

appears to be a satisfactory procedure. A loop of colon reaches easily into the pelvis and can readily be anastomosed to the base of the bladder or the urethra. The tone of the colon is good and as in the colon conduits provides efficient expulsion. This procedure is likely to be more effective in females, but our single experience in a male, who unfortunately died of an unrelated cause, has shown it to be a very feasible surgical procedure, which should allow good drainage without external diversion.

#### SUMMARY

Urinary diversion has a place, with certain limitations, in the treatment of neuropathic bladders.

If there is deterioration of renal function which cannot be controlled by making the patient totally incontinent or by constant urethral catheter drainage, diversion seems to be essential and has been shown to be beneficial.

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#### Discussion on Papers of Mr. Cosbie Ross, Mr. Ellison Nash and Dr. Key

*Sir Ludwig.* I should like to thank Mr. Cosbie Ross and Mr. Ellison Nash very much for their excellent surveys of one of the trickiest problems in paraplegia and also Dr. Key for her report from Conradie Hospital, Cape Town. These papers no doubt, have given a very good basis for discussion. I was particularly impressed by the very selective approach of these highly experienced urologists towards the problem of urinary diversion in paraplegic patients.

According to Mr. Nash's statistics, 2500 babies are born every year with spina bifida, and you will remember that Mr. Guthkelch from Manchester in his paper read at the 1963 meeting of this Society, estimated that by 1980 we shall have about 5000 intelligent but paraplegic spina bifida children of school age. This does not include the many surviving spina bifida children with more or less mental deficiency. The fact remains that these children survive through the modern methods of primary treatment

and a better after-care, and this will add considerably to the steady increase of the problem of paraplegia as a whole within the next 10 or 20 years. I should like to congratulate Mr. Ellison Nash on the remarkably good results he has achieved with these unfortunate children.

*O'Flynn* (Ireland). I should like to say how much I appreciated these two papers and I am delighted to see that Mr. Cosbie Ross has put the situation regarding diversion for paraplegics in proper perspective. The most important thing we must remember is that diversion is not the first thing we must aim at in the treatment of the paraplegic bladder. Despite what Professor Ascoli said yesterday about transurethral resection, we know it is illogical, but it still remains the first operation to be done in the obstructed paraplegic bladder. This has been well borne out by Dr. Key yesterday, who found out of over 200 people only six needed diversion of some sort. We find Mr. Ellison Nash producing a figure of only 70 in a much greater series, and in our own recent series of 111 traumatic paraplegics we have done no diversion of any sort. Therefore, I think the most important conclusion of these two papers and those of yesterday was that transurethral resection still remains the first operation, and after that we must consider the second thing such as external sphincter resection and then possibly elimination of perineal spasticity and so on if one is to get rid of the obstructive aspects of the paraplegic bladder. I have brought five slides which I would like to show you. I have brought them primarily because of the discussion I had with Mr. Cosbie Ross some time ago about ureterostomy, and I know it is almost sinful to mention Lapidès here at the moment, but he has devised a very suitable form of ureterostomy. I have done two of these in cases who are not paraplegics, but I thought it worth while showing the X-rays and the type of ureterostomy done in Lapidès' fashion. As you probably know, he brings the ureter out through the skin rather close to the umbilicus and tucks in a flap of skin rather like this into the stoma and this effectively prevents contraction of the ureterostomy stoma. The important thing to remember is that it should be done in cases with a widely dilated ureter. The ureter must be at least as big as your little finger. This is, as I say, not a paraplegic case but it illustrates the point. He was a man with quite a marked hydronephrosis; as a matter of fact he was a failed transplant of ureter into the large bowel. The ureterostomy was carried out and the hydronephrosis has largely disappeared. Slides are shown which illustrate the technique.

Last September I had the opportunity to visit seven or eight paraplegic units in the United States and the question of suprapubic vesicostomy has been widely discussed in all paraplegic units, and in none of them which I visited had anyone done Lapidès' type, and most people felt that his indications were incorrect for the procedure and that the operation itself was difficult to perform and full of minor complications and some major ones. Some people had attempted the operation with not very good results, but I must say, even though I have never done these procedures myself nor can I see any case in which I would want to do it, I did see Lapidès and I saw several of these vesicostomies. I must admit that many of them did have infection of a minor degree, but none of the cases that I saw demonstrated at his department had any stones in their bladders and the upper urinary tract in most of them seemed to be quite all right. So I do not think, despite what we think about vesicostomies, it is quite as bad an operation as we would like to believe.

*Walsh* (England). I am very relieved indeed to hear the very particular way in which both Mr. Cosbie Ross and Mr. Nash select their cases. I am afraid I would still feel myself in principle against an ileal conduit in paraplegics. I haven't had a big experience. We have had about 10 cases here, and we may have been unlucky, but none of the 10 cases was free of troubles. The commonest one was skin irritation, and amongst these one little girl where for about three months we were unable to get the skin really satisfactory even with the use of a catheter. We have had two unfortunate

experiences: one case we did here and the patient died afterwards from an ileus and peritonitis and a second case done elsewhere, a man of 67, had to be opened for bowel obstruction due to adhesions around the operative site. My main objection to ileal conduit, however, is that once you have done it you have not got access to the upper urinary tract. Now, in the last seven or eight years particularly, we are coming up more and more against ureteric obstruction due to fibrosis and strictures of the ureter, and it is very difficult indeed if you cannot explore these by putting a catheter up. Therefore, I think that a bilateral ureterostomy is to be preferred in the long-term view.

*Cibeira* (Argentine). At the 1965 meeting of the Society, we presented a paper dealing with the urinary tract status in patients with myelomeningocele. We reported then that out of 51 patients admitted with this affliction to our clinic 11 underwent some form of urinary diversion. Of the five patients who had ileal conduit, two (aged 9) died, one of them in the post-operative period, the other from renal deficiency, two (aged 8 and 18) are suffering from infection, and only one (aged 5) is doing well. One (aged 6) who had ileo-cystostomy did not return to the hospital, four who had suprapubic cystostomy (Blockson's technique) are doing well (two of these under stomal dilatation) and one (aged 16) treated with Lapedes' cutaneous vesicostomy had to be reverted to urethral indwelling catheter drainage because of the inability to fit an appliance due to deep skin folds, one (aged 19) had a nephrostomy discontinued following successful bilateral ureterostomy.

*Rossier* (Switzerland). I would like to congratulate Mr. Cosbie Ross, who has taken such a firm position with regard to cutaneous vesicostomy. When I was in the States I was lucky enough to be present at the annual V.A. meeting in 1961 in Cleveland. We had a report of the seven V.A. centres about vesicostomy, and every chief gave his opinion about this particular procedure. There were about six or seven cases of vesicostomy reported in spinal cord injury patients and all the cases with the exception of one showed deplorable results. When I talked to Lapedes he did not mention the operation within weeks, as Mr. Cosbie Ross told us, but within a week. I would like to emphasise that I cannot see the indication for making such a major procedure as we all know that about 80 to 90 per cent. of cases are able to get rid of their catheter by one way or another conservatively.

*Sir Ludwig*. First of all, my comments to the question of discontinuing of the suprapubic cystostomy which Mr. Cosbie Ross mentioned. We all agree, of course, that for a suprapubic cystostomy as immediate or early management of the paralysed bladder the only indication, as Mr. Cosbie Ross has pointed out and as I have stressed since 1944, is a direct damage to the urethra either at the time of the injury or by a previous stricture. We also agree that the suprapubic drainage should be discontinued as soon as possible. However, we must not be dogmatic. People with suprapubic drainage come to a spinal unit sometimes after two or three even after five years, and it depends always on the condition of the bladder whether we are entitled even after a longer period to discontinue the suprapubic cystostomy; the main consideration is the degree of deformity, especially whether or not there is fibrous contracture of the bladder. Perhaps Mr. Cosbie Ross has overlooked one sentence in my publication in the Volume on Surgery of the *British Medical History of World War II*, 1953. I wrote quite clearly that although it is possible to discontinue a suprapubic cystostomy even after six years, this is the exception rather than the rule, and I am sure Mr Cosbie Ross will agree with this.

With regard to the colonic loop I think that there are still differences of opinion amongst urologists. For instance, Dr. Pelot in France is an advocate of the colonic loop and he has demonstrated that in certain cases this operation is successful and Drs. Refief and Key, as we have heard, even prefer a loop of the colon. Of course, there is always the danger of the electrolytes depletion, but this can be controlled, as Dr. Pelot

pointed out, and quite successfully was done in his own cases. Dr. Key felt that the colonic loop provides a better conduit because of its better tone.

I was particularly interested in the woman with an ileal loop mentioned by Mr. Ellison Nash, who had a normal pregnancy. This is a very important case as it proves that this condition may not be a contra-indication to normal pregnancy. Not long ago a paraplegic woman was advised not to have children. We and other authors have clearly shown that this is wrong and we have now over 30 paraplegic women, even with high lesions and even one with a suprapubic cystostomy we could not discontinue who became pregnant and gave birth to normal children. Judging from our experience it can be concluded that Caesarean section is indicated only in extremely rare cases. In our own case of a T<sub>4/5</sub> lesion with a contracted bladder and long-standing suprapubic drainage which we could not discontinue, when she became pregnant, I suggested to the gynaecologist that a Caesarean section would be preferable. This was successfully done 13 years ago and mother and son are very much alive.

Dr. Walsh has pointed out that we prefer here ureterostomy to an ileal conduit as far as adult paraplegics are concerned.

Finally, I come to the point of the relapse into suprapubic cystostomy by Lapides and followers under the new name cutaneous vesicostomy. Criticism has already been made here today by various speakers and as Dr. Rossier has pointed out very strong criticism has also been made in the United States. This operation has been originated by Blocksom in 1957 and has been developed by Lapides and his co-workers. Lapides, in his latest publication of 1964, even goes so far as to state categorically that if the function of the bladder in a paraplegic does not return within a week or two then this operation must be done. This is an attitude with which no one with experience of the management of paraplegic patients, can possibly agree. American experts in paraplegia, such as Bors, Comarr, Talbot and others, have rejected this procedure. Even Lloyd from Hines Hospital in Chicago, who is in favour of cutaneous vesicostomy instead of the use of permanent suprapubic mushroom catheter in an occasional case only when such form of bladder drainage becomes necessary, made his view abundantly clear. I quote: 'To do frequent and routine cutaneous vesicostomy early in the course of paraplegia is inexcusable'.

There have been publications about this method by other workers in this field. Kramm and co-workers in 1964 stated that all their seven patients undergoing Lapides' vesicostomy were failures and required intubated drainage later. I like to quote in particular from a paper which in my view reveals how perverted sometimes the view of people can be. Laskovsky and Brandley Scott (1965) published a paper giving a report about Lapides' vesicostomy in 45 patients, 44 of them with spinal cord lesions, who:

- (1) were unable to empty the bladder effectively;
- (2) required long tube drainage;
- (3) had a poor prognosis for neurological recovery. No explanation was given whatsoever what that means.

Although there have been no deaths, wound infection was the most common early post-operative complication (eight cases), the others being necrosis of the distal part of the bladder flap (five cases), prolonged urinary leakage (two cases) atelectasis (one), and paralytic ileus (one). The most common late complications were technical difficulty with the collecting device (eight cases), encrustation on skin flap due to growing hair (four cases), bladder calculi (four cases), tight stoma (three cases), renal calculi (two cases), vesical eversion (one case). Moreover, squamous metaplasia was found in all 13 cases where biopsies were performed and cystitis glandularis occurred in two patients. These tissue changes may, as you know, lead later to carcinomatous development. Yet, incredible as it may seem, in spite of all these results the authors consider the incidence of post-operative complication as acceptable!

From all this, you will realise how emphatically I endorse the strong criticism at this

revival of suprapubic cystostomy which has already been expressed here as well as in the United States, and I deplore such an approach which ignores so profoundly the natural forces of the physiological adjustment of the neurogenic bladder in the spinal man. In my opinion, this procedure is a grave mistake and represents a serious retrograde step, particularly in the early management but also in the late management of paraplegics and tetraplegics as it adds a local damage to the bladder wall to the neurogenic dysfunction of the bladder. It will result in most if not all of the unhappy consequences of suprapubic cystostomy of 25 years ago and will create a very serious situation if this surgical procedure is followed up by other workers with only little experience in the field of paraplegia and tetraplegia.

## **RADIOLOGICAL STUDY OF THE VESICAL NECK IN PARAPLEGIA SECONDARY TO SPINAL CORD INJURY**

By Professor R. R. ASCOLI

*Milan*

I INTEND to deal today with a special aspect of urology in the paraplegic, an aspect of great importance because of its repercussions on micturition, namely the behaviour of the bladder neck during micturition. I shall also consider the therapeutic implications.

Micturition is, essentially, a conflict between the expulsive forces (contraction of the detrusor muscle of the bladder and straining with the abdominal muscles) and the inhibitory forces of the sphincter complex. Clearly, the stronger the former and the weaker the latter the more easily will urine be passed. Obviously, many factors affect expulsion, namely:

- (1) the capacity of the bladder, that is, the quantity of fluid it contains;
- (2) the degree of vesical tone;
- (3) the ability of the detrusor muscle to contract, and the extent of its contractions, that is the ability of the detrusor to contract sufficiently to empty the bladder completely;
- (4) the ability of the bladder neck to open in synchrony with the contraction of the detrusor;
- (5) the ability of the external sphincter to relax or to contract;
- (6) the passive resistance set up by the urethral canal regardless of the sphincters, the degree of this resistance and its consequences, which differ greatly between men and women.

My subject today is point (4).

Taking advantage of the large clinical material of the Milan Orthopaedic and Traumatology Centre, we set out to study the behaviour of the bladder neck in paraplegics.

We asked ourselves the following questions:

- (1) How does the bladder neck behave in paraplegics with spinal cord injury, especially during micturition? How is its behaviour respectively in patients with low, medium and high-level lesions?
- (2) How does the behaviour of the bladder neck in the recently injured compare with that in patients with old injuries?