

Major Pickrell devised an ingenious method to prevent the posterior fragment from riding upward and outward. He introduced a screw through the zygoma into the coronoid process, in this way retaining the fragment in its normal position. After union had occurred, the screw was removed.

Mr. Collier showed that in fractures of the lower jaw in the molar region, when bone substance was lost, he could avoid a graft by extracting the corresponding teeth of the upper jaw, thus letting the posterior fragment slide forward. His results were very good. One rule we all learned: To obtain union, all teeth in the line of fracture must be extracted.

PLASTIC SURGERY

In plastic work, this hospital holds an enviable position; the originality of the surgeons, coupled with their excellent technic, established principles in plastic surgery which will last forever. Major Waldron, of the Canadian section, was the first to use the Esser inlay, that is, the buried skin graft. This was later modified by Colonels Gilles and Newland, so that instead of introducing the graft from without, it was inserted from the inside of the mouth.

A later modification for obtaining mucous membrane for the mouth was the introduction of the free skin graft. The procedure consisted in incising the mucous membranes or scar tissue of the mouth and making a cast with modeling compound of the cavity thus produced. A Thiersch skin graft was placed over this cast of modeling compound, the latter being held by a dental appliance which had previously been cemented to the teeth. This method failed only in exceptional cases.

Colonel Gilles, the most experienced operator in the British section, frequently used a double tubed pedicle flap taken from the scalp or the chest. The advantage of the double pedicle flap is that it can be transplanted for a long distance without danger of the pedicle becoming infected. He insists that the flap, as in all plastic work, be taken from the area nearest the surface to be covered.

Cartilage grafts were preferred by all the surgeons to free bone grafts in the reconstruction of the nose and supra-orbital margin. It was found that the free bone grafts often became absorbed. No sutures were used through the cartilage to hold it in place.

Previous to our arrival, the staff had run through the entire gamut of methods of nasal construction and had adopted the Indian method as the one of choice, using in every instance a layer of skin for the inner lining. The septum was preferred for nasal support. In the event of its destruction, one or both of the turbinates were selected (if either or both were available), and a free cartilage graft was implanted high up on the forehead, in the area from which the flap was to be taken.

For the correction of shrunken eye sockets, Major Gilles implanted cartilage in preference to performing Mule's operation, in which gold or a glass ball is used, as the inlay became part of the tissues and did not act as a foreign body. The eyelids were restored by an epithelium inlay, with very good results.

Pedicle bone grafts, for example, those of the lower border of the jaw attached to the diaphragm, gave better results than the free bone grafts. Free grafts taken from the rib and tibia periosteum, with a small amount of bone attached, and known as osteoperi-

osteal flaps, were used; all gave fairly uniform results. Practically all the surgeons used catgut for ligatures and for suturing the tissues, silkworm gut and horse-hair being used to close the skin.

Artificial noses were not favored because of their appearance and discomfort, and the necessity of constantly changing and tinting them. Practically all the patients preferred the plastic operations.

The anesthetic used was ether or chloroform, or a mixture of both. In a large number of instances, the anesthetic was administered by rectum, ether being always used in these cases. Very little local anesthesia was used.

SUMMARY

In my experience at Sidcup the things most impressed on my mind were the system of records, the care with which the case was studied before operation, the originality of the operators, and the courtesy and patience shown to those of us who were fortunate enough to be assigned to Queen's Hospital for study.

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ORAL AND PLASTIC SURGERY IN THE INTERMEDIATE SECTION OF FRANCE

OBSERVATIONS OF A CONSULTANT*

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CHICAGO

The exigencies of war always distort and change the ideas and ideals of the civilian soldier, and he is at once confronted with problems that seem insurmountable. It was a difficult task for him to reconcile his dominant idea, of serving the wounded soldier to the best of his ability, to the existing military conditions which many times seemed to overshadow his professional duties; and he was often compelled to sit with folded hands awaiting the arrival of orders, equipment, supplies, etc.

Consolation must be had from the fact that in a very short space of time a movement was successfully "put over," the magnitude of which he will never fully realize, and from the consciousness that he was ready and willing to do his part in the "biggest thing that has ever happened."

For study and comparison a vast amount of work must be done to bring the various data into form which will permit the deduction of logical conclusions. I have ventured to classify some of the case records (the few of which I have copies) from which, together with my observations in the hospitals of Orleans, Blois, Tours, Chateauxaux and Issoudun, I shall endeavor to make some deductions.

RATE OF FORMATION OF BONE UNION

We will first consider the time elapsing between the date of injury and the patients' arrival at our base hospital:

Of thirty-five cases of fracture of the jaws of varying degrees of severity, twenty came into our hands within one week after injury. Our treatment of these comprised the removal of teeth, roots and foreign bodies from the line of fracture, the establishment of adequate drainage, and splint-

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ing or immobilization. Seventeen of these cases were well along toward a bony union, demonstrated clinically and by the roentgen ray, at the end of twenty-seven days (average).

The three remaining cases of the twenty were very severe, with extensive loss of bone and much comminution of fragments, and with severe involvement of the soft parts. Satisfactory progress with bone formation was demonstrated in these at the end of 120, ninety and sixty days, respectively.

One case seen during the second week after injury was splinted and a bony union attained within four weeks.

One case seen in the third week had a bony union with trismus; there was no displacement and no loss of bone. Under an anesthetic, impressions were taken, splints constructed which were cemented in place, and by means of rubber bands, the jaws forced apart. At the end of seven days the patient could open his jaws to the fullest extent.

Of three cases seen in the fourth week, one was ununited, owing to roots of teeth and sequestrums in the line of fracture, after the removal of which the fracture healed rapidly under a splint.

Another, which had healed in malocclusion, was improved by an artificial denture.

The other case of this group was a fracture of the upper jaw which progressed rapidly after adequate drainage was established and after it was splinted.

Of four cases seen in the fifth week, one was united in malocclusion; this was refractured and splinted, after which it healed rapidly. The three other cases were injuries of the soft parts.

Three cases seen during the sixth week all healed rapidly after the removal of dead bone and drainage.

One case seen after ninety-three days healed rapidly after the removal of dead bone and splinting.

One case, seen 180 days after injury, being fractured at the symphysis, became solid after the wearing of a splint for four weeks.

One case seen 365 days after injury presented a suppurating sinus with a partial bony union; this closed rapidly with new bone formation after the removal of the second bicuspid, whose root extended into the line of fracture.

These few cases demonstrated the crying need of immediate reduction of fragments and restoration, as far as possible, of the dental occlusion, with the retention of fragments and with the teeth held in normal position by means of splints on the upper or lower jaws, or both, which might, if need be, be held in occlusion by a removable mechanical appliance.

Displaced fragments may be held in place by temporarily wiring them together, or by circumferential wiring, or in selected cases, by external pressure. The open-bite splint is at times of service.

I have seen very few cases of trismus following these injuries unless there were foreign bodies within the substance of the muscles of mastication. The mild cases due to neighboring inflammation readily subsided.

TECHNIC FOR REMOVAL OF FOREIGN BODIES

In this connection, I might mention the technic of the removal of foreign bodies as practiced at Base Hospital No. 202 by Capt. L. H. Graves and Roentgenologists Jones and O'Dea. I do not recall the name of the method, but it consists of a table beneath which is a movable roentgen-ray tube, the vertical ray of which is directed upward through the foreign body. The fluoroscope, also adjustable and at right angles to the vertical ray, is lowered on the part. The movement of the tube marks the excursion of the body on the fluoroscope. Blunt artery forceps are then placed on the skin at the supposed depth of the foreign body. The tube is again moved, and if the excursion of the tip of the forceps coincides with the excursion of the foreign body, it is exactly at that depth. The forceps

are then held to mark the spot on the skin, the headlight of the operator is turned on, and a buttonhole incision is made in the skin. The forceps are introduced, and under the fluoroscope are carried by a boring motion to the body, which is grasped by the forceps and extracted directly under the eye. From one to five minutes is consumed by the whole operation, and there is no mutilation of the tissues. More than 400 foreign bodies were in this manner removed, with 100 per cent. success.

NERVE INJURIES

I have seen a few patients with injured hypoglossal nerves, but the injuries were either too near the condyloid foramen or too near the entrance of the nerve into the tongue to permit surgical procedure on them. The same may be said regarding the seventh nerve, as it was usually severed within the petrous portion of the temporal bone, or too near its foramen of exit, or too near its exit from the parotid gland, so that it was not promising from a surgical standpoint.

After noting the difficulty which a patient with a severed hypoglossal nerve experiences in eating and talking, I should hesitate very much before utilizing the hypoglossal to repair the facial nerve.

The sliding of the jaw to one side on opening the mouth, after injuries to the neck of the ramus, seems to be due to impaired external pterygoid function, which may be the result of muscular or external pterygoid nerve injury, and usually improves or is recovered from entirely. We see the same phenomenon at times to a mild degree following nerve blocking of the second and third branches of the trigeminus.

Injury of the third branch of the trigeminus in a fracture of the jaw is the rule rather than the exception and is negligible.

CHARACTER AND EXTENT OF INJURIES

It seems from subsequent observation of cases that even when there is extensive destruction of soft tissues, one should not delay in the reduction and fixation of the remaining bony fragments in the best possible position. This applies also to the periosteum which molds the bony new growth rather than forms it.

It seems also that anything more than a very feeble effort at primary repair of the soft parts is likely to be a failure, and that the wide open wounds after having been freed of all foreign bodies and injured tissue do better than the ones in which an effort at repair has been made.

Under constant and efficient care for a few days or weeks, secondary closure with a view of limiting scar formation may be attempted; but before attempting extensive plastic surgery, one should wait until all infection has disappeared and until the bacteria and their spores which have been incarcerated within the scar tissue have been killed.

At the earliest possible moment after injury all foreign bodies, including detached bone fragments and tissues injured by the missiles, should be cleanly dissected out, as the lacerated soft tissues do not retain their vitality and subsequently become culture mediums for bacteria.

Wide open wounds, even when extensive suppuration was present, due to lack of frequent dressing, cleared up more quickly than even partially closed ones. Careful Carrel-Dakin management, especially if the wounds did not communicate with the oral cavity, was the method of choice.

Reduction of fractures, immobilization and retention of fragments, together with adequate drainage, established with the idea of its continuance much longer than in wounds of other parts of the body, were the aims of the maxillofacial staffs within the intermediate section, and a suppurating sinus which continued more than six weeks from the time of injury was an indication for operation and removal of the usual sequestrum, after which the suppuration quickly subsided, cavities in the bone and overhanging ledges of bone being removed.

The retention of bone-forming elements in normal position, especially the periosteum with its attached osteoblasts, even in the presence of suppuration, is very important. I suspect that many cases with extensive loss of bone substance which were splinted for transit overseas, and which seemed to be cases requiring large bone-grafts, were found to have bony union by the time the patients landed, or at least had so far regenerated that very small grafts were required.

When the general order came to evacuate all cases, our aim was to splint them in the best possible occlusion, using splints which could in an emergency be quickly released, allowing the patient to open his mouth, or avoid accident by using an open-bite splint.

The general order stopping all operations except in cases of emergency prevented our doing many plastic operations which we were at that time ready to execute.

The feeding of these patients at times presented difficulties, but usually the friendly cooperation of head nurses, cooks and the Red Cross, enabled us to procure an abundance of proper food for them. A variety both in kind and preparation was also provided.

Some few patients came to us with their jaws wired together, and most of them were in good shape. It was no doubt the best means at hand, but dangerous.

I am inclined to think that the better practice would have been to expedite the transportation of the patient to the base hospital without any attempt at reduction or immobilization as the presence of any sort of appliance is at times misleading to the surgeon. He thinks that as an appliance or wire is about the teeth, the patient has been properly attended to, and may be inclined to procrastinate in sending him to the oral surgeon who, when the patient does come, finds that there has been union either fibrous or bony, in malposition, and that reduction on account of the delay is more difficult, demanding at times a refracture before proper splinting can be done.

A TRIBUTE

I must pay tribute to the wonderful spirit, implicit trust and confidence of the American soldier; his placid mental state and fortitude were marvelous.

There were eight tables in our operating room at Orleans and when the trains of wounded arrived eight patients were put on the tables, eight rested on the floor, and as fast as one was taken from an operating table another was placed on it. This routine was kept up until the last one was operated on and dressed. There was never a whimper or complaint from any of them. They even assisted when being placed on the table, and took the anesthetic in the most quiet way imaginable without a word of remonstrance or sign of fear, really a phenomenon almost never seen in a civilian hospital. In the wards also there were no grouches, and they appreciated to the fullest extent the efforts of officers and nurses in their behalf. My hat is off to the doughboy.

THE BROAD TAPEWORM, *DIBOTHRIOCEPHALUS LATUS*, IN MINNESOTA

ADDITIONAL RECORDS *

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Cases of infestation of man by the broad, or fish tapeworm, *Dibothriocephalus latus*, have been regarded as rare in the United States. Nevertheless, Stiles¹ states that over thirty cases have been recognized here, chiefly among foreigners. At least four cases have been reported since that time, and I have knowledge of seven cases from Minnesota which have not been recorded.

Indeed, I am inclined to believe that there are sections of Minnesota in which it is by all odds the commonest of the large tapeworms of man. This seems true in some of the sections settled largely by Scandinavian, Finnish and Polish immigrants. Cases have been reported repeatedly as occurring among these nationalities, but have been regarded as imported. Such, indeed, most of them clearly are.

In 1906, Dr. W. S. Nickerson² reported three cases that had occurred in the practice of Dr. Owen W. Parker of Ely, Minn. The patients in two of these cases were Finlanders, but the most significant fact was that the third was a child of Finnish parentage, who was born in Minnesota and had never been outside the state. The father came to this country in 1891. Three years after coming from Finland he passed a tapeworm (*Dibothriocephalus*?). The infested child was born, April 15, 1902, in Ely, Minn. At the age of 2 years, he ceased to thrive or gain in weight, became anemic and suffered from abdominal pains. In August, 1904, his mother noticed segments of tapeworm in his stools and called the physician, who successfully treated him. Up to the time of this report, the child had remained perfectly well.

The tapeworm expelled measured 7 feet in length and was a "typical specimen of *Dibothriocephalus latus*." The scolex measured 1.75 mm. by 0.9 mm.

In the words of Dr. Nickerson, "This latter case is of exceeding importance, since there can be no question that the infection occurred in Minnesota, and it, therefore, demonstrates the fact that the broad tapeworm now has a foothold, at least locally, in this country."

So far as I have been able to learn, Dr. Parker's case is the only recorded one of *Dibothriocephalus* infestation of man in this country which is not clearly explicable on the theory that the parasite was an importation. Indeed, in spite of the apparently clear-cut nature of the evidence, the general point of view of medical men is that expressed by Kopelowitz,³ who says:

There is very little evidence at present to justify an assumption that native foci of infection exist in this country.

For this reason it seems desirable to place on record two additional cases which have come to my attention

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2. Nickerson, W. S.: The Broad Tapeworm in Minnesota, J. A. M. A. 46: 711 (March 10) 1906.

3. Kopelowitz, J. C.: Bothriocephalus Latus Infection in Missouri, with Report of a Case, J. Missouri M. A. 13: 502 (Oct.) 1916.