Discussion to Papers on the Urinary Tract

DR PERKASH (*U.S.A.*). My own experience tells me that most of the patients are infected 20 per cent, 50 per cent, 90 per cent or even 100 per cent of the time in follow-up. I just cannot believe that these patients are not infected when they leave hospital. Having checked up my own 200 or 300 patients in the last 4 or 5 years I believe that almost every patient has been infected at some stage or another. Nobody seems to have come out with a real paper—what is infection? What are we talking about when we say the urine is sterile or when we say the urine is infected?

DR H. MADERSBACHER (*Austria*). I just want to ask Mr Fellows and Dr Silver about their paper on reflux. You showed that one group with reflux had renal damage and the other not and you proposed three grades of reflux. From the urological point of view, I want to ask, did you also find out from the charts if these patients already had a reflux during the filling period or only during micturition? That is to say did they have a low pressure or high pressure reflux? I think that this might probably be the key why one group will develop renal damage and the other not. There is a tremendous change in the urodynamics if you have low pressure reflux, which means always refluxing up and down or just reflux during micturition.

MR FELLOWS (*G.B.*). These cystograms were carried out many years ago and at that time patients were not screened. Static films were taken at different phases of bladder filling and on micturition. I am afraid I cannot say what proportion had reflux at different stages of the cycle but I do agree with your comments.

MR J. COSBIE ROSS (*G.B.*). I should like to ask Dr Silver about the question of reflux. Would he not agree that reflux can occur many years after injury which means that these patients must be investigated at regular intervals for the rest of their lives? We used to say that once a stricture has developed there will be always a stricture. I think that this still remains true of the paraplegic bladder. I would also like to ask him whether he agrees that the real question is whether the reflux is progressive? Some of these cases may remain in *status quo* for some time and not deteriorate. Furthermore, would be agree that the important thing about the catheter is it only really works when there is no obstruction? If there is an obstruction at the bladder neck or external sphincter level, then the method is quite useless. Ten years ago we reported about 36 patients with reflux and in 18 of these we found that there was a definite obstruction. In these 18 cases the obstruction was removed and in ten of them the reflux disappeared, while in the remaining eight we found it did not disappear because there were many changes in the bladder which was trabeculated or there were changes at the orifice of the ureters, or there was trabeculation or oedema or sacculation—there was some change in the bladder or the ureter, and in these cases the removal of the obstruction maintained the *status quo* and they remained more or less the same. I enjoyed the paper and I am glad that they use the classification which I think is very important.

DR J. SILVER (*G.B.*). I thank Mr Ross very much for his comments. I am quite sure that reflux can occur late, and, of course, the whole argument as to whether the neurogenic defect in the spinal cord causes some defect in the neurological innervation of the bladder or the end of the ureter, or that the infection is only a secondary phenomenon or, as I believe and I am sure Mr Ross believes, that it is an obstruction which causes infection and the infection damages the ureter.

I must take issue with Dr Perkash. I don't think that he has read *Paraplegia* very carefully over the last ten years because the criteria of the infection are quite clearly delineated, certainly from the papers that have come from Stoke Mandeville. The infection is diagnosed by the pure growth on several subsequent cultures and by the number of colonies found. The other point I take issue with Dr Perkash is that if you visit some of the other Spinal Centres you can see many patients returning for check-ups year after year who have no infection and have a clean specimen which can be confirmed by doing catheter specimens and the bacteriological examination will show no growth.

These patients do exist and I know that other Units particularly in England and Australia have a much higher incidence of freedom from infection than those in other countries.

MR FELLOWS (*G.B.*). About Mr Cosbie Ross's statement that the grade of reflux may increase, the reflux may get more severe with time. We had five patients who initially had grade 2 reflux and on subsequent cystograms had an increased reflux of grade 3. Actually some of these patients had on indwelling catheter throughout that period and some did not.

PROF. ROSSIER (*U.S.A.*). To the paper of Mr Smith I have one question and one comment. The comment is, we have used his method of suprapubic catheterisation three times because we could not carry out intermittent catheterisation due to an urethral problem. My question is: did you measure the residual urine after the urine was evacuated through the suprapubic cystostomy? I am bringing this to your attention because we made this test without aspiration, every time there was about 50 cc left in the bladder and this residual urine must have a relationship to the infection with this type of drainage. Would you tell me what you think of this?

MR P. H. SMITH (*G.B.*). Dr Cook drew attention to this matter in the proceedings of the Royal Society of Medicine about 15 years ago and he and I have argued for some years as to whether there should or should not be residual urine following such technique. In the first instance, I took 12 people who were not paraplegics but who had an obstruction with urethral catheters, and to prove or defeat this point the radiologist performed cystograms. Then we tried the catheter and in that particular number of normal patients they all emptied. We thought this was perhaps due to the fact that the fluid was too cool or perhaps it was put too fast. I asked the radiologist to have 200 ml of fluid instilled into the bladder of a patient with a cannula and would he then allow it to drain out and have a film taken to see what the residual urine was. He produced a film which showed no evidence of medium whatsoever. However, it is only fair to observe that these cannulae do intermittently block and that they silt up which is usually the reason for which they are changed. The nursing staff would record from time to time that the cannula was aspirated and a quantity of urine will come out, but this is not quite the same answer to the question you were asking. It is my impression that in the early stages they drain and then gradually they silt up and cause a bit of trouble and that is really the reason why we have to change the catheter after 2 or 3 weeks.

DR P. DOLLFUS (*France*). Firstly, did you ever have any haemorrhage when you introduced the suprapubic catheter? In a meeting in Paris we were told they had run into that trouble. Secondly, have you ever had any fistula when you took out the cannula?

MR P. H. SMITH. In answer to your first question, the answer is yes. We felt that this was because the trocar was left protruding beyond the cannula as it was put into the bladder. We then changed to inserting the cannula until the urine started to flow and then pulled back the trocar so that no sharp point stuck into the bladder mucosa or the base of the bladder. Therefore, we have seen it but it has not been a recent feature. With regard to the second question, we have not seen any fistula, even though we have replaced the catheter on three or four occasions there has not been a single leak.

DR DOLLFUS. Have you done any cystograms to see if by chance there has been any change in the wall of the bladder or any adherence or anything like that?

MR P. H. SMITH. No, I have not done a cystogram but I can advise you what a curse it is if you put such a cannula into a patient with acute retention due to prostatic hypertrophy. When we performed an open prostatectomy about 3 or 4 days later there was an area of considerable oedema between the bladder and the posterior abdominal wall and there is no doubt there is a tendency for a small amount of urine to leak out from the bladder into the posterior abdominal wall.

PROF. A. TRICOT (*Belgium*). Is it not a risk to trocate the abscess after taking out your catheter?

DR P. H. SMITH. I am sure the answer to that must be yes. All I can say is that so far we haven't seen one but we only have 50 patients.

DR DOLLFUS. What is very important is to know the way of putting the suprapubic

cannula into the bladder. It needs repeating because a case which was reported last year became extremely dramatic and needed many transfusions. So people here who attempt to use this technique must really obtain full information.

DR P. H. SMITH. We usually ask one of the medical staff to prepare the patient's lower abdomen first as you would do for any minor surgical procedure. We put some towels on. If there is any question of sensation in that area then we do some local anaesthetising. Then we insert the cannula down through all the layers of the tissue until aspiration of the syringe shows that the needle has gone into the bladder. If you are using a fine suprapubic catheter it is worth while making a small nick in the skin and possibly taking that with a fine blade to just make an equally small whole in the fascia. You then put the cannula with the patient horizontal in the midline half way between the symphysis and the umbilicus, having ascertained that the bladder is distended up to that level. If you insert this at 45° downwards and backwards as far as that urine will start to flow out. As the urine starts to flow out the sharp tip which projects beyond the cannula which one is going to leave *in situ*, is withdrawn 1½ cm, so that there is then a blunt-ended cannula which can be pushed downwards into the base of the bladder for about 10 cm after which usually we put one skin stitch to anchor it and then connect the drainage tubing.

DR J. SILVER (*G.B.*). As I understand, the virtue of Mr Smith's method is that there is inadequate staff in England to sterilise the urethra adequately resulting in infection by intermittent catheterisation. Dr Smith's results although good, do not compare with Pearman's excellent results where only one patient in two gets infection at all through the whole period of intermittent catheterisation. Surely we should strive to get adequate staff to sterilise the urethra properly by instillation of antibiotics or whatever method is appropriate and then we could avoid all these problems with your method.

DR P. H. SMITH. I would call that a controversial comment from Dr Silver. My argument was not that there is an inadequate number of staff in this country but that in certain Units there would be inadequate numbers of staff. This is probably likely to be world wide. The second point is that for one medical person to spend a half-hour of his time either once a week, once a fortnight or once every 3 weeks depending on how long the cannula lasts must be better, if the results are as good, than a person catheterising through the urethra three times a day. As to the question of sterilisation of the urethra, that had not even crossed my mind, because the virtue of my technique is that the urethra and the prostate are left in what one assumes to be a virgin condition, and it would be my contention as a urologist that many of the chronic infections would be associated with a chronic prostatitis during a period of continuous catheterisation and possibly during an infection acquired as a result of intermittent catheterisation. But I do not wish to make this as a contentious issue at all, I am merely putting it forward as a possible alternative which if it is proved viable, will save a large amount of time, a considerable amount of money and will leave the urethra entirely undamaged.

DR J. COOK (*G.B.*). Regarding the question of haemorrhage, as Dr Smith said, there has been haemorrhage for a time, although he does say that it was very slight. As for transfusing a patient after suprapubic catheterisation, I have had to transfuse a patient after urethral catheterisation.

DR DOLLFUS. In answer to Dr Cook, I have myself done approximately 16,000 to 18,000 intermittent catheterisations and I have never yet had to transfuse any one of my patients.

DR SMITH. As I have stated, no prophylactic antibiotics have been given unless the patient had associated injuries which required antibiotics. But you are quite right to mention that Pearman has I think 92 per cent of his patients sterile throughout and also in follow-up and that is a remarkable tribute to him and to his Unit, using intermittent catheterisation. But if we could take a properly scrubbed up person and if he could put pre-sterilised cannula in through a sterile skin surface through what should have been a sterile bladder, then infection should not occur as long as there is adequate drainage and as long as the tubing is not disconnected at frequent intervals. So the matter has been unresolved and I quite accept your point.