

# Clinical Study on Risk Factors of Pelvic Organ Prolapse in Reproductive Age Group and Study of Abdominal Sling Surgeries done for It, with respect to Early Complications, Anatomical Results, and Symptoms of Descent

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## ABSTRACT

**Introduction:** The purpose of a conservative procedure is the correction and restoration of the prolapse with the most effective long-lasting result, which allows sexual functioning and, for young patients, conservation of reproduction.

**Objectives:** To study the risk factors for prolapse in reproductive age group; to study various conservative surgeries done for pelvic organ prolapse (POP).

**Materials and methods:** This is a retrospective study conducted on patients presenting with pelvic organ prolapse in reproductive age group, at Vydehi Institute of Medical Sciences and Research Center, from June 2008 to June 2014.

**Results:** We identified 68 women with uterovaginal prolapse in reproductive age group who underwent conservative surgeries: 26 (18%) underwent Virkud's surgery, 20 (29.4%) underwent Shirodkar's sling surgery, and 22 (32.3%) underwent Purandare's sling surgery.

There was no major difference in intraoperative and postoperative details in all three surgeries. Postoperative improvement in symptoms was 16 (80%) in Shirodkar's group, 20 (90%) in Virkud's composite sling surgery, and 16 (61.5%) in anterior abdominal wall cervicopexy surgery.

**Conclusion:** Obstetric risk factors are the major contributing factors for pelvic organ prolapse in the reproductive age group. Proper intranatal care will help in reducing the problem; all the conservative surgeries have similar intraoperative, postoperative morbidity and are similar with respect to early anatomical correction. Urinary tract infection and urinary retention were more in anterior abdominal wall hysteropexy group; Patient's satisfaction and success rate is more in Sacropexy and Virkud's composite surgery group compared to anterior abdominal wall hysteropexy group.

**Keywords:** Anterior abdominal wall cervicopexy, Sacrohysteropexy, Virkud.

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## INTRODUCTION

In developed countries, the prevalence of pelvic organ prolapse (POP) is high among postmenopausal women, whereas in developing countries POP is also common in women of reproductive age. The prevalence of POP at the global level is 2 to 20% in women under the age of 45 years.<sup>1</sup>

Many factors contribute to POP, especially those related to childbirth, such as multiparity, instrumental delivery, prolonged labor, and giving birth to a macrosomic infant.<sup>2</sup>

In general, treatment of POP varies depending on the extent of the pelvic organ descent, the reported symptoms, woman's general health, and the surgeon's preference and competences.<sup>3</sup> Available treatment options include conservative, mechanical, or surgical intervention. The purpose of a conservative procedure is the correction and restoration of the prolapse with long-lasting result, which allows sexual functioning, conservation of menstruation, and reproduction for young patients.<sup>4</sup>

Conservative surgeries done for prolapse include Fothergill's Manchester operation and abdominal sling surgeries. Abdominal sling surgeries include sacrohysteropexy, anterior abdominal wall hysteropexy (Purandare's sling surgery), and Virkud's composite sling surgery. Ideal conservative method should preserve menstruation, restore fertility, should not interfere with labor, and technically easy. Sling surgeries are ideally suited for 2nd and 3rd degree uterovaginal descent without anterior and posterior compartment prolapsed and cervical elongation.

Pelvic organ prolapse can affect quality of life, which can result in physical, psychological, and sexual lifestyle

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limitation.<sup>2</sup> Clinical studies on reproductive age group prolapse are limited and there is a need of further studies. The present study aims at studying of risk factors for POP in reproductive age group and abdominal sling surgeries done for it.

## OBJECTIVES

- To study the risk factors for POP in reproductive age group
- To evaluate the role of abdominal sling surgeries done for POP in reproductive age group, with respect to early complications, anatomical results, and symptoms of descent.

## MATERIALS AND METHODS

This is a retrospective study conducted on patients presenting with POP in reproductive age group at Vydehi Institute of Medical Sciences and Research Center from June 2008 to June 2014 after taking ethical approval from Institutional Ethics Committee.

## INCLUSION CRITERIA

- Second degree and third degree uterovaginal prolapse in women of 20 to 45 years
- Women desiring to retain menstrual function and reproductive function.

## EXCLUSION CRITERIA

- Patients with uterovaginal prolapse with other comorbid states
- First-degree uterovaginal prolapse
- Presence of cervical elongation
- Patients with cystocele, urethrocele, enterocele and rectocele
- Patients with other causes of mass per vagina like Bartholin's cyst, vaginal wall cysts, cervical polyps, and uterine inversion.

All these patients are studied in detail with respect to age distribution, parity, socioeconomic status, family history, occupation, and marital status.

The risk factors for prolapse in reproductive age group were studied in detail. The general risk factors like women with low body mass index (BMI), obesity, family history of prolapse, connective tissue disorder in the family, presence of precipitating factors like chronic cough, constipation, and mass per abdomen, presence of comorbid conditions like diabetes and hypertension were documented. Obstetric risk factors like history of prolonged labor, history of instrumental delivery, home delivery, and delivery of macrosomic baby, history of perineal tear and postpartum hemorrhage (PPH), and

history of early resumption of activities in the postpartum period were documented in detail.

The cases were categorized based on the surgeries they have undergone. They were categorized into three groups, i.e., anterior abdominal wall cervicopexy, posterior sacrohysteropexy, and Virkud's composite sling surgery group.

Anterior abdominal wall cervicopexy was done by opening abdomen by pfannenstiel incision. After identifying uterovesical (UV) fold of peritoneum and opening it, a polypropylene mesh of around 7 cm in length and 3 cm wide was taken and it was stitched by deep bites in front of cervix just below the UV fold and stitched to the posterior part of rectus, and the UV fold of peritoneum was closed. Abdominal wall also closed in layers.

Posterior sacrohysteropexy was done by opening the abdomen by pfannenstiel incision; posteriorly retroperitoneum was opened and polypropylene mesh of 7 cm in length and 3 cm width was fixed at the level of uterosacrals to the uterus and above it is fixed to anterior longitudinal ligament of sacrum in front of sacral promontory on right side. Peritoneum was closed and abdominal wall closed. Virkud's composite surgery includes mesh fixation to anterior longitudinal ligament of sacrum on right side and fixed anteriorly to rectus sheath of left side and abdomen closed in layers.

Intraoperative details were studied in detail like duration of surgery, blood loss during surgery, need of transfusion during surgery, injury to the surrounding structures. Postoperative details were studied in detail like infection (fever, urinary tract infection, and wound infection), postoperative pain, vomiting, and hospital stay after surgery.

Postoperative quantification of prolapsed with respect to anatomical results are studied at the end of 6 months and 1 year by using POP quantification system. Symptoms of descent, improvement of symptoms by the patient, and success rate, i.e., anatomical improvements and patient's satisfaction were assessed at the end of 1 year.

## STATISTICAL ANALYSIS

The data of risk factors and surgeries done for reproductive age group prolapse were analyzed with percentage charts,  $\chi^2$  test and Fisher's exact t-test.

## RESULTS

This is a retrospective study conducted from June 2008 to June 2014 at Vydehi Institute of Medical Sciences and Research Center. We identified 68 patients with uterovaginal prolapse in nulliparous women and reproductive age

**Table 1:** Basic details

|                             |    |       |
|-----------------------------|----|-------|
| <i>Age distribution</i>     |    |       |
| 20–25 years                 | 22 | 32.3% |
| 25–30 years                 | 24 | 35.2% |
| 30–35 years                 | 18 | 26.4% |
| >35 years                   | 4  | 5.8%  |
| <i>BMI</i>                  |    |       |
| <19                         | 9  | 13.2% |
| 19–25                       | 26 | 38.2% |
| 26–30                       | 16 | 23.5% |
| >30                         | 10 | 14.7% |
| <i>Socioeconomic status</i> |    |       |
| Higher                      | 6  | 8.8%  |
| Upper middle                | 14 | 20.5% |
| Middle                      | 24 | 35.5% |
| Lower middle                | 16 | 23.5% |
| Lower                       | 8  | 11.7% |
| <i>Occupational history</i> |    |       |
| Housewife                   | 30 | 44.1% |
| Laborer                     | 32 | 47.0% |
| Sedentary work              | 6  | 8.8%  |
| <i>Parity</i>               |    |       |
| Nullipara                   | 10 | 14.7% |
| Primipara                   | 16 | 23.5% |
| Para 2                      | 34 | 50%   |
| Para 3 and above            | 8  | 11.7% |
| <i>Marital status</i>       |    |       |
| Yes                         | 58 | 85.3% |
| No                          | 10 | 14.7% |

group women, who are willing to preserve the uterus. Eligible women included were symptomatic stage 2 and stage 3 uterovaginal prolapse. The majority of patients in our study are in the range of 25 to 30 years, i.e., 24 (35.2%). Majority of women, i.e., 26 (38.2%) were in the range of normal BMI. Majority of women belongs to middle socio-economic status, i.e., 24 (35.3%). In the study group 34 (50%) women were para 2, and 58 (85.3%) women were married (Table 1).

The details of the risk factors studied were represented in the chart. Among the general risk factors, family history of prolapse is the major contributing factor, i.e., in 20 women, and the other risk factors include obesity in 14 women, connective tissue disorder in family in 10 women, and presence of precipitating factors like chronic cough constipation and mass per abdomen in 8 women. Among obstetric risk factors, home delivery is the major contributing factor in 32 women and others include history of prolonged labor in 20 women, history of instrumental delivery in 8 women, delivery of macrosomic baby in 6 women, history of perineal tear or PPH in 8 women, history of blood transfusion after delivery indicating major blood loss after delivery in 8 women, and history of early resumption of heavy activity after delivery in 12 women (Table 2).

**Table 2:** Representing risk factors of prolapse

|  |    |
|--|----|
| <i>Risk factors</i>  |    |
| Obesity  | 14 |
| Family history of prolapse                                   | 30 |
| Connective tissue disorders in family                        | 10 |
| History of chronic cough, constipation, and mass per abdomen | 28 |
| <i>Obstetric risk factors</i>                                |    |
| History of prolonged labor                                   | 20 |
| History of instrumental delivery                             | 8  |
| Home delivery  | 32 |
| Delivery of macrosomic baby                                  | 6  |
| History of perineal tear or PPH                              | 8  |
| History of blood transfusion after delivery                  | 8  |
| History of bowel and bladder disturbances after delivery     | 6  |
| History of early resumption of activities after delivery     | 22 |
| <i>Symptoms of presentation</i>                              |    |
| Mass per vagina  | 68 |
| Bowel and bladder disturbances                               | 12 |
| Infertility  | 10 |
| Backache and white discharge                                 | 46 |
| Sexual problems  | 48 |
| <i>Conservative surgeries</i>                                |    |
| Virkud's surgery   | 26 |
| Sacrohysteropexy surgery                                     | 20 |
| Anterior abdominal wall cervicopexy surgery                  | 22 |

Among the study group, 68 patients presented with mass per vagina, 12 patients had bowel and bladder disturbances, 10 patients presented with infertility, 46 patients had backache and white discharge per vagina, and 48 patients had sexual disturbances. In the study group, 22 patients have underwent anterior abdominal wall cervicopexy, 20 patients underwent sacrohysteropexy, and 26 patients underwent Virkud's surgery.

In sacrohysteropexy group, the duration of surgery in 18 patients was less than 1 hour, blood loss in 16 patients was less than 500 mL, need of transfusion was there in 2 patients, and 2 patients had injury to the surrounding structures (damage to the serosa of bowel). In anterior abdominal wall hysteropexy group, the duration of surgery in 18 patients was less than 1 hour, blood loss during surgery was less than 500 mL in 16 patients, need of transfusion was there in 2 patients, and there was no damage to surrounding structures.

In Virkud's surgery out of 26, the duration of surgery in 22 patients was less than 1 hour, blood loss during surgery in majority of patients was less than 500 mL in 16 patients, need of transfusion was there in two cases. In two cases there was injury to the surrounding structures (serosal injury to the bowel and ureteric damage).

In sacrohysteropexy surgery group, 6 patients had postoperative fever, 0 patients had wound infection, and 2 patients had urinary tract infection. Postoperative pain

**Table 3:** Intraoperative and postoperative details

| Intraoperative details                         | 22 (Anterior abdominal wall cervicopexy) |    |    | 26 (Virkud) |                                 |
|--|--|----|----|-------------|---------------------------------|
|  | 20 (Sacrohysteropexy)                    |    |    |             |                                 |
| Duration of surgery                            |  |    |    |             | $\chi^2$ with Yate's correction |
| 1 hour   | 18                                       | 18 | 22 |             | 0.37                            |
| >2 hours                                       | 2  | 4  | 4  |             |                                 |
| Blood loss during surgery                      |  |    |    |             | $\chi^2$ with Yates correction  |
| 500 mL   | 16                                       | 16 | 16 |             | 0.58                            |
| >500 mL  | 4  | 6  | 10 |             |                                 |
| Blood transfusion during surgery               |  |    |    |             | Fisher's exact t-test           |
| Yes  | 2  | 2  | 2  |             | 0.041                           |
| No   | 18                                       | 20 | 24 |             |                                 |
| Injury to the surrounding structures           |  |    |    |             | Fisher's exact t-test           |
| Yes  | 2  | 2  | 0  |             | 0.553                           |
| No   | 18                                       | 20 | 26 |             |                                 |
| <b>Postoperative details</b>                   |  |    |    |             |                                 |
| Infections                                     |  |    |    |             |                                 |
| Fever  | 6  | 4  | 6  |             |                                 |
| Wound infection                                | 0  | 2  | 2  |             |                                 |
| Urinary tract infection and retention of urine | 2  | 8  | 4  |             |                                 |
| Pain   | 18                                       | 16 | 20 |             |                                 |
| Vomiting                                       | 4  | 2  | 4  |             |                                 |
| Hospital stay                                  |  |    |    |             | $\chi^2$ with Yates correction  |
| <4 days  | 14                                       | 18 | 20 |             | 0.053                           |
| >4 days  | 6  | 4  | 6  |             |                                 |

was seen in 18 patients. In 14 patients the hospital stay was less than 4 days. In anterior abdominal wall hysteropexy group, 4 patients had postoperative fever, 2 patients had wound infection, and 8 patients had urinary tract infection and urinary retention, 16 patients had postoperative pain, and 2 patients had vomiting. In 18 patients the hospital stay was less than 4 days. In postoperative period in Virkud's surgery group, postoperative fever was seen in 6 patients, wound infection in 2 patients, and 4 patients had urinary tract infections. Postoperative pain was seen in 20 patients and 4 patients had vomiting. Hospital stay was less than 4 days in 20 patients (Table 3).

Postoperative quantification of prolapse was done 6 months and 1 year after surgery. In all the three surgery groups there were statistically significant improvements. Postoperative improvement of symptoms was significant in Virkud's and sacrohysteropexy group: 16 (61.5%) had improvement of symptoms in anterior abdominal wall hysteropexy group, 16 (80%) had improvement of symptoms in sacrohysteropexy surgery group, and 20 (90%) of the patients had improvement of symptoms in Virkud's group.

The success rate with respect to anatomical quantification and patient's satisfaction was assessed at the end of 1 year. In anterior abdominal wall cervicopexy group it was 72.7%, in sacrohysteropexy surgery group it was 90%, and in Virkud's surgery group it was 91% (Table 4).

**Table 4:** Quantification of prolapse and success rate

|  | Preoperative | At the             | At the end   | p-value<br>McNemar<br>$\chi^2$ test |
|--|--------------|--------------------|--------------|-------------------------------------|
|  |              | end of<br>3 months | of<br>1 year |                                     |
| <b>Virkud's surgery</b>                          |              |                    |              |                                     |
| Stage 0  | 0            | 8                  | 13           | <0.001                              |
| Stage 1  | 0            | 13                 | 11           |                                     |
| Stage 2  | 5            | 4                  | 1            |                                     |
| Stage 3  | 21           | 1                  | 1            |                                     |
| <b>Sacrohysteropexy group</b>                    |              |                    |              |                                     |
| Stage 0  | 0            | 8                  | 12           | <0.001                              |
| Stage 1  | 0            | 7                  | 8            |                                     |
| Stage 2  | 6            | 4                  | 1            |                                     |
| Stage 3  | 14           | 1                  | 1            |                                     |
| <b>Anterior abdominal wall hysteropexy group</b> |              |                    |              |                                     |
| Stage 0  | 0            | 6                  | 10           | <0.001                              |
| Stage 1  | 0            | 10                 | 8            |                                     |
| Stage 2  | 6            | 3                  | 1            |                                     |
| Stage 3  | 16           | 3                  | 3            |                                     |
| <b>Improvement of symptoms</b>                   |              |                    |              |                                     |
| Yes  | 22           | 16                 | 16           |                                     |
| No   | 4            | 4                  | 6            |                                     |
| <b>Success rate</b>                              |              |                    |              |                                     |
|  | 24 (91%)     | 18 (90%)           | 16 (72.7%)   |                                     |

## DISCUSSION

The duration of surgery, blood loss during surgery, need for transfusion and incidence of injury to the surrounding structures, postoperative infection, postoperative urinary

tract infections, and urinary retention was more in anterior abdominal wall hysteropexy group. Postoperative pain, vomiting, bowel disturbances, and hospital stay was similar in all the three groups.

In a study done by Ali el Salman and Ahmed Naser on anterior abdominal wall cervicopexy, the operative time in majority of cases was less than 1 hour and there were no intraoperative complications. Hospital stay in majority of patients was less than 3 days. Urinary tract infection and urinary problems were seen in almost 40% of cases. This is almost comparable to our study.<sup>5</sup>

In a study done by Farkhunda Khursheed, Chandra Madhu Das, Ambreen Ghouri on sacropexy, the duration of surgery was less than 45 minutes. In 96% of the patients, blood loss during surgery was less than 100 mL. Postoperative infection rate was 3%. Duration of hospital stay was less than 4 days in 93%. No recurrence was seen in first 6 months of follow-up. The results are comparable with our study in sacropexy group.<sup>6</sup>

The limitation of our study is that we have not studied the effect of surgeries on fertility and reproductive outcome as the duration of study was limited and majority of the patients were parous and not willing for childbearing.

## CONCLUSION

The following are the conclusions from our study:

- Obstetric risk factors are the major contributing factors for POP in the reproductive age group. Proper intranatal care will help in reducing the problem.
- All the conservative surgeries have similar intraoperative, postoperative morbidity, and are similar with respect to early anatomical correction. Urinary tract infection and urinary retention were more in anterior abdominal wall hysteropexy group.
- Patient's satisfaction and success rate is more in sacropexy and Virkud's composite surgery group compared to anterior abdominal wall hysteropexy group.
- Posterior sling surgeries are preferred for prolapse in reproductive age group because of more successful rate with respect to anatomical results and patient's satisfaction.

Sling surgeries are preferred over Fothergill's surgery and hysterectomy because Fothergill's surgery involves

amputation of cervix, so it has various shortcomings like cervical stenosis, infertility, cervical dystocia during labor, and dyspareunia.<sup>7</sup> Hysterectomy should not be done for reproductive age group prolapse because there is increased morbidity, blood loss, pelvic neuropathy, long-term risk of cardiac problems, and osteoporosis.

Sacropexy unilateral on right side is preferred over Shirodkar's because on left side there are chances of injury to the sigmoid mesocolon and sacral plexuses leading to hemorrhage. If the knot of psoas loop is kept laterally, it may irritate genito femoral nerve and surgery is technically difficult.<sup>8</sup>

Women should be educated regarding preventive measures of prolapse like improvement of literacy, awareness about small family norms, proper intranatal care, antenatal physiotherapy, and postnatal exercises described by Kegels.<sup>9</sup>

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