

Medi-Vision™ Film Transcript

Programme 5

First Edition, 1993; Second, DVD Edition 2005
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GENITO-URINARY SYSTEM 1: Renal, Bladder & Rectal Examination

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Introduced by
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Introduction

DCA

This is the first of two programmes in which urologist Dr Raymond Carroll presents a series of patients with interesting genito-urinary problems. This, the first film, concentrates on problems of the urinary tract, while the second looks specifically at the inguino-scrotal region.

Educational Objectives

Through watching this film the student and doctor should

- come to understand the approach to a patient with possible renal colic
- learn how to examine the abdomen and renal tract
- appreciate the importance of the so-called KUB X-ray
- be able to examine for renal enlargement, to ballot the kidneys, and distinguish an enlarged kidney from a spleen or liver
- be able to detect bladder enlargement and understand some of the management problems with chronic urinary retention in the male
- and finally be competent at undertaking a rectal examination .

The first patient is a young man who presented with severe loin pain.....

Patient 1: History

RC John, last month you experienced a bad attack of pain. Can you tell me about it?

J Yes I was just sat at home watching telly, and all of a sudden I had a tremendous pain come in my back.

RC So you called the doctor?

J So we called the doctor and he gave me an injection which worked after about twenty minutes.

RC Now the pain in the back. Was it in the middle of the back, the left or the right side?

J It was on the left hand side around the back.

R Can you indicate to me where it was?
 J It was there.
 R In the kidney area?
 J In the kidney area, yes.
 R Then you came to hospital. We investigated you and sent you home. Then you got another attack of pain.
 J That's right.
 R Now when did that happen? A few days ago?
 J Yes.
 R And was it different from the first attack?
 J No, it was just the same pain.
 R And you required an injection?
 J I did yes. The doctor come round and gave me an injection but it didn't work.
 R So you came back to the hospital?
 J I came back to the hospital.
 R Now does this pain move at all?
 J It moved round to the front, which was about half way between the kidney and the testicles.
 R Did it in fact go down into the groin and the testicles, the pain?
 J I had pain in the testicles, yes.
 R During either of these attacks or afterwards - was there anything different about the waterworks?
 J No it was just the same. There were no problems with my waterworks.
 R You didn't pass any blood in the water?
 J No.
 R Any bits and pieces or gravel or stones that you noticed?
 J No.
 R What about burning, stinging or scalding?
 J No problems. It was just this pain.
 R How would you rate the pain?
 J Well it's the worst pain I've ever had in my body. And I have had quite a lot of pain in my body, but this is the worst one.

Xrays

R Now we are going to look at John's x-rays, and this is the first one that was taken after his first attack of pain. It is known that a KUB represents kidneys, ureters and bladder. And it is slightly different from the plain x-ray of the abdomen done for other reasons because we like to see the pelvic bones, pubic rami and the hip joints, because many patients undergo endoscopic assessment and we need to know that the hip joints are satisfactory.

We look at the bones first and the spines are central and normal, and the pelvic bones on both sides are normal as are the pubic rami and the hip joints. The soft tissue shadows are also well shown. And on the left side the renal outline we can see. On the right side it's not so well shown but we can see the lower pole. In addition the psoas shadow is here on the left, not so well shown on the right, and finally the bladder. The abnormalities are at least one if not two calcifications in the lower kidney, and the striking feature is an abnormality at the transverse process of L3, and this represents a ureteric

calculus - because here is the line of the ureter. Further down in the pelvis just at the edge of the bladder are three calcifications which represent phleboliths.

Now moving onto the second x-ray which was taken after his second attack of pain, we have a few opacities here which represent dental fillings because he had been to the dentist the day before. And the striking feature is the absence of the stone at the left transverse process. It has now moved down into the pelvis and is lying at the junction of the ureter and the bladder. This we have since removed endoscopically using a Dormier's basket, and the following day the KUB shows the stone was no longer in the ureter but here it is... a brown crystalline stone of a regular shape almost certainly a calcium oxalate stone which we sent for analysis.

Patient 1: Examination

R Turning now to the examination of John's renal tract I would do this after a general examination which includes a measurement of the blood pressure.

And I start by examining the renal tract with the patient sitting up. *John, would you like to sit up for me so we can start the examination of your back. Lean slightly forward if you would.* And I start by examining the neck for lymph node enlargement in the supraclavicular fossae because sometimes we encounter lymph node enlargement here. John doesn't have any. *John, would you show me where you experienced the pain when you had the bad attacks.* Most patients do this when they are indicating kidney pain. But if they point with one finger it usually means the pain is not renal in origin. It's much more likely to be musculo-skeletal.

I start by examining the spine looking for abnormalities of curvature and then looking at the erector spinae muscle on both sides, and then looking at the renal hollow - the renal fossa 'hollow' - on each side. It's not very well shown in John because he's rather well covered. But what you are looking for is asymmetry. And there isn't any here.

I start by examining the sacrum and move upwards... *and John, if I illicit any tenderness will you let me know?* I close my fist and I tap the sacrum, and I move up over the lumbar vertebrae looking for tenderness. *Is that all right?* And then I do the same over the erector spinae muscles on both sides. I include the sacral iliac joints and then I move up to the lower thoracic cage on both sides before examining the renal fossae. *No tenderness?* The renal angle is in between the 12th rib, the erector spinae muscle and the top of the iliac crest. That's just here. And I tap on both sides. Is there a difference on the two sides or are they both the same at the moment? Frequently I place my fingers in the same area and press... and finally ask the patient to cough. *Can you do a cough for me?* Trying to find out if in fact they have tenderness on coughing in the renal area. When that is complete I ask the patient to lie down.

With John recumbent I'm going to focus on the renal tract. He's comfortable because he has a pillow behind his head and the headrest is tilted 15 degrees. His abdomen is relaxed. If it wasn't I would ask him to flex his

knees and thereby his hips to get relaxation of the abdomen. Looking at the abdomen the striking features are two scars. An appendectomy scar and a hernia scar which was for a Spigelain hernia which is a rare condition. *John, could you point to any tenderness in your abdomen at the moment? Vaguely tender down there. Could you give a cough for me?* Any coughs we are looking at the umbilicus and each of the scars and the groin areas. *Could you cough once more?* And there's a very slight cough impulse which you may not be able to see on the left side.

I'm going to examine his abdomen by palpating him. And in order to do this I'm going to kneel down or I could sit - and start in the left renal area by superficial palpation of the tissues using the flat of my hand and overlapping my fingers as I do it. He demonstrates some guarding in the left iliac fossa, he's not as tender as he was a few days ago before we removed the stone. Epigastrium, umbilical area, suprapubic area and the bladder area. Then I move to the right side which is more difficult to examine because I must keep my elbow below my wrist in order to flex my MP joint to do the examination. I have felt nothing abnormal apart from the iliac fossa tenderness and now I'm going to do deep palpation in the hypochondrium looking for a spleen or a kidney. I'm going to stay away from here because I know he's tender. I will repeat this slightly deeper examination in the epigastrium and move down to the bladder. And I can actually flex my fingers quite deeply here. And he's not reacting, and his bladder is not palpable. Again it's difficult on this right side and sometimes it's necessary for the examiner to cross over onto the other side of the bed in order to get deep palpation on the right flank.

I want to be sure - although I cannot feel anything - that the spleen, the liver and the bladder are not palpable, and I'm going to percuss over the bladder and it's quite resonant. I'm going to percuss over the liver area and he's quite resonant, and in fact over here in the left hypochondrium he remains resonant.

There are in fact no masses in the abdomen but the completion of the renal tract examination entails ballotting for the kidney. In order to do this - the left hand is placed on the flat of the couch and the examining hand is placed in the hypochondrium. I ask the patient to take a deep breath, and then as he does I push the kidney up off onto the examining hand. *John, could you take a big deep breath for me?* And as he does... *out... once more...* and I can feel nothing as I push my bottom hand onto the tissues. On the right side the same thing is done. The hand is put flat on the couch, in the renal angle, the examining hand on top... *one more... and out...* press up from below... and I cannot feel anything coming up onto my hand. Neither kidney is palpable, the liver and the spleen and the bladder are not palpable either.

Ordinarily now I would auscultate the renal area for renal artery stenosis.

Patient 1: Discussion

DCA Ray, John presented with quite severe renal pain, was this classical renal colic?

- R No. Colic comes in waves. This was a constant severe pain requiring a morphine injection to relieve him. He didn't have pain coming in waves which sometimes happens when the stone moves. The stone was moved from the kidney into the middle part of the ureter and that is where we came across him. The plain x-ray of the abdomen which we have seen, shows the stone and this was confirmed as being in the ureter by an intravenous urogram.
- D Right. And that wasn't showing obstruction at that time?
- R It was not showing true obstruction because the contrast was getting past the stone. And then the renogram confirmed that the function in the left kidney was essentially normal.
- D So why did you let him out at that time?
- R Well we hoped that he would pass the stone either into the lower ureter or into the bladder. And of course it did pass into the lower ureter. This means it was accessible to instrumentation. A stone in the lower ureter you can instrumentally remove endoscopically - you cannot do it easily in the upper ureter.
- D Now on examination you examined him sitting up as well as lying down. What's the importance of that?
- R Well sometimes you can see pathology with the patient sitting up that you won't see lying down. If the patient has a pyarthrosis or a periphrenic abscess there would be a bulge in the loin which you don't come across, which you can't in fact see when they are lie flat. In addition to this if you punched the kidney area like I was doing and illicit tenderness and that tenderness is not present when you examine them bimanually, then it doesn't probably mean anything. Whereas if the tenderness is constant, both sitting up and lying down it probably means it's renal.
- D Right. On a normal kidney it is difficult to demonstrate the physical signs, and I think our next case you're going to show to us some particular ballotting of the kidney.
- R Yes, you can't really ballot a normal kidney. Sometimes you can feel the lower pole of the right kidney. You shouldn't really be able to feel the left kidney. When the kidneys are enlarged such as in polycystic disease it's easy to feel one if not both and ballot them and this demonstration on Dennis shows ballotting very well, particularly on the right side.
- D Right, let's look at it.

Examination

- R Dennis comes from a family with a strong history of polycystic kidney disease going back many generations. His abdomen is interesting because he has swelling and scars on his trunk in addition to his abdomen. Seven months ago this scar was made which is due to the placing of a peritoneal dialysis catheter. Six months ago he underwent a coronary artery bypass graft. And two months ago he had another operation. And if I stretch the tissues - I think you can see the swelling which is a kidney transplant.

When I examine his abdomen I find in addition that there is a swelling in the left hypochondrium and one in the right. I know the swelling is there from

previous examination, and if I put my hand here I can feel a resistance underneath the costal margin.
I will try and demonstrate that this is a kidney.

If I put my hand in the renal angle on the left side and push upwards... I think you can see there's a swelling that's here. This swelling is ballotable. I'll place my observing hand on top of the swelling... my active hand pushes from below... and I think you can see that my observing hand is displaced. This swelling is a kidney because I can ballot it. It's not a spleen because I am able to push my fingers just under the costal margin. If the swelling was a spleen I would expect the area to be dull, but on percussion it is resonant. And the resonance is due to the air in the stomach, the transverse colon, and descending colon. If it was a splenic enlargement which comes hugging the costal margin and moving towards the right iliac fossa, it would be not be possible to insinuate my fingers and I would expect it to be dull because the bowel would not be in front of it.

On the right side the swelling is naturally placed. It is here under my hand, and when I run my hands over it there is a cystic feeling to the tissues which in fact move away from me. This is not a liver because the abdomen is resonant where I would expect a liver enlargement. If I place my hand in the right renal angle and press the tissues forwards. I think you can see there's a swelling here and also here. These are part of the cysts that make up a polycystic kidney.

When I ballot this kidney, my observing hand is moved by the active hand as it moves upwards and displaces the kidney from its renal bed onto my hand. This really cannot be anything else other than a kidney enlargement. Ordinarily it is much easier to examine a right kidney because it is lower than a left, and as is the case here the right polycystic kidney is bigger than the left polycystic kidney which makes the demonstration relatively easy.

Discussion

- D Raymund, a couple of points I'd like you to discuss in relation to Dennis. One is the distinction between a spleen and a kidney. How reliable is the fact that the spleen hugs the front of the abdominal wall?
- R Well that's reliable. The spleen always hugs the front of the abdominal wall, coming from underneath the costal margin and moving in the direction of the right iliac fossa. It pushes everything out of its way so in percussion you always get a dull sensation. When a kidney enlarges - either a polycystic kidney or a tumour - most of the time you can get your fingers underneath the costal margin and ballot the kidney. There are times however when kidney tumours mushroom up from the anterior surface of the lower pole and come straight up onto the costal margin. You cannot always in this situation insinuate your fingers between the kidney and the costal margin but you should be able to ballot the kidney none-the-less.
- D Right. And an adrenal tumour on the left. What would that do?

- R A large adrenal tumour will push the kidney down. And if you bimanually examine the patient you will feel the kidney but very rarely in the adrenal gland? But the kidney itself will not be enlarged.
- D And on the right? Is there any confusion between the kidney and the liver?
- R Very rarely. The liver of course has on occasion a Regal's? lobe. A Regal's? lobe is not as big as a polycystic kidney, it's not as big as a kidney tumour, but it does cause confusion. But apart from the Regal's? lobe which can be seen very easily on plain x-ray of the abdomen there is really nothing else that laterally apart from the kidney.
- D Right. And you've got a tennis ball in your pocket. Would you please demonstrate ballotting.
- R Ballotting really means bouncing. And when ballotting takes place you have the active hand underneath the kidney in the renal angle. The tennis ball represents the kidney and you have your observing hand here. And what basically is done is you flex your MP joints and you bounce the kidney on the observing hand. And that is the movement of ballotting. It's that sensation of feeling something coming up onto your fingers that demonstrates to you that you can actually ballot the lesion.
- D And that's reliable for distinguishing the kidney from other masses?
- R It's reliable for a kidney from a spleen provided you understand that the spleen does sometimes push a kidney down. But if you percuss a kidney it should always be resonant, because on the left side the colon will be lying in front of it and even the stomach, whereas the spleen is always dull.
- D Right. Well we'll move onto our third case now with chronic retention.

Patient 3

- R Jandish is a gentlemen who has difficulty in evacuating his bladder, and I'd like to demonstrate the signs of a distended bladder.

The striking feature of this abdomen is the flatness of the upper abdomen and the distension of the lower abdomen. In palpating the abdomen there is no resistance in the upper abdomen above the umbilicus on either side. But in order to demonstrate the distended bladder I need to stand up and put my two hands on his lower abdomen like this... and press equally on both sides. I know from previous examination that this is giving the patient a feeling of wanting to urinate. If I in fact push the bladder from side to side he gets much the same sort of symptom.

The cardinal feature of a distended bladder is percussion. I will start out in the flank. Resonant here... changing here... and quite dull at this point. There's the changing point and it's dull. His bladder is about here and he has incomplete bladder emptying. It's chronic distension and it's not painful.

Discussion

- D What's the basis for his pathology?
- R It's Detrusor failure secondary to obstruction to the bladder neck and prostate. He's had a prostatectomy and resection of his bladder neck but he still does not evacuate his bladder. His chronic retention is so severe that he has in fact lost the ability to empty his bladder. He does urinate but doesn't

evacuate fully. He has lost the elastic tissue in his bladder and his muscle contractivity, and his bladder has largely been replaced with collagen.

D And in fact his renal function isn't deteriorating?

R It's not deteriorating, but it isn't good. He is unhappy to have an indwelling catheter. We hope to teach him how to do self intermittent clean catheterisation. But he doesn't seem to want to accept that either.

D Now in a patient such as him - is it important to do a rectal examination?

R Yes, you will need to do a rectal examination on any man with a lower urinary tract problem. But one needs to know that in the presence of a distended bladder, a rectal examination is unrewarding and can be misleading. And we prefer to decompress the bladder, leave it for a day or two and then assess the prostate. The only time when you can be certain of what you feel is when you have carcinoma first time out you get a hard gland, but under ordinary circumstances the bladder oedema and the prostate together seem to be one tissue and you can't distinguish the landmarks.

Having demonstrated the examination of a distended bladder we now need to make an assessment of a prostate. This is done by a rectal examination.

Patient 4: Rectal Examination

RC And the next patient, Joseph, has kindly agreed to allow me to demonstrate how this should be done.

For the purposes of a rectal examination I've positioned Joseph in the most comfortable position in which I can get him. His head is supported by two pillows and the headrest is also elevated. He has arthritic problems in his lower limbs and we haven't been able to flex his hip and his knee on the right side as much as we would like. His buttock is as near the edge as we can reasonably get it for the purpose of digital insertion. The examination continues by distracting the buttocks and looking for lesions in the perianal area. Here there is an area of erythema which is the beginning of a pressure sore which has been dressed with a transparent dressing to prevent the skin from breaking down.

Now I'll take you through the movements of a rectal examination. The index finger is placed in the natal cleft and it is edged up to the sphincter on this arc. By flexing the distal interphalangeal joint the arc will give way because the pubo-rectalis muscle is pulled backwards and relaxes. And when that happens it is customary to change your angle by moving the elbow forward and then allowing the finger to enter into the sacral curve. The finger is then swept on the front of the sacrum, and when that is complete it is necessary to pronate the hand - and the easiest way of doing this is to drop the elbow by going down on your knee and then sweeping over the prostate gland first the lower lobe which is the left and then the upper right lobe.

I'm going to apply some lubricant to my gloved finger. Distract the upper buttock, place my finger in the natal cleft, press on the arc underneath my finger. The pubo-rectalis muscle is pulled back and then I move forwards and introduce my finger. Sweep it through the sacral hollow. Rotate my hand and sweep it over the prostate gland feeling first the lower left lobe and

then the upper. The finger is then withdrawn and the buttock is distracted while the perianal area is wiped.

This examination revealed the sacral hollow was normal. There were no lesions palpable in the rectum, and he has an enlarged prostate gland bulging back into the sacral hollow meaning that there's very little space between the sacrum and the prostate. This of course accounts for his obstructive symptoms and why he has an indwelling catheter.

Discussion

R This poor chap has advanced malignancy. He's not very fit as you've seen in the film. He has other disabilities. He wasn't in the preferred position for elected examination, I would have much rather been able to flex his knees and hip on the right side much more to get good relaxation in order to do the digital examination.

The technique of digital examination is important for one reason. If you approach the anal canal in this direction with a straight finger it will go into spasm and you will find that the examination is unrewarding. The patient will extend his hips and knees and you won't be able to feel the prostate or the rectum.

So it is important to follow the technique that I've shown of pressing on one arc of the sphincter, getting it to relax, pulling back the pubo-rectalis muscle and then moving your elbow forward and your wrist, and then realigning the finger in the anal canal.

Conclusion

DCA

So I hope you found these four cases interesting. On this film we....

- heard first the history in a young man with a left renal calculus
- we then saw how a conservative approach was used till the KUB Xray showed the stone had become stuck in the lower bladder, from which it could be removed endoscopically.
- Mr Carroll then took us through the systematic examination of the renal tract. You will find it instructive to compare this with the techniques of abdominal examination shown on Programme 4.
- Then we saw a man with polycystic kidney disease, and how to ballot the kidneys, and heard how to distinguish an large left kidney from a spleen.
- The third patient was an elderly man with chronic bladder retention. In such cases you should wait for oedema to settle before examining the prostate.
- Finally, we were taken through the technique of rectal examination, and given a demonstration on a man with advanced prostatic cancer.

On the subject of Urology, Programmes 15 and 18, are also relevant, while on the next programme Mr Carroll demonstrates five different problems in the inguino-scrotal region on which it is obviously difficult to teach in real life.

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