

ment of these children by bladder expression, long-term antibiotics, pudendal neurectomy and bladder neck resection is adequate in some but the majority will come to some form of urinary tract diversion. This should be done to prevent the development of pyelonephritis, not as treatment of the established condition.

Anorectal dysfunction: The proctologist may be asked to see a child with spina bifida for two main reasons: chronic neurogenic constipation and because of rectal prolapse (Fig 3). The majority of these cases have a lumbar or lumbosacral lesion which damages the second and third sacral segments which control the subtleties of anal continence. This results in an insensitive anal canal and severe constipation. Anal incontinence is not a problem, apart from transient episodes of diarrhoea due to the constipation. The management of this constipation is entirely conservative: we have never seen a case which merited colostomy. A regular mild aperient together with occasional enemata and in some children a manual removal of the dry hard faeces usually minimizes the problem. Most parents can cope with this situation and rarely regard it as a serious problem.

Rectal prolapse is seen in a modest proportion of these children and has not in our experience required surgical intervention: its management does not differ from that of a similar lesion in a normal child of comparable years and it will similarly resolve spontaneously with time.

Despite the fact that the proctologist has the least clinical problem these patients present a fascinating exercise in applied physiology.

Orthopaedic complications: With the advent of the present concept of early closure of the primary lesion, the orthopaedic complications in general have been reduced. Of these cases 30% may have normal lower limbs following such a regime.

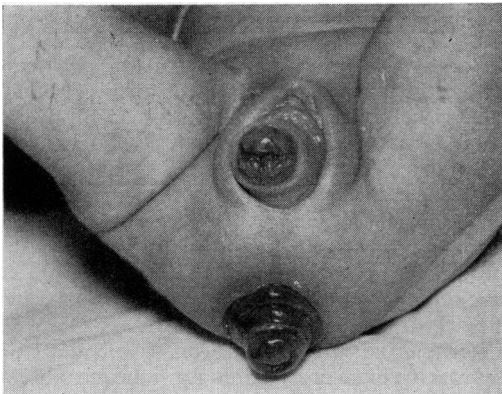


Fig 3 *Rectal and uterine prolapse*

Incomplete paralysis will lead to muscle imbalance and characteristic patterns of deformity in the legs and feet. This is exemplified by the relatively frequent paralytic dislocation of the hips. The management of this has been transformed by the recent introduction by Sharrard (1964) of the operation of posterior iliopsoas transplantation. In suitable cases – those with an active flexor-adduction group and paralysed antagonists – this procedure has enabled many partly paralysed children to walk without any hip splintage, though in some below-knee supports may be necessary.

Soft tissue corrections and tendon transplantations in the leg also have their place in assisting a child to walk unaided.

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Diabetic Diarrhoea

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Patients with diabetes and diarrhoea fall into three main groups: (1) Diarrhoea caused by a disease unrelated to the diabetes. (2) Pancreatitis causing both the diabetes and diarrhoea. (3) Diarrhoea caused by the diabetes.

(1) The first group does not usually produce diagnostic difficulty unless the disease causing the diarrhoea is unusual or atypical in its presentation. Vinnik *et al.* (1962) investigated 7 patients with 'diabetic diarrhoea' and found that 3 had a disorder indistinguishable to idiopathic steatorrhea according to fat balance, intestinal biopsy and the response to a gluten-free diet. They quote three studies of the incidence of diabetes in sprue and in only one was the incidence of diabetes greater than in the general population. There is little evidence that any disease causing diarrhoea has a higher incidence in diabetics than in nondiabetics other than those discussed in this paper.

(2) In our experience pancreatitis causing diabetes and diarrhoea is uncommon and when it occurs the pancreatitis is or has been florid.

(3) A third group of diabetics develop diarrhoea as a direct consequence of the disease. At the Joslin clinic in Boston the incidence of this has been estimated at 2.5% of adult diabetics (Root 1959), and Rundles (1945) found that 22% of 125 diabetics with neuropathy had diarrhoea.

The clinical features of this complication were first reported in detail from the Mayo clinic (Bargen *et al.* 1936) and subsequent reports have been reviewed by Walcott (1961). The diarrhoea is usually watery and brown, it is often worse at night sometimes with incontinence and often with urgency. It is usually intermittent and may alternate with constipation or with normal bowel action. Although blood in the stools has been attributed to diabetic diarrhoea this symptom makes a fresh search for another cause essential. Colonic distension occasionally occurs and may present as a surgical emergency (Paley *et al.* 1961).

The patients usually have a history of many years of diabetes, often with poor control and often have other complications associated with this situation such as retinopathy, vascular disease and especially neuropathy. They may, however, present with the complaint of diarrhoea and have undetected diabetes mellitus.

In addition to the symptoms and signs of peripheral neuritis there is often evidence of a severe disturbance of the autonomic nervous system. Some of the following features may be seen: postural hypotension, impotence, gastric and bladder dysfunction, disturbed vascular and pilomotor reflexes and abnormal pupillary reflexes. Dr D R Coles (1965, personal communication) has studied patients from the diabetic clinic at the Bristol Royal Infirmary using a vasomotor reflex. If the trunk is heated an increase in hand blood flow occurs within fifteen seconds, but if the lumbar or cervical sympathetic nervous system has been removed this reflex is absent. Of 16 patients with diabetic neuropathy only 2 had an intact autonomic nervous system as assessed by this test; 22 diabetics without neuropathy had a normal reflex.

There is, therefore, good circumstantial evidence that the diarrhoea in this group of patients may be related to autonomic dysfunction; a similar diarrhoea was sometimes seen after extensive sympathectomy for hypertension. The diarrhoea may simply be a consequence of the withdrawal of autonomic inhibitions causing a rapid intestinal transit time. Other changes have been described, and Vinnik *et al.* (1962) found an impaired absorption of urea and glucose when these were placed in the jejunum. If this observation is correct the osmotic effect of these substances and also bacterial fermentation of the sugar might increase the bulk of the intestinal contents and contribute to the diarrhoea: this has recently been shown to be the mechanism of diarrhoea in the syndrome of lactose intolerance (Haemmerli *et al.* 1965); in contrast Malins & French (1957) in Birmingham found a normal absorption of urea and glucose in their diabetic patients.

The bacterial flora of the bowel has attracted interest, and reports of abnormal gastric, jejunal and stool organisms have been made at different times. Malins & French (1957) reported the finding of increased numbers of clostridia in the stool and suggested that they might contribute to the diarrhoea: we studied a series of stools from diabetics with diarrhoea following this article but failed to find abnormal numbers of clostridia. That bacterial activity may play some part is suggested by the observation also of Malins & French that in these patients the diarrhoea may remit after a course of a broad-spectrum antibiotic: we have observed this in some of our patients and the improvement on a small dose of tetracycline is sometimes dramatic.

The exact pathogenesis of this disorder thus still needs to be worked out, but automatic dysfunction and abnormal bacterial activity both seem relevant. Evidence of autonomic neuropathy outside the bowel is absent in some cases and in these bacterial activity alone or some other unidentified mechanism may be responsible.

The intermittent nature of the diarrhoea has made evaluation of treatment difficult. The diabetes must be controlled and this may, infrequently, be all that is needed. Tetracycline, anticholinergic drugs (e.g. atropine), cholinergic drugs (e.g. urecholine), liver extract and vitamin B have all been used. Symptomatic treatment with chalk and opiates has not usually been of much help but at the Bristol clinic a night dose of codeine phosphate has been useful for some patients.

[A selected series of case reports followed, chosen to illustrate the problem as it may present to the surgeon with special emphasis on the important differential diagnosis from carcinoma of the bowel and the occasional need for laparotomy to exclude this disease.]

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