ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL, to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

Mandibular Bone-Grafts. C. W. Waldron and E. F. Risdon. Proceedings Royal Society of Medicine, London, 1919, xii.

In the early treatment of mandibular compound fractures with loss of bone substance, persistent efforts should be made to keep the mouth as clean as possible by frequent mouth washings and irrigation of pockets and sinuses. All sinuses should be freely drained and any attached comminuted fragments should not be disturbed until they become separated and remain as sequestra. Displaced fragments should be corrected and held by dental splints for two months or more. Teeth too near the line of fracture or those predisposing to infection of the wound should be extracted, but those which will be of service in immobilization of the parts when the graft is placed should be preserved. The date when all external and alveolar sinuses have definitely healed should be noted as no operative procedure should be undertaken until at least six months have elapsed after the complete disappearance of all inflammatory processes.

At least a week before the operation the dental splints should be cemented to the teeth in order that the mucous membrane of the mouth may become accustomed to them. The anæsthetic used is ether oil administered by rectum and ether administered intrapharyngeally through a nasal tube. After the field has been prepared with ether and iodine, a sterile dental rubber dam is fixed to the cheek and lower lip with adhesive. By turning this upward, the mouth is walled off and soiling by saliva is prevented. At the conclusion of the operation the rubber dam is turned down over the wound as a part of the dressing.

One type of graft is illustrated by the accompanying drawing. The incision is made so that it will be below, rather than over, the graft. The non-touch method is used. The ends of the fragments are exposed 1½ to 2 centimeters back and great care is taken not to perforate into the mouth cavity. The ends of the fragments are trimmed back until good, healthy, bleeding bone is reached. All cicatricial tissue should be excised. The rongeur forceps are used in preparing the graft and fragments. The ends of the fragments are squared off as well as possible, leaving a ledge above the graft which affords additional surface contact between the fragments and graft. When one end is well forward, an overlapping joint or a notching of the posterior fragment may be advantageous. The

iliac crest is exposed and a piece of the proper size removed with small chisels and thin saws. Usually there is considerable free hemorrhage which will require drainage of, and firm pressure to, the wound to control it. From this site, a shape suitable to the requirements of the case may be had with the minimum amount of modeling. Holes are drilled into the ends of the transplant and ends of the fragments, and short pieces of Belgian wire are threaded through and tightened. The subcutaneous tissues are closed with interrupted catgut and the skin closed with horsehair after all hemorrhage is controlled.

On account of the wound of the iliac crest the patients are kept in bed for ten days. The diet is at first liquid, then semisolid. Splints are left on for from three to four months, and removed only when the progress, as shown by the x-ray, is satisfactory.

In reviewing the cases the author concludes: (1) that restoration of function may be expected in a large percentage of cases; (2) that both surgeon and dental surgeon must give careful attention to the case to the final stage; (3) that the iliac crest is best suited for grafts of mandibular fractures; and (4) that good contact of grafts to fresh healthy bone and the maintenance of the graft in position by wiring is essential.

Results of Bone-Grafting Operations in the Treatment of Ununited Fractures of the Mandible. W. Maxwell Munby and A. D. E. Shefford. The Lancet, London, 1919, June 21, i, p 1070.

The results obtained by bone-grafting operations in the treatment of ununited fractures of the mandible, in the Northern General Hospital, Leeds, England, are reported by the authors on account of the great odontological importance of these observations. In their earlier cases, the free graft was invariably used, while in the later cases, a pedicled graft from the mandible (as introduced by Percival Cole) was adopted. Better results are obtained by the use of the pedicled grafts than by free grafts in that the former considerably shorten the period between the actual operation and the establishment of union. Where there are no teeth in the posterior fragment, the best results are also obtained by use of the pedicled graft. Certain cases where there is a large gap between the fragments are not suitable for a pedicle graft, especially when both ends of the fragments are pointed. In such instances a free graft is preferable. In free grafts the best results are obtained when the graft can be wedged into position and the periosteum stitched with fine catgut. The graft was obtained from the crest of the ilium in the majority of the cases.

Ununited fractures of the mandible, the result of gunshot injuries, are divisible into two classes, those having teeth in both fragments, and those having no teeth in the posterior fragment. In those cases where there is an absence of teeth in the posterior fragment, the operation is only indicated when the pseudo arthrosis is very lax, and marked improvement can be obtained, even if union of the graft is imperfect. Where there is already firm fibrous union causing little or no disability, the operation is not indicated. Bone-grafting operations give the best results when there are teeth in both fragments, which can then be completely controlled by a splint; eight of nine such cases were united at the end of

ten months. Absence of wound infection is an essential in order to secure satisfactory results. The amount of scar tissue present in the area of operation does not appear to influence the result, except that a slight sloughing of the skin flaps may occur when it is abundant. Bony union was obtained in ten of seventeen cases, equaling 59 per cent.

Radiographs in fractures at the angle region of the mandible are deceptive, inasmuch as they do not show the true extent of the size of the gap, which is frequently greater than it would appear, owing to the fact that the posterior fragment generally becomes displaced and lies at a deeper plane than the anterior fragment.

Teratoma of the Maxillary Antrum. H. E. Velarde. Philippine Journal of Science, 1919, xiv, No. 1, p. 161.

The case described was that of a 14-year old girl. The condition was of several years' standing, there being an increasing prominence of the right face. The right maxilla in the region of the antrum of Highmore was found to be prominent and bulging, extending to the side of the nose. There was no inflammation nor was there tenderness on pressure. A skiagram showed the presence of a tooth in the antrum. A radical operation was performed, the antrum being opened by a blow on a chisel, the membranous sac (containing fluid) was incised, and the sac and the single-rooted tooth buried in the roof of the antrum and the floor of the orbit were removed. An opening into the nose was left for drainage. The pathological examination indicated that the tumor mass was of the nature of an enamel organ or adamantinoma. The location is unusual.

Treatment of Ununited Fractures of the Jaws, Resume of Work Done by the Dental Department, U. S. A. General Hospital No. 11, Cape May, N. J. D. H. McCauley and D. L. Worthley. Dental Cosmos, 1919, lxi, p. 391.

War surgery has presented problems and difficulties quite different from those met with in civil practice and of these the dental surgeon has had his full share, particularly in the treatment of fractures of the jaws due to gunshot wounds.

In civil life, fractures of the maxilla and mandible are seldom complicated by a loss of substance. In war injuries, however, such a loss is the rule rather than the exception.

In the cases reported the patients had received their wounds from six weeks to four months previous to the time treatment was begun. Only a few were not in good condition, in spite of the fact that there was a lack of proper materials for treatment. Splints had to be devised from 2-franc pieces, chicken wire, telephone wire, and any other malleable metal which could be obtained.

Immobilization for from three to four months was always necessary to secure union when there was a loss of substance. Such immobilization should be instituted with the muscles relaxed and the jaws in the position of rest. The danger of trismus following immobilization is very slight.

To force the jaws apart gradually the authors suggest the use of a simple

tapered screw which can be adjusted by the patient himself. As the muscles seem to contract more at night during normal sleeping hours than at any other time, the patients were given a cork with a wire attached to place between the teeth before going to bed. Larger corks were substituted at regular intervals.

Food and fresh air are important factors in the successful treatment of any fracture. When the jaws have been immobilized, the food must, of course, be liquid or semi-liquid.

The authors report many interesting cases of fracture of the jaws which were treated successfully.

Mandibular Bone-Grafts. C. W. Waldron and E. F. Risdon. The British Journal of Dental Science, 1919, lxii, p. 201.

During the past three years, the surgeons doing this work have made a careful and uninterrupted study of all the various phases of the problems arising in cases of severe fractures of the lower jaw. With special reference to the transplantation of bone, the consensus of opinion appears to be that the transplanted bone has varying, but extremely important, osteogenetic properties. Bone-grafting of the lower jaw is an operative procedure whereby union of the fracture and restoration of function may be expected in a large percentage of cases. Complete co-operation and careful attention to every detail by the dental surgeon and the surgeon concerned, are essential from the early treatment to the final stage. Full advantage should be taken of the osteogenetic activity of the fragments, and of the transplanted bone, and also of the osteo-conductive properties of the latter. The iliac crest is, in the authors' experience, best suited in most cases for the bridging of defects in the lower jaw. The operation should be made as simple as possible, the object being to obtain good contact of the graft to fresh healthy bone of the fragments, maintaining the same firmly in position by wiring. The iliac crest graft is easily obtained, is very cancellous, strong, and particularly adaptable, as any surface may be used. The crest is easily exposed, and the required amount removed by thin chisels and narrow saws. Hemorrhage may be free, necessitating firm pressure and the insertion of a rubber-tube drainage. The graft is readily trimmed and fitted to place. Holes are then drilled in each end of the transplant, through which are threaded the wires previously inserted in the ends of the fragments. These are then tightened, fixing the graft firmly in position. The subcutaneous tissues are then united with interrupted mattress catgut sutures, and the skin is closed with horse-hair after bleeding has been controlled.

War Injuries of the Face. W. Rosenthal. Ergebnisse der Chirurgie und Orthopaedie, x, 1918.

Cooperation between surgeon and dentist is essential for the best possible results in these cases. Early treatment is of the greatest importance in facial and jaw injuries, a splint attachment being useful in the latter, so as to prevent displacement of the fragments while allowing the mouth a certain amount of gape. A correct technic is imperative, with attention to rigorous asepsis, com-

plete hemostasis, and systematic after-treatment. Defects of the lips should be repaired as a general rule with tissues from the upper lip in the case of lower lip lesions, and vice versa, supplemented by tissue from the cheek region. In the treatment of palatal defects, all closure by means of obturators and dental appliances is rejected by the author, in whose opinion all such defects of any size and in any position, admit of closure by plastic procedures. A pedicled flap including the whole thickness of the cheek is recommended for very extensive palatal defects, but with a more or less intact alveolar border. The flap is turned inwards to cover the opening, the wound in the cheek being brought together around the pedicle. At a later date, the pedicle is completely divided, in order to assist the desired transformation from external skin into oral mucosa and to favor efficient innervation from the palate. In bone-graft reconstruction of jaw fragments, a pedicled slide-graft can be obtained from the region of the mandibular angle or from the symphysis, or in the case of greater defect, from the opposite side. There is no limit to the size of free bone grafts for the jaw, which may be secured from the jaw itself, the ribs, the clavicle, the ilium, the tibia, and the metatarsus. In a general way, the ilium and the tibia would seem to be the most advantageous sources of the graft. The operative technic is of decisive importance, and the periosteum must be carefully preserved, guarding against its infiltration in case the work is done under local anesthesia. The graft is preferably transferred directly to its new bed, without preliminary immersion in solutions of any kind, and without any unnecessary handling. The periosteal edges are then united by catgut sutures, an important step in the operation, although the freshened end of the jaw fragment with its medullary tissue may also participate in the final union of the graft. Appropriate employment of free bone-grafts is often followed by perfect union and excellent functional results.

Ankylosis of the Jaw Due to Fixation of the Temporal Muscle. Gordon B. New. Journal American Medical Association, July 25, 1919, lxxiii, No. 4, p. 264.

It is sometimes difficult to determine definitely the side involved and the location of the fixation of an ankylosis of the jaw. This is particularly true in cases in which the jaws are fully formed before the ankylosis has occurred and in which there is no deformity. The diagnosis of the location is not so difficult when the fixation has occurred early in life, causing the deformity typical of such cases. Ankylosis of the jaw may be said to be of three types: (1) articular ankylosis, the most common type, due to the involvement of the temporomaxillary joint, (2) extra-articular ankylosis, in which the extra-articular structures or muscles are the cause, and (3) articular-extra-articular ankylosis, in which both the joint and the extra-articular structures are at fault. The clinical points of value in determining the side involved and the location of the ankylosis have been brought out in a recent article. The treatment of the articular type of ankylosis gives uniformly good results. It consists of an arthroplasty of the temporomaxillary joint through a curved incision 2 inches long, extending above the zygoma and down in front of the ear, and the removal of at least one-half inch of the

condyle and the ascending ramus of the jaw. It is not necessary to interpose any tissue in the new joint. When the jaw is not deformed, the operation is not difficult. If the typical deformity of ankylosis developed early in life is present, the joint will be very low and should be attacked from above by removing the lower margin of the zygoma. In this way the facial nerve is avoided, which is liable to injury if care is not taken in making the dissection in the soft tissues. The treatment of the extra-articular and the articular-extra-articular types of ankylosis are much more difficult and present many problems.

Relation of Dental Affections to Systemic Diseases. A. Stengel. The Dental Cosmos, 1919, lxi, No. 7, p. 619.

It is only recently that attention has been paid to the roots of the teeth as localities from which general infection can occur. These deep-seated, hidden, and incarcerated abscesses about the roots of the teeth are far more apt to become the source of generalized infection than are superficial conditions such as gingivitis or pyorrhea. Root abscesses become increasingly important in the involutional period of life, in the forties, fifties, and sixties. Whereas infections of the soft tissues are threatened in youth, infection of the alveolar process is to be anticipated in patients past forty years of age. Among the diseases due to oral or dental infection, the following are especially noteworthy: (1) Chronic anemia. (2) Chronic arthritis. (3) Chronic nephritis, Bright's disease. (4) Myocarditis; that is, weak heart. (5) Recurrent or relapsing endocarditis, or infection of the heart-valves. Beginning in adult life, an indefinite anemia, even approaching pernicious anemia in type and severity, is not infrequently referable to root infections. Elderly people in a chronic state of ill health are apt to be suffering from focal infection somewhere in the body. As a rule, these patients are anemic, and the cause of their secondary anemia should be sought for in the oral cavity, among other places. Oral infection is often, but by no means invariably responsible for the forms of chronic arthritis known as arthritis deformans. A case of vertebral arthritis, with pains radiating along the intercostal nerves, and chronic nephritis with albumen and casts in the urine, under the author's personal observation, was undoubtedly referable to infection disseminated from the mouth. Complete recovery followed within some months after the removal of all the patient's teeth, which were literally swimming in pus. The mouth is also an important but not invariable source of infection of the heart-muscle. Patients suffering from valvular disease of the heart must carefully guard against re-infection of the damaged valve, by exercising the greatest care about the mouth, the pharynx, the teeth, etc. The invasion of the streptococcus viridans, whose frequent habitat is in the mouth, is likely to reinfect an already damaged and less resistant heart.

Concerning root abscesses, it is necessary to make a distinction between an abscess that is infecting the system and one that is not, the latter can perhaps be drained and treated, with preservation of a valuable tooth. "There is no kind of thing that men are not attributing to root abscesses. A patient develops iritis, glaucoma, or panophthalmitis. These are all manifestations that may mean gout, arteriosclerosis, or syphilis; and yet some one is willing to say the con-

dition is due to a root shadow, and he takes the tooth out. Teeth should not be sacrificed in this haphazard way; and, worst of all, the obsession that oral infections explain everything should not lead us to overlook much more serious conditions." "The author, who has seen an instance in which a bad place in the x-ray plate was thought to be a bad abscess that did not exist, emphasizes that we must be more skeptical concerning the work of the x-ray artist; we should be less complacent, and not accept it lightly when there is a tooth to be sacrificed."

While a conservative radical method in the form of root amputations may be expected to cure many cases of root-abscess, the end result of the use of sera and vaccines in the treatment of root-abscesses will presumably prove wholly unsuccessful.

Pyorrhea and Autogenous Vaccines. G. M. Hoffman. Medical Sentinel, 1919, xxvii, No. 8, p. 991.

In reviewing 100 cases of pyorrhea alveolaris, each of which was examined from a direct smear of pus, plus cultures, the predominating organism of the infection was found to be streptococci pyogenese. The staphylococci, usually aureus and albus, was present in 30 per cent of all cases. Spirochetes, fusiform B. mould fungus and some diplococci are frequently found associated with the streptococci pyogenese. It has been the author's practice to treat these cases with autogenous vaccines of streptococci pyogenese, eliminating the extraneous organisms above cited. It may be of interest to note in but ten cases the amebæ buccalis was found, which organism for years was believed to be the causative of the majority of cases of pyorrhea.

Trench Mouth. H. L. Merkeley. Oral Health, 1919, ix, No. 7, p. 243.

This condition is well described by the designation as ulcerative interstitial gingivitis. A lack of oral hygiene is generally conceded as a contributing factor, and badly kept table utensils undoubtedly help in the distribution of the infection. Streptococci, and a very few staphylococci have been found, as well as anaerobes in the form of the bacillus fusiformis and its spirochaete, said to be a spore form of the bacillus fusiformis. Certain other ultra-microscopic forms are regarded by the author as chiefly responsible. The infection spreads with great rapidity and then assumes a stubborn chronic character. The clinical picture presents a slough closely approximating in general appearance that of an arsenic necrosis. The floor of the mouth, tongue and cheeks are rarely involved, although there is a considerable rise in temperature of the cheeks in acute exacerbations. There is also a general rise in temperature of a couple of degrees, due no doubt to the absorption of ptomaines and toxins. Pain may be severe enough to produce insomnia. The chief aim in the treatment being the removal of the cause and all contributing factors, the slough is best cleaned away by applying dry crystals of copper sulphate on a small pledget of cotton to each interproximal space where slough is present. The bactericidal application is allowed to remain three or four minutes, then washed out with a water syringe, this treatment to be repeated daily for three or four days, or if pain be intense, twice

daily. As a mouth-wash, undiluted Dakin's solution should be prescribed, with instructions to the patient to hold the solution in the mouth for some minutes, and use the cheeks to forcibly wash out the interproximal spaces. When the pain has disappeared and the slough has been cast off, which should be in four to five days, a thorough examination should be made for all irritants, and these should be removed even to the removal of all shell crowns and extraction of the third molars, if badly involved. It is noteworthy that the tissue flap covering a partially erupted third molar may form a pocket and thus become the seat of trouble. In fact, fifty per cent of cases treated to date point to this origin. Treatment by irrigation and wash should be continued until granulation-tissue has a good start, then iodine and violet ray massage may well be employed, keeping up the Dakin solution as a mouth wash intermittently. The destroyed gingival tissue will slowly regenerate, and give a fairly good effect even in extensive necrosis.

Radiography in Dental Diagnosis and Treatment. L. H. Woodroffe. British Dental Journal, 1919, xl, No. 13, p. 505.

The following classification of the indications for dental radiography is offered by the author on account of its simplicity and comprehensiveness:

1. Septic and inflammatory conditions, including (a) Pyorrhea alveolaris; (b) chronic rarefying osteitis; (c) alveolar abscess, acute or chronic; (d) fistula; (e) pericemental abscess; (f) empyema of antrum; (g) bone necrosis.

2. In orthodontia, including: (a) Late eruption of teeth, possibly due to absence of permanent teeth; (b) in cases of supernumerary teeth; (c) in cases of impaction; (d) determination of position of secondary teeth.

3. Root canal treatment, including: (a) Preliminary examination to determine the position and direction of roots, and subsequently (b) to see if filling has been correctly performed.

4. Root resection.

5. In all crown and bridge work: Not only should an examination be made before commencing work, to ascertain the condition of the teeth concerned, but an examination of any crowned teeth some months after the work has been done will lessen the large number of unhealthy teeth met with. A preliminary examination of the skiagrams of these teeth will also facilitate matters in respect to the treatment of root canals.

6. In making a general radiographic survey of the mouth, whether at the request of the careful dentist who wishes to be sure that no hidden trouble is present, or at the request of the physician who is faced with some nervous, alimentary or other disorder of obscure origin.

7. In oral surgery, including: (a) Extractions which, when unusually difficult, will be facilitated by a radiograph of the position and direction of the roots; (b) in cases where after extraction curettage may be necessary; (c) in cases of fracture; (d) in gunshot wounds; (e) in cases of cysts and tumors of the maxillae, whether malignant or benign.

As regards the examination of the mouth for septic or inflammatory conditions, intra-oral films are as a rule the most satisfactory, as the fine detail re-

quired for the recognition of these diseases is more easily obtained by placing the film in the mouth. This method should always be followed, though occasionally the exposure of a plate will give material assistance, as for example in suspected empyema of the antrum, where a special exposure giving a comparative view of the two antra should be made. In cases of fistula, stereoscopic exposures on extra-oral plates and on intra-oral films will frequently throw light on the course of the sinus and the cause thereof, the fistula being previously injected with a bismuth or similar opaque preparation. The presence of necrotic fragments of bone or broken and buried roots will also frequently be found to repay the increased trouble of stereoscopic exposures on plates or films. It is, however, in regulation work that the value of extra-oral exposures is most often seen, these being followed when found necessary by the exposure of intra-oral films as well. In regulation cases it will often be found that the information obtainable from a single exposure is misleading and a stereoscopic exposure will at once make the task of the dentist more simple.

From the viewpoint of orthodontia, radiography will at once settle the question as to the presence or absence of secondary teeth; if present, the stage of development reached and the approximate size of the unerupted teeth will be available, and from this the space necessary for their proper eruption can be judged. The direction in which the teeth are advancing and their approximate line of occlusion can be decided by means of a radiograph exposed at the right time, and occasionally by making attachments to unerupted teeth more can be done to regulate their advance than would otherwise be possible. The correct time for the extraction of deciduous teeth can also be determined. Finally, much may be done to avoid the overcrowding of teeth and faulty occlusion due to the malposition of third molars. Misplacements of these teeth are common, and cases of impaction and abnormality of roots will at once be brought to light by a skiagram of the area. In these cases it is very desirable to make stereoscopic exposures. Frequently an impacted and unerupted third molar will give rise to serious nervous disturbances, and such a tooth may only be discovered and its extraction enormously simplified by a radiographic picture of its relations.

The value of the x-ray in cases of fracture, of the formation of sequestra, and of loss of bone after shell and gunshot wounds is obvious, as it is also in cases of tumors of various types, and of salivary calculus. In these cases plates should in all cases be exposed, and inasmuch as in a large proportion of these conditions a clearer conception of the state of affairs can be obtained by a stereoscopic view, stereoscopic exposures should be made as a routine.