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Management of Ureteral Injuries due to Non-urologic Operations in Two Hospitals in Addis Ababa, Ethiopia

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Background: ***Ureteric injury is rare in obstetric and gynecological practice but, when it occurs, it has serious implications in terms of both morbidity and litigation. The morbidity arising from ureteric injury includes increased hospital stay, secondary invasive interventions, reoperation, and potential loss of renal function and deterioration of the woman's quality of life[2].***
Methods: ***This study was conducted in Tikur Anbessa specialized and Addis Hiwot General Hospitals, Addis Ababa, Ethiopia from June 2013 to May 2014. All patients who were either operated or referred to these hospitals with a diagnosis or a suspected diagnosis of ureteric injury were identified and included in the study.***
Results: ***Three patients sustained injuries during cesarean section while two of them during hysterectomy and two others during colectomy and teratoma excision. Three were transection injuries while three had ligation with complete closure and one of the injuries was incomplete narrowing. All the transections were diagnosed intraoperatively where as all the ligations were diagnosed late (> 7 days) post operatively.***
Discussion: ***In our study all ligations are diagnosed postoperatively and all of were made late (>7days). This show the operating surgeons should have a very high degree of suspicion and should not take lightly any postoperative complaint of loin pain. Ureteroneocystostomy is also a common surgical approach to treat distal ureteric injuries and our result is very good like in several other studies.***
Conclusion: ***Though ureteric injury is rare, it is a real tragedy when it occurs. In our study all ligations are diagnosed postoperatively and all of were made late (>7days). This shows the operating surgeons should have a very high degree of suspicion and should not take lightly any postoperative complaint of loin pain.***

Introduction

Injury to urinary tract in medical practice was first described on 1030 AD in the opus called "Al-Kanoun". It was earlier observed by Derry in the mummy of Henhenit who lived in the court of King Mentuhotep II on 2050 BC[1]. Ureteric injury is rare in obstetric and gynecological practice but, when it occurs, it has serious implications in terms of both morbidity and litigation. The morbidity arising from ureteric injury includes increased hospital stay, secondary invasive interventions, reoperation, and potential loss of renal function and deterioration of the woman's quality of life[2]. Other morbidities include persistent leakage of urine, recurrent urinary tract infections, vulval dermatitis, hydroureteronephrosis, and in some instances, renal loss[3].

In addition iatrogenic urological injuries are a major cause of anxiety to the surgeons, the patients and their spouses. They are an important concern of a gynecologist especially during hysterectomy and Caesarea section[3,4,7]. Ureteric injury has an incidence of 0.2–1.0% during any abdominal or pelvic surgery. Obstetric or gynecological surgery accounts for approximately 50% of all these injuries[1], ranging from 0.2-0.4%[3].

Intra-operatively ureter may be injured by ligation or kinking by a ligature, crushing by clamp, division, complete or partial transection, devascularization or diathermy. Diagnosis of ureteric injury may be made intraoperatively or postoperatively. Approximately 70% of ureteric injuries occurring during gynecological procedures are diagnosed postoperatively[2]. Authorities agree that the most important prognostic indicator of ultimate patient morbidity is the time of

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recognition of the injury. Bladder and ureteral injuries discovered intraoperatively can be repaired, and return of normal function can be anticipated[5].
Postoperative symptoms of urologic injury tend to be variable. Flank pain and fever are the most common symptoms. Haematuria, a reliable indicator of renal trauma, is absent in approximately 30% of ureteric injuries. Women may occasionally present with a retroperitoneal urinoma, which can be confirmed by an ultrasound scan. Postoperative anuria, though uncommon, should prompt urgent evaluation[6]. The objective of this study is to show the clinical feature of presentation and the timing of diagnosis after ureteric injury in the two hospitals.

Materials and methods

This is a retrospective study conducted in Tikur Anbessa Specialized and Addis Hiwot General Hospitals, Addis Ababa, Ethiopia from June 2013 to May 2014. All patients who were either operated or referred to these hospitals with a diagnosis ureteric injury were identified and included in the study. Information obtained included the patients' age, presenting symptoms, the primary disease, primary procedure and the nature of the antecedent surgery. Ureteric injuries were diagnosed by using clinical features, ultrasonography and intravenous urography. In this study, the timing of presentation was noted as 'early' if the patient presented within seven days of the operation, and 'late' thereafter. The outcome was deemed to be 'good' if there was no residual leakage of urine and a procedure was performed, either of which resulted in an improvement in the patient's quality of life.

Results

During the study period, there were seven patients with ureteral injuries secondary to non-urologic operations, managed in the two hospitals. Six of them are females, one being male with age range of 25 to 52 years. Three patients sustained injuries during cesarean section while two of them during hysterectomy and two others during colectomy (Table 1). Four patients presented with loin pain while three of them presented with urine leak and one had fever (Table 2).

Table 1. Types of procedures with Ureteric Injuries

No	Cause	Number of Patients	Number of Ureters
1	Ceasarean section	3	4
2	Hysterectomy	2	2
3	Colectomy (Left side)	1	1
4	Teratoma excision	1	1
	Total	7	8

Table 2.Type and Time of Diagnosis of Ureteric Injury

No	Type of diagnosis	Intraoperative diagnosis	Postoperative diagnosis	
			Early (<7 days)	Late (>7 days)
1	Transection	3	-	-
2	Ligation	-	-	4
3	Stricture	-	-	1
	Total	3	-	5

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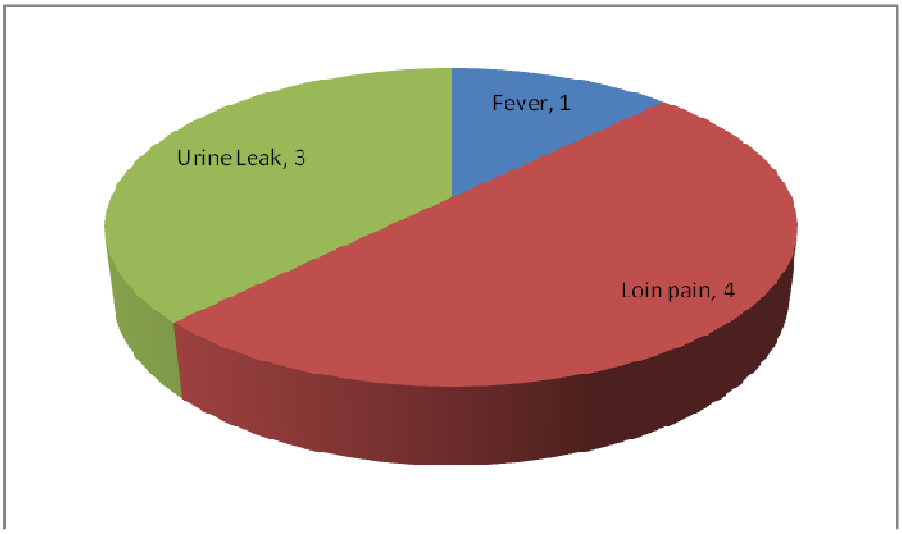

Figure 1. Presentations of patients with ureteric injuries

Table 3. Management of ureteric injuries and outcome

No	Type of management	Number of procedures	Outcome	
			Good	complicated
1	Immediate repair	3	1	2
2	ureteroneocystostomy	5	5	-
3	Double J stenting	1	1	
4	Nephrectomy	1	-	-

Table 4. Anatomic locations and primary and secondary procedures done.

Ureter	**Proximal**		**Distal**	
	Primary procedure	**Secondary procedure**	**Primary procedure**	**Secondary procedure**
Right			2 Ureteroneocystostomy	
left	2 Direct repair	1 Nephrectomy	1 Ureteroneocystostomy 1 Direct repair	1 Ureteroneocystostomy
Both			1Ureteroneocystostomy 1Ddouble J stenting	

Three were transection injuries while three had ligation with complete closure and one of the injuries was incomplete narrowing. All the transections were diagnosed intraoperatively where as all the ligations were diagnosed late (> 7 days) post operatively (Table 2). One of the immediate repair had good outcome whereas two of them were complicated; one of them had urine leak managed by ureteroneocystostomy and one ended up in nephrectomy. All the ureteroneocystostomy patients had good outcome (Table 3).

Discussion

Though ureteric injury is rare, it is a real tragedy when it occurs. This study, just like other previous studies, confirmed that ureteric injuries are rare in our set up and that they occur now and then in non-urologic abdominal operations. As seen in many other studies most ureteric injuries due to pelvic operations and more specifically Gynecology-obstetric surgeries. But the study also showed there are cases of ureteric injuries in colonic operations especially for colonic cancer.

The main presenting features of ureteric loin pain, fever and urine leak and this is true in most other studies. The common types of injuries are ureteral transection and ureteral ligation which is similar in many surveys. In our study all ligations were diagnosed postoperatively and all of were made late (>7days). This shows the operating surgeons should have a very high degree of suspicion and should not take lightly any postoperative complaint of loin pain.

Ureteric injuries are treated with various modalities of interventions. If diagnosed intraoperatively transections can be immediately repaired which are said to be highly successful[6] but this does not seem in our survey where it failed in two out of the three patients. This finding is similar in a study done in Tanzania[8]. Ureteroneocystostomy is also a common surgical approach to treat distal ureteric injuries and our result is very good like in several other studies which is similar with other reviews [9, 10].

Conclusion

Though ureteric injury is rare, it is a real tragedy when it occurs. In our study all ligations are diagnosed postoperatively and all of were made late (>7days). This show the operating surgeons should have a very high degree of suspicion and should not take lightly any postoperative complaint of loin pain.

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