

made individual apparatus from impressions of each case, casting metal caps to fit the teeth. The advantage claimed for the present appliance is that it is ready for immediate use in any case with not less than one centimetre of separation, without the necessity of impression taking. It can be applied readily without any special skill, and can be used much earlier in the case when there may be insufficient room for taking impressions of the teeth. The elastics produce a constant counteraction to the powerful elevator muscles of the mandible, which at the same time are permitted to function, the upper and lower jaws being at no time fixed. Lateral movements as well as opening and closing are possible. Where additional stability is desirable the trays may be filled with a little softened dental impression compound before insertion, to receive the imprint of the teeth. This compound can be renewed from time to time. The dilating force can be readily regulated by the size and tension of the elastic bands. In some cases, where it is advisable to aid in the forward movement of the condyle as the mouth opens, this can be accomplished by running a second rubber band between the hook on the wire attached to the upper tray and one placed at the extreme posterior end of the lower wire.

He was indebted to Mr. J. A. Eberly, Jr., of the Senior Class of the University of Pennsylvania School of Dentistry, for following his suggestions in the construction of the original models of this appliance; also to Messrs. George P. Pilling and Son Company, Philadelphia, for making the finished appliance.

Stated Meeting Held May 8, 1922

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

BRANCHIAL FISTULA

DR. BENJAMIN LIPSHUTZ presented a girl, six years of age, in whom, after an attack of scarlet fever two years ago, there appeared a small opening surrounded by an inflammatory areola and discharging pus, situated at the anterior border of the right sternomastoid muscle between the angle of the mandible and the inner end of the clavicle. Pressure over the latter caused the exit of distinct pus. On examination a distinct cord was felt which seemed loosely attached to the surrounding and subjacent structures and over which the skin moved freely. Colored fluid injected through it came out of the mouth. No probing of the tract was attempted because of the infection present, and because it is frequently impossible beforehand to know the type of fistula under consideration.

Operation at the Mt. Sinai Hospital, March 4, 1922, ether anæsthesia. An incision was made so as to leave a small disc of skin about the margin of the opening and extended upward and backward nearly to the angle of the jaw. On cutting through the skin, fascia, and platysma the sinus was exposed to view. It lay on the deep fascia

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parallel to the sternohyoid muscle and was unexpectedly clear. It was rather easily separated from the surrounding structures, except its posterior surface, which was adherent to the carotid sheath, especially the internal jugular vein. Continuing the dissection, the entire fistulous tract was dissected upward to the digastric muscle, and separated without injury from its attachment to the pharyngeal muscle. The presence of the infection did not permit the inversion of the fistula into the mouth, as first advised by V. Hacker in 1897. The latter procedure can only be successfully carried out when the fistula is freely movable and has a lax attachment to the surrounding structures. Hacker, Whitacre, Helferich, and Dowd have reported cases in which the latter procedure was successfully performed. At times the excessive amount of fibrous tissue, muscle, etc., in the wall of the tract prohibits the inversion of the fistulous tract. In some of the fistulæ it is impossible to dissect them away without destroying important next structures, a procedure which the primary condition does not justify. A mouth-gag was then placed in the mouth and the blunt end of a probe was passed upward from the upper end of the operative wound in the neck to the floor of the mouth, to the anterior inferior border of the right tonsil. A small incision was made in the oral mucous membrane over the probe. The distal end of the fistula was tied to the open end of the probe with silk and the probe drawn into the mouth, the fistulous tract following until it seemed to be on a stretch. The distal portion of the fistulous tract was removed and the portion remaining was fixed to the mucous membrane of the mouth by two chromic catgut sutures, as advised by Konig. The fistula now has both openings in mucous membrane, the inner end in Rosenmuller's fossa, the other in front of the tonsil instead of in the skin. There is thus produced an open canal beneath the oral mucous membrane in which retention cannot take place.

EXOPHTHALMIC GOITRE

DR. CHARLES F. NASSAU presented a woman, forty-nine years of age, who first noticed thyroid pressure symptoms about fifteen years ago. From that time the swelling gradually increased in size. Three years ago she began to suffer from dyspnoea and symptoms became progressively worse. For the past two years she has had the oncoming of the symptoms of hyperthyroidism, everything except exophthalmos. One year ago she was in bed three months with dilatation of the heart. For the past year she has been having X-ray treatment, having in the past refused operation. Admitted to the Mt. Sinai Hospital in a terrible condition; seemed asphyxiated and about to die. On April 11, 1922, Doctor Lipshutz made a straight incision in the median line and divided the isthmus. Since then it was determined that she also had substernal goitre, probably bilateral. Heart feeble and pulse too rapid to count. On May 8 her heart-sounds were fairly good, pulse 90 to 100. Patient not able to lie down, had to be operated on partly sitting up. Operation under local anæsthesia morphine. Goitre ex-

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tremely difficult to get owing to the fibrous development from X-ray. Patient was now entirely relieved of all cough, not nervous, pulse-rate down and quite comfortable.

DOCTOR NASSAU presented also a man, thirty-three years of age, who one year ago noticed enlargement of the neck. He had palpitation of the heart and shortness of breath. On admission had exophthalmos, etc. Pulse 80 to 140, had difficulty in keeping patient in bed; almost continual vomiting. He was kept two weeks in bed before operation with ice-bags and oxygen inhalations. Ligation of one side was done in his room. The reaction was very great for seven days, when the second ligation was done. Patient was discharged to come back. On his return, under local anæsthesia, the greater part of the right lobe on the right side was removed, and there was practically no reaction. In two weeks the left side was operated on under local anæsthesia, and they removed practically all of the left side except the stump around the vessels. The neck is now fairly symmetrical, although there is still a lot of room for improvement. Pulse was 120 after second operation, temperature 101.

DOCTOR NASSAU then presented a third case, who had been referred to him at Frankford Hospital. The patient was excessively nervous, weighing 121 pounds on admission; weighs 151 pounds now. Purely toxic case with marked exophthalmos; no adenomata. Ligation without any ether. First one side and then the other. Then after a couple of weeks, he went in and took out both sides. One of the most perfect results the reporter has ever secured was in this case. The thyroidectomy was done at one sitting, because his reaction was so perfect. Pulse up to 180 after thyroidectomy.

A fourth case was then presented in the person of a man who noticed an enlargement in the neck one year ago, with all symptoms of exophthalmic goitre, thought to be purely toxic on account of the age. Ligation was done and patient allowed to go home for ten or eleven weeks. He came back, and a bilateral partial thyroidectomy was done under gas anæsthesia. All difficulties cleared up.

In response to a question, Doctor Nassau said he always ligated the superior thyroid artery.

FAT TRANSPLANT FOR PAINFUL STUMP

DR. HUBLEY R. OWEN exhibited a man whose leg had been amputated in January, 1920, at the junction of the upper and middle third of the leg. He complained of pain along the crest of the tibia, caused by pressure of his artificial leg. He also had a painful scar adherent to the internal condyle of the femur, and to the lower portion of the shaft of the femur. In December, 1921, two fat transplants were taken from the right thigh. One was placed under the painful scar of the left thigh, which was freed from its attachment to the femur, and the second transplant was placed over the crest of the left tibia. The scar of the amputation was opened, and the fat transplant was tucked underneath the skin of the stump so that the transplant made a good pad over

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the crest of the tibia. The day before the patient presented himself before the Academy of Surgery he had played eighteen holes of golf and had worn his artificial leg without pain.

Doctor Owen stated that he had several amputations which complained of pain over the crest of the tibia in spite of the fact that the stumps were apparently good and healthy, and thought that placing transplant of fat so as to pad the crest of the tibia would relieve pain in such cases.

CARCINOMA OF THE TONGUE WITH METASTASIS IN THE CERVICAL GLANDS UNDER TREATMENT WITH RADIUM AND X-RAY

DR. W. ESTELL LEE showed a patient, a man, who had been decidedly improved by the application of radium for carcinoma of the tongue. Up to the present time, four months since beginning treatment, the patient has had three applications of 100 mm. of radium, the needles being so applied as to surround the lesion and extended almost down to the epiglottis. In addition to this radium he has also had X-ray. Patient improved; pain much less, while before the use of the radium, pain was so great as to make life almost unbearable.

MULTIPLE GUNSHOT WOUND OF THE ILEUM

DOCTOR LEE presented a boy, fifteen years of age, who was admitted with history of gunshot wound from small toy pistol. Absolutely without symptoms; normal pulse, temperature, and no pain. Two cm. to the left and one cm. below the umbilicus there was a small gunshot wound. Three hours after accident an exploratory laparotomy was performed. There was only a small amount of free blood in the abdominal cavity. Eight perforations were found within one foot of ileum. Two were near the mesentery and the other six were in such a small area that it would have been impossible to close them, so a resection was performed and an end-to-end anastomosis done. The abdominal cavity closed without drainage. Patient was practically recovered in three or four days. Doctor Lee stated that he felt that resection was justified in this case because the holes were so close together that the lumen would have been practically occluded if they had been sutured. Resection was done because of the danger of producing intestinal obstruction. He believes that all the wounds could have been closed except those involving the mesentery.

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DR. GEORGE P. MULLER reported the following cases to bring out a discussion of certain points concerning blood-vessel ligation:

CASE I.—W. S., age eleven. He was admitted to the University Hospital June 7, 1918, suffering from a bullet wound in the right groin over the line of the femoral artery and one and a half inches below Poupart's ligament. The bullet had passed directly through the leg. Examination showed the leg slightly swollen, and wounds of entrance

and exit. A distinct hum was heard over the femoral artery at the site of injury and the pulse was felt behind the internal malleolus.

The injury was treated expectantly, but in five or six days' time some purulent material was discharging from the wound. Two weeks after admission it was noted that a pulsating swelling (not expansile) was developing in Scarpa's triangle. A few days later (June 24, 1918) operation was undertaken with the diagnosis of infected hæmatoma. Pressure was made over the common femoral in the groin and an oblique incision made. When the hæmatoma was opened it was found that much of it was fluid blood and that only a scab prevented furious bleeding. The artery was found to be cut half-way through. Attempts were made to reconstruct the vessel, but this was not successful. Accordingly it was doubly ligated. The vein showed a small nick, which, however, might have been made by one of the retractors. It was ligated. In so far as he could determine the profunda femoris was present. A rubber drain was introduced through the posterior wound and the anterior wound packed with gauze saturated with dichloramine-T. In spite of this chemical the wound became freely infected, and at one time he could see the stump of the femoral artery, nearly an inch in length, beating sharply, and hemorrhage only prevented by the catgut ligature. It was thought inadvisable to use Dakin solution, and accordingly boric acid solution irrigations were practiced successfully. The boy was discharged August 8, 1918, with the wound practically healed.

CASE II.—M. F., age seven. He was admitted to the St. Agnes Hospital February 6, 1922, with a history of having been shot through the groin a short time previously. He bled profusely and was in a state of shock on admission. He was given salt solution and later 500 c.c. of blood. There was no swelling, only the wounds of entrance and exit, and no signs of bleeding from the wound. Accordingly it was decided not to practice any operative intervention. The injured leg was colder than the right leg and slightly bluish, and of course gangrene was feared. Flannel bandages and hot-water bottles were applied. The child did well reacting perfectly from the shock, and in twenty-four hours showed evidence of collateral circulation having been established. The temperature declined and was normal on the fourth day, but thereafter showed an evening rise to about 101 degrees. On February 17, eleven days after admission, he was found by the nurse in a pool of blood. A tight bandage was applied and the hemorrhage stopped, but recurred five hours later. Patient pale and thirsty. His assistant, Doctor Ryan, opened up the wound and found a hole in the femoral artery at the point where the profunda femoris is given off. The common femoral was ligated, the incision swabbed out with iodine and rubber dam drainage inserted. The patient was very ill for a few days, but on February 28 the wound was clean and granulation tissue filling it up.

Subsequently the child developed an abscess of the leg, which was incised and drained. He was discharged on May 6.

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The two points of interest that he wanted to bring out are: (1) The occurrence of secondary hemorrhage in each case, and (2) the viability of the limb after ligation of the femoral artery.

In regard to the first point, he had not made an exhaustive study, but he finds a general agreement on the dictum: "In case of primary hemorrhage, do not ligate the vessel unless it is bleeding at the time." Both of their Fellows who had written text-books of Surgery accept this rule. Makins, from the experience of the War, says: "When evidence exists that a large vessel has been wounded in the course of a track traversing the body or limbs, unless the conditions are favorable, it is not advisable to interfere primarily if no signs of progressing hemorrhage are forthcoming, nor indications that the vitality of a distal portion of the limb is becoming endangered."

As he looked back over the cases of gunshot wounds of the extremities which he had encountered, he felt that a certain degree of infection had occurred in nearly all. Different from military practice, they were admitted usually a few minutes after infliction. Different also, in that there is not the severe trauma of the tissues from the shattering blow of the shell fragment or high velocity rifle bullet.

Broadly applying the principles taught by the War surgeons, and as these wounds can nearly all be treated during the stage of contamination, not infection, he felt that in the future he would, *knowing the vessel had been cut*, promptly cut down and either suture the hole, repair the artery or ligate it, even though hemorrhage has ceased. Blood transfusion and modern methods enable surgeons mostly to disregard the shock complication.

II. Regarding ligation of the femoral artery: In 1891 Treves wrote that great risks attend ligation of the common femoral, from gangrene or secondary hemorrhage. Before the War gangrene was said to occur in 20 per cent. of femoral ligations, and in 50 per cent. where both artery and vein were ligated. Sencert (1918) is "of the opinion that ligation of the femoral artery is not as dangerous to the vitality of the limb as is commonly believed." He ligated the femoral eleven times (in three the common femoral) with no case of gangrene, where there was no large hæmatoma, but gangrene occurred several times in nine cases of the latter class. Makins observed gangrene in five out of thirty-five cases, and in two of these gangrene was present before operation. On the other hand, Heidrick, very recently (1921), gives detailed statistics covering cases of the last ten years. Ligation of the femoral was followed by gangrene in 20.7 per cent. He found gangrene more frequent following ligation below the branching off of the profunda than above. This is in agreement with the teaching of Treves. Ligation of the external iliac was followed by gangrene in 13.4 per cent. This again is in agreement with the older teaching of Treves and leads us to wonder whether it would not be better to expose the larger vessel through a fresh or clean incision, temporarily ligate it, and then tie

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both it and the femoral if the latter could not be repaired by suture. We had followed this principle with success for a number of years in the treatment of infected thigh stumps where hemorrhage was feared, ligating the femoral artery in Scarpa's triangle.

SUBMAXILLARY SALIVARY CALCULUS

DR. B. FRANKLIN BUZBY read a paper with the above title.