

Treatment of uterine prolapse with bilateral hydronephrosis in a young nulliparous woman; a new minimally invasive extraperitoneal technique

S. KURT, T. GULER¹, M.T. CANDA², Ö. DEMIRTAS¹, A. TASYURT

Department of Obstetrics and Gynecology, Tepecik Teaching and Research Hospital, Izmir, Turkey

¹Department of Obstetrics and Gynecology, Pamukkale University Medical School, Denizli, Turkey

²Department of Obstetrics and Gynecology, Kent Hospital, Izmir, Turkey

Abstract. – A 37-year-old nulligravid woman presented with a 2-year history of uterine prolapse along with mixed incontinence. Gynecological examination confirmed third degree cystocele and uterine prolapse. Renal ultrasonography showed enlarged kidneys and marked dilation of the bilateral pelvicalyceal system. She was hospitalized and a ring pessary was inserted after bladder catheterization. Her preoperative evaluation was performed and the patient was operated one month after her first admission. Anterior colporrhaphy along with Kurt Extraperitoneal Ligamentopexy was performed without any complication. A control visit on second postoperative month revealed recovery of incontinence symptoms and no prolapse was observed. To our knowledge this is the first reported treatment of a case with bilateral hydronephrosis due to uterine prolapse that were corrected and overcame with a novel minimally invasive extraperitoneal approach by fixation of bilateral round ligaments to the rectus fascia sheet.

Key words:

Ligamentopexy, Uterine prolapse, Minimally invasive.

Introduction

It is well known that uterine prolapse can cause hydronephrosis more frequently than vaginal vault prolapse¹. The widely accepted pathophysiology of this is the direct compression and occlusion of the ureters via being entrapped by the genital hiatus against the uterine fundus². However, the obstructed part of the ureter is generally above the ureterovesical junction and, therefore, another explanation also described the kinking of the ureters because of the traction of the cardinal ligaments on ureters¹. Ureteral stretching and ureteral

compression against the pelvic musculature are also argued as the other possible mechanisms of hydronephrosis in pelvic organ prolapse (POP)³. Nevertheless, the mechanism of hydronephrosis in POP is multifactorial and related with the etiology of the prolapse itself.

Although POP in older women is more prevalent, symptomatic prolapse could also be seen in younger women. Prolapse in young women are more likely to be associated with a predisposing medical condition such as connective tissues disorders or neurological diseases than the prolapse in older women⁴. It is documented childbearing is an important risk factor for POP and its prevalence gradually increases with increasing parity; however, there are few reports investigating the etiology and treatment of POP in nulliparous women⁵. It is generally accepted that pelvic floor denervation develops mainly after the first delivery⁶. On the other hand, the exact pathophysiology of POP in young and nulliparous women has not been widely investigated and remains unexplained.

There are several surgical options for the reconstructive management of uterine prolapse with a fertility preserving perspective. Vaginal, abdominal or laparoscopic approaches are available with and without using graft materials. Most of these modalities require special education and experience; therefore are not widely used. They also require particular technical instruments such as special ligature carriers and endoscopic setup. Kurt Extraperitoneal Ligamentopexy (KEPL) was recently presented as a simple and minimally invasive alternative in reconstruction of uterine prolapse⁷. In this approach, after a suprapubic mini incision, extraperitoneal Retzius space is entered and the round ligaments are identified at the entrance of inguinal canal. By creating a free ans of the ligament, the uterus is repositioned upwards and the round ligament is shouldered over

the fascia sheet. The new location of uterus is maintained via fixation of the free ans to the anterior rectus fascia by nonabsorbable monofilament sutures. The mean operation time was reported to be 39 minutes including additional interventions (such as Burch procedure).

We report a case of a young nulliparous woman presenting with uterine prolapse and bilateral hydronephrosis in whom the conservative management with vaginal pessary ameliorated the degree of renal pelvicalyceal dilatation. Afterwards KEPL was performed and it was documented that the hydronephrosis was cured and the uterine prolapse was corrected.

Case Report

A 37-year-old nulligravid woman presented with a 2-year history of uterine prolapse along with mixed incontinence. She also complained of gradually increasing constipation for one year. Her body mass index was 26.8. She reported that she has been heavy lifting regularly for 10 years in a farm. Her medical history was unremarkable except for hypothyroidism and major depression. She was on thyroid hormone replacement therapy for two months. Gynecological examination confirmed third degree cystocele and uterine prolapse (according to Baden-Walker Halfway Scoring System). Uterine size and bilateral adnexa were normal and the cervix appeared edematous with minimal ulceration. Laboratory tests revealed an increase in serum urea and creatinine of 38 mg/dl and 1.5 mg/dl, respectively and a normal range of hemoglobin and liver enzymes. Renal ultrasonography showed enlarged kidneys (138 x 49 mm and 132 x 53 mm for right and left kidney, respectively) and marked dilation of the bilateral pelvicalyceal system (Figure 1). Right renal pelvis was measured as 38 mm and left one as 26 mm. Both ureters were found to be 13-14 mm dilated at their greatest diameters. She was hospitalized and a ring pessary was inserted after bladder catheterization. During follow-up intravenous fluid replacement along with oral furosemide was administered. Seven days later, serum urea and creatinine levels were found to be decreased, 24 mg/dl and 1.1 mg/dl respectively. Re-evaluation with ultrasonography revealed decreased renal sizes (right kidney, 111 x 36 mm; left kidney, 108 x 39 mm) and moderately increased renal pelvis diameters (right renal pelvis 17 mm, left renal pelvis 10 mm). Her preoperative evaluation was



Figure 1. Marked dilation of the pelvicalyceal system.

performed and the patient was operated one month after her first admission. Anterior colporrhaphy along with KEPL was performed without any complication. Uterine prolapse was corrected according to this new defined technique. Her postoperative follow-up was uneventful and she was discharged without urinary incontinence on seventh postoperative day after reevaluation with renal ultrasonography. A control visit on second postoperative month revealed recovery of incontinence symptoms and no prolapse was observed. This evaluation revealed bilateral normal sized kidneys without any renal pelvis dilatation but minimally indented renal calyces.

Discussion

Herein, we report a reversible case of hydronephrosis in a young nulliparous women corrected by a novel minimally invasive surgical technique. It has long been known that surgical treatment of uterine prolapse can correct hydronephrosis. However, the two most important and actual points in this case are; 1- the implementation of a new and alternative minimally invasive technique for the surgical correction of uterine prolapse with the preservation of uterus and 2- the effectiveness of this technique in correction of hydronephrosis and providing a continent status without need of an additional incontinence surgery. Another interesting aspect in this case was the young age of this nulliparous woman.

Unless overlooked and gone late for the treatment, hydronephrosis secondary to uterine prolapse can be completely reversible after surgical correction of the prolapse¹. In this case, our surgical correction successfully reversed the hy-

dronephrosis and the development of chronic renal failure was prevented. Choice for the surgical treatment of uterine prolapse depends on several parameters, patients' age and fertility desire being the most important ones. Several surgical approaches with the aim of uterine preservation has been defined and successfully reported in the correction of uterine descent⁸. Hysterectomy can be offered or not. Surgical options for apical prolapse treatment include transvaginal, transperitoneal, and endoscopic routes.

Uterine prolapse is associated with the deficit of the uterosacral-cardinal complex. Therefore, it is reasonable to assert that apical prolapse is not directly related to the uterus⁷. KEPL was defined recently for reduction of the descended uterus and also implementation of simultaneous urinary incontinence surgery similar to Burch procedure⁷. Extraperitoneal approach provides enough exposure and prevents all intraperitoneal complications. A suprapubic incision in 3 cm length is enough for fixating bilateral round ligaments to rectus fascia (Figure 2). Short mean operation time, regional anesthesia option and extraperitoneal approach to avoid intraperitoneal complications present this approach as a minimally invasive alternative for the treatment of uterine prolapse. In this case, we performed the same procedure and did not observe any complications. Another important aspect of this case is the stress incontinence symptom of the patient. A preoperative pessary trial in the presented case resulted in recovery of this symptom. This kind of trial for the sake of detecting occult stress incontinence prior to the correction procedure is reported to successfully aid the decision of a concomitant incontinence surgery with prolapse treatment⁹. However, there are no clear recommendations for concomitant incontinence surgery if preoperative reduction of the prolapse is associated with recovery of stress incontinence. We also believe that KEPL has an anti-incontinence effect; therefore, we preferred not to add any anti-incontinence procedure besides from a routine anterior colporrhaphy. Although the patient reported recovery of her incontinence symptoms on the second postoperative month, a longer follow-up is needed to draw conclusions for the outcome of this surgery in stress urinary incontinence along with pelvic organ prolapse.

Chen et al¹⁰ reported that laparoscopic extraperitoneal uterine suspension to anterior abdominal wall using synthetic mesh can be performed as a minimally invasive technique with similar indications as in our case. We, however,

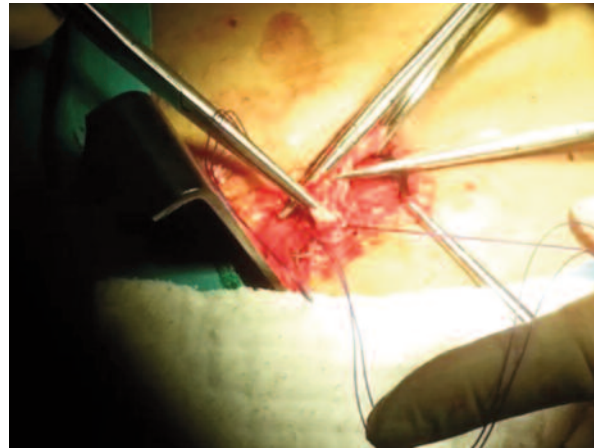


Figure 2. Fixation of the round ligament to the anterior rectus fascia.

believe that our technique can be used in settings with limited resources where endoscopic setup is not available. KEPL also does not need mesh material or any other special instruments. Besides, extraperitoneal approach in this technique has significant advantages when compared to open surgeries such as abdominal sacrocolpopexy. We documented in this presented case an alternative approach to endoscopic or vaginal surgery for uterine prolapse in order to preserve uterus with a minimally invasive approach. Such an approach may be used to treat uterine prolapse with less morbidity than transperitoneal surgeries especially in settings where endoscopic or special vaginal surgery equipments are not available.

Conclusions

To our knowledge this is the first reported treatment of a case with bilateral hydronephrosis due to uterine prolapse that were corrected by a novel minimally invasive extraperitoneal approach – KEPL by fixation of bilateral round ligaments to the rectus fascia sheet. We speculate that not only the establishment and maintenance of uterine reduction but also the ongoing correction of hydronephrosis may indicate the sufficiency of KEPL as a reconstructive intervention. For future prospects, KEPL is open for laparoscopic development and implementation. Functional urodynamic evaluations will be useful to dissect the effects of this surgery on urinary functions. Prospective studies are also warranted in order to evaluate long-term efficiency and reliability of this technique.

Conflict of Interest

The Authors stated that they do not have any conflict of interests.

References

- 1) COSTANTINI E, LAZZERI M, MEARINI L, ZUCCHI A, DEL ZINGARO M, PORENA M. Hydronephrosis and pelvic organ prolapse. *Urology* 2009; 73: 263-267.
- 2) BEVERLY CM, WALTERS MD, WEBER AM, PIEDMONTE MR, BALLARD LA. Prevalence of hydronephrosis in patients undergoing surgery for pelvic organ prolapse. *Obstet Gynecol* 1997; 90: 37-41.
- 3) BEGLIOMINI H, BEGLIOMINI BD. Bilateral hydronephrosis caused by vaginal prolapse. *Int Braz J Urol* 2003; 29: 243-244.
- 4) STROHBEHN K, JAKARY JA, DELANCEY JO. Pelvic organ prolapse in young women. *Obstet Gynecol* 1997; 90: 33-36.
- 5) HARRIS RL, CUNDIFF GW, COATES KW, BUMP RC. Urinary incontinence and pelvic organ prolapse in nulliparous women. *Obstet Gynecol* 1998; 92: 951-954.
- 6) ALLEN RE, HOSKER GL, SMITH ARB, WARRELL DW. Pelvic floor damage and childbirth: A neurophysiological study. *Br J Obstet Gynaecol* 1990; 97: 770-779.
- 7) SEFA KURT, MEHMET TUNC CANDA, ABDULLAH TASYURT. A new surgical method of suprapubic and extraperitoneal approach with uterine preservation for pelvic organ prolapse: kurt extraperitoneal ligamentopexy. *Obstet Gynecol* 2013; 2013: Article ID 748232.
- 8) WALTERS MD, RIDGEWAY BM. Surgical treatment of vaginal apex prolapse. *Obstet Gynecol* 2013; 121: 354-374.
- 9) CHUGHTAI B, SPETTEL S, KURMAN J, DE E. Ambulatory pessary trial unmasks occult stress urinary incontinence. *Obstet Gynecol Int* 2012; 2012: 392027.
- 10) CHEN G, LING B, LI J, XU P, HU W, ZHAO W, WU D. Laparoscopic extraperitoneal uterine suspension to anterior abdominal wall bilaterally using synthetic mesh to treat uterovaginal prolapse. *J Minim Invasive Gynecol* 2010; 17: 631-636.