Effect of Pelvic Organ Prolapse Reconstructive Mesh Surgery on the Quality of Life of Turkish Patients: A Prospective Study

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Abstract

Objectives: The purpose of this study was to investigate transvaginal mesh treatment and its effect on the quality of life of Turkish patients with pelvic organ prolapse (POP). Turkish patients with POP were invited to participate in this study, and all the participants underwent prolapse surgery.

Materials and Methods: The clinical outcomes, including effectiveness of the treatment and changes in the quality of life, were measured by the short form-36 survey. The data were analyzed using SPSS version 23. To analyze differences in the quality of life at the three aforementioned points in time, a paired sample t-test was used.

Results: The results indicated that participants’ quality of life increased after surgery. Some quality of life domains (i.e., vitality and mental health) as well as physical and mental health summary scores increased. Overall, transvaginal mesh treatment significantly improved the quality of life of Turkish patients with POP.

Conclusion: Women who undergo transvaginal mesh treatment will have positive changes in the quality of life.

Keywords: Life quality, pelvic organ prolapse, pelvic organ prolapse mesh surgery, reconstructive mesh surgery

Introduction

Various organs, including the bladder, uterus, and rectum, surround the vaginal canal. The arrangement of these organs and weaknesses in their supportive tissues may result to bulge into the vaginal canal of these organs. The supportive organs include vaginal wall, posterior vaginal wall, uterus, and apex of the vagina, and the downward movement of one or more of these organs is described as pelvic organ prolapse (POP). The research done by Hagen et al. indicates that most women lose pelvic floor support as a result of childbirth. The prevalence of POP varies among different populations, but it is reported to range between 3% and 28% in Western countries. Although POP is usually asymptomatic, it may cause various symptoms, including vaginal bleeding, pelvic pain, leakage of urine, and discomfort using the toilet. These symptoms are likely to negatively affect the quality of life of women with POP and cause social, psychological, and sexual problems.

The treatment options for POP include electrical stimulation, pelvic floor muscle training, and biofeedback. However, depending upon the severity of the POP, surgical techniques can be used to reduce symptom severity. Various types of surgery are currently used to treat POP, one of which is transvaginal mesh. Julian et al. first used this method for pelvic reconstruction in 1966. The efficacy of this and other surgical methods is evaluated by the relief of symptoms.
recurrence rate, and increase in quality of life. The research indicates that this method results in reduced rates of severity and recurrence of symptoms. Consequently, this method has gained wider acceptance among health professionals in gynecology. However, not enough research has been done to investigate the effects of transvaginal mesh on the quality of life of Turkish patients.

Health-related quality of life and the functional status of patients are the important indicators of treatment outcomes in the field of medicine. The clinical outcomes of surgical treatment for POP can therefore be measured using posttreatment changes in quality of life. However, POP is a complex condition with physical and psychological implications, and the results of studies investigating the effect of surgical treatments on quality of life of patients with POP are controversial. While some studies have found negative outcomes for sexual functioning and behavioral domains, some studies have shown improvement in the quality of life after treatment. Consequently, this study aimed to investigate transvaginal mesh treatment and its effects on the quality of life of Turkish patients with POP.

**Materials and Methods**

This study was conducted between January 2011 and January 2016 at two private hospitals in Southern Turkey. A total of 36 patients who gave informed consent and who met the inclusion criteria agreed to participate in the study. Patients who did not agree to participate were excluded from the study. The inclusion criteria were i) to have diagnosed with Stage 2 POP or higher and ii) had a fourth stage reading level to be able to understand and respond to questionnaires. In addition, participants who had undergone previous surgeries to treat POP and urinary incontinence, who had undergone reconstructive pelvic organ surgeries, who had lesions in the genital and urinary system organs, and who had undergone radiation therapy to treat pelvic cancer were excluded from this study. The participants had a mean age of 45.6 (range 39–58) years. Among the patients, 10 had urinary incontinence and 8 had a history of hysterectomy. The demographic characteristics of the patients and the weight of their POP were measured using POP-Q tests, the results of which are shown in Tables 1 and 2.

All the participants underwent POP surgery for the first time. During the surgery, four-armed transobturator synthetic mesh was implanted. The surgical procedure was as follows: Under spinal anesthesia, the vesicovaginal fascia was dissected in a lithotomy position, with an incision from 2.5 cm below the urethra to the bladder floor. The proximal part of the mesh was passed through the arcus tendineus fasciae pelvis to be used with the external obturator fossa guide. An anterior mesh implant with four arms was made according to the procedure. The posterior arms of the mesh were fixed to the sacrouterine and cardinal ligaments. The anterior part of the mesh was brought to the midurethra. Tension-free was achieved by applying traction to the mesh arms. The mesh arms at the posterior skin level were fixed on the skin. The vagina mucosa was sutured with no. 2/0 vicryl. The surgical technique and mesh are illustrated in Figures 1 and 2.

In this study, the short form-36 survey (SF-36) was used as a psychometric assessment tool to measure the participants’ quality of life.
of life. The SF-36 evaluates functioning and quality of life in eight domains, including physical functioning, social functioning, role functioning—physical, role functioning—emotional, mental health, vitality, pain, and general health. The participants were asked to complete the questionnaire at three points in time: before surgery, 6–8 weeks after surgery, and 16–18 months after surgery. All the patients’ records were obtained from the hospital, and the patients received phone calls and e-mails to arrange follow-up visits to fill out the questionnaire. The scoring of the SF-36 included two parts: first, the raw scores were converted to a standardized score ranging from 0 to 100; second, the scores were summed up to yield total scores. The scale yields eight total scores for eight domains and two summary scores for physical and mental health. Scoring higher on the scale indicates a better quality of life. At the 16–18 months of follow-up visit, the patients were asked, “According to the time before the operation, how would you evaluate your health in general?” The patients’ response options were better, a little better, a little worse, or much worse. The scale was translated into Turkish and validated for different populations. The data were analyzed using SPSS version 23 (SPSS Inc., Chicago, IL, USA). A paired sample t-test was used to analyze the differences in quality of life between the aforementioned three points in time.

The Ethical Committee of the Derince Training and Research Hospital at University of Health Sciences (Kocaeli, Turkey) approved the study protocol (approval number: 2019-15). Written informed consent was obtained from all patients included in this study, and the study was in agreement with the Declaration of Helsinki for medical research involving human subjects.

RESULTS
This study included 36 patients, none of whom were lost in the follow-up period, so both baseline and observation included 36 patients.

Complications and anatomical results after surgery
All the patients had stress urinary incontinence. In the early period after surgery, none of the patients had complications due to an unsuccessful operation, and none of the patients developed chronic urinary retention. Four patients developed de novo urgency, and they were successfully treated with short-term anticholinergic drugs. Seven patients developed de novo dysuria; however, no infection was detected in their urine cultures, and symptoms were attenuated in a short time. Six patients were observed to have problems with urination and intermittent urination. The postvoiding residual volume of these patients was detected to be 100 mL. They received catheterization for a 3–5-day period, and their symptoms were attenuated. Twenty-five patients had postoperative pelvic pain, which was treated with physical exercise with positive outcomes. One patient had an intraoperative complication of urethral damage, but the urologists fixated the primer with cystoscopy. One patient had a mesh opening, and the primer was fixated under local anesthesia. Cystoscopy was not routinely used unless patients had complications. Due to changes in pelvic anatomy, 14 patients developed dyspareunia, but vaginal stimulation and local treatment with a cream improved the symptoms.

Quality of life before and after surgery
The results indicated that the patients’ quality of life scores were lower than those of the general Turkish population in physical and mental health domains, as reported by previous studies. The results also indicated significant decreases in the role functioning domain after the operation (RP: P < 0.001). However, there were significant improvements in other functioning and health domains. The general health domain scores of the participants (GH: P < 0.001) significantly increased after the operation, especially regarding participants’ mental health (MH: P < 0.001) and mental component summary score (MCS: P < 0.001). Although the 6–8-week postoperation scores in the physical health domain were lower than those before operation, there were significant increases in this domain 16–18 months after surgery. A comparison of participants’ 16–18-month follow-up scores with their preparation scores indicated that the participants had significant increases in four of the eight domains (PF: P < 0.001, V: P = 0.023; SF: P = 0.002; and MH: P = 0.001). There were also significant increases in two summary domains (physical component summary: P < 0.01, MCS: P = 0.02). These results are shown in Tables 3 and 4. POP was fully cured in all patients who underwent surgery. The postoperative POP-Q stage of all operated patients is 0 or 1.

DISCUSSION
POP is a disease with both physical and functional aspects. It can therefore negatively influence the quality of life. Experiencing symptoms of POP, including pain and urinary incontinence, negatively affects aspects of life including social and role functioning. POP is also associated with negative body image in patients.
Given that a significant number of people experience POP and that 45% of people are expected to experience POP or various other clinical forms of urinary continence, POP is a major issue for the general population. Because of the negative association between quality of life and POP, it is important to measure quality of life to understand the treatment procedures’ effects on clinical outcomes for patients with POP. Indeed, this study indicates that the quality of life of patients with POP is lower than that of the general Turkish population.

Treatments for POP include both surgical and nonsurgical procedures. Although nonsurgical procedures, including pessaries and pelvic floor muscle training, can improve POP symptoms, these treatments may not alleviate symptoms in severe POP cases. Surgical procedures are therefore recommended in severe POP. However, surgical procedures may not be recommended in certain cases, including for people with vaginal disease and people in early stages of POP. In cases where surgery is needed, mesh implementation is recommended as a safe transvaginal reconstructive surgery. This procedure results in lower POP reoccurrence rates than classical surgical procedures. The findings of this study confirm that adopting proper surgical procedures with mesh implantations resulted in improvements in anatomical structures. However, it is important to note that mesh implantations may cause complications, including anesthesia-related complications, bleeding, and injury to the bladder, ureter, urethra, nerves, or bowels. This study also reported some complications after surgery, but with proper interventions, the effects of these complications were attenuated.

The results of using a surgical procedure with vaginal mesh to treat POP are controversial. Some studies have found improvements in quality of life and sexual functioning over a long-term period, and other studies have found no functioning problems after treatment. For example, Caruso et al. found that the surgical procedure had positive effects on the quality of life of 39 patients, as measured with the SF-36, and they reported low rates of complications after the procedure. The findings of the current study aligned with other studies, indicating that mesh implantation resulted in a better quality of life for patients with POP. Given that physical and social

### Table 3: Short Form-36 scores for particular domains before and 6-8 weeks after surgery

| Domains | Before, mean±SD | 6-8 weeks after, mean±SD | P     | 95 CI         | Lower | Upper  |
|---------|----------------|--------------------------|-------|--------------|-------|--------|
| PF      | 42.5±8.34      | 44.6±8.26                | NS    | <0.001       | −3.22 | 0.58   |
| RP      | 41.2±9.25      | 34.2±6.23                | <0.001| 3.67         | 7.89  |
| BP      | 40.4±7.95      | 39.7±7.89                | NS    | −1.56        | 3.24  |
| GH      | 43.2±8.67      | 45.9±9.01                | 0.003 | −2.17        | −0.45 |
| V       | 47.4±8.45      | 49.9±8.25                | 0.003 | −3.45        | −0.37 |
| SF      | 41.2±9.25      | 41.4±8.25                | NS    | −2.67        | 2.54  |
| RE      | 42.9±7.76      | 40.7±8.80                | NS    | −0.34        | 4.45  |
| MH      | 42.2±8.57      | 46.9±9.31                | <0.001| −6.34        | −2.43 |
| PCS     | 42.6±8.64      | 40.6±8.85                | 0.002 | 0.28         | 3.45  |
| MCS     | 44.2±9.54      | 46.2±6.75                | 0.002 | −3.45        | −0.24 |

PF: Physical functioning, RP: Role-physical, BP: Bodily pain, GH: General health, V: Vitality, SF: Social functioning, RE: Role-emotional, MH: Mental health, PCS: Physical component summary, MCS: Mental component summary, CI: Confidence interval, SD: Standard deviation, NS: Not significant

### Table 4: Short form-36 scores for particular domains before and 16-18 months after surgery

| Domains | Before, mean±SD | 16-18 weeks after, mean±SD | P     | 95 CI         | Lower | Upper  |
|---------|----------------|-----------------------------|-------|--------------|-------|--------|
| PF      | 42.5±8.34      | 46.8±8.32                  | <0.001| −5.54        | −2.67 |
| RP      | 41.2±9.25      | 41.5±7.85                  | NS    | −3.08        | 0.57  |
| BP      | 40.4±7.95      | 39.6±8.85                  | NS    | −4.56        | 0.79  |
| GH      | 43.2±8.67      | 44.1±2.01                  | NS    | −2.18        | 0.57  |
| V       | 47.4±8.45      | 49.9±8.39                  | 0.002 | −3.69        | 0.77  |
| SF      | 41.2±9.25      | 44.3±9.62                  | 0.002 | −4.28        | −1.74 |
| RE      | 42.9±7.76      | 43.1±8.67                  | NS    | −3.45        | 1.18  |
| MH      | 42.2±8.57      | 44.5±9.42                  | <0.001| −5.29        | −1.34 |
| PCS     | 42.5±8.64      | 43.7±8.87                  | 0.002 | −3.45        | −0.51 |
| MCS     | 44.2±9.54      | 47.3±9.72                  | 0.002 | −4.36        | −0.14 |

PF: Physical functioning, RP: Role-physical, BP: Bodily pain, GH: General health, V: Vitality, SF: Social functioning, RE: Role-emotional, MH: Mental health, PCS: Physical component summary, MCS: Mental component summary, CI: Confidence interval, SD: Standard deviation, NS: Not significant
functioning improved, it was not surprising that patients’ overall quality of life also improved.

It is important to note that quality of life is a general, multifaceted concept influenced by factors including patient demographics, such as age and education level, and coexisting conditions and diseases. The effects of the surgery on quality of life are therefore difficult to assess, and other factors could influence patients’ quality of life.\(^1\) Because the postoperative and preoperative patients were the same in this study, their coexisting characteristics remained the same in the preoperative and postoperative periods. This study therefore attributes improvement in the quality of life to the surgery itself. It is certain that POP has a negative effect on the quality of life of Turkish patients, as their quality of life scores were lower than those of the general population. With this in mind, it can be concluded that reconstructive surgery with mesh implantation improved different domains of patients’ quality of life, as well as their physical and mental health.

Much more exploration of the effects of surgical treatment on the quality of life of Turkish POP patients is still required. The development of POP, its complications, and its treatment options need to be further explained. This study provided information regarding only the effects of transvaginal mesh treatment on the quality of life of patients with POP. The results of this study should be interpreted cautiously as it had important limitations. First, this study did not have a control group, so the effects of internal validity threats cannot be controlled, and this study could not prove a cause-and-effect relationship. Further studies with control groups are therefore needed to explain the relationship between transvaginal mesh treatment and quality of life. Second, the participants of this study were selected from a hospital where all participants agreed to participate in this study; however, some patients did not want to be a part of this study. Selection bias is therefore another threat to the validity of the results. All the participants in this study were from the southern part of Turkey, and the demographic variables and lifestyles of the participants were similar, so it is possible that different results would be obtained with patients from different backgrounds and with different demographic characteristics.

**Conclusion**

The results of this study indicate that POP negatively affects the quality of life of patients, but transvaginal mesh treatment with proper interventions after surgery increases patients’ quality of life. However, not all the quality of life domains improved. Some including role functioning and social functioning did. Although the aim of quality of life scoring is to increase objectivity, subjectivity still remains in these scoring systems. We believe that this subjectivity is the reason for different results in each domain. This subjectivity further complicates the subject. Despite this complexity, we found that patients’ quality of life increased after surgery. It is expected that transvaginal mesh treatment will increase the quality of life of Turkish patients with POP. These findings could be useful when discussing possible treatment options and their effects with patients experiencing POP.

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**Conflicts of interest**

There are no conflicts of interest.

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