

TRANSACTIONS

OF THE

PHILADELPHIA ACADEMY OF SURGERY

Stated Meeting Held April 5, 1926

The President, DR. CHARLES F. MITCHELL, in the Chair

COMMUNUTED FRACTURE OF HUMERUS

DOCTOR A. BRUCE GILL presented an adult man, who, October 9, 1925, sustained a comminuted fracture of the middle third of the left humerus. The two portions of the shaft were separated from each other about one inch and were overlapping for an equal distance. A third large fragment of bone about four inches long, consisting of more than half of the circumference of the shaft, was separated from the two fragments of the shaft by three-fourths of an inch to an inch.

The man was put to bed. His arm was placed on a Thomas splint with abduction of the shoulder to a right angle and with elevation of the arm so that the hand was higher than the shoulder and about ten pounds of weight were applied gradually. The fragments gradually came into better position and all the shortening was overcome. The fragment which lay free of the other two approached the main body of the shaft. Swelling of the hand and arm rapidly subsided.

After three weeks, at the end of which time union was becoming firm, a removable plaster splint was applied and patient was allowed to get up. Baking and massage of the arm and passive manipulation of the elbow were begun. By December 4 he had fairly firm union at the site of the fracture, and had about thirty degrees of motion in his elbow.

January 13, 1926. Union firm. Humerus straight. Normal motion in elbow-joint. It was rather difficult by examination of the humerus to tell where the fracture had been. Slight limitation of abduction and external rotation of shoulder was present. Patient returned to work as an upholsterer.

April 5, 1926. Left upper extremity is apparently normal in every respect. Patient suffers from no pain or disability. X-ray shows firm union. Humerus straight. The large loose fragment of bone in firm union with the shaft.

The reporter believes that the early elimination of swelling by means of the elevation had much to do with the prevention of fibrous ankylosis of hand and elbow, and with the prompt return of function in the elbow after removal of the splint. Abduction in an ambulatory splint would not have given as good a result so promptly if at all. Almost all fractures of the shaft of the humerus may be treated in this way and with very satisfactory results.

DOCTOR JOHN H. JOPSON said regarding the case of comminuted fracture of the shaft of the humerus, treated by extension and the Thomas splint, that he felt sure that this method is very applicable to a good many fractures of the humerus. He has been using it routinely for several years in fractures of the humerus through and below the tuberosity and has used it in a comparatively large number of such cases. In every case but one, in which there was a great deal of swelling of the hand in an old woman, the results have

been excellent. The X-ray has shown the bone lined up by this simple method and union takes place with anatomical reduction. It means confinement to bed for two weeks, but the patient is no worse off than if he was up and around. After two weeks in bed, he gets the patient up and dresses the arm in moderate abduction. One cannot attribute any cases of musculo-spiral paralysis to this treatment; but there would be fewer cases with this treatment because one gets reduction this way which cannot easily be obtained in any fixed ambulatory dressing.

SEVERE COMMINUTED FRACTURE LOWER END OF RADIUS

DOCTOR GILL presented an adult man who was injured December 7, 1925. When seen on the following day his fingers and hand and forearm were greatly swollen. X-ray examination showed the lower end of the radius fractured in the fashion of a Colles' fracture with about one-half inch shortening. The lower fragment was split through the centre from the radial to the ulnar side. The palmar portion of this fragment was displaced upward more than the dorsal portion, and it carried with it the carpus, so that there was a slight anterior subluxation of the hand. Furthermore, this palmar portion was again split in two in a longitudinal manner. There was thus the main portion of the body of the radius and four fragments at the lower end.

December 9, 1925. Under gas anæsthesia better position of fragments was secured. The hand and arm was dressed on a plaster splint from the elbow to the metacarpophalangeal joints. Patient was put to bed and the extremity was suspended on a standard so that his hand was well above his head. Massage of the fingers was begun at once and the patient was instructed to keep rubbing them and moving them. The man returned to light work at the end of three weeks at which time he could make a good fist and had free motion in all joints of fingers and thumb. At the end of six weeks he was back at his usual labor, which is that of foreman and mechanic in a dental manufacturing establishment.

April 5, 1926. Has normal function of wrist and fingers. Has no pain or disability.

By way of contrast Doctor Gill presented a woman with fibrous ankylosis of the hand as a result of a Colles' fracture. She had been treated by anterior and posterior splints which were retained for a period of ten weeks after the injury at which time there was still fairly marked swelling of the hand and fingers. When seen by the reporter for the first time, about twelve weeks after the fracture, she still had some swelling present and had a very severe condition of fibrous ankylosis. This condition is being improved somewhat by baking and massage and gentle manipulation, but her hand will probably never be restored to normal function. Prolonged swelling of the hand almost always leads to fibrous ankylosis, and it is the most serious condition which may result from fracture at the lower end of the radius. Therefore, the surgeon's attention should always be directed to swelling if there is any present, and every effort made to eliminate it by elevation, by early baking and massage, and by splinting in such manner that the patient can from the very beginning exercise his fingers. In the presence of severe swelling, as in this case, the best method of treatment is to put the patient to bed and elevate the arm well above the head. Fibrous ankylosis is one of the most common causes of disability of the hand and may result from injury of any portion of the upper extremity from the shoulder down. It is usually, if not always, due to prolonged swelling.

FUSION OF UPPER END OF TIBIA AND FIBULA

DISLOCATION OF FIRST METATARSAL AT BOTH ENDS

DOCTOR GILL presented a man who, in October of 1925, was injured in an automobile accident. He was treated in a hospital in a nearby town.

January 23, 1926, he came to the Orthopædic Hospital because of pain in his left foot and because of inability to work. At this time there was marked swelling and thickening of the foot, marked prominence of the head of the first metatarsal on the inner side and there appeared to be displacement outward of the base of the fifth metatarsal. X-ray showed almost transverse position of the bone with dislocation at both ends. (Fig. 1.)

February 5, 1926. Open reduction. Incision along metatarsal along the inner side of the foot. A small portion of the head was excised to allow reduction of the head. The base of the metatarsal was freed of adhesions. It was then possible to place the head in contact with the phalanx of the great toe and the base in contact with the articular surface of the internal cuneiform. However, the base became redisplaced as soon as the fingers or the instruments were removed from it. The fragment of bone which had been removed from the head of the metatarsal was therefore placed between its base and the second metatarsal. This kept the base in contact with the articular surface of the internal cuneiform. Wound sutured and foot dressed in plaster. Nothing was done for the fracture of the second and third metatarsals.

March 20, 1926. Plaster case was removed and a shoe with steel shank and felt pad beneath inner side of the heel and longitudinal arch and raised in front to lift heads of metatarsals was applied.

April 5, 1926. Patient's foot is in good position and condition. Can walk freely without pain. Has returned to work.



FIG. 1.—Case 3. Dislocation of first metatarsal bones at both ends.

FUSION OF UPPER END OF TIBIA AND FIBULA FOR UNUNITED FRACTURE OF THE TIBIA

DOCTOR GILL presented a boy who was admitted to the Widener Memorial Industrial Training School for Crippled Children, November 18, 1921, when seven years of age. He had osteomyelitis of the left tibia with pathological fracture at the junction of the upper and middle thirds. Non-union was of more than three years' duration. He had had two bone-graft operations which had failed to produce union of the tibia. On his admission he had two discharging sinuses over the left tibia and there was an inch shortening.

The sinuses healed up several months after his admission, and he was fitted with a brace on which he walked until the time of the operation now to be described.

March 9, 1923. Operation—*fusion of the upper end of tibia and fibula*. Incision between the head of fibula and tibia. Peroneal nerve identified and retracted. Fibula exposed. Periosteum split and lifted from the fibula from

just below the epiphyseal line to the junction of the upper and middle thirds. Fibula then divided below the epiphysis. The tibialis anticus muscle detached from the upper portion of the tibia and a groove cut in the tibia to receive the fibula. The distal fragment of the fibula was passed through the muscles intervening between the fibula and tibia and placed securely in the bed in the tibia which had been made for it. It was held in place by catgut sutures and by hyperextension of the knee. Dressed in plaster. Wound closed without drainage. Patient walked in the plaster case at the end of six weeks. Case removed at the end of three months. X-ray made then showed fusion of the fibula and tibia and union of the two fragments of the tibia. Later X-rays show continued growth of the tibia at the site of the old fracture and solid fusion of the upper end of the tibia and fibula with growth of the upper end of the fibula from the strip of periosteum which connected the head with the shaft like a bridge.

The surprising feature of this case is the fact that the tibia reunited at the site of the old fracture, although at the time of operation the area of non-union was not even exposed. It may have been due to stimulation of bone regeneration following the fusion operation, and that this stimulation of regeneration extended well beyond the site of the operation and was sufficient to cause new bone formation at the site of the original fracture.

TRANSPLANTATION OF UPPER END OF FIBULA TO REPLACE
HEAD OF HUMERUS

DOCTOR GILL presented an adult man, a bricklayer, who February 16, 1921, suffered fracture of the surgical neck of his right humerus. After two months the head of the humerus was excised by the surgeon in charge because of "mass of callus about shoulder and ugly deformity."

The reporter saw him first February 23, 1922. At that time the upper end of the shaft of the humerus was one and a half inches below the acromion and the shoulder was flail. Patient was unable to abduct or elevate the arm. The upper end of the humerus would slide backward and forward in the axillary space when the patient attempted to use his arm. He had been unable to resume work at his trade as a bricklayer.

March 16, 1922. *Transplantation of upper end of fibula to upper end of humerus.* The shoulder-joint was exposed through an anterior incision. Difficulty was found in making dissection as the shoulder-joint cavity was completely obliterated. The upper end of the humerus was exposed and a place was prepared in the soft tissues beneath the acromion and against the glenoid process for the transplanted fibula. The medullary canal of the humerus was greatly enlarged and was filled with very soft substance. The cortex of the bone was extremely thin. The upper end of the humerus was sealed over with a very thin layer of bone. The upper end of the fibula, about four inches in length, was removed and inserted into the upper end of the humerus. The shaft of the fibula did not by any means fill the medullary space so that the transplant wobbled about from side to side. The head of the fibula was then placed well up beneath the acromion and well in toward the glenoid and the soft tissues which had been dissected were sutured about it to make a new capsule. Wound closed without drainage. Arm dressed in plaster case in abduction.

Case removed June 2, 1922, at which time the graft was united to the humerus.

August 2, 1922, he suffered an accident and fractured the fibula just

PHYSICOCHEMICAL FACTORS IN FORMATION OF GALL-STONES

above its entrance into the humerus. His arm was again placed in a plaster case which was removed September 29, 1922. At that time X-ray examination showed union of the graft. After that his progress was uneventful. The graft gradually increased in thickness and strength. The patient returned to work early in 1923.

April 5, 1926. X-ray shows that the fibula has increased to about one inch in thickness, but a little less than the thickness of the humerus itself. The head of the fibula does not seem to alter much in shape as it has not become rounded off like the head of the humerus. The upper end of the humerus has increased greatly in density and in thickness of the cortex. The transplanted fibula can still be seen lying within the medullary canal. The man has been doing hard work and suffers no pain or disability in his shoulder. There is considerable flattening below the acromion. This may be due in part to wasting of the deltoid and in part to the fact that the head of the fibula is not as large as the normal head of the humerus. He can abduct his arm about seventy or eighty degrees. There is passive abduction to about a hundred and ten or a hundred and twenty degrees. External rotation fairly well beyond the sagittal plane.

PATHOLOGICAL FRACTURE OF HUMERUS IN INFANT TWO MONTHS OF AGE DUE TO CONGENITAL SYPHILIS

DOCTOR GILL presented a female infant, who was first seen January 12, 1926, being then three months of age. The mother stated that a month before this when the child was about two months of age, she took her by the left arm and rolled her over as she was dressing her. She stated that no greater force or violence was used than this. Immediately thereafter the child cried when the left arm was handled, and it was noticed that she no longer moved the arm. Prior to the time of this injury the arm was apparently normal and the child moved it freely and did not cry when it was handled.

At the time of his examination the left arm of the child hung limp at its side. It made no effort to move it. It cried when the arm was handled. There was an enlargement of the lower end of the arm above the elbow which appeared to begin about the middle of the humerus and gradually increased in size toward the lower end. The elbow-joint itself was apparently not involved. This enlargement seemed to be of the humerus and tender to the touch. X-ray examination showed some absorption of lime salts in the lower end of the shaft of the humerus, together with subperiosteal thickening or new bone formation beginning about the middle of the humerus and extending downward toward the lower end. There appeared to be a transverse fracture of the shaft about two inches above the lower end without displacement. In the differential diagnosis were considered fracture, osteomyelitis, sarcoma, infantile scurvy, congenital syphilis. The history of the case, the absence of fever, the X-ray appearance all indicated pathological fracture due probably to congenital syphilis. Specimen of the child's blood was not obtained. Wassermann examination of the father was negative but strongly positive of the mother. The child was placed on anti-syphilitic treatment and in six weeks' time all evidence of lesion had disappeared clinically. X-ray showed practically complete absorption of the new subperiosteal bone, and disappearance of the line of fracture, and increased density of the diseased shaft.

PHYSICOCHEMICAL FACTORS IN THE FORMATION OF GALL-STONES

DOCTOR J. E. SWEET and DOCTOR R. C. WEIMER gave a lantern demonstration consisting of a large series of slides illustrating the formation of gall-stones. Slides of the artificial stones which they had made showed a

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radial arrangement closely simulating that seen in real gall-stones. This radial arrangement was produced by chilling a molten mass of cholesterol and lecithin contained in a glass ball. The apparent lamellation of gall-stones was produced by a phenomenon of colloidal chemistry known as "Liesegang's rings." The authors conclude that neither the radial arrangement of the crystals in gall-stones, nor the apparent lamellation, necessarily prove that gall-stones grow from a central nucleus.

THE SURGICAL ASPECT OF BLOOD DYSCRASIAS

DOCTOR JOHN SPEESE pronounced the *Annual Oration*, being a paper entitled *The Surgical Aspect of Blood Dyscrasias*.

Stated Meeting Held May 3, 1926

The President, DR. CHARLES F. MITCHELL, in the Chair

INTRACRANIAL DIVISION OF GLOSSO-PHARYNGEAL NERVE COMBINED WITH CERVICAL RHIZOTOMY FOR PAIN IN INOPERABLE CARCINOMA OF THE THROAT

DOCTOR TEMPLE FAY reported the case of a woman, aged forty-one years, who had been under treatment for nine months for primary carcinoma of the tongue and soft palate on the left. For three months she had had extreme pain, deep in the ear, behind the ear and in the throat. Two months before, a speno-palatine injection relieved slightly the pain in the ear, but as the growth extended there was extreme pain, constant in character, situated over the left mastoid, behind the ear, and a great degree of difficulty in swallowing, with pain, so much so that she was unable to secure sufficient nutrition. Radiation treatments produced reactions causing severe pain to such an extent, that the patient required two grains of morphine a day in addition to allinol. There is a palpable mass in the left submaxillary region and below the left ear.

In view of the pain deep in the ear and its exacerbation on swallowing, as well as the pain in the cervical distribution, a combined cervical rhizotomy and intracranial section of the ninth nerve was undertaken on the left. The operative procedure was made possible by rectal anæsthesia, which proved sufficient to maintain a complete anæsthesia throughout the entire procedure.

The preparation of the surgical field, so as to include the ninth and upper cervical posterior roots, was accomplished by a midline incision, so as to expose the upper three cervical laminæ. After removal of the atlas, axis and part of the third cervical lamina, the upper cord was disclosed and then an incision was made at right angles to the midline incision, carrying it well to the left and almost to the mastoid, at a point sufficiently below the superior occipital ridge to avoid injury to the occipital artery, and at a level of about the lower hair line of the neck. The skin and muscles were sectioned in one block. The upper flap was then freed from its attachment to the occipital bone and then turned outward toward the ear. The occipital bone was then removed over the left cerebellar hemisphere, as far out as the ridge of the mastoid and below, along the margin of the foramen magnum, to the point of entry of the vertebral artery. A small portion of bone was removed to the right of the midline. This disclosed the dura, covering the left side of the posterior fossa and the upper three inches of its prolongation down into the spinal canal.