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Case No. 1

Medical History

A 68 year old man diagnosed with genito-urinary tuberculosis one year prior to admission, and treated with appropriate antibiotherapy. He is admitted for asthenia, weight loss, and severe irritative symptoms (frequency and burning on urination).

Images:

IVP: A non-functioning right kidney, a delayed clearance of the left collecting system, and a retracted bladder.

US: A dilatation of left renal cavities

CT: A retracted bladder

Biological Tests:

Blood Tests:

WBC:	9.6 giga/L	(3.2-9.8)
RBC:	4.1 tera/L	(4.3-5.9)
PLT:	320 giga/L	(150-450)
Hgb:	9.5 g/100mL	(12-16)
Hct:	35%	(39-49)
Sedimentation rate:	66/110 mm/hour	(<15)
Creatinine:	316 µmol/L	(59-115)
INR:	1.12	(0.88-1.2)

Urine Tests:

WBC	> 1,000,000/mL	(< 10,000)
RBC	> 1,000,000/mL	(< 10,000)
Urine culture:	Negative, no evidence of tuberculosis	

Main Tasks:

1. Access the dilated kidney.
2. Nephrostomy catheter placement for urinary diversion.



*Created in collaboration with Prof Thierry Flam, Department of Urology, Hospital Cochin, Paris, France.
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Case No. 2

Medical History:

A 30 year old male patient that complained about vague left flank pain and had been previously treated for a urinary tract infection.

Images:

KUB: A left renal pelvic stone

Biological Tests:

Blood Tests:

WBC:	7.0 x 10 ⁹ /L	(4.00-11.00)
RBC:	4.5 x 10 ¹² /L	(3.80-5.20)
PLT:	350 x 10 ⁹ /L	(150-400)
Hgb:	120 g/L	(115-160)
Hct:	0.37	(0.345-0.450)
Na:	139 mmol/L	(135-145)
K:	3.9 mmol/L	(3.5-5.0)
Creatinine:	80 μmol/L	(62-120)
INR:	1.0	(0.9-1.1)

Urine Tests:

WBC:	>100/HPF	(0)
RBC:	5 / HPF	(3-5)
Ph:	5	(5-8)
Urine Culture:	Negative	
Nitrite:	Negative	

Main Tasks

1. Establish a percutaneous tract to the stone through an appropriate calyx.
2. Guide wire manipulation past the renal pelvic stone and down the ureter.



*Created in collaboration with Dr. John Denstedt, Dr. James Watterson, and Dr. Darren Beiko.
Division of Urology, The University of Western Ontario, London, Canada.
Symbionix Ltd. (2002)*



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Case No. 3

Medical History:

A 59 year old man with a history of right ureteral stone 4 years prior to admission. One week prior to admission, an onset of mild left flank pain.

Images:

IVP: A non-functioning left kidney, a large left renal stone and several small stones in the right collecting system.

US: A dilatation of left renal cavities, and a stone within the left kidney.

Biological Tests:

Blood Tests:

WBC:	9.6 giga/L	(3.2-9.8)
RBC:	5.17 tera/L	(4.3-5.9)
PLT:	274 giga/L	(150-450)
Hgb:	15.7 /100mL	(12-16)
Hct:	46 %	(39-49)
Creatinine:	168 μ mol/L	(59-115)
INR:	1.0	(0.88-1.2)

Urine Tests:

WBC:	39,000/mL	(< 10,000)
RBC:	450,000/mL	(< 10,000)
Urine Culture:	Negative	

Main Tasks:

1. Establish a percutaneous tract to the stone through an appropriate calyx (recommended access: through lower calyx).
2. Guide wire manipulation past the renal pelvic stone and down the ureter.



*Created in collaboration with Prof Thierry Flam, Department of Urology, Hospital Cochin, Paris, France.
Symbionix Ltd. (2002)*



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Case No. 4

Medical History:

A 72 year old man. 9 years prior to admission, he underwent a radical cystoprostatectomy with an ileal loop diversion. He is admitted to the emergency room for a febrile urinary infection with left lumbar tenderness.

Images:

KUB: 2 hard looking stones within the left kidney.

IVP: Bilateral dilatation of the upper collecting system, with left renal stones located in the kidney pelvis and the middle calyx.

Ultrasound: A dilatation of the left renal cavities, and hyperechogenic stones within the cavities.

Loopography: Rules out stricture of the uretero-ileal anastomoses .

Biological Tests:

Blood Tests:

WBC:	5.2 giga/L	(3.2-9.8)
RBC:	4.7 tera/L	(4.3-5.9)
PLT:	250 giga/L	(150-450)
Hgb:	14 g/100mL	(12-16)
Hct:	45%	(39-49)
Creatinine:	120 μmol/L	(59-115)
INR:	1.1	(0.88-1.2)

Urine Tests:

WBC:	128,000/mL	(< 10,000)
RBC:	6,000/mL	(< 10,000)
Urine culture:	10 ⁷ /ml Pseudomonas	



Main Tasks:

1. Access kidney with a skinny needle assisted by caliceal stone location.
2. Antegrade fluoroscopy.
3. Guide wire manipulation into the renal pelvis.
4. Nephrostomy catheter placement for urinary diversion.

*Created in collaboration with Prof Thierry Flam, Department of Urology, Hospital Cochin, Paris, France.
Symbionix Ltd. (2002)*



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Case No. 5

Medical History:

A 45 year old man, who experienced left flank pain for the past 2 months. He was treated with ESWL 3 years prior to admission.

Images:

KUB: 2 stones in the left kidney: at the lower calyx (20x10 mm) and at the upper ureter, 2cm below UPJ (18x10 mm).

IVP: A delayed excretion, mild hydronephrosis and stone at lower calyx and upper ureter.

Biological Tests:

Blood Tests:

WBC:	8.00 x 10 ⁹ /L	(4.00-11.00)
RBC:	4.10 x 10 ¹² /L	(3.80-5.20)
PLT:	250 x 10 ⁹ /L	(114-400)
Hgb:	145 g/L	(115-155)
Hct:	.380	(0.345-0.450)
Na:	145 mmol/L	(135-155)
K:	5.4 mmol/L	(3.5-5.5)
Ca:	2.20	(2.10-2.60)
Creatinine:	140 μmol/L	(50-110)
INR:	1.00	(0.9-1.1)
PTT:	32 sec.	(24-35)

Urine Tests:

WBC:	2/HPF	(0-2)
RBC:	15/HPF	(0-2)
Ph:	6.5	(5-8)
Urine Culture:	Negative	
Nitrite:	Negative	

Main Tasks:

1. Establish a percutaneous tract to the stone through an appropriate calyx (recommended access: through middle calyx).
2. Guide wire manipulation down the ureter.



Created in collaboration with Dr. John Honey, Director of Endourology and Dr. Solieman Bilgasesm, The University of Toronto, Canada. Symbionix Ltd. (2002)



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Case No. 6

Medical History:

A 49 year old male patient with known cystinuria (first diagnosed 30 years ago) was admitted for treatment of bilateral renal staghorn stones. The patient had been well, except for slight flank pain. He had previously undergone an open lithotomy of the right kidney twice (29 and 9 years ago), percutaneous nephrolithotomies (PNL) of both kidneys (10 and 7 years ago), and multiple bilateral ESWL 29 years ago. His right kidney had been continuously drained by an ureteric stent during the past 6 years. Former stone analyses revealed exclusive pure cystine stones. Physical examination was normal. Technetium kidney scintigraphy a year ago revealed 75% of overall renal function was achieved by the left kidney. Urine examination showed typical cystine crystals.

Images:

KUB: A large staghorn stone in the left and right kidneys.

IVP: A delayed excretion from the left kidney.

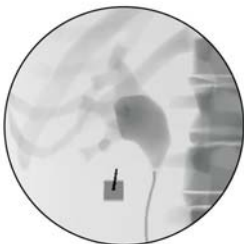
Biological Tests:

Blood Tests:

WBC:	5.5 x 10 ⁹ /L	(3.8-10.6)
RBC:	4.7 x 10 ¹² /L	(4.4-5.9)
PLT:	200 x 10 ⁹ /L	(140-430)
Hgb:	15 g/dL	(13-18)
Hct:	45 %	(40-52)
Creatinine:	1.42 mg/dL	(0.7-1.3)
INR:	1.12	(0.88-1.2)
PTT:	29.2 sec.	(<30)

Urine Tests:

Erythrocytes:	250/μl	(<10)
Leukocytes:	500/μl	(<10)
PH:	6	(5-8.5)
Urine Culture:	Negative	
Nitrite:	Negative	



Main Tasks:

1. Establish a percutaneous tract to the stone through an appropriate calyx (recommended access: through lower or middle calyx).
2. Guide wire manipulation past the staghorn stone and down the ureter.

Created in collaboration with Dr. Maurice Stephan Michel M.D. Ph.D., Department of Urology, University Hospital Mannheim, Germany. Symbionix Ltd. (2002)



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Case No. 7

Medical History:

A 32 year old patient suffering from left flank pain. He had previously passed two stones spontaneously 5 years ago.

Images:

Retrograde pyelogram: Upper-calyx diverticulum in the left kidney.

KUB: A 1 cm radio-density overlying the left kidney.

CT: A stone in the left kidney.

Biological Tests:

Blood Tests:

WBC:	7.0 x 10 ⁹ /L	(4.00-11.00)
RBC:	5.2 x 10 ¹² /L	(3.80-5.20)
PLT:	296 x 10 ⁹ /L	(150-400)
Hgb:	148 g/L	(115-160)
Hct:	0.44	(0.345-0.450)
Na:	141 mmol/L	(135-145)
K:	4.3 mmol/L	(3.5-5.0)
Ca:	2.2 mmol/L	(2.12-2.62)
Creatinine	96 µmol/L	(62-120)
INR	0.9	(0.9-1.1)

Urine Tests:

WBC:	Negative	
RBC:	Negative	
Ph:	6.0	(5-8)
Urine Culture:	Negative	
Nitrite:	Negative	

Main Tasks:

1. Establish a transdiverticular percutaneous tract.
2. Guide wire manipulation through the diverticulum neck and down the ureter.



*Created in collaboration with Dr. John Denstedt, Dr. James Watterson, and Dr. Darren Beiko.
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Symbionix Ltd. (2002)*