TRANSACTIONS

OF THE

PHILADELPHIA ACADEMY OF SURGERY

Stated Meeting Held February 4, 1924

The President, DR. JOHN H. JOPSON, in the Chair

AN AUTOGENOUS CONTROL OF THE OPERATION OF SYMPATHECTOMY

DR. HENRY P. BROWN, JR., presented a man, forty-one years of age, who was admitted to Doctor LeConte's service at the Pennsylvania Hospital on February 14, 1922, complaining of constant pain in the left great toe which had been present for three or four months before admission. During the four weeks preceding admission there had been swelling of his foot. He was a well-nourished, well-developed man, showing no demonstrable pathological changes aside from the condition of his legs.

The pulsations in the femoral arteries were palpable below Poupart's ligament on each side. No pulsations could be felt in the popliteal, anterior or posterior tibials on either side. The toes of the left foot were of a dusky pinkish color, and pressure showed a slow filling of the capillaries. The discoloration was more marked in the great toe, and it was in this one that the pain was most severe. The change in color extended to the mid-metatarsal region. The toes of the right foot showed the same type of discoloration as on the left, but to a much less degree, and there was no pain on this side.

February 24, 1922, under nitrous oxide anæsthesia, Doctor LeConte performed a sympathectomy on the left common femoral artery without encountering any technical difficulties. The relief from pain in the toe followed almost immediately, and in the course of a week or ten days there was a decided improvement in the circulation of the foot, to such an extent that it appeared even better than the right one.

In view of the fact that such an improvement had followed sympathectomy, Doctor LeConte urged the patient to allow the right artery to be operated upon, but this permission was refused for reasons best known to the patient himself.

Upon his discharge, March 24, his condition was recorded as being very much improved on the left side, and unchanged on the right.

In January of 1923, ten months after leaving the hospital, he was readmitted, complaining of pain and discoloration in the right great toe, and examination showed that gangrene had already appeared in this toe and the others of the same foot were of a dusky pinkish-blue color. The left foot showed a moderate discoloration extending to the mid-metatarsal region, but not nearly as marked as on the right side, and it was free from pain. He said that the left foot, the side upon which he had been operated, had been free from pain ever since his operation. He was extremely anxious to have a sympathectomy done on the right side, but in view of the fact that gangrene had already appeared in the great toe on this side, Doctor LeConte did not entertain much hope of relieving his condition. It was decided to give him the benefit of the doubt, and accordingly a sympathectomy was performed on the right femoral artery, just below Poupart's ligament, January 27, 1923. On expos-

ing the artery it was seen to be very sclerotic and the phenomena of contraction of the vessel after removal of its adventia, as mentioned by LeRiche, was easily demonstrated.

The relief from pain was almost immediate, but it was not followed by the improvement of the circulation which had followed operation on the left side. The gangrene of the right toe progressed and a line of demarcation having formed, it was amputated without an anæsthetic March 6th. Pathological examination showed almost complete obliteration of the vessel and great thickening of the walls.

By March 12, six days after removing the great toe, the gangrenous process had involved the second and third toes, and amputation of the leg was advised. March 22 this was done, the leg being removed at the junction of the middle and lower thirds. The notes at the time of operation state that there was practically no bleeding. The patient had insisted upon saving as much of the leg as possible, hence its removal at the lower rather than the upper third. Pathological examination of the tibial vessels showed marked thickening of the intima, but no fibrosis or calcification. One isolated portion of the dorsalis pedis showed a lesion of the arterial wall in the form of a circumscribed area of necrosis, involving the intima and media. There was actual caseation in the periphery of this lesion and a diffuse collection of polymorphonuclears in its centre.

April 22, the notes state that the flaps were sloughing but the patient's morale was much improved. He had been having attacks of marked depression. The sloughing gradually subsided and the stump healed over with granulation tissue, till at present, February 4th, there is a small granulating area approximately one and a half by two centimetres in extent.

The progress of the left foot has been most interesting. Upon two or three occasions during his present stay in the hospital the discoloration has become quite marked, lasting over a period from one to two weeks. At one time after wearing a shoe which was slightly tight, it appeared as though the toes would become gangrenous. With rest in bed, however, and constant heat (electric light) to his foot, the condition greatly improved. At present he spends most of his time in a wheel chair and on crutches, and as you can see, the foot is in fairly good condition.

This is the first case to come under their observation in which they have had what might almost be called an autogenous control of the operation of sympathectomy. While they have not had a sufficiently large number of cases of sympathectomy at the Pennsylvania Hospital to warrant drawing any conclusions, yet they feel that this operation has been an important factor in the preservation, up to this time, of the left foot of this man. Whether the improvement will be permanent or not, at the present time they have no means of telling.

CERVICAL LYMPHADENITIS SIMULATING A TUMOR

DR. ASTLEY P. C. ASHHURST presented a further report in the case of the patient who was shown at the meeting of the Academy, October 1, 1923 (ANNALS OF SURGERY, 1924, vol. lxxix, p. 133). This patient returned to the Episcopal Hospital in January, 1924, and a few indolent lymph-nodes adjacent to the scar of the operation on the left side of the neck were excised. Histological examination of these, and further examinations of the original specimen by Dr. C. Y. White, failed to reveal any indication of malignancy, as suggested by Doctor Nassau in his discussion of this case. Doctor White

found merely chronic inflammatory tissue without evidence of any specific histological changes.

PROSTHETIC APPLIANCE REPLACING ONE-HALF OF LOWER JAW

DR. GEORGE M. DORRANCE presented a man, who after having been operated upon twice by the late Dr. Francis T. Stewart for multilocular cyst of

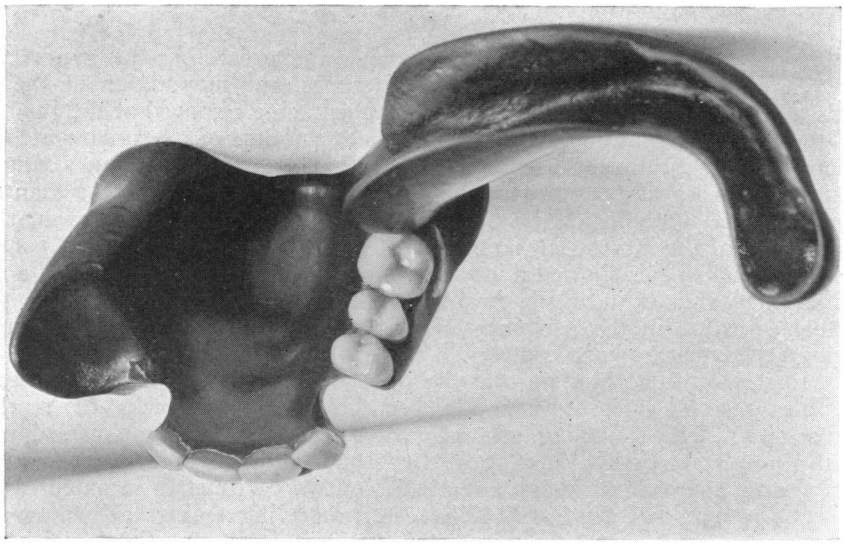

FIG. 1.—Prosthetic appliance for replacing one-half of lower jaw.

jaw, first operation, nine years ago, and second operation seven years ago, in both of which operations the cysts were excised by the intrabuccal route,

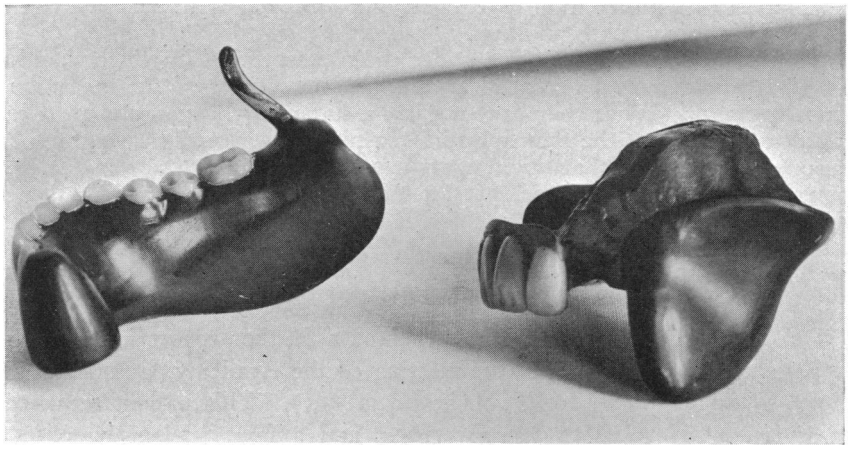

FIG. 2.—Prosthetic appliance for replacing one-half of lower jaw.

had developed recurrence one year ago. Upon examination six months ago, practically all of the left half of the lower jaw was involved. X-ray studies by Doctor Dassell confirmed the diagnosis. Patient was operated upon several

months ago and brought before this Society. At that time the importance of leaving intact the genio-hyoid muscles on both sides was pointed out. This patient is now perfectly comfortable and is able to masticate his food, with appliance which Doctor Dorrance demonstrated (Figs. 1 and 2). The principle of the apparatus is the old double incline plane.

MOBILIZATION OF ANKYLOSED JOINTS

DR. W. S. BAER, of Baltimore (by invitation), addressed the Academy on the question of the production of motion in ankylosed joints, joints which are really ankylosed and where the fibrous tissue is so dense in amount that no motion is allowed and not joints which are only partially ankylosed and in which various methods may give good results. The subject narrows itself to one of arthroplasty. For arthroplasty at first many things were used as interposing substances between the joint surfaces so that the bone would not grow together again; both organic and inorganic substances were used and both living and dead material. Nowadays only three methods of producing arthroplasty are in use: interposition of fascial flap free transplant, interposition of fascia and fat transplanted with living pedicle attached to it, or by organic material.

The membrane which the speaker had used for reasons he had demonstrated is made up of pig's bladder, chromicized to remain *in situ* fifty or sixty days. It does not make any difference which material is used; the free fascia, the fascia and fat with the pedicle, or the membrane. The pathology is the same.

It is said that free fascia when transplanted dies and that fascia and fat with the pedicle dies, but pigs' bladders do not have to die. In the interposition it is a question of the production of connective-tissue cells, which after a while show no tendency to unite with the layer on the opposite side of the joint.

Arthroplasty was first done on a series of cases in which it was done in the hope of saving life. Consequently, these first were for ankylosis of the jaw, congenital, or produced from disease at an early period of life, where disuse of the joint occurred and where the child could not be properly nourished because it could not swallow. But now arthroplasty has been solved for practically all parts of the body unless it be the knee-joint and the small joints of the hands and feet.

The knee-joint offers a problem which is gradually, although not yet completely, solved. The intimate anatomical relation of the tendons of the small joints of the body makes it difficult for arthroplasty because the range of motion is small and the tendons are so close to the joint that one is apt to get adhesion between the tendons and the small joints. But in all such joints as the jaw, shoulder, elbow, ankle, and hip, arthroplasty has come to stay. It is a proper operation in which one can almost with certainty predict the result.

The speaker then reported the results obtained by him during a period of about 15 years, comprising about 250 cases of arthroplasty on various

joints of the body. Being enthusiastic over the treatment, he had tried it on many tubercular cases which had failed, so that the result is not so good as if he would take only the last five or six years. The general result, however, has been good—serviceable motion being obtained in 78 per cent. of the cases operated on. At one time he had trouble with the pig's bladder material because he had not learned to what extent chromic acid was evulsed from certain joints. That membrane which he now uses lasts only fifty days, and he had rarely had evulsion since of the membrane. He prefers to use the membrane because he thinks it is easier than the fascia, also it is always put up and ready for use and is the same consistency throughout. Sometimes when one removes fascia one has to take a larger piece than is needed in order not to interfere with some part of the anatomy; also a hernia in the fascia lata is not an unheard of thing.

In his series there are 46 cases of true ankylosis of the jaw, with one failure and one death—a case he should not have tackled, a child with congenital synostosis clear down to the molar teeth. Two other children died of the same thing. The child only weighed 3 pounds, although a year old, and the operation failed. In the other cases the result was perfectly satisfactory, whether single or double jaws. The mode of operation was simply a small incision underneath the zygoma. All one has to do is to be careful in the retraction not to pull too hard on the branches of the smaller nerves. There was some temporary fascial paralysis in 18 per cent. of the cases, but never a permanent paralysis. The next thing is to divide down the masseter muscle in a longitudinal manner and expose the bone. Make an incision in the periosteum and shove back on both sides, the operation being done subperiosteally, leaving the branches of the temporal muscle. Sometimes the condyle and the coronoid process are both involved. If the condyle alone is involved, take it off, but if both are involved, remove both pieces of bone; done subperiosteally, there is no danger of hemorrhage. The membrane is drawn directly around in a purse-string fashion and the skin closed up and the operation is finished. He never does two sides at one sitting and usually allows three weeks to elapse before doing the second stage.

In simple cases of undershot jaw, the chin is deflected to one side. The patients feed themselves. In some cases will be noticed a slight paresis of the facial nerve on one side, showing the eye also more open than is normal.

In one case arthritis had developed late in life. At the age of eighteen following the infection of a tooth, it, the infection, went to the jaw and surrounding structures. Sometimes people go through life with ankylosed jaws and when they go to have their teeth fixed, discover that the work can not be done because their mouths can not be opened. He had operated on both jaws for arthritis deformans with the result that five years later the man had the same amount of motion which we secured by operation.

In cases of ankylosis of the shoulder and elbow. Three cases of ankylosis of the shoulder in his series had resulted in two successes. In eight cases of ankylosis of the elbow there were 72 per cent. with good motion; one

case had a double ankylosis of both elbows. This case was operated on by Doctor Bennett and himself, he doing one elbow and the reporter the other. Five weeks after the second operation, the man can come up to almost normal level in pronation and supination.

The difference between resection and arthroplasty is the greater stability, the greater power and the more normal action in the joint itself secured by arthroplasty. Of course one can get good strength from resection of the elbow and good results but always there is lateral motion and the result is not good cosmetically.

Ankylosis of the hip-joint is another question and in certain cases one will almost always be able to guarantee that normal function in the joint itself will be obtained. He would avoid interfering in tuberculous cases because only fifty per cent. of cures had been obtained in tuberculosis of the hip, while in the other fifty per cent. one probably lights up the tuberculosis again in doing arthroplasty.

He would not operate in cases of hip disease due to infectious arthritis. One is not sure in arthritis deformans that the disease is over.

The procedure advocated by the speaker is the incision from the anterior superior spine around the trochanter to the sacro-iliac notch. The trochanter is cut with a broad chisel. Sometimes it is hard to tell where the acetabulum begins and one has to guess at the point where the ileum stops because there is new bone. Sometimes one does the arthroplasty on the end of the bone and sometimes on the ileum itself. Generally, one finds some small line of cleavage, and can chisel in between it and the acetabular cavity itself. Then separate and dislocate the head of the bone fragments, and file off the head until it is perfectly smooth and having done that, cover the head with the membrane entirely and sew the membrane into the fibrous tissue along the lines of the trochanter; replace it in the fragment, turn it down near the shaft and close the wound perfectly with silver wire. He leaves it in for six, eight or nine weeks as the case may warrant. He puts the limb in extension on a Thomas splint. At the end of three weeks this is removed and the patient is allowed to walk at the end of another week. Massage and hydrotherapy then are used. There have been in the hip cases 32 patients with Neisserian infection with 90 per cent. of cures; by that he meant flexion of 60 degrees was secured. These cases lend themselves very well to arthroplasty, but they should not be operated on until one year after the acute process is over.

Septic cases are much more difficult than those with gonorrhœal infection. They very often have marked scar tissue. Treatment in these cases is difficult and the reasons to his mind is the one which has not allowed him to go further in the knee-joint than he has up to the present. In the elbow cases, motion is the great thing, in the hip-joint, motion and stability are necessary, but in the knee-joint, stability must be had and also good motion. He divides the knee-joint cases into three groups: those with fibrous ankylosis between the patella and tibia and between the femur and tibia; those with bony ankylosis in one or the other, and those with complete bony ankylosis. In

the fibrous ankylosis one can usually procure fairly good joints. He had gotten motion in about 80 per cent. of the knee-joints of this type. His own cases show only 22 per cent. of good motion where complete bony ankylosis had occurred. The knee-joint question is not so much the solving of arthroplasty as it is the solving of the question of interference with the soft parts. In association with the operation of arthroplasty he had been lengthening the triceps muscle by suitable incision and in sewing up he did not bring the quadrilateral muscle up to where it was before; he also takes out all the scar tissue around the joint itself. If it is left, motion is interfered with.

In conclusion he said that arthroplasty of the shoulder, jaw, elbow and hip, is an operation that can be perfectly well offered to the public. Arthroplasty in the knee-joint is still in the state of solution but becoming better and better every day as one recognizes difficulties in the periarticular tissue. The small joints should not be subjected to arthroplasty.

Dr. Astley P. C. Ashhurst said that he would not attempt to compare his results with Doctor Baer's, as he has had so many more cases: excluding arthroplasties of the jaw, for every one of his own cases of arthroplasty Doctor Baer has done ten, 200 to 20. His own results had been as follows:

Arthroplasty	Total	Good	Bad	Per cent.
Elbow	8	5	3	37.5
Hip	8	4	4	50
Knee	4	2	2	50
	20	11 (55%)	9	(45%)

	Total	Good	Bad
Excision of elbow (ankylosis, etc.)	8	7 (87.5%)	1 (12.5%)

	Total	Good	Fair	Unknown
Reconstruction of hip (pathological dislocation)	12	10	1	1

In arthroplasty of the elbow, after doing a number with very good results, he had several in succession in whom ankylosis recurred; so that he had about given up this operation in favor of excision, in spite of the partiality he might be expected to feel for the method of operation described by himself in 1915. In arthroplasty of the hip, the four failures were all on the same patient (two operations on each hip); but the four good results, in patients carefully selected, were so satisfactory that he regards it as an excellent operation. He had done only four arthroplasties of the knee. Doctor Baer says in cases with bony ankylosis he secured good results in only 20 per cent. of his patients. Doctor Ashhurst had had two good results and two bad.

The speaker then presented five patients who had undergone either arthroplasty of the elbow or hip; also lantern slides for the purpose of showing why excision of the elbow is as good as arthroplasty in most cases, and why reconstruction of the hip is more generally applicable than is arthroplasty. As Doctor Baer says, the *indications* for arthroplasty, in the case of any joint, are very limited; and therefore he must exclude a large number of patients who are entitled to relief at the surgeon's hands. No joint in which the normal

contours of the bone ends are lost is suitable for arthroplasty; whereas excision of the elbow and reconstruction of the hip will give very useful limbs even when the joint has been utterly disorganized and deformed. In the knee, where the results are so very uncertain, even in Doctor Baer's own experience, the decision to attempt arthroplasty is very difficult to make, even when the suitable case presents itself.

DR. DEFOREST P. WILLARD said that tuberculosis is distinctly a contra-indication to an attempt at arthroplasty, although in certain cases one has to operate in spite of it. Any acute or subacute infection during the time of its occurrence, any joint with marked destruction of the bone or of the soft parts, offers a poor seat for arthroplasty. The ideal case is one in which the ankylosed process has remained very closely localized in the joint itself such as arthritis or traumatic or pathologic origin. Another side not brought out and one of distinct importance is the after-treatment. Arthroplasties do not get well of themselves. They need courage on the part of the patients and the doctors; they need massage to bring back musculature and exercise to prevent further ankylosis. I think more can be done with active exercise than by simple passive motion of the joint. If the patient assists the surgeon, the end result will be better than with passive motion. There is the question of partial recurrence of limitation of motion after four or six months' periods. Many cases have marked improvement during four to six months and then there is distinct return of limitation of motion, not to the degree before arthroplasty but a distinct cutting down of motion.

DR. ROBERT H. IVY said that most of the patients with ankylosis of the mandible that he had seen had been remarkably well nourished and stated that they could eat practically a normal diet. In operating for this condition he preferred the curved incision of Blair. Being largely within the hair-line it leaves less visible deformity, is less likely to injure facial nerve fibres to the occipito-frontalis and orbicularis palpebrarum, and affords easy access to a pedicled temporal fascia flap, if desired, to interpose between the cut bone surfaces.

FRAGILITAS OSSIUM

DR. GEORGE W. WAGONER read a paper on the above subject (Idiopathic Osteopsathyrosis), for which see ANNALS OF SURGERY, July, 1924.