Large Hepatic Subcapsular Hematoma Secondary to Double-J Stent Placement

Leandro Blas, MD,¹ Javier Roberti, LPsy,² Maximiliano Daniel Ringa, MD,¹
Pablo Contreras, MD,¹ and Carlos Alberto Ameri, MD¹

Abstract

Introduction and Background: Urinary diversion with the endoscopic Double-J stent is a frequent procedure; complications can include irritation, suprapubic or flank pain, vesicoureteral reflux, hematuria, or urinary infection. We report a case of hepatic subcapsular hematoma secondary to Double-J stent placement.

Case Presentation: A 28-year-old woman presented with a history of Sjögren's disease, nephrocalcinosis, and chronic kidney disease (CKD). The patient underwent multiple percutaneous and endoscopic procedures during the previous 2 years: right kidney: extracorporeal shock wave lithotripsy (SWL) × 4, ureteroscopic lithotripsy × 2, percutaneous nephrolithotomy (PCNL), and retrograde intrarenal surgery; left kidney: SWL × 2, ureteroscopic lithotripsy × 5, and PCNL. Ultrasound imaging showed severe dilation in the right kidney and moderate dilation in the left kidney. CT scanning without contrast revealed a right pyelourethral dilation caused by a 13 mm ureteral lithiasis; also, cortical atrophy was observed. Urosepsis with exacerbated CKD was diagnosed and bilateral 7F Double-J stents were placed on both sides under general anesthesia. On postoperative day (POD) 8, the patient presented with pain in the right hemithorax and dullness to percussion. CT scans showed a heterogeneous hepatic subcapsular collection, of 15 × 7 × 23 cm, of hematic aspect, displacing vascular structures, and no active bleeding. Treatment was expectant and symptomatic. On POD 16, a new CT scan ruled out progression of the hematoma. The patient was finally discharged on POD 19. Four months later, bilateral semirigid ureteroscopy showed a right ureteral lithiasis of 8 × 7 mm, which was fragmented with a holmium laser. Nineteen months after the first episode, the patient is asymptomatic, with no residual lithiasis or hepatic hematoma.

Conclusion: This case shows a very rare complication of Double-J stent placement that could be managed by conservative treatment.

Keywords: hepatic hematoma, Double-J stent, complication

Introduction and Background

URINARY DIVERSION WITH the endoscopic Double-J stent has been performed since the 1960s. Frequent complications include irritation, suprapubic or flank pain, vesicoureteral reflux, hematuria, or urinary infection; less frequently, ureteroarterial fistula, intravascular stent migration, hemo-peritoneum, extrusion, or stent rupture can occur. We report a case of hepatic subcapsular hematoma secondary to Double-J stent placement.

Case Presentation

A 28-year-old woman presented with a history of Sjögren's disease, nephrocalcinosis, and chronic kidney disease (CKD), with a baseline creatinine of 2.03 mg/dL and a glo-

merular filtration rate of 31.91 mL/minute. As a result of renal and ureteral lithiasis and recurrent urinary tract infections, the patient underwent multiple percutaneous and endoscopic procedures during the previous 2 years (right kidney: extracorporeal shock wave lithotripsy (SWL) × 4, ureteroscopic lithotripsy × 2, percutaneous nephrolithotomy (PCNL), retrograde intrarenal surgery (RIRS); left kidney: SWL × 2, ureteroscopic lithotripsy × 5, and PCNL).

Ultrasound imaging showed severe dilation in the right kidney and moderate dilation in the left kidney, with increased creatinine, indicating CKD exacerbation. The patient had a fever of 38°C during the preceding days, which was interpreted as an upper airway infection. Physical examination was normal, and laboratory results showed hematocrit (Ht) 28%, hemoglobin (Hb) 9.33 g/dL, creatinine

¹Hospital Alemán de Buenos Aires, Buenos Aires, Argentina.

²FINAER, Buenos Aires, Argentina.

7.12 mg/dL, urea 143 mg/dL, prothrombin time 100%, INR 0.91, and urinary sediment 7–10 leukocytes per field. CT scanning without contrast revealed a right pyelourethral dilation caused by a 13 mm ureteral lithiasis; also, cortical atrophy was observed (Fig. 1). Moreover, signs of nephrocalcinosis were detected with left ureteropelvic dilation but no obstructive cause. Urosepsis with exacerbated CKD was diagnosed and bilateral 7F Double-J stents were placed on both sides under general anesthesia, without any complication.

Postoperatively, the patient was referred to the general ward and received electrolytic adjustments. On postoperative day (POD) 8, the patient presented with pain in the right hemithorax, exacerbated when in the decubitus position, and dullness to percussion. CT scans showed a heterogeneous hepatic subcapsular collection, of $15 \times 7 \times 23$ cm, of hematic aspect, displacing vascular structures, and no active bleeding (Fig. 2). Ht had decreased to 24% and Hb to 7.5 g/dL. The patient was then assessed by hepatic and percutaneous surgeons; treatment was expectant and symptomatic, and the patient was transferred to intensive care. She received 2 U of red blood cells as Ht and Hb had decreased to 21% and 6.8 g/dL, respectively. The patient had no inotropes and mechanical respiratory assistance was not necessary. On POD 16, the patient was transferred to the general ward. A new CT scan ruled out progression of the hematoma. The patient evolved favorably, with no pain, Cr 3.77 mg/dL, Ht 30%, and Hb 9.4 g/dL, and was finally discharged on POD 19 (Fig. 2). Four months later, bilateral semirigid ureteroscopy showed a right ureteral lithiasis of 8×7 mm, which was fragmented with a holmium laser. No lithiasis was found in the left ureter. Nineteen months after the first episode, the patient is asymptomatic, with no residual lithiasis or hepatic hematoma.

FIG. 1. CT scan. Right pyelourethral dilation caused by 13 mm ureteral lithiasis associated with kidney atrophy and normal liver.

Discussion

Gustav Simon described the placement of a ureteral catheter in open surgery in the 19th century and developed the idea of catheterizing the urinary tract. In 1967, Zimskind et al. described the first case of a straight stent ureteral silicone endoscopically placed to derive obstructions by tumor compression and to treat ureterovaginal fistulas. Although these stents provided satisfactory internal drainage, proximal or distal migrations were common, which were later managed using a modified stent with an acorn. The simple-J ureteral stent was then developed, and in 1978, Finney described the first Double-J stent with curves at both ends to prevent migration. Double-J stents are most frequently used

FIG. 2. CT scan. Heterogeneous hepatic subcapsular collection with a size of $15 \times 7 \times 23$ cm of hematic aspect, which displaces vascular structures. Both Double-J stents are properly placed.

for obstructions, infections, or both.¹ As with any invasive procedure, complications can occur such as irritation, suprapubic or flank pain, vesicoureteral reflux, hematuria and urinary infections, inadequate position, ureteral erosion, ureteroarterial fistula, intravascular stent migration, hemoperitoneum, and stent rupture can also occur.²

A small body of literature describes subcapsular renal hematoma after RIRS or ureteroscopic lithotripsy, with an incidence of ~0.3%, and possibly caused by direct injury, caliceal avulsion, or high intrarenal pressure.³ Intraparenchymal renal hematoma as a late complication of RIRS has also been described. Subcapsular renal hematoma usually requires conservative management, but it could be complicated with an abscess requiring percutaneous drainage or a surgical treatment. The intervention with a flank drain into the hematoma is a safe and effective option to manage a perirenal or subcapsular hematoma while preserving renal function. Subcapsular and intraparenchymal liver hematomas after SWL have also been described. This potentially life threatening condition may be managed either conservatively or with embolization or open surgery.

We have not found any report of subcapsular hepatic hematoma secondary to Double-J stent placement. Our hypothesis is that the patient may have had a coagulopathy caused by the exacerbated CKD, and in a fragile hypotrophic kidney, the renal and hepatic capsules could have been perforated with the steel guidewire of the catheter, despite monitoring through live fluoroscopic imaging.⁴ A retrograde pyelogram could have been useful to monitor the placement of the guidewire and stent into the renal pelvis; however, this was not performed because the patient presented with fever and, when the open-end catheter was inserted into the right kidney, brownish turbid urine was drained. The renal and hepatic capsules are in close contact with the right renal superior pole. The renal capsule is formed by two layers of cells: an external layer with fibroblasts and collagen and an internal layer with myofibroblasts. The Glisson capsule, covering the liver, consists of fibrous connective tissue and the serous peritoneum, except in areas where it adheres to other organs.

Following the surgeons' recommendations, we administered conservative treatment with good results. This case shows a very rare complication of Double-J stent placement that could be managed by conservative treatment.

Disclosure Statement

No competing financial interests exist.

References

1. Beiko DT, Knudsen BE, Denstedt JD. Advances in ureteral stent design. *J Endourol* 17:195–199, 2003.
2. Betschart P, Zumstein V, Piller A, Schmid HP, Abt D. Prevention and treatment of symptoms associated with indwelling ureteral stents: A systematic review. *Int J Urol* 24: 250–259, 2017.
3. Chiu PK, Chan CK, Ma WK, To KC, Cheung FK, Yiu MK. Subcapsular hematoma after ureteroscopy and laser lithotripsy. *J Endourol* 27:1115–1119, 2013.
4. Jalal DI, Chonchol M, Targher G. Disorders of hemostasis associated with chronic kidney disease. *Semin Thromb Hemost* 36:34–40, 2010.

Address correspondence to:

Leandro Blas, MD
Hospital Alemán de Buenos Aires
Av Pueyrredón 1640
C1182AAT Buenos Aires
Argentina

E-mail: blasstone@hotmail.com

Abbreviations Used

CKD = chronic kidney disease
CT = computed tomography
Hb = hemoglobin
Ht = hematocrit
INR = international normalized ratio
PCNL = percutaneous nephrolithotomy
POD = postoperative day
RIRS = retrograde intrarenal surgery
SWL = extracorporeal shock wave lithotripsy

Cite this article as: Blas L, Roberti J, Ringa MD, Contreras P, Ameri CA (2019) Large hepatic subcapsular hematoma secondary to Double-J stent placement, *Journal of Endourology Case Reports* 5:3, 85–87, DOI: 10.1089/cren.2019.0017.