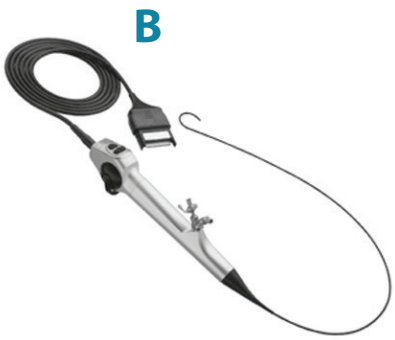
Technology – part 3

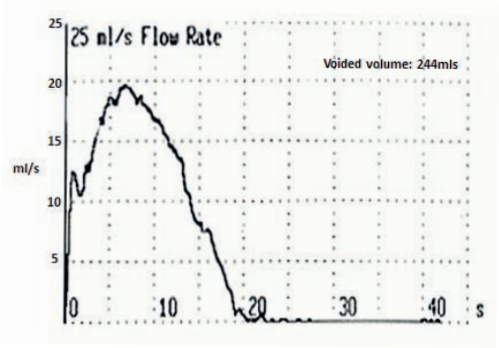
Case 1

1. What is shown in figures A and B?
2. What is the diameter of each scope?
3. What is the working channel size of each?
4. What are the advantages of a digital versus optic flexible ureteroscope?



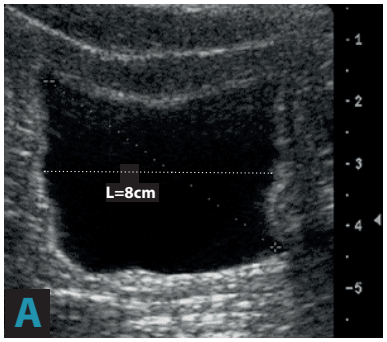
Case 2

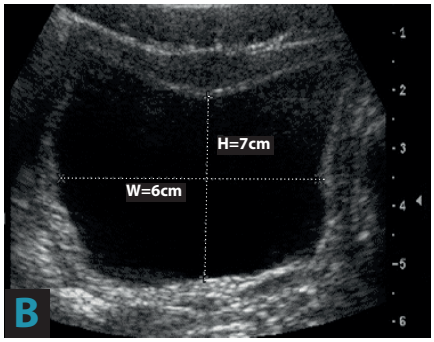
1. What is this machine?
2. What are the different methods of its operation?
3. Calculate the following uroflow parameters: voided volume (Vcomp), voiding time (T100), maximum flow (Qmax).
4. What is the probability of obstruction with a Q-max of <10ml/s, 10-15ml/s and >15ml/s?



Case 3

1. What is this machine?
2. How does it calculate volume?
3. Calculate the urine volume from the ultrasound images A and B.





Technology – answers

Case 1

1. A: Video flexible cystoscopy (Karl Storz C-VIEW).
   B: Video uretero-renoscope (Karl Storz Flex XC).
2. A: Video flexible cystoscopy is 16Fr.
   B: Video uretero-renoscope is 8.4Fr.
3. A: Video flexible cystoscopy is 8.4F.
   B: Video uretero-renoscope is 3.6Fr.
4. Improved vision translates to more efficient stone fragmentation with a significant reduction in flexible ureterorenoscopy time and overall operative time.

Case 2

1. Uroflowmetry machine.
2. Gravimetric principle: weight of urine is the urine volume and by differentiation the flow rate.
   Momentum flux principle: a rotating disk slows as urine falls on it. The power required to maintain a constant disc speed is used to calculate urine flow.
   Capacitance principle: electrical capacitance of a metallic strip in a urine collecting chamber of standard size changes with the height of urine as it fills.
3. Vcomp = 244ml, T100 = 20s, Qmax = 20ml/s.
4. Approximately: 90% with Qmax <10ml/s, 60% with Qmax between 10-15ml/s and 30% with a Qmax >15ml/s.

Case 3

1. Ultrasound bladder scanner.
2. By taking measurements in two planes, and deriving length, width and height measurement, bladder volume can be calculated. This utilises the prolate ellipsoid formula (π/6 x L x H x W). This is relatively simple and easy to use.
3. (π/6 x L x H x W) or more simply (0.52 x L x H x W) (prolate ellipsoid formula) = 175mls.

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