# TRANSACTIONS

OF THE

# PHILADELPHIA ACADEMY OF SURGERY

STATED MEETING HELD MARCH 5, 1928

The President, Dr. Astley P. C. Ashhurst, in the Chair

Calvin M. Smyth, Jr., M.D., Recorder

## END RESULTS OF CARPALECTOMY

Dr. Benjamin Franklin Buzby read a paper with the above title for which see page 266.

## SUPRA-CONDYLOID FRACTURE OF FEMUR

Dr. John H. Jopson presented two patients from his service at the Presbyterian Hospital, illustrating the treatment of supra-condyloid fractures of the femur by skeletal traction. In each case the tongs were used, and traction made through the condyles. Both cases were in young men. In one the fracture was a simple supra-condyloid one. In the second the fracture was of the "T" type, involving the joint, with additional comminution of the major fragments, and in very bad position, including lateral and backward rotation of the separated condyles and vertical displacement. A very satisfactory reduction had been obtained in each case by the use of the tongs. An effort is made in these cases to introduce the tong in each condyle at a point above the axial centre, so that the traction may be combined with forward rotation of the lower fragment from the backward position in which it is held by the hamstring muscles. This mechanism has been emphasized and illustrated by Doctor Blake and by Van De Velde of Belgium. The Thomas splint and Pearson attachment of course are used in connection with the tongs, and after the upper end of the lower fragment or fragments of the femur has been rotated into contact with the shaft, the direction of pull on the tongs is raised to straighten the lower fragment into line with the shaft. Doctor Jopson has consistently found the classical position of the fragments in this type of fracture, and believes it due, as usually stated, to the pull of the gastrocnemii. While perhaps many fracture surgeons practice this method of treatment, in which they personally have great confidence, it is curious that it finds little place in the modern authoritative text-books. An attempt had been made in each of these cases presented, to reduce by the Russell method, in which Doctor Jopson has been interested, but it was apparent after a brief trial that it was not effective in this situation and the tongs were then resorted to, as was his usual practice. After removal of the tongs a split plaster case is applied to prevent displacement before the callus is firm, and physiotherapy begun soon thereafter. Both of these cases were still under treatment, and some limitation of joint motion was still present, but motion was improving.

DOCTOR JOPSON spoke of other cases previously reported and treated by tongs traction, including one of supra-condyloid fracture complicated by fracture of both bones of the leg on the same side, and one in a child, of anterior displacement of the lower epiphysis of the femur, with fracture of the tibia on that side. Both of these made good recoveries.

DR. WILLIAM O'NEILL SHERMAN, of Pittsburgh, said that the treatment by calipers is the method of choice in this particular type of fracture. Ransohoff of Cincinnati used ice tongs some twenty-five years ago. The Pearson pressure pad can often be used to advantage in conjunction with skeletal traction. It must not be assumed that after the tongs have been applied, that the case can be turned over to the interne. Constant readjustment and supervision is necessary. Open reduction where comminution is present is usually contraindicated. Doctor Jopson failed to state how early walking was begun. One great advantage in the use of tongs, is the ability to mobilize at an early date. Most patients can walk with properly fitting Thomas calipers in nine to ten weeks.

DR. ASTLEY P. C. ASHHURST said that the patients under his own care with supra-condylar fractures of the femur who had been treated by Buck's extension, did not obtain complete reduction of the deformity, and did not always secure complete flexion of the knee after convalescence. However the patients were satisfied and the surgeon who treated them was satisfied.

DR. JOHN H. JOPSON said that concerning Dr. Ashhurst's statement that the patients he treated for this type of fracture by Buck's extension were satisfied with the results; it is possible that the patient had never had the method of treatment outlined by Doctor Jopson on the other leg. The speaker changes his ideas on treatment from year to year. He likes to improve on the methods used. At the present time he has in the ward a woman with a fracture of the shaft of the femur who is being treated by the Russell method. She had been in the speaker's service two years ago for fracture of the other femur. When this fact was brought to his attention, Doctor Jopson asked the patient what treatment she had had on her first admission to which she replied "the British method," but that she liked the present treatment, *i.e.*, the Russell method, better. The British method referred to is the one used by Sir Robert Jones, and consists in the application of Buck's extension and a Thomas splint, and a strapping of the Thomas splint to the frame above the bed and elevating the foot of the bed. Doctor Jopson has used that method successfully in a man who weighed 225 pounds. The speaker thinks if Doctor Ashhurst will give up the Buck's extension and try the tongs extension, he will like it.

As to the length of time which the tongs should be used, the speaker agrees with Doctor Speed that seven weeks is about right. A split plaster case is then applied for two weeks and at the end of nine weeks, this is removed and physiotherapy continued with weight-bearing in eleven to twelve weeks, first with crutches and later without. The use of calipers has not been found necessary.

## FRACTURES OF THE OS CALCIS

DR. HENRY P. BROWN, JR., and DR. A. A. WALKLING (by invitation) presented slides, showing results in cases of fracture of the os calcis which they had followed. These cases were from the services of Dr. Charles F. Mitchell and Dr. John H. Gibbon at the Pennsylvania Hospital. The reporters were of the opinion that the results in the treatment of fractures of the os calcis do not compare favorably with those attained in the treatment of other

FIG. 1A.—Shows typical fissure fracture of os calcis before treatment.

fractures, and that the importance of their management is not realized by surgeons in general.

Fractures of the os calcis comprise 2 per cent. of all fractures. In the seventy-one cases reviewed, 92 per cent. occurred in males whose average age was forty-one, the youngest nine and the oldest eighty. Fifty per cent. occurred between the ages of thirty and fifty. The treatment of these fractures, some dating back as far as 1910, was a plaster case for varying lengths of time, in positions which varied with the type of fracture. The patient went about on crutches and then with a cane for varying periods. Some of these patients still require a cane and are unable to work. The disability ranges from none in certain types to complete in others. It seems that in the avulsion type, expectant treatment is all that is necessary. If there is spur formation with pain, the spur should be removed. The disability here is slight. The types with flattening, shortening or involvement of the subastragalar joint need surgery in some form. Whether it be (1) moulding, (2) excision of callus and remodeling, (3) subastragalar arthrodesis or (4) any combination of these three procedures; depends they think on the type of fracture and disability.

All of their cases, except the avulsion fracture, complained of painful lateral motion, especially eversion. There was marked widening of the os

calcis with excess callus beneath the malleoli, especially the external. There was usually a flat foot. The severely comminuted fracture, with many fracture lines entering the subastragalar joint, might probably do better with moulding combined with subastragalar arthrodesis. The fissured type which involves the subastragalar joint can also be treated in this way.

It seems that the application of tongs or hooks to bring fragments down

FIG. 1B.—Shows same case after treatment. Subastragalar joint fairly clear. Functional result poor.

is not a good thing. An infection occurring in this already badly contused tissue is apt to be very troublesome. Osteomyelitis of the os calcis is usually quite a serious matter and prolongs hospitalization.

DR. FRASER B. GURD, of Montreal, said that in all such cases in which it was thought that improvement in the position of the fragments might be obtained, the foot has been hammered into position; the foot is first placed in a pillow splint and the hammering is done on the fifth, sixth or seventh day, never earlier than the fifth day. A full boot of plaster is made with the foot at about a right angle with the ankle-joint and in as marked abduction as can reasonably be secured. The first plaster is applied over a small amount of cotton. The foot of the bed is raised for ten days; then the plaster is removed

and a second plaster is put on, this time without padding and fitted closely to the upper part of the leg. The patient is urged to walk, if possible without crutches or a stick. Those with a single fracture seem able to walk without a stick or crutch, but the bilateral cases must have crutches as they are not stable.

The patient is allowed to remain in and urged to walk in the plaster or plasters during the ensuing two and one-half to three and one-half months,

FIG. 2A.—Shows comminuted fracture of os calcis.

the plaster being changed as required owing to the wear and tear causing it to break through. If the hospital facilities permit, Doctor Gurd prefers that the patient should be readmitted for the change of the plaster and for two or three days physiotherapy at the same time. At the end of three or four months the plaster is removed and both sole and heel of the shoe are tilted, raising the inner border one-half inch, and sometimes as much as three-quarters of an inch—so that the patient walks on the lateral border of the foot. During the next two and a half months, the amount of tilt is gradually reduced so that in eight months time, he is walking with one-quarter inch tilt only and is as a rule able at the end of eight or nine months to go back to his work. The patient is advised to continue to wear one-quarter inch tilt for the remainder of his life.

DR. NATHANIEL ALLISON, of Boston, said that he did not wish the gentlemen present to think that they have heard the ultimate conclusion in regard to the treatment of fractures of the os calcis, as outlined by Doctor Gurd. Tonight Doctor Gurd used the term "as a rule"; this afternoon, he told us 80 per cent. of his cases returned to work. The feeling in Boston is that this is not the best treatment for fracture of the os calcis. After having been through all these various methods of treatment, including plaster and hammering, although perhaps not through the tilting of the shoe, Doctor Allison believes that these patients have pain because they injure tremendously the

subastragalar joint and that is why they have disability. The thing to do for them is to destroy the subastragalar joint and unite the astragalus and os calcis and hence do away with the pain. Of twenty-five cases treated by this method, in only three have good results not been obtained, and in much less time than required by the method described by Doctor Gurd.

DR. FREDERICK COTTON, of Boston, said that they had heard what hap-

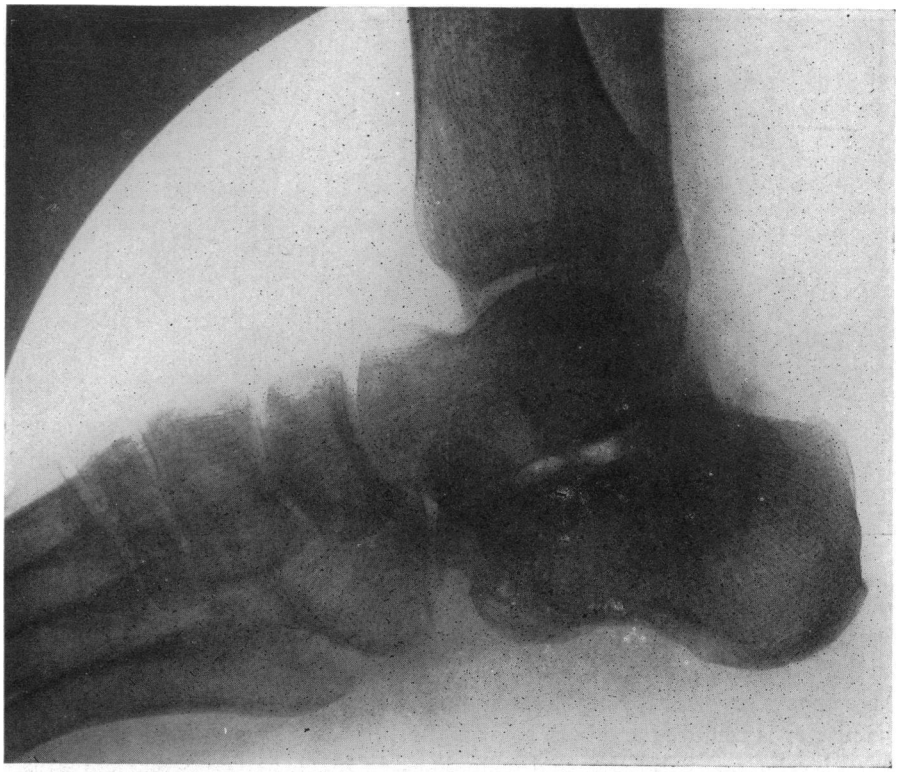

FIG. 2B.—Shows treatment. Subastragalar joint quite clouded. Function poor. Arthrodesis probably needed for cure.

pens without remodeling treatment on a conservative basis; it does not work. With skill and attention one can remodel these cases and the speaker has had results with the method described by Doctor Gurd, which were very satisfactory. There is a place for conservatism in the use of mechanical treatment. Since Doctor Wilson brought out his method of subastragalar arthrodesis, Doctor Cotton has used it—not in the new cases but in the ones which have not done well by other methods.

DR. CLAY RAY MURRAY, of New York, said that he pursues the method of subastragalar arthrodesis very infrequently, reserving it only for those cases in which there has been marked bone deformity. In the majority of cases, he tries to mould the bone back into the original form, as Doctor Cotton has suggested, then to immobilize it in plaster for six to eight weeks with marked inversion of the foot, tilting the foot to the inner side, and following this by

weight-bearing with the insertion under the heel of an ordinary rubber bath sponge with the idea that by this method one eliminates from the weight-bearing the sudden pounding-down on the heel by giving an elastic pad under the heel.

DR. PHILIP DUNCAN WILSON, of Boston, pointed out that examination of these cases showed that the pain of which they complained was usually a pain felt when they walked on an uneven surface, that anything which caused lateral motion of the foot caused pain. Examination of such a foot showed good ankle motion, but deformity of the heel and limitation of motion in the lateral plane when an attempt was made to invert the foot. The motion was not all gone because there was pain when we attempted to invert; if it had been entirely ankylosed, there would have been no pain. There are other causes of trouble—the possibility of having the foot fixed in inversion—deformity on attempting to throw the heel out—this means that the weight of the body deviates more to the inner side and there is more tendency to turn the foot over. Certain cases have trouble from irregularity of the surface of the plantar bone; but the chief factor is the presence of pain on lateral motion which can be demonstrated by examination and which should be "run to earth". X-rays have shown it to be a traumatic arthritis of the subastragalar joint, a traumatic arthritis which is evidenced by the fact that there is great tendency to lipping about the joint and thinning of the joint cartilage. That is the reason for doing a subastragalar arthrodesis. As to Doctor Gurd's method of treatment, the speaker cannot see anything in it which changes the basic factors with which one is dealing. He does not reduce the deformity any more than had previously been done; he only fixes the foot for a little longer period of time, and allows the patient to weight-bear instead of staying in bed. This method will not change the basic condition in these feet. Good results may be due to the fact that under the weight-bearing influence he tends to stimulate ankylosis of the joint. When the X-ray shows severe comminution of the os calcis with involvement of the subastragalar joint and irregularity of the joint surface, it is fair to assume that these patients are going to have pain indefinitely until the joint is returned to the original position or until the joint motion is eliminated.

DR. KELLOGG SPEED, of Chicago, called attention to the lack of unanimity concerning treatment of fractures of the os calcis. One enthusiast cuts down on the bone and by narrowing it, takes away the pressure from the external malleolus caused by its thickening. Most men, however, treat these fractures by means of prolonged immobilization with the foot in adduction. Subastragalar arthrodesis is being accepted as the last word in the treatment of the painful feet with prolonged disability in those cases which require compensation adjustment.

DR. FRASER B. GURD, said that a large proportion of these cases of severe fracture show no movement between the os calcis and the astragalus. Doctor Gurd took exception to Doctor Wilson's statement that the treatment described by the speaker accomplished nothing more than the older methods. His feel-

ing is that the prolonged walking, following the removal of the plaster and the external tilted position, are of a very great deal of importance in preventing strain of the subastragalar joint. His patients cannot as a rule, abduct the heel; the foot is forever in the position of adduction. It is not the adduction but the abduction which causes pain on walking on irregular surfaces. As the patient cannot abduct, he cannot suffer the pain. *Pari passu* with the continuance of the adduction of the heel there is a tendency for any new bone which may have developed in the neighborhood of the peroneal tuberosity to absorb on account of its freedom from irritation.

## COMPOUND FRACTURE OF TIBIA AND FIBULA WITH NON-UNION

Dr. Edward T. Crossan presented a specimen consisting of the lower two-thirds of the tibia and fibula, with the foot attached. The patient, a man, age twenty-eight years, was originally admitted in October, 1924, to the Episcopal Hospital, in Doctor Ashhurst's service, for fractures of both legs, that of the left being badly comminuted, and with a large wound of the soft parts. The right leg united without deformity, but the fracture of the left tibia remained ununited, one of the large fragments having been removed as a sequestrum before final closure of the wound, which occurred about a year after the injury. The patient wore a brace and walked with crutches for more than three years, when he returned to the hospital (in January, 1928) with evidence of infection at the site of the non-union, the soft parts having been firmly healed for more than two years. Doctor Crossan opened the abscess, finding the ends of the tibia carious; and, at the earnest solicitation of the patient, amputated the leg in February, 1928.

To secure union in the tibia, it would have been necessary to wait until the wound became aseptic, and then insert a bone-transplant. The patient was opposed to any such long delay, and preferred an artificial leg.

The specimen, of which shows bony union of the fibula, without deformity; the site of the second fracture in the fibula can no longer be recognized. The tibia is entirely ununited, its ends showing proliferative and inflammatory changes, with a gap of 1.5 to 2 cm. between them. A steel pin had been passed through the calcaneum, and used for traction for a period of about three weeks at the time of the original injury; the röntgenogram shows this tunnel apparently still open, but in the specimen the outer end of the tunnel is closed, but the medial end is widely open. The incisions in the soft parts had not become infected and had remained healed ever since the removal of the pin.

## FRACTURES OF FEMORAL NECK TREATED BY THE WHITMAN METHOD

Dr. Damon B. Pfeiffer related briefly the histories and showed X-ray plates of several cases to serve as a text for remarks concerning the utility of the Whitman abduction treatment for fractures of the neck and trochanteric region of the femur.

One of these cases was unusual in that a woman of eighty having recov-

ered from a fracture of the neck of the femur treated by Whitman's method, fell six months later and sustained an identical fracture on the opposite side. She was again treated in the same manner and good union was secured. It is noteworthy that in this case immediately prior to her first fall her death had been expected almost momentarily owing to the condition of her heart, which was dilated and fibrillating. For the first few days after the accident decompensation was extreme and but slight hope was entertained of recovery. She rallied sufficiently, however, in ten days to permit the application of the case with a few whiffs of ether in order to obtain abduction. Gradually the cardiac condition improved until the heart action became entirely regular and remained so until a fatal attack of cholecystitis five months after the second fracture. It is not too much to say that the immobilization following the fracture saved her life. It is a striking refutation to the idea formerly held that it is unwise to place these aged individuals in a plaster case for fear of circulatory depression. It is an apparent paradox that immobilization of the fracture by these massive cases actually mobilizes the patient, permitting a considerable variety of positions to be achieved by ingenious nursing care. Elevation of the head of the bed, the lateral and the prone positions should be alternated with the dorsal position. These changes, in addition to preventing pressure sores, act as stimulants to the circulation. A suggestive recommendation of this method, as against the older plan of treatment by some form of Buck's extension is to be found in the fact that nurses who have cared for patients under both methods greatly prefer the case, since it makes the patient more comfortable and the nurse's work easier. Of fifteen patients treated in this manner in the last five years there was one death which occurred in a greatly debilitated and arthritic woman over eighty years of age as a result of senile gangrene of the affected extremity. It is not believed that the case was responsible for the gangrene, as this patient was treated for several days without the case on account of her rheumatic contractures and was placed in the case only because of her continued complaint of pain in the leg which in retrospect was apparently due to senile circulatory disturbances, though this was not recognized until after the case had been applied. Functional results have been excellent in about 85 per cent. of the cases and good in the remainder.

During this time only one fracture of the hip has been treated without the case. This was a very stout woman of eighty-six years of age with a firmly impacted fracture at the base. The patient eventually recovered and at the present time, two years later, is able to walk with assistance.

It is the reporter's feeling that there are few exceptions to the rule that fractures in this location should be treated in the manner so clearly described by Whitman.

Dr. Calvin M. Smyth, Jr., said that he employed the Whitman case in all fractures at the hip including those fractures which were already impacted and in satisfactory position when first seen. In the speaker's experience such patients are much easier to nurse and are more comfortable even though the fracture, in itself, may not require immobilization in abduction. The frequent

change of position, which the case allows is a distinct advantage to the patient with impaired circulation. The Whitman case has been employed in two such cases recently with great satisfaction on the part of the patients, the nurses and the surgeon.

## TREATMENT OF FRACTURES INVOLVING THE ANKLE-JOINT

DR. FRASER B. GURD, of Montreal, by invitation, read a paper with the above title for which see page 260.

## UNHAPPY RESULTS IN TREATMENT OF FRACTURES

DR. KELLOGG SPEED, of Chicago, spoke on the above topic, using lantern slides to illustrate his remarks. The unhappy results mentioned by him were: 1. Loss of length of legs. 2. Angular deformity, unsightly and disabling. 3. Delayed or non-union. 4. Infection; osteomyelitis; loss of limb. 5. Involvement of blood-vessels, nerves, tendons or muscles causing functional loss. Volkman's paralysis. 6. Disability in joints. 7. Neurasthenical states.

*Means of Avoiding Unhappy Results.*—1. Divide all fractures into those of the shaft or those near the joint. Their underlying treatment is essentially different. Fracture near a joint requires immediate setting, whereas a great many fractures of the shaft require traction and prolonged extension or even operation.

2. Inspect and record findings in writing concerning nerves, blood-vessels or muscle injuries. When primary injuries are present, operate at once (in 80 per cent. at least).

3. Minimize chance of infection:

(a) By proper protection of the parts even in closed fracture. Every fracture of the leg, the limb should be washed and the skin cleansed with alcohol or some mild antiseptic. (b) Immediate primary operation in all open fractures. (c) Greater attention to closed methods, thereby reducing the ratio of operative treatment.

4. Immediate (permanent) treatment. Immediate treatment should merge always into permanent treatment; it should not be given haphazardly: (a) Reduce joint fractures completely; and control this by röntgenogram. (b) Put shaft fractures in position and splint or use extension traction. (c) Check position of fragments by the röntgenogram and if it is unsatisfactory, use skeletal traction.

5. Early active motion and massage even in the splint. Do not immobilize too long. Avoid early weight-bearing or work which might cause secondary deformity. Do not let the patient walk too soon on soft callus or use too soon a joint which may be pressed into secondary deformity. Active motion and the galvanic current for muscles.

6. Increase the blood calcium when delayed union is feared.

Sacrifice length of limb if necessary for irritation of the bone ends, as by the use of walking calipers or splints to promote bony union. Lantern slides of cases were shown illustrating various fracture conditions.