FRACTURES OF THE INTERNAL MALLEOLUS

BY

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A certain proportion of fractures of the internal malleolus treated in plaster end in fibrous union. Though some of these have slight or no disability, others leave the patient with a painful limp or a stiff joint. To obviate the latter type of bad result it has been the custom here to perform an open reduction on these fractures.

For practical purposes the fractures may be classified as (a) fracture of the internal malleolus alone; (b) fracture of the internal malleolus complicated by fracture of the external malleolus and/or the posterior malleolus, or by diastasis. Attempted manipulative reduction of the vast majority of these fractures meets with only partial success. The chief factor militating against anatomical reduction is the indrawing of the periosteal-fascial covering of the malleolus into the gap between the fragments in a tense curtain-like fold. In the fortunate ones this fold does not extend as deeply as the cartilaginous surface, and union of the deeper part of the malleolus next to the joint restores the mortise of the ankle. In those less lucky, particularly where some displacement has occurred, the aponeurotic fold clothes the entire depth of the fracture and fibrous union is inevitable. It is not possible to tell from the skiagrams which cases have this interposed fold and which have not—it has been found here in the great majority of the cases operated on. After excision of the fold the opportunity is taken to obtain anatomical reduction of the malleolus by internal fixation. This minimizes the chance of fibrous union, maintains reduction, and facilitates early active movements and thus a return to full function in minimum time.

Operative Fixation

The operation is not a difficult one, and is best done as early as possible, before reactionary swelling occurs. A study of the lateral x-ray view will show whether the anterior or the posterior part of the malleolus is fractured, and the siting of the incision is made accordingly: attention to this apparently trivial point adds considerably to the ease of the operation. The fracture line is exposed, clot cleared, and the aponeurotic curtain excised. Anatomical reduction is now effected, particular care being taken that filleting of the small fragment is not done, because of the danger of subsequent ischaemic death.

The fragment is fixed by a long vitallium screw, which is introduced at a steep angle in order to avoid the angle of the joint mortise. The screw has to be long because of the poor holding quality of the cancellous bone into which it is introduced. Comminuted fractures, or fractures in which the fragment is too small to hold a screw, are not suitable for this method of fixation.

Active movements are started from the very next day, the leg being put up in a right-angled foot splint when at rest. In

the uncomplicated variety full movements are generally obtained in two weeks. The patient is then allowed up on crutches, and goes through the movements of walking without actually taking weight: this reduces to a minimum the gravitational oedema which otherwise follows when the patient gets up after several weeks in bed. Full weight is taken at six weeks, when he walks with confidence and without a limp.

Our series of 20 cases (15 of them personal) comprise: (a) 13 in which the internal malleolus alone was fractured, one of them with comminution. Ten of these had full movements at or before six weeks, and two were evacuated at an early stage. The case with comminution had full movements at eight weeks. (b) Of the other seven, three had trimalleolar fractures, the posterior malleolar fragment involving less than a quarter of the articular surface and not being displaced. They obtained full movements at three, five, and six weeks respectively, and took full weight at six weeks. The remaining four had fractures of the external malleolus at varying levels, obtained full movements at an average of two and a half weeks, and took full weight at an average of seven weeks. Any associated external malleolar fracture or diastasis of the inferior tibio-fibular joint is not directly treated. Since the internal and external lateral ligaments are intact, the anatomical reduction of the internal malleolus pulls the astragalus into place, and this in turn reduces the external malleolus.

Summary

The cause of fibrous union which occurs in many fractures of the internal malleolus is an aponeurotic curtain-like fold interposed between the fragments.

Internal fixation following excision of this fold is recommended as a measure to ensure union, to obviate the use of external fixation, and to restore early function.

The method of operation is described and the results of 20 cases are given.

Medical Memoranda**Partial Atresia of the Cervix complicating Pregnancy**

The case recorded below, which came under my care, may be thought interesting enough to merit publication.

CASE HISTORY

A primipara, aged about 27, was admitted on May 28, 1944. She had been carried to Calabar from a neighbouring village by canoe. On admission she gave a history of full-term pregnancy and of labour pains, which were said to have begun four days previously, but at the time of admission the labour pains had ceased. She was lightly built, emaciated, and appeared toxic. Temperature 102.4° F., pulse 144, respirations 24, and blood pressure 100/60. Pelvic measurements were: I.C. 9 in.; I.S., 8 in.; E.C., 7 in. On abdominal palpation the uterus was found to be tense and tender. The fundus was four fingers below E.C., with vertex presentation and left occipito-anterior position. The head was well down in the pelvis. Thirty-six ounces of urine was withdrawn by catheter: it was highly concentrated, with a heavy cloud of albumin; sugar was not present.

Vaginal examination showed oedema of the labia: the clitoris was normal. The vagina was about 2 in. in length and led to a blind alley, formed by the partially atresic cervix. In place of the external os were two "pin-hole" openings, about 3/4 in. apart. Through these small holes a few strands of the infant's hair were protruding, and very offensive liquor amnii was trickling out.

Treatment.—Under chloroform anaesthesia with gr. 1/100 atropine premedication the cervix was opened with a pair of scissors. Craniotomy was performed, and a female baby weighing 7 lb. 2 oz. extracted. The placenta was removed manually. Bubbles of gas and very offensive material came from the uterus on extraction of the placenta. There was brisk bleeding, but this was quickly controlled by the injection of 1 c.cm. of pituitrin. The foot of the bed was kept raised for six hours, and one pint of submammary saline given.

Subsequent treatment consisted of injection of one ampoule of soluble sulphapyridine, followed by two tablets of sulphapyridine four-hourly. As the temperature had not settled down by the end of the first week and the patient's condition was still unsatisfactory, sulphathiazole was administered in doses of two tablets four-hourly. The temperature settled down three days after giving this drug. Apart from oxytocic drugs, sedatives, and tonics, repeated administration of anti-gas-gangrene and antitetanus sera was found necessary. Local treatment consisted of a daily intra-uterine douche with 1 in 320 dettol followed by insufflation with powdered sulphapyridine.

The woman was discharged from hospital exactly one month after admission, June 28. At the time of her discharge she appeared to have gained weight, and she had completely recovered.

COMMENTS

This was undoubtedly a case of congenital partial atresia of the cervix, as there was no history of previous infection or trauma to suggest closure of the cervix by scar tissue or any evidence of scarring. I consider this case of peculiar interest in view of the generally accepted view that in this type of abnormality the internal genital organs are too much underdeveloped to permit of fertilization.

At this station one has no access to the literature, but I doubt if many such cases as the one described above are recorded.

I am indebted to the Director of Medical Services, Nigeria, for permission to publish this case report.

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Spontaneous Rupture of Rectus Muscle

Haemorrhage into the rectus sheath may result from a direct blow or a severe muscular strain, but there is the so-called "spontaneous" type, the cause of which is not so obvious. This latter condition is rare, and most surgeons of wide experience have seen few cases. It is well known that certain febrile diseases are complicated by muscle degeneration and that this may predispose to rupture of the muscle. Thus Virchow in 1857 described the rupture got in typhoid fever, and gave a detailed account of the hyaline degeneration present—a condition which later became known as Zenker's degeneration. Snyder (1939) has pointed out that the condition is also not uncommon in respiratory infections, especially influenza, and was noted during the epidemic in 1918. Haematoma of the rectus sheath is also found occasionally after the termination of pregnancy, and Torpin (1943) has summarized 27 cases which come into this category and has added one of his own.

The following is a case of haematoma of the rectus sheath which shows some unusual features and is worth recording:

CASE HISTORY

A carrier aged 36 was admitted to hospital with a painful swelling on the right side of the abdomen. Two weeks previously he had been suffering from boils on the side of his neck, and found about this time that he was having slight twinges of pain in the right side of the abdomen when he was cranking his motor lorry. The pain continued, but was never severe enough to prevent him from starting his lorry each morning. About a week after the pain had begun the patient noted a fullness in the right side of the abdomen. A few days later he found that there was a definite swelling present, and this enlarged up to the day of admission.

The patient was a healthy, well-nourished man who did not seem to be suffering much pain. There was a tender mass the size of a fist lying to the right of and slightly below the umbilicus. The condition was diagnosed as a rupture of the rectus muscle, and it was decided to operate and repair it. This was done on the day after admission. Under general anaesthesia an incision was made over the swelling. The rectus sheath was found to be distended with partially clotted blood and, after this had been evacuated, a transverse tear 1 cm. long was found 1.5 cm. below the level of the umbilicus. Suture of the tear was impossible because of the friability of the muscle, and the rent was thus made into a longitudinal one by removing small segments of muscle above and below; it was then sutured transversely. The patient made an uninterrupted recovery.

The pieces of muscle removed were examined histologically. The muscle fibres were swollen and the striations were absent, the appearance resembling that of Zenker's degeneration. Much blood-clot was seen extending between the fibres.

DISCUSSION

There are three interesting features about the case. First, the condition appeared to start during the time the patient was suffering from a septic process; secondly, the trauma applied to the rectus was not such as would normally rupture the muscle; and, thirdly, the histology suggested a degenerative lesion of the muscle fibres, although it is possible that this was due to the ischaemia of the fibres around the tear. It is thus tempting to postulate that the rupture of the rectus was predisposed to by a degenerative process secondary to the septic focus in the neck. It should also be noted, however, that there was some pain in the muscle for almost two weeks before the final large rupture, and it is possible that the repeated slight strains on the muscle caused by cranking a heavy engine had played an important part in producing the muscle degeneration.

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Reviews

LEUCOPENIA AND AGRANULOCYTOSIS

Leukopenia and Agranulocytosis. By William Dameshek, M.D. Edited by Henry A. Christian, M.D., F.A.C.P., F.R.C.P.Can. Oxford Medical Publications. (Pp. 74. 10s. 6d.) London: Oxford University Press.

This little book gives an excellent summary of the numerous observations which have been made on the occurrence of leucopenia and agranulocytosis, and at the same time on exposition of our ignorance of the physiological background of these events. "Definite leucopenia" is said to be present when the white blood corpuscles are below 4,000, though it is difficult to impose a standard owing to the variations in the white count in different individuals. Agranulocytosis is defined as an acute disorder characterized by constitutional disturbances, fever, sore throat, and extreme leucopenia. Leucopenia occurs in a variety of conditions, which are enumerated in detail. Agranulocytosis, on the other hand, is due in the great majority of instances to sensitivity to drugs, of which amidopyrine and the sulphonamides are the most important. It is probably an anaphylactic or allergic type of shock phenomenon with sudden arrest of production of granulocytes in the marrow. In the past, treatment has been chiefly concentrated on efforts to stimulate the marrow to make white cells. Therapeutic agents for this purpose have included x rays, nuclein derivatives such as pentose nucleotides, liver extract, leucocyte cream, and yellow bone-marrow; transfusions have also been used. The value of these agents has been much disputed, and it would appear that the marrow is already stimulated to a maximum degree by the infection which is present. Dameshek believes that a more rational therapy is to prohibit the offending drug and to endeavour to control the infection by sulphonamides (if the case is not due to sulphonamide sensitivity) or by penicillin. It seems probable, indeed, that penicillin will greatly improve the prognosis of agranulocytosis. So much, then, for empirical data. When we look deeper into the matter we find we know very little about the mechanism of leucocytosis in pyogenic infections, and still less about the leucopenia of virus infections, many protozoal diseases, and many forms of splenomegaly. This has been at any rate partly due to the relative inaccessibility of the bone-marrow; but the recent development of marrow puncture should make investigations easier. We also know very little of the process of sensitization to drugs, though this is a matter of increasing concern with the introduction of chemotherapeutic agents, such as the sulphonamides and thiourea. Dameshek's review is therefore timely in providing a base from which further advances may be made in these important fields of experimental and clinical science.

ALLERGY

Allergy. By Erich Urbach, M.D., with the collaboration of Philip M. Gottlieb, M.D. (Pp. 1,073; illustrated. 70s.) London: William Heinemann. 1944.

Allergy is one of the most loosely used words in medicine: it has even passed into common speech, where it is used in a sense hardly wider or less legitimate. If some definitions of it be accepted the term certainly covers a wide variety of phenomena, and anyone who can formulate principles to explain them is doing an important service. This is the commendable approach to the subject adopted by E. Urbach and P. M. Gottlieb, of the Allergy Service, Jewish Hospital, Philadelphia, in a massive tome of which the first considerable section deals only with fundamental principles and the experimental basis on which knowledge rests. Succeeding subjects are the principles of diagnosis and treatment, "etiologic agents" (which are classified as inhalants, ingestants, injectants, contactants, physical agents, and infectants), and finally the symptomatology and treatment of allergic diseases, which are here classified regionally. The practising physician will find many interesting ideas in this volume, though he may not accept all its doctrines. He may, indeed, be surprised how many commonplace phenomena or actual diseases are capable of explanation on an allergic basis. To invoke such an explanation for exanthematous rashes and a variety of skin diseases and for functional disorders of the respiratory and intestinal tracts is often reason-