

heel upward produced no pain and no increase in tension in the tumours." As the fluctuating area was separated into two parts by the extensor tendons, the pus lay behind these tendons. As no fluctuating spots appeared behind the joint (merely œdema), as pressing the heel upward did not cause pain or increase the tension in the swellings, the pus could not be within the joint. Hence the pus was behind the tendons and in front of the joint. Diagnosis: phlegmon periarticularis anterior. After the swellings had been opened the exploring finger could be inserted behind the tendons, where it came in contact with the capsule. Water injected by one opening ran from the other. The connective-tissue layers in front of the joint had suppurated, and, on account of the great tension exerted by the tendons, had pointed along their sides. This accounted for the marked œdema. The process which developed in the course of six days completely healed in three weeks.

CHAPTER XXXV

INJURIES OF THE FOOT

THE diagnosis of effusions into the ankle-joint was discussed in the preceding chapter, because the question frequently arises whether a traumatic effusion into the joint has or has not followed upon an injury to this region. This question is most often asked when contusions or sprains have been sustained. The main points to be considered have just been dealt with.

On account of the frequency of injuries in this region, on the one hand, and common occurrence of tuberculosis of the tarsus on the other, it is well for beginners to give a guarded prognosis. This applies especially in cases of anæmic children, or those of tuberculous families, even if a positive history of trauma (falls, sprains) has been obtained, for tuberculosis may subsequently develop.

Acute osteomyelitis frequently follows subcutaneous trauma. Severe pain, persisting in spite of complete rest in bed, strongly marked œdema, and especially violent fever and prostration, indicate, from the very outset, that the process is serious. Red streaks appearing along the lymphatics without preceding injury to the skin, in conjunction with extensive œdema and fever, will at once point to a deep-seated suppurative process. Carefully conducted palpation of the

tibia and fibula will lead to the discovery of some particularly painful spot in the neighbourhood of the inferior portion of the diaphysis. The exquisite tenderness of a part of the bone must fall heavily in the scales against acute articular rheumatism in cases in which the osteomyelitis has caused a joint effusion. In the course of a few days a thin layer of fluid collects over the maximum point of bone tenderness—corresponding to the development of a periosteal abscess.

In the foot, simple bone and joint injuries are very varied, owing to the manifold articulations met with. Isolated varieties occur, however, with varying frequency. While fractures of the ankle are of every-day occurrence, dislocations of the foot are extremely infrequent. The so-called fracture-dislocations, by which is meant the displacement of the foot due to Pott's fracture, are, of course, not included, for they are by no means rare.

Only two uncomplicated DISLOCATIONS are met with in the tibio-tarsal articulation—in which the tibia is either displaced in front of or behind the astragalus. If the anterior ligaments and capsule are torn by excessive plantar flexion, the tibia is displaced forward and protrudes through the tear. The foot remains in plantar flexion; the heel appears more prominent, the Achillis tendon is very concave posteriorly, and the anterior surface of the foot is strikingly shortened. The opposite holds good when the posterior portion of the capsule is torn by exaggerated dorsal flexion. The tibia then glides backward through the rent in the capsule, the foot remains in dorsal flexion, the heel disappears, and the anterior portion of the foot is markedly increased in length. Careful palpation will

allow the displacement of the bones to be more accurately determined.

A similar, but less pronounced, sagittal displacement of the ankle in relation to the foot may take place if both malleoli are transversely fractured. The treatment of these fractures must be conducted in such a fashion that no abnormal lengthening or shortening of the heel remains. Correct reposition can readily be obtained if the knee-joint is flexed. I can not over-emphasize this point, for skiagrams show how readily physicians neglect to correct minor degrees of displacement of the astragalus. But at the present time the lay public has, in the Röntgen ray, a means of controlling the physician.

Lateral dislocation of the ankle can take place only after one or the other malleolus has been fractured. The condition, therefore, receives the name of *fracture dislocation*. Internal displacement is uncommon; displacement outward is more frequent. We talk of external luxation when the foot is twisted in such a way that the inner edge of the sole lies at a lower, the outer edge at a higher, level, so that an extreme position of valgus results. The picture is striking. In addition to the tilting of the foot, the observer's attention is attracted particularly by the sharp protrusion of the lower end of the tibia. This part of the bone threatens at each moment to pierce the skin, and sometimes does so, particularly if the internal malleolus is torn off, so that the fractured surface of the tibia protrudes externally, producing a compound fracture. Frequently the patient is carried into the dispensary after some of the onlookers have reduced the displacement—workmen and farmers are especially skilful. The

foot, however, retains the tendency to redislocate. Dupuytren has taught us to treat these fractures by placing them in the varus position, and thus counteracting the deformity. If this tendency is not overcome, healing of the Pott's fracture takes place in the valgus position, and the foot always remains less serviceable.

If a suspected malleolar fracture is not complicated by displacement of the foot, the extensive swelling interferes with the detection of the site of fracture. In order to save the patient much pain—certainly one of our duties—and yet to make the diagnosis positive at the first examination, it must be borne in mind that malleolar fractures occur at certain typical locations. The internal malleolus is fractured near its tip or its summit is torn off. This portion of the malleolus should therefore be palpated for a sharp, fractured surface. The external malleolus has not only its tip torn off, but transverse fractures also result. These, as a rule, take place above the tibio-fibular ligament—that is, immediately above the ankle-joint. The lower end of the fibula requires examination in a patient who, after a fall, can no longer step on his foot, and whose ankle-joint is obscured by the swelling. If an account of the relative situation of the foot and of the body at the time of injury can be elicited, the mechanism and the variety of fracture can usually be guessed at. Strong plantar flexion may tear off the summit of one or both malleoli; exaggerated dorsal flexion fractures the internal malleolus at the level of the articular surface of the tibia. Strong supination may tear off the tip of the external malleolus; strong pronation, the tip of the inner malleolus. Such simple

directions of force rarely occur; as a rule, more complicated factors are met with. Strong adduction of the foot, with simultaneous supination of the whole foot, may lead to fracture of the fibula (even above the level of the joint); strong abduction, in combination with pronation, may cause a tearing fracture of the internal malleolus, immediately followed by fracture of the external.

The following infrequent forms of injury require brief mention:

That remarkable bone, the astragalus, which articulates with four other bones and has no tendon inserted into it, may be torn from its complicated relations and be displaced forward or backward. It may turn, or even tear through the soft parts, and be found lying by the side of the injured subject. In this case the diagnosis is not difficult. But, even in the cases in which the soft parts are not injured, the astragalus may be recognised by its outline, whether it is displaced backward and causes the Achillis tendon to arch, or whether it comes to lie upon the dorsum of the foot. In each and every case, the lower extremity is shortened, the ankle not fractured, and careful palpation of the protruding bone will serve to identify the astragalus.

By *Subastragaloid dislocation* is meant a dislocation in which the leg and astragalus form the upper, the rest of the foot the lower, dislocated member. The displacement may occur in a forward, backward, external or internal direction. The position of the foot defines the variety.

In the *internal* (mesial), the foot remains in marked supination. The head of the astragalus protrudes on

the dorsum as a readily recognised eminence. The malleoli, so to speak, grasp it.

In the *external* (lateral), the foot is found in pronation. Along the inner edge of the sole, immediately beneath the internal malleolus, a considerable portion of the astragalus may be felt. The bone is between the malleoli.

In the *posterior*, the foot is held in equinus, the heel is prominent, and the anterior portion of the foot shortened. Upon the dorsum the protruding head of the astragalus is felt, although it retains its normal relationship to the malleoli.

In the *anterior*, the foot is in the calcaneus position, the heel has disappeared, the anterior portion of the foot is increased in length, and the astragalus palpable posteriorly.

In all four cases the relative position of the tuberosity of the navicular bone to the tip of the internal malleolus is changed according to the direction in which the displacement takes place.

CHAPTER XXXVI

REMARKS ON DIVERSE DISEASES OF THE FOOT

MANY years ago there was a well-known "foot doctor" in Vienna to whom all patients suffering with diseases of the foot wended their way. Some, however, he was unable to relieve, so that occasionally a patient drifted into the clinic or into a private office. Frequently *flatfoot* was not recognised by this celebrated "specialist," hence a few remarks upon the subject of flatfoot.

According to an old saying, an ideally shaped foot should have an arch in which a bird can hide. But there are individuals, and also races, in whom the foot is quite flat, so that the sole leaves a complete imprint on a soft surface. By these footprints fugitive negro slaves were tracked, for their feet are devoid of any arch. Such feet, in contradistinction to *acquired* flatfoot, should be called *pedes plani*. The acquired form of flatfoot is known as *pes valgus*.

This state of valgus may also be called pronation, for the *pes valgus* is a pathologically pronated foot. The deformity causes much discomfort and disability, which is limited to the time when the patient stands or walks. The more advanced the disease, the more marked is the pain during both walking and standing. When the patient sits or lies down the pain usually