Lectures ON ORTHOPÆDIC SURGERY.

BY
BERNARD E. BRODHURST, F.R.C.S.,
OF ST. GEORGE'S HOSPITAL, AND THE ROYAL
ORTHOPÆDIC HOSPITAL, ETC.

LECTURE XV. ON TALIPES, OR CLUB-FOOT. (Continued.)

Talipes Valgus occurs both as a congenital and a non-congenital deformity. As compared with *talipes varus*, it is a rare form of congenital deformity; but it is a very common non-congenital affection.

The *external characters* of this deformity are in some measure expressed in the name by which it is known, which signifies that the foot is twisted outwards. Thus the inner margin of the foot is depressed, while the outer is more or less raised; and the sole presents outwards. From its nomenclature, it would be supposed that this deformity was the reverse of *talipes varus*; and, if this is not absolutely the case, the name is sufficiently well given, for it expresses the most prominent external characteristic—namely, that the foot is inclined outwards. The general appearance of the deformity, as it is seen in the young child, is shown in the following figure.

Fig. 44.

When the child begins to walk, the great inconvenience of the deformity shows itself. Not only is much lameness produced by the shape which the foot assumes, but pressure on the ground, as in walking, becomes excessively painful. It is only necessary to see such a figure as the following, for instance, to feel sure that such must undoubtedly be the case. The weight of the body is borne on the inner margin of the foot; and pressure may induce ulceration of the integument and troublesome sloughs. This is rare, however. Occasionally, walking becomes impossible without crutches or supports of some kind.

Morbid Anatomy. The following figure (Fig. 45) represents a severe form of congenital deformity;

and yet, even where the deformity is so great, there is seldom to be found any deviation from the normal forms of the tarsal bones. The os calcis always deviates somewhat from its normal position, the tuber calcis being drawn upwards by the tendo Achillis

Fig. 45.

and the powerful contraction of the muscles of the calf of the leg. In one case which he examined, Mr. Adams found the tuberosity of the os calcis as much elevated as it is in a severe example of congenital varus. The astragalus lies somewhat obliquely; and its head presents beneath the skin on the inner margin of the foot, and is partly uncovered by the navicular bone. The prominence which is formed by it may always be distinguished in congenital valgus. The longitudinal and transverse arches of the foot are obliterated, and even they may be reversed; so that the plantar surface shall present a convex instead of its usual concave form. The scaphoid, cuneiform, and cuboid bones, together with the metatarsal bones, are all more or less altered, not in shape, but in their positions, both absolutely and relatively as regards each other; and the foot is bent upon itself, and everted at the transverse tarsal joint. The following figure shows this better, perhaps, than either of the preceding. (Fig. 46.)

Fig. 46.

The muscles which are especially active in this deformity are the peronei and the extensor longus

digitorum; but also, in general, the muscles of the calf of the leg are retracted, and become serious obstacles in the mechanical treatment of this deformity. The strong ligaments and fasciæ in the sole of the foot are lengthened and much weakened.

Non-congenital Talipes Valgus is, in one or other of its various grades, a very common affection, occasioned for the most part by debility, but arising also from other causes, such as paralysis, spasm, inflammation, and wounds.

The *external characters* of non-congenital valgus have strong resemblances to congenital valgus, and yet there exist differences which enable the observer at once to distinguish between these varieties of deformity.

Non-congenital valgus consists of a flattened condition of the longitudinal and transverse arches of the foot, through which the sole of the foot rests with its inner margin flat on the ground. This condition is induced slowly. At first, it is present only when the weight of the body is borne on the feet, as in standing; and the natural arches are restored on removing the superincumbent weight. But at length the elasticity of the structures which enter into the formation of the sole and arches of the foot is lost, and the foot remains flat. In proportion as the arches are flattened, so is the height of the instep diminished, and the foot becomes somewhat elongated and everted; and, in consequence of these changes, the internal malleolus is brought absolutely nearer to the ground, and its prominence is increased in proportion to the eversion of the foot. These points are shown in the following figure. (Fig. 47.)

Fig. 47.

This flattening of the foot alters absolutely the positions of all the tarsal bones; but perhaps none are affected in a more important manner, or tend to destroy the use of the ankle-joint more, than the calcaneum and the astragalus. The astragalus being placed somewhat obliquely, and the anterior surface of the calcaneum being depressed, together cause a partial locking of the tibio-tarsal joint, which is further increased by the contraction of the muscles of the calf of the leg to render the tendo Achillis tense; thus to prevent painful motion at the ankle-joint. Thus, not only is elasticity lost through the destruction of the arches of the foot, but lameness is rendered still greater by the loss of motion at the ankle-joint. The arches of the foot are destroyed, compressing very painfully the soft structures of the sole in walking (see Fig. 48); and the deformity may

even increase to produce a convex surface towards the ground—the reverse of the natural arches of the foot.

One of the most severe forms of this distortion that has perhaps ever been witnessed, was lately under my care at St. George's Hospital. It was induced

Fig. 48.

as a consequence of extensive ulceration on the dorsum of the foot and by cicatrisation in healing. In this instance, the arches of the foot were absolutely reversed; the foot was much everted and flexed, and its outer margin was raised; the tendo Achillis was tense; and there was scarcely perceptible motion at the ankle-joint. The following illustrations show the deformity well. (Figs. 49 and 50.)

Fig. 49.

The *Treatment of Congenital Valgus* varies somewhat according to the degree of deformity which has to be removed. Just as in varus, slight cases of deformity may be treated by mechanical means alone, and without the division of tendons. It is only justifiable, however, to recommend such a course when the deformity is so slight that the treatment may safely be left in the hands of a judicious nurse. In an ordinary case, this mechanical treatment would occupy many months, and it might probably then not be successful.

Lately, I saw a case of congenital valgus, of not a severe grade, which had been treated mechanically for several months, with very little gain except to

the surgeon himself, when he proposed to divide the tendons; for he was then convinced that the operation was necessary. The operation was performed, not however by the bandagist, and the deformity was entirely removed in six weeks.

Fig. 50.

But if, at a tender age, these efforts of bandaging are futile, how much more so must they be in congenital cases at a more advanced age. In many of these cases, the most perfectly adapted mechanism will scarcely avail to remove deformity even after the section of tendons and fasciæ. In the majority of cases, it is sufficient to divide the peronei tendons. If, however, the extensor longus digitorum muscle is retracted, its tendons should also be divided. Then, after the punctures have healed, the foot may be gently and gradually inverted and restored to its normal form, being bound to a pliable splint. In instances of severe distortion, it is frequently necessary, also, to divide the tendo Achillis after the foot has been fully inverted.

In the adult, the treatment will probably occupy as many months as it occupied weeks in the infant. A well adjusted mechanical shoe will be required to remove deformity after the tendons have been divided. The improved instruments which are now in use for the treatment of these cases are very powerful; and they require nice management, lest so much force should be exerted as to injure the soft structures.

The *Treatment of Non-Congenital Valgus* will vary according to the degree of deformity and the cause which gave rise to it. A very large majority of these cases depend on debility; and the deformity may be removed by local support, and by general tonic treatment and rest. No treatment will avail anything without rest—that is to say, rest to the overworked lower limbs.

In paralytic valgus, the deformity may generally be overcome without operation and by mechanical means only. When the affection is recent, this may always be done, and even there is then hope of partial recovery, at least, of muscular power, when attention is given to the cause of paralysis, and means are taken to excite the affected muscles. When the deformity is of long standing, the loss of power will probably remain; and, in consequence of structural shortening which will probably have taken place,

one or more tendons may require to be divided. In these cases, however, the comfort and power which are given by restoring the normal shape of the foot, and by well adjusted mechanical support, are worth anything to one who has been long crippled. Such support may probably be necessary during the remainder of life, that contraction may not again occur.

Spasmodic valgus is rare. It is a sequel of convulsive action, perhaps occasioned by teething or by some other irritating cause; and it remains, for some years perhaps, just as, in another instance, strabismus may remain, or equinus, or any other muscle or group of muscles may remain affected. Without, however, an epileptic condition or a morbidly excitable nervous condition continues, this spasmodic muscular action will probably diminish, and at length cease altogether, without division of tendons. It is necessary to attend to the exciting cause of spasmodic action, rather than to the manifestation itself. Wherever disease of the nervous centres remains, no idea of section of tendons can be entertained; but when irritation and disease have entirely passed away, and this habit (so to say) of increased muscular action is left as the sole indication of former disease, it may be justifiable to divide a tendon and thus to restore the use of a limb.

Inflammation about the foot and ankle—whether by inducing thickening and softening of ligaments and other soft structures, or by causing loss of substance and subsequent contraction—may give rise to valgus; and there is no form in which this deformity can present itself that is more obstinate or difficult to control than this arising from inflammation. A severe case is well nigh hopeless: if it be of long standing, it is intractable; and when it is recent, wounds and sloughs readily form. The only manner in which these cases can be mastered, is to encase the limb in cerate on strips of kid, and then to apply mechanical means as gently as possible.

When the ankle-joint itself has been affected, and partial ankylosis remains as a result of inflammation, the greatest benefit may be derived, after inflammation has entirely ceased, from the section of such tendons as may tend to impede motion. It is rare, however, that the tendons themselves have to be divided. For the most part, it is alone necessary to break through the adhesions after chloroform has been fully administered.

After deformity has been removed, the use of the limb may be regained by various well adapted movements, galvanism, shampooing, the hot air bath, and such other means as may be indicated by the cause and nature of the affection itself. It is necessary, in all cases of this description, that mechanical support shall be worn until the control of the limb has been gained.

LONDON FEVER HOSPITAL. Mr. Charles Squarey, the house-surgeon of the Fever Hospital, is suffering from an attack of typhus fever, which he has no doubt taken in the discharge of his onerous and dangerous duties. Mr. Squarey for many months during 1863 acted as one of the resident surgeons of the hospital, so that this is a second occasion upon which he has so courageously volunteered to do battle against the insidious attacks of fever to which the unusually numerous patients admitted into the hospital during the last year have been subjected.

LEEDS GENERAL INFIRMARY.

STATISTICAL TABLES OF THE OPERATIONS PERFORMED FROM JANUARY TO JUNE, 1864, INCLUSIVE.

Operations for Necrosis and Caries of Bone.

No.	Sex and age.	Operator.	Nature of operation.	Stay in Hospital after operation.	Result.	Remarks.
1	M. 14	Mr. Teale	Removal by gouge of carious part of os calcis.	43 days	Cured. Wound very nearly healed when discharged.	Four sinuses led to caries of the posterior part of the right os calcis. The disease had continued for four years. An incision was made down to the disease, and a hole having been made into the back part of the bone by Mr. Smith's auger, a considerable number of carious fragments were gouged out. The cavity rapidly filled up.
2	F. 19	Mr. S. Hey	Gouging of carious cavity in inner malleolus.	55 days	Cured. Wound nearly closed.	An opening led directly into a cavity in the inner malleolus of the tibia. The diseased bone was exposed by incision, a free opening made into the cavity by Mr. Smith's auger, and the diseased bone gouged out.
3	M. 8	Mr. S. Hey	Removal of sequestrum.	15 days	Cured, with useful limb.	A loose sequestrum was protruding from the left tibia in front. When removed by forceps, it measured about three inches. The cavity was gouged.
4	F. 5	Mr. Nunneley	Removal of sequestrum.	20 days	Cured.	The left angle of the lower jaw was necrosed. Pieces of sequestrum were removed through the mouth.
5	M. 16	Mr. S. Hey	Gouging os calcis.	33 days	Cured.	Sinuses led to a carious cavity on the inner side of the os calcis. The diseased part was exposed and removed by Mr. Smith's auger and the gouge. After the operation, the wound healed well.

Removal of Innocent Tumours.

No.	Sex and age.	Operator.	Nature of operation.	Stay in Hospital after operation.	Result.	Remarks.
1	F. 30	Mr. Teale	Excision of small epulis from lower alveolus.	7 days	Recovery.	This was a fibrous growth, of the size of a filbert, springing from the periosteum of the lower alveolus on the right side. It was removed by the knife and bone-scissors, along with a superficial piece of the jaw.
2	M. 53	Mr. Teale	Excision of rodent ulcer situated on the right ala nasi.	15 days	Recovery.	About one-half the right ala nasi was destroyed by a rodent ulcer of four months' duration. The base of the ulcer was freely removed by the knife. When discharged, the wound was nearly cicatrised.
3	F. 34	Mr. Teale	Excision of bursal tumour from both patellæ.	15 days	Recovery.	Over the right patella was an almost solid bursal tumour as large as a pigeon's egg, which had commenced five years before; and over the left knee a similar growth, of the size of a walnut, of like duration. After removal, both wounds healed rapidly and well.
4	F. 6	Mr. Teale	Excision of small epulis from upper alveolus.	13 days	Recovery.	A small glandular epulis was removed by bone-scissors and gouge from the centre of the upper alveolus, in the situation of the front incisor teeth, which had previously been extracted.
5	M. 61	Mr. Teale	Removal of simple fibro-cellular polypus from right antrum.	13 days	Recovery.	Forty years before admission, polypi were removed from both nostrils; and every two years, for five or six times, the operation was repeated. No return took place until July 1863, when the right nostril again became the seat of the disease; and in the same month the upper part of the right cheek began to bulge. The nasal polypus was again removed, but the cheek continued to swell, and at the time of his admission presented two nodules—each the size of half a walnut—below the orbit. The operation was commenced as if for excision of upper jaw by two incisions—one reaching from the malar bone to the nose immediately below the orbit, and the other from the inner canthus downwards by the side of the nose and through the upper lip; the flap thus marked out was turned outwards, and a mass of ordinary polypus, which had made its way through the anterior wall of the antrum, was at once exposed. The whole was gouged away, and the flap laid down again. Union was rapid, and his recovery apparently complete.
6	F. 41	Mr. Teale	Excision of fatty tumour.	20 days	Recovery.	The tumour was pendulous, was situated over the right trochanter, and weighed about a pound.
7	F. 40	Mr. P. Teale	Excision of adenocoele from left breast.	29 days	Recovery.	The tumour was situated in the outer part of the breast, and was as large as a hen's egg.
8	F. 46	Mr. Nunneley	Excision of fatty tumour.	22 days	Recovery.	The growth was about the size of half an ordinary cocoa-nut, was situated over the epigastrium, and was of three years' growth.
9	F. 47	Mr. P. Teale	Excision of small cheloid.	Out-patient	Recovery.	This was a small cheloid growth of the skin in the summit of the left shoulder.
10	F. 40	Mr. P. Teale	Excision of small cheloid.	Out-patient	Recovery.	A small cheloid tumour situated over the upper part of sternum.
11	F. 40	Mr. P. Teale	Excision of adenoid tumour of breast.	14 days	Recovery.	An adenocoele of the left breast, about as large as a pigeon's egg.

Operations for the Cure of Aneurism, Nævus, etc.

No.	Sex and age.	Operator.	Nature of operation.	Stay in Hospital after operation.	Result.	Remarks.
1	F. 9 w.	Mr. S. Hey	Application of nitric acid to nævus.	13 days	Cure.	The nævus affected the skin of the cheek and lower eyelid. That on the cheek had been previously excised by the knife. Nitric acid was carefully applied to the disease affecting the eyelid. A slough and cicatrization followed, which resulted in cure of the disease without deformity.
2	F. 7 m.	Mr. Teale	Excision of nævus.	12 days	Cure.	The nævus was situated on the right cheek, was as large as a walnut, and involved both skin and subcutaneous cellular tissue. The whole was removed by the knife.
3	F. 10 m.	Mr. Teale	Excision of nævus.	Out-patient 5 days	Cure.	The nævus was situated on the left side of the head, and was about the size of a sixpence.
4	F. 5 m.	Mr. P. Teale	Enucleation of large parotid nævus.		Death.	The nævus was very large, and chiefly subcutaneous. It measured about an inch and a half in diameter, and occupied the lobule and inferior part of the helix of the ear and the whole parotid region. The skin was dissected off, and the growth removed by enucleation. Death was caused by convulsions. The child had been subject to laryngismus stridulus.
5	M. 26	Mr. P. Teale	Compression and ligature of femoral artery for popliteal aneurism.	60 days	Recovery.	An aneurism, about as large as an ordinary cocoa-nut, completely filled the right ham. Pain in the part about a month, but no tumour noticed until sixteen days before admission. Symptoms and signs of aneurism well marked; also very loud musical regurgitant aortic murmur. Swelling had during the last few days become more solid, and on its surface several enlarged anastomosing vessels could be felt; no treatment for six days beyond rest in bed; pulsation had then increased; aneurism decidedly larger. Signoroni's tourniquet applied over femoral artery in the groin, and was removed in an hour and a half because of pain. During following three days, pressure for a short time at intervals. Swelling continued to increase; knee-joint became somewhat distended with fluid; œdema of leg became more manifest; and pain very severe. Femoral artery was tied at the apex of Scarpa's triangle. After operation, everything went on well; pulsation ceased, and did not return; aneurism quickly solidified, and gradually lessened; œdema disappeared; pain ceased; collateral circulation rapidly established; and on discharge, only a solid tumour of the size of a small orange. The ligature was cast off on the eleventh day.
6	M. 6 m.	Mr. P. Teale	Introduction of setons for the cure of nævus.	16 days	Partial cure.	The nævus occupied the lower half of the nose and its septum, and extended through the entire thickness of the middle third of the upper lip. That on the nose only was treated on the present occasion. Setons of silk were passed through its substance in various directions, and left there until fourteen days afterwards, at which time the part of the growth so treated was quite solid. A second similar operation was performed three months later. After which, the growth seemed to have lost its nœvoid structure.
7	M. 5 m.	Mr. S. Hey	Excision of nævus.	Out-patient 33 days	Cure.	The nævus was about the size of a fourpenny-piece, and situated on the forehead.
8	M. 17	Mr. Nunneley	Aneurism by anastomosis treated by ligature of vessels and introduction of setons.		Partial cure.	The disease occupied the whole upper lip (which was enlarged to more than twice its normal size), and had followed immediately upon a blow by a stone when the patient was six years old. The two enlarged superior coronary arteries were tied, and through the substance of the lip three double thick silk setons were passed. Considerable suppuration having been set up along the track of the setons, they were removed at the end of twenty-six days. When seen three months later, the lip was considerably lessened, felt solid, and pulsated less strongly. The operations were repeated, and the setons left in fifteen days, with the result of still further solidifying the lip, and diminishing pulsation. This case is still under treatment.
9	M. 37	Mr. Wheelhouse	Compression and ligature of femoral artery for popliteal aneurism.	47 days	Recovery.	Right ham was completely filled by a large aneurism, which had first appeared six weeks before admission; though for two or three weeks previously to finding the swelling, the patient had acute pain in and around the right knee. Up to the commencement of the disease, he

had been engaged for several weeks on a farm, in digging a hard clay soil, using the *right* foot constantly to press the spade. No other disease detected. Symptoms and signs well marked. Femoral artery compressed by Signoroni's tourniquet at upper part during six hours each day for thirteen days. When the aneurism had become solid, and pulsation nearly ceased, all treatment was suspended. Ten days later, pulsation slightly increased; and at its most prominent part, the skin became thin, red, and conical. Fearing lest the sac might burst, Mr. Wheelhouse tied the femoral artery at the apex of Scarpa's triangle. All threatening signs left; pulsation ceased; the mass became quite solid; and the conical red point disappeared. The ligature did not come away until the thirty-second day; eight days after which he was allowed to get up. When seen lately, there was still a very large hard tumour in the ham, but no pulsation. He did not suffer pain, and there was no œdema. There was a feeling, however, of fluctuation on the outer side of the tumour in a limited space.

Excisions of Joints of Bones.

1	F. 26	Mr. Teale	Excision of os calcis.	86 days	Recovery, with useful foot.	Right heel had become the seat of disease three years before. At the time of admission, six sinuses—all leading to the os calcis, which was felt bare—surrounded the heel.
---	-------	-----------	------------------------	---------	-----------------------------	--

With the view of picking out any bones of the tarsus which might be found in a diseased condition, Mr. Teale made two incisions—one transversely across the sole opposite and down to the calcaneo-cuboid joint, the other commencing at the outer extremity of the first and extending directly backwards along the outer border of the heel as far as the insertion of the tendo Achillis; and thus was mapped out a large flap, comprising the whole of the tissues of the heel, which was dissected up and turned inwards. As the os calcis alone was found to be in a carious condition, it was removed, whilst the other bones were left. The flap lived and united well; and at the time of her discharge the wound had nearly closed. When seen some months afterwards, the foot was quite sound; and, with the exception of a little puckering, there was no deformity. She had not then tried to walk upon it, but was ordered to do so.