

FIVE YEARS CHARACTERISTIC OF URETERAL TRAUMA IN TERTIARY HOSPITAL IN WEST JAVA FROM 2013-2017

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ABSTRACT

Objective: This study aims to determine the characteristics of trauma patients, especially ureteral trauma in Hasan Sadikin General Hospital and expected to be used as data for trauma nationally. **Material & Methods:** This study was descriptive. Retrospective data collection is taken from medical records of ureteral trauma from 2013 until August 2017 at Hasan Sadikin General Hospital, Bandung. The data obtained are gender, mechanism of trauma, and management of ureteral trauma. **Results:** A total of 20489 cases of trauma handled in Hasan Sadikin General Hospital, 2.3% is a case of urogenital trauma and 40 of which are cases of ureteral trauma (0.19%). Most ureteral trauma patients are female (90%). Based on the trauma mechanism, 39 patients iatrogenic trauma (97.5%) and 1 patient gunshot wounds (2.5%). From iatrogenic ureteral trauma, 36 patients (90%) had iatrogenic trauma from the gynecological procedure, 5% as a result of the urological procedure, and 2.5% due to gastrointestinal procedure. Management of ureteral trauma is 47.5% ureteroureterostomy and 25% ureteroneocystostomy. **Conclusion:** Most cases of ureteral trauma are experienced by women, and most commonly due to iatrogenic trauma. Iatrogenic ureteral trauma caused by gynecology procedure is the most common.

Keywords: Ureteral trauma, iatrogenic trauma.

ABSTRAK

Tujuan: Penelitian ini bertujuan untuk mengetahui karakteristik trauma pasien, khususnya trauma ureter di RSUD Dr. Hasan Sadikin dan diharapkan dapat digunakan sebagai data trauma secara nasional. **Bahan & Cara:** Penelitian ini bersifat deskriptif. Pengumpulan data retrospektif diambil dari rekam medis trauma ureter dari tahun 2013 sampai dengan Agustus 2017 di RSUD Dr. Hasan Sadikin Bandung. Data yang diperoleh berupa jenis kelamin, mekanisme trauma dan penanganan trauma ureter. **Hasil:** Sebanyak 20489 kasus trauma yang ditangani di RSUD Dr. Hasan Sadikin, 2.3% kasus trauma urogenital dan 40 diantaranya kasus trauma ureter (0.19%). Sebagian besar pasien trauma ureter adalah wanita (90%). Berdasarkan mekanisme trauma, 39 pasien trauma iatrogenik (97.5%) dan 1 pasien luka tembak (2.5%). Dari trauma ureter iatrogenik, 36 pasien (90%) mengalami trauma iatrogenik akibat prosedur ginekologi, 5% akibat prosedur urologi, dan 2.5% akibat prosedur gastrointestinal. Penatalaksanaan trauma ureter terdiri dari 47.5% ureteroureterostomi dan 25% ureteroneocystostomi. **Simpulan:** Sebagian besar kasus trauma ureter dialami oleh wanita, dan paling sering trauma iatrogenik. Trauma ureter iatrogenik yang disebabkan oleh prosedur ginekologi adalah yang paling umum.

Kata kunci: Trauma ureter, trauma iatrogenik.

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INTRODUCTION

Overall, ureteral trauma accounts for 1-2.5% of urinary tract trauma.¹⁻² Trauma to the ureters is relatively rare as they are protected from injury by their small size, mobility, the adjacent vertebrae, bony pelvis, and muscles. Iatrogenic trauma is the commonest cause of ureteral injury (approximately 80%).² Ureteral injuries from external trauma are unusual but when they occur are usually related to

penetrating trauma, primarily gunshot wounds 2-3% of cases.²⁻³ As with all cases of penetrating trauma, multiple associated intraabdominal organ injuries are often present.⁴ Iatrogenic ureteral injuries can occur during gynecologic, obstetric, urologic, colorectal, general, or vascular surgery; gynecologic surgery accounts for more than half of all iatrogenic injuries.^{3,5}

Patients may present with flank or abdominal pain, elevated serum blood urea nitrogen

and creatinine levels, vaginal urinary leakage, fever, or other nonspecific symptoms. If the injury is recognized intraoperatively, the ureter can be repaired immediately. Unfortunately, the diagnosis of an iatrogenic ureteral injury can be delayed for several weeks until the patient becomes symptomatic. Hematuria is an unreliable indicator of ureteral trauma and may be absent in many patients.³⁻⁴

Extravasation of contrast medium on CT is the hallmark sign of ureteral trauma. However, hydronephrosis, ascites, urinoma, or mild ureteral dilation are often the only signs. In unclear cases, a retrograde or antegrade urography is the optimum standard for confirmation.³ Intravenous pyelography, especially one-shot IVP, is unreliable in diagnosis, as it is negative in up to 60% of patients.²⁻³

Table 1. Incidence of ureteral injury in various procedures.⁶⁻¹²

Procedure	Percentage (%)
Gynaecological	
Vaginal hysterectomy	0.02 – 0.5
Abdominal hysterectomy	0.03 – 2.0
Laparoscopic hysterectomy	0.2 – 6.0
Urogynaecological (anti-incontinence/prolapse)	1.7 – 3.0
Colorectal	0.15 – 10
Ureteroscopy	
Mucosal abrasion	0.3 – 4.1
Ureteral perforation	0.2 – 2.0
Intussusception/avulsion	0 – 0.3
Radical prostatectomy	
Open retropubic	0.05 – 1.6
Robot-assisted	0.05 – 0.4

Table 2. Ureteral reconstruction options by site of injury.¹³

Site of injury	Reconstruction options
Upper ureter	Uretero-ureterostomy Transuretero-ureterostomy Uretero-calycostomy
Mid ureter	Uretero-ureterostomy Transuretero-ureterostomy Ureteral re-implantation and a Boari flap
Lower ureter	Ureteral re-implantation Ureteral re-implantation with a psoas hitch

The long-term complications include anastomotic stricture (3%) and fistulae (6%). Extravasation also causes urinoma that facilitates the occurrence of infection and allows urosepsis.¹⁴⁻¹⁶

OBJECTIVE

This study aims to determine the characteristics of trauma patients, especially ureteral trauma in Hasan Sadikin General Hospital and expected to be used as data for trauma nationally.

MATERIAL & METHODS

This study was descriptive. Retrospective data collection is taken from medical record of ureteral trauma from 2013 until August 2017 at Hasan Sadikin General Hospital, Bandung. The data obtained are gender, mechanism of trauma, and management of ureteral trauma.

RESULTS

A total of 20489 cases of trauma handled in Hasan Sadikin General Hospital, 2.3% is a case of urogenital trauma, and 40 of which are cases of ureteral trauma (0.19%). Most ureteral trauma patients are female (90%).

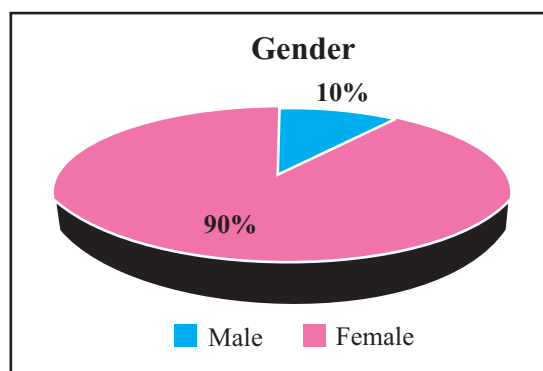


Figure 1. The gender of the ureteral trauma patients

Based on the trauma mechanism, 39 patients had iatrogenic trauma (97.5%) and 1 gunshot wounds (2.5%). From 39 iatrogenic ureteral trauma, 36 patients (92.3%) had iatrogenic trauma from the gynecological procedure, 5.1% as a result of the urological procedure, and 2.6% due to gastrointestinal procedure.

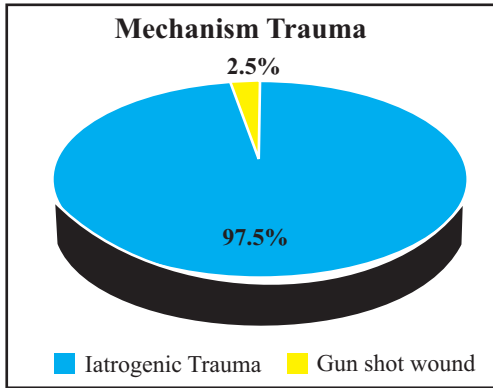


Figure 2. Mechanism Trauma.

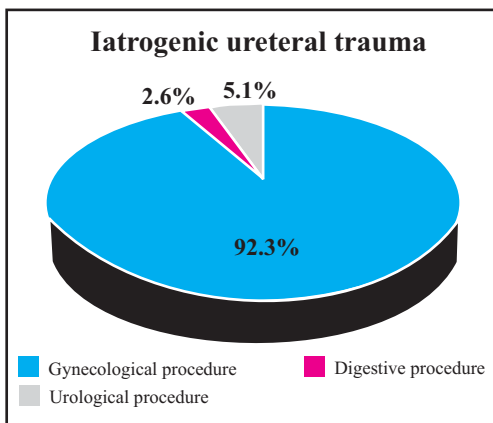


Figure 3. Iatrogenic ureteral trauma.

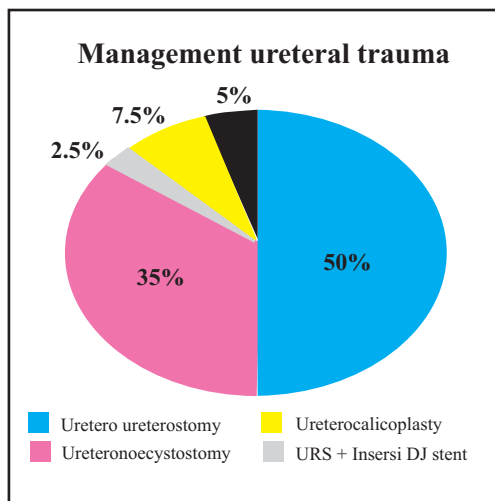


Figure 4. Management ureteral trauma.

Management of ureteral trauma are 50% uretero-ureterostomy and 35% ureteronocystostomy, ureterocalicoplasty 2.5%, URS and Insertion stent 7.5%, nephrectomy 5%.

DISCUSSION

The results of retrospective data from this study it was found that ureteral trauma only 0.19% cases from urogenital trauma. It is lower than reported in the literature that ureteral trauma occurred in 1-2.5% of urogenital trauma.¹⁻² The most common mechanism of ureteral trauma is iatrogenic trauma 39 (97.5%). It is higher than reported by Elliot et al. that approximately 80% of ureteral injury is caused by iatrogenic trauma. The most common cause of iatrogenic trauma is gynecological procedure 92.3%. Brandes et al. show that gynecologic surgery accounts for more than half of all iatrogenic injuries. Management of ureteral trauma in Hasan Sadikin General Hospital performed are 50% uretero- ureterostomy and 35% ureteroneocystostomy, ureterocalicoplasty 2.5%, URS and insertion stent 7.5%, nephrectomy 5%.

The management of ureteral injuries require a broad surgical armamentarium. Factors such as the timing of diagnosis, associated injuries, and degree of injury must be considered when selecting the most optimal technique. Clinical observation and/or placement of an indwelling ureteral stent is suitable for low-grade injuries. Surgical reconstruction may consist of primary ureteroureterostomy, trans-ureteroureterostomy, or ureteral reimplantation.¹⁷

CONCLUSION

Most cases of ureteral trauma in our institute are experienced by women, and most commonly due to iatrogenic trauma. The most common iatrogenic ureteral trauma is caused by gynecology procedure.

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