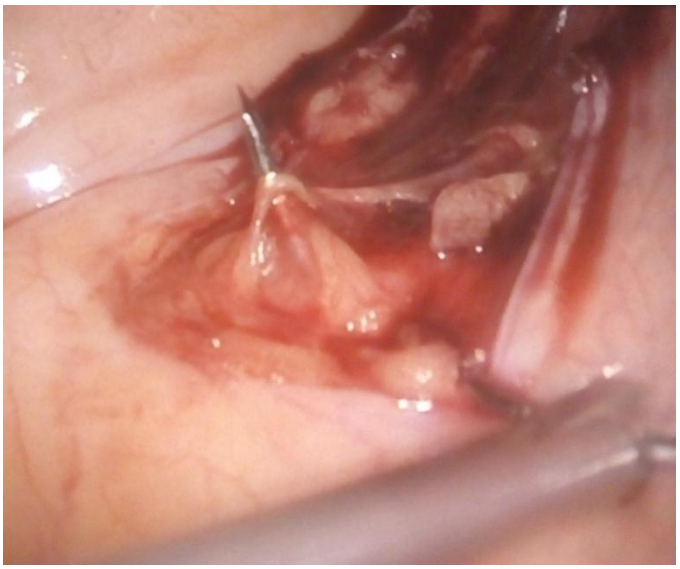

Fig. 9: Good bite into the anterior surface of sacral promontory. taken to fix the.

After loosely suspending the graft it was completely covered by re approximating the peritoneum over the graft.

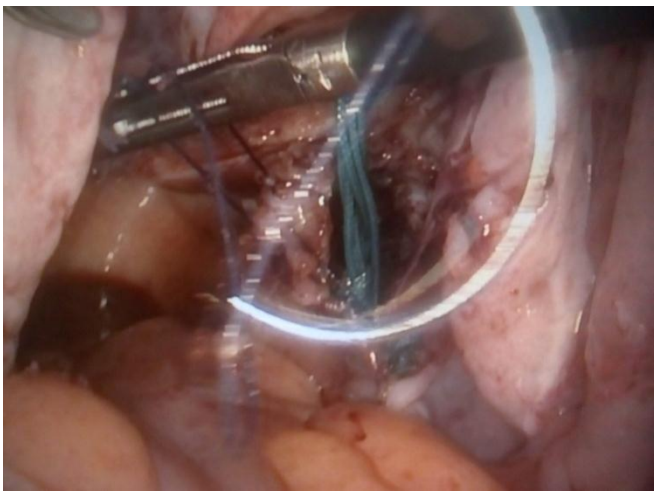

Fig. 10: Retro peritonealisation of the graft by approximating the cut edge of peritoneum.

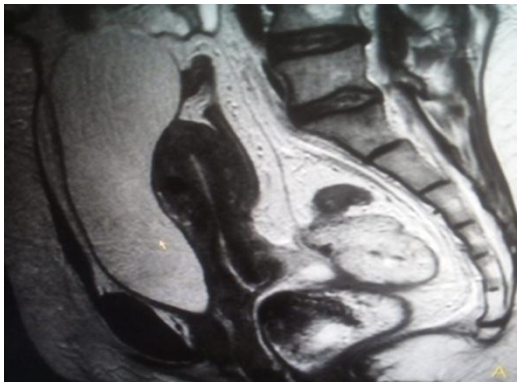

Fig. 11: Pre operative MRI image of uterine descent.

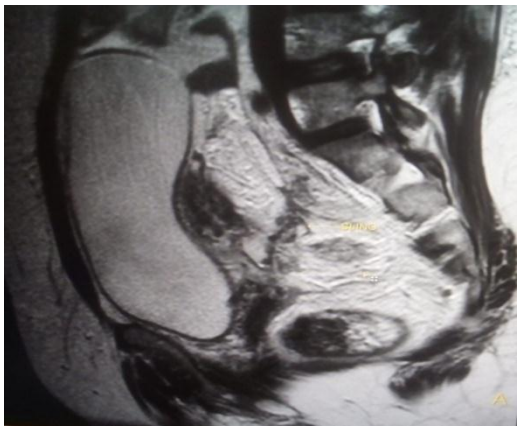

Fig. 12: Post operative MRI image of corrected uterine position.

Innovation of the surgical technique

- Simplicity of the procedure, use of inexpensive graft prepared by no 5 Ethibond suture.
- Holding the cervix all around without any need of suture on cervix, being surrounded as in reef knot it can never come out in contrast to fixing on the posterior surface of the cervix where there is a risk of failure due to tissue remodeling and loosening of suture.
- Suturing done only once in the anterior ligament over the sacral promontory. No need of tacker to fix the graft. Technically easy for beginners and very economical in minimal resource settings.

RESULTS

The post operative recovery was very smooth and the descent of the uterus was corrected. Post surgery follow up for two years revealed very high patient satisfaction and no recurrence of prolapse.

DISCUSSION

The sacrocervicopexy, was first described in 1976, but was not practiced regularly due to alleged imprecise clinical role. Until now, sacrocervicopexy surgery was performed to treat uterine prolapse in women desirous to preserve their uterus and fertility.[18] In 2001, Leron et al published their results from 13 women with symptomatic uterovaginal prolapse treated by sacrohysteropexy without any complications except one patient who had first-degree uterine prolapse.[19] A retrospective case series of 40 women had sacrohysteropexy operation for uterine prolapse was published by Rosenblatt et al.[18] Success was evaluated in that study as an improvement in point C from the preoperative position, and that point C was above the hymen postoperatively.

The theoretical risk of cervical cancer for preserving the uterus was found to be erroneous. A Cochrane review,[20] showed the true risk of cervical stump carcinoma among women with previously normal Pap smears is approximately 0.3% which is similar to the risk of vaginal carcinoma following hysterectomy for benign disease.[21,22] Our technique of sacrocervicopexy, is simple and economical and needs less expertise. The long-term failure rates for abdominal sacrocolpopexy was in the range from 0% to 26%, and laparoscopic sacrocolpopexy had similar rates as elaborated in a recent review.[15] Preservation of the cervix avoids opening of the vagina. Reduction of mesh load is thought to be a factor in reducing the risk of mesh erosion in pelvic reconstructive surgery. The presence of the uterosacral ligaments seems to improve the quality of sexual life.[15,21]

The laparoscopic route has several well-known advantages, such as short hospitalization, low postoperative pain, aesthetically appealing and rapid return to work and normal activities. Laparoscopy also provides a magnification of the surgical field, which might allow a better placement of the stitches, thereby increasing the likelihood of an improved long-term outcome.

CONCLUSION

In conclusion, sacrocervicopexy operation with the innovative technique is very effective in the treatment of severe pelvic organ prolapse. This is also very economical as the cost of additional mesh is obviated, also does not require very high degree of laparoscopic suturing skill. It provides high patient satisfaction for quick post operative recovery and for maintaining adequate vaginal length and axis for better sexual function.

REFERENCES

1. B. T. Haylen, D. de Ridder, R. M. Freeman et al., "An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction," Neurourology and Urodynamics, 2010; 29(1): 4–20.
2. I. Milsom, D. Altman, R. Cartwright et al., "Epidemiology of urinary incontinence (UI) and other lower urinary tract symptoms (LUTS), pelvic organ prolapse (POP) and anal incontinence," in Incontinence (5th International Consultation on Incontinence), P. Abrams, L. Cardozo, S. Khoury, and A. Wein, Eds., Paris, France, 2013.
3. S. Maggi, N. Minicuci, J. Langlois, M. Pavan, G. Enzi, and G. Crepaldi, "Prevalence rate of urinary incontinence in community-dwelling elderly individuals: The Veneto study," Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 2001; 56(1): M14–M18.
4. A. Miedel, G. Tegerstedt, M. Mæhle-Schmidt, O. Nyrén, and M. Hammarström, "Nonobstetric risk factors for symptomatic pelvic organ prolapse," Obstetrics and Gynecology, 2009; 113(5): 1089–1097.
5. I. Nygaard, C. Bradley, and D. Brandt, "Pelvic organ prolapse in older women: prevalence and risk factors," Obstetrics and Gynecology, 2004; 104(3): 489–497.
6. Luber KM, Boero S, Choe JY. The demographics of pelvic floor disorders: current observations and future projections. Am J Obstet Gynecol, 2001; 184: 1496–1501.
7. Meyer S, Schreyer A, De Grandi P, Hohlfeld P. The effects of birth on urinary continence mechanisms and other pelvic-floor characteristics. Obstet Gynecol, 1998; 92: 613–618.
8. Miedel A, Tegersted G, Maehle-Schmidt M, Nyrén O, Hammarström M. Nonobstetric risk factors for symptomatic pelvic organ prolapse. Obstet Gynecol, 2009; 113: 1089–1097.
9. Marchionni M, Bracco GL, Checcucci V, et al. True incidence of vaginal vault prolapse. Thirteen year experience. J Reprod Med, 1999; 44: 679–684.
10. Barrington JW, Edwards G. Post hysterectomy vault prolapse. Int Urogynecol J Pelvic Floor Dysfunct, 2000; 11: 241–245.
11. Maher C, Baessler K, Glazener CM, Adams EJ, Hagen S. Surgical management of pelvic organ prolapse in women. Cochrane Database Syst Rev, 2007; 3: CD004014.
12. Maher CF, Qatawneh AM, Dwyer PL, Carey MP, Cornish A, Schulter PJ. Abdominal sacral colpopexy or vaginal sacrospinous colpopexy for vaginal vault prolapse: a prospective randomized study. Am J Obstet Gynecol, 2004; 190: 20–26.

13. Lo TS, Wang AC. Abdominal colposacropexy and sacrospinous ligament suspension for severe uterovaginal prolapse: a comparison. J Gynecol Surg, 1998; 14: 59–64.
14. Nygaard IE, McCreery R, Brubaker L, et al. Abdominal sacrocolpopexy: a comprehensive review. Obstet Gynecol, 2004; 104: 805–823.
15. Ganatra AM, Rozet F, Sanchez-Salas R, et al. The current status of laparoscopic sacrocolpopexy: a review. Eur Urol, 2009; 55: 1089–1105.
16. Giulia Gigliobianco,1 Sabiniano Roman Regueros,1 Nadir I. Osman,1,2 Julio Bissoli,3 Anthony J. Bullock,1 Chris R. Chapple,2 and Sheila MacNeil, Biomaterials for Pelvic Floor Reconstructive Surgery: How Can We Do Better? BioMed Research International, 2015(2015): Article ID 968087, 20 pages.
17. Sharon, Chetna, Madhuri. Studies of biodegradation of polyethylene terephthalate: Asynthtic polymer. Journal of Microbiology and Biotechnology rwsearch, 2(2): 248-257.
18. Rosenblatt PL, Chelmow D, Ferzandi TR. Laparoscopic sacrocervicopexy for the treatment of uterine prolapse: a retrospective case series report. J Minim Invasive Gynecol, 2008; 15: 268–272.
19. Leron E, Stantin SL. Sacrohysteropexy with synthetic mesh for the management of uterovaginal prolapse. Br J Obstet Gynecol, 2001; 108: 629–633.
20. Su KC, Mutone MF, Terry CL, Hale DS. Abdominovaginal sacral colpoperineopexy: patient perceptions, anatomical outcomes, and graft erosions. Int Urogynecol J Pelvic Floor Dysfunct, 2007; 18: 503–511.
21. Washington JL. Laparoscopic supracervical hysterectomy compared with abdominal, vaginal, and laparoscopic vaginal hysterectomy in a primary care hospital setting. JSLS, 2005; 9: 292–297.