

# Expectant management of partial ureteral angulation: a case report

## *Parsiyel üreteral açılanmanın yönetimi: bir vaka bildirimi*

İsmet Gün<sup>1</sup>, Mehmet Akif Sargin<sup>1</sup>, Ali Babacan<sup>2</sup>

<sup>1</sup>Adana Asker Hastanesi, Adana, Turkey

<sup>2</sup>GATA Haydarpaşa Training Hospital, İstanbul, Turkey

### Abstract

Urinary tract injuries are one of the most serious complications of pelvic surgery and its incidence is about 0.1-1.5%. A 28 year-old woman who had delivered by emergency cesarean section in the second stage of labour presented at the emergency department with pain commencing on the fifth day of the birth. The diagnosis was left ureteral angulation due to deep myometrial suturing during surgery. The patient was regularly followed-up by ultrasonography once a week until the left pelvic ectasia disappeared. Medical therapy is given when necessary. The aim of this report is to evaluate expectant management for the treatment of ureteral angulation that is diagnosed in the early period after cesarean section.

(J Turkish-German Gynecol Assoc 2009; 10: 178-80)

**Key words:** Ureteral Angulation, Caesarean Section, Expectant Management

**Received:** 23 May, 2009

**Accepted:** 20 July, 2009

### Introduction

Urinary tract injuries during surgery are one of the most serious complications of pelvic surgery and occur more commonly in the left ureter (1-3). The incidence is about 0.1-1.5% (2, 4). Emergency operations are one of the most important risk factors in ureteral injuries (5-7).

Intraoperatively, the ureters can be damaged by suture ligation, sharp incision or transection, avulsion, devascularization, and heat or cryoablative therapy. Intraoperative recognition of ureteral injury is difficult and the diagnosis rate is about 33% (2). Urinary tract injury can be detected postoperatively by an intravenous pyelogram (IVP) or retrograde x-ray studies. The management of ureteral injury can be simple and successful when is recognized early. However, there is still controversy regarding the management of ureteral injuries.

We aimed to present the result of expectant management for the treatment of left ureteral angulation which was diagnosed in the early period after cesarean section.

### Case

A 28 year-old woman, who had been delivered by emergency cesarean section with indications of repeated cesarean sections

### Özet

Ureter sistem komplikasyonları pelvik cerrahi girişimlerin en ciddi komplikasyonlarıdır ve yaklaşık olarak %0.1-1.5 sıklıkta görülür. Sezaryen ile 5 gün önce doğum yapmış ve acile kanın ağrısı ile gelen 28 yaşındaki bir vaka sunuldu. Tanı derin myometriyal sütüre bağlı oluşan sol üreteral açılanma olarak değerlendirildi. Hasta pelvik konjesyonu gerileyene kadar haftalık ultrasonlarla takip edildi. Bu vaka, erken dönemde tanı konulan vakalarda bekle gör tedavisinin yeri olduğunu göstermek için sunuldu.

(J Turkish-German Gynecol Assoc 2009; 10: 178-80)

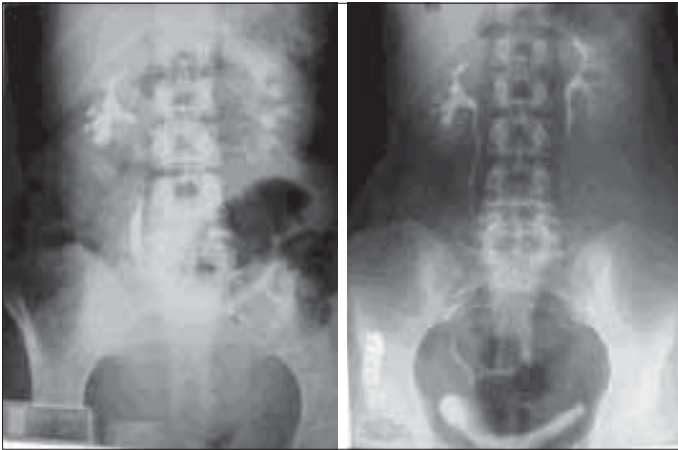
**Anahtar kelimeler:** Üreteral açılanma, sezaryen, bekle gör tedavisi

**Geliş Tarihi:** 23 Mayıs 2009 **Kabul Tarihi:** 20 Temmuz 2009

and on the patient's request in the second stage of labor. applied to the emergency department with complaints of left upper flank pain commencing on the fifth day after birth. Bimanual pelvic examination and vital signs were within normal limits, but in the physical examination evident pain was detected in the left upper posterolateral abdominal wall during deep palpation. While the hemogram results revealed mild anemia (hemoglobin 10.5gr/dl, hematocrit 32.4%, leucocytes 14500/cc), the other laboratory test results were within normal limits (such as BUN 16mg/dl, creatine 0.8mg/dl). First degree ectasia of the left renipelvic was shown in ultrasonography. Thereupon, IVP and retrograde pyelography under scopy was performed. Delay in the left renal filling and dilatation on the upper part and mid-ureter of the left urinary tract due to the left ureteral angulation was shown (Figure 1a). The patient was regularly followed-up by ultrasonography once a week until the left renipelvic ectasia disappeared and the control IVP was performed. The control IVP was within normal limits (Figure 1b). Meanwhile, medical therapy was given when necessary.

### Discussion

Urinary tract injuries are one of the most serious and frequent complications encountered during gynecologic pelvic surgery



**Figure 1. Postoperative early and late IVP**

at Departments of Obstetric and Gynaecology (1, 2). The genital and urinary tracts are in close relationship both embryologically and anatomically. The ureter, approximately 25-30 cm in length, lies in its course from the renal pelvis to the bladder. Because of the close relationship, ureteral injury during gynecologic pelvic surgery is more frequent than other organ injuries (2, 5). Left ureteral injury occurs more frequently than right ureteral injury since the left ureter is closer to the cervix than the right ureter (3). The ureteral injuries due to gynecologic pelvic surgery occur frequently at the level of the uterine artery (1, 2). Even in the hands of the most experienced gynecologic surgeon, ureteral injury may be almost unavoidable. Fortunately, such injuries are uncommon and the incidence is 0.1-1.5% (2, 4, 8). Ureteral injury is more common in gynecologic surgery than obstetric surgery (2). In the past 20 years, a marked rise in the proportion of cesarean section delivery has occurred and has steadily increased from about 5% to more than 20% (6, 9, 10). The rising number of elective repeat cesarean sections has been one of the principal reasons for the steady increase in the cesarean delivery rate. In general, cesarean section is a safe delivery procedure and the surgery risks related to cesarean section have been reduced in the course of time but not completely eliminated (6). Particularly, the intraoperative maternal complication rate is higher in the urgent cesarean sections compared to elective procedures (5-7). Risk factors for ureteral injury during gynecologic pelvic surgery or cesarean section may be enumerated as; large uterus, urgent operations, pelvic organ prolapse, surgery performed because of malignant tumor, history of previous irradiation, pelvic adhesions due to prior pelvic surgery and skill of the operator (6). Our patient is also a case of left partial ureteral injury which occurred during emergency cesarean section.

Intraoperatively, the ureters may be damaged by suture ligation, sharp incision or transection, avulsion, devascularization, heat or cryoablative therapy. The majority of ureteral injuries during cesarean section is the obstructive type caused by hemostatic sutures placed for bleeding control. Less frequently, ureters may be directly damaged due to extending an uterine incision (3, 6). Hemostatic sutures placed to control bleeding may lead

to partial or complete ligation of the ureter or kinking because of periureteral edema or scarring in the ureter. Complete recovery of renal function after relief of obstruction is dependent on several factors such as the duration and location of the obstruction, whether it is partial or complete, and the presence of intercurrent infection (2, 11-13). In general, such minor ureteral injuries may heal without sequelae as an advantage of a blood supply to the ureters from multiple sources. Depending on pelvic pressure caused by the enlarged uterus in pregnancy, minimal ureteral obstruction may be seen and renal function may be affected temporarily. In the same way, an ureteral calculus may also lead to partial or complete ureteral obstruction. Our patient is a case of partial ureteral injury occurring due to the deep hemostatic suture placed near to the ureter because of an extending left side uterine incision. The suture placed is a synthetic absorbable suture that is known as polyglactin 910 and the time for complete absorption of this suture is 56 -72 days. Namely; after absorption of the suture, the obstruction may be relieved. Due to these factors, we would prefer an expectant management rather than an invasive procedure and then a close follow-up.

Key factors for obtaining optimal results in the management of urological injuries are the early recognition and immediate repair of damage (1). The surgical management of ureteral injuries is simple and successful when they are promptly recognized (1). But, when there is a delay in diagnosis or it is not repaired, ureteral injury may lead to hydronephrosis, hydroureter, and/or loss of kidney function (1, 11, 14). The indications for determining the loss of kidney function due to ureteral injury are few. There is no relation between the degree of ureteral injury and complaints of the patient. The most common complaints are flank pain, nausea, vomiting and fever if secondary urinary infection develops. So, the intraoperative recognition rates in the literature for ureteral injury range from 11% to 33% (2). For example, Newell first drew attention to previously ligated ureters at autopsy in an autopsy study in 1939. In none of these cases were injury suspected in the ureters before autopsy. In this respect, both intraoperative and postoperative evaluation of the ureters in patients with suspected ureteral damage would prevent delay in the diagnosis. Diagnostic procedures are urography, renal ultrasonography, retrograde pyelography with cystoscopy, computerized tomography, and magnetic resonance imaging scan. Particularly, retrograde urography is a powerful tool for evaluating ureteral functioning in the critically ill patients. If necessary, the peritoneum should be opened during or after surgery and the surgeon may see the ureters along the lateral pelvic wall if the anatomy is normal. In our case too, there was left flank pain complaint commencing in the early postoperative period and diagnosis of partial ureteral injury was confirmed by ultrasonography, IVP and retrograde pyelography with cystoscopy.

Gynecologic surgeons must be knowledgeable about common intraoperative and postoperative complications in order to decrease the risk of patient morbidity and understand the anatomy and physiology of the ureter. Diagnostic tests should be made if necessary. However, the most important aspect of ureteral injury is prevention of the injury. The best way to

prevent ureteral injury is to identify the ureters by palpation in paracervical tissues before placement of a suture or clamp. The results of ureteral injury may not always be as expected and kidney function may not return to normal completely with or without any clinical signs and symptoms.

In conclusion, if the ureter is ligated by suture, the suture should be removed or, if the ureter is seriously damaged, the ureter should be repaired. If necessary also, a ureteral catheter (double-J ureteral stent) may be placed. The earliest reports in repair of ureteral injury have been reported by Berard (1841) and Simon (1869). Since then, very many studies have been reported. Despite this, there is still controversy regarding the management of an ureteral injury among gynecologic surgeons, and the question of whether expectant management or invasive procedure is safer for such patients is often debated. Expectant management in suitable cases may be an alternative for the treatment of such partial ureteral injury which is diagnosed early after cesarean sections. Clearly, more studies regarding expectant management are needed.

## References

1. Yossepowitch O, Baniel J, Livne PM. Urological injuries during cesarean section: intraoperative diagnosis and management. *J Urol*. 2004; 172: 196-9.
2. Mteta KA, Mbwambo J, Mvungi M. Iatrogenic ureteric and bladder injuries in obstetric and gynaecologic surgeries. *East Afr Med J*. 2006; 83: 79-85.
3. Rajasekar D, Hall M. Urinary tract injuries during obstetric intervention. *Br J Obstet Gynaecol* 1997; 104: 731-4.
4. Bai SW, Huh EH, Jung da J, et al. Urinary tract injuries during pelvic surgery: incidence rates and predisposing factors. *Int Urogynecol J Pelvic Floor Dysfunct* 2006; 17: 360-4.
5. Nielsen TF, Hökegård KH. Cesarean section and intraoperative surgical complications. *Acta Obstet Gynecol Scand*. 1984; 63: 103-8.
6. Van Ham MA, van Dongen PW, Mulder J. Maternal consequences of caesarean section. A retrospective study of intra-operative and postoperative maternal complications of caesarean section during a 10-year period. *Eur J Obstet Gynecol Reprod Biol*. 1997; 74: 1-6.
7. Tanrıverdi HA, Aktun E, Dolen Ü. Intraoperative Surgical Complications in Cesarean Sections. *J Turkish German Gynecol Assoc*. January 2003; 4: 27-32.
8. Ku JH, Kim ME, Jeon YS, Lee NK, Park YH. Minimally invasive management of ureteral injuries recognized late after obstetric and gynaecologic surgery. *Injury* 2003; 34: 480-3.
9. Baker ER, D'Alton ME. Cesarean section birth and cesarean hysterectomy. *Clin Obstet Gynecol*. 1994; 37: 806-15.
10. Rosen MG, Dickinson JC, Westhoff CL. Vaginal birth after cesarean: a meta-analysis of morbidity and mortality. *Obstet Gynecol*. 1991; 77: 465-70.
11. Fry DE, Milholen L, Harbrecht PJ. Iatrogenic ureteral injury. Options in management. *Arch Surg*. 1983; 118: 454-7.
12. Davis JD. Management of injuries to the urinary and gastrointestinal tract during cesarean section. *Obstet Gynecol Clin North Am*. 1999; 26: 469-80.
13. Ranieri A, Sironi D, Micheli E, et al. Treatment of ureteral lesions during gynecologic surgery. *Arch Ital Urol Androl*. 2002; 74: 16-20.
14. Buchholz NP, Daly-Grandeau E, Huber-Buchholz MM. Urological complications associated with caesarean section. *Eur J Obstet Gynecol Reprod Biol*. 1994; 56: 161-3.