CLINICAL LECTURE

ON

THE SCOPE OF DENTAL SURGERY.

Delivered at King's College, London.

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THE duty which devolves upon me of giving you a course of clinical lectures and demonstrations on dental surgery is a peculiarly pleasant and congenial one, inasmuch as I have to address a body of gentlemen who are studying medicine and surgery in a general hospital, upon a subject which has been looked upon too much in the light of a specialty, more separate than other specialties from medicine, and which I fear, as a rule, does not meet with that measure of attention which is its due; although, if you would give even a very small proportion of your time, in comparison with that allotted to your other studies, to its consideration, I am certain that you would thereby render yourselves good service in a future day. I fear that there are too many not only of those who are without the ranks of that branch of surgery which I profess, but also of the less highly cultivated practitioners within them, who seem to think that the practice of dentistry merely implies the filling or extraction of teeth; and I must confess that I have often been surprised at the ignorance of intelligent members of our profession in relation to diseases of these organs. Feeling strongly as I do, as a surgeon, the *rapport* existing between this specialty and general surgery, I shall attempt to show you to-day, in this Introductory Lecture, the necessity, on the one hand, that the dental practitioner should not only be a fully qualified but also an intelligent surgeon, and, on the other, that the general surgeon, aye, and the physician too, may derive some benefit from studying those diseases, direct or indirect, which have their origin in morbid or abnormal conditions of the dental structures. You all recollect the fable of Menenius, wherein he pointed out to the dissentient plebeians the harmony existing between the various parts of the human frame, applying the moral of his story to their divisions with the patrician body of the state. Now, the teeth are in as intimate relation with the body generally as is the eye or ear, and their morbid conditions can only be treated rationally upon such acknowledgment. The oculist and the aurist are fully qualified practitioners. The dentist should be so also, and it seems to me ridiculous that men should cavil about their status and position in the social scale, if they do not choose to educate themselves as other specialists are educated. The teeth must not be looked upon as mere pegs or nails inserted into living structure, but as organs having the most important relation to the whole system; and I think that I shall be able to prove to you that there is not a period in life when some knowledge concerning their development and condition may not be of service to you in any branch of practice, whilst the special objects of my future demonstrations will be to give you practical illustration of the treatment and diagnosis of cases quoted here, and to show you those operations which, having for their object the relief of pain or the arrest of disease, may be especially useful to those in country practice, or to those about to be engaged in the naval and military service of their country.

Firstly, consider, with me, the position of the maxillary bones, in which the teeth are implanted. Consider with how many nerves, with their attendant ganglia and plexuses, those teeth have connection. On each side, the oral cavity is in close proximity to the internal and external ear. Above, it is in near relation to the orbits and that oft-troublesome cavity the antrum, which is again in contiguity with the nasal fosse, the contents of which are frequently affected as a result of dental disease; whilst, finally, the continuation of the oral aperture leads to the stomach, in which arise, should assimilation be imperfect, the first causes of faulty structural development, or in which are produced, if dyspepsia exist, those acids which, being eructed into the mouth, constitute a local source of dental lesion; whilst the unhealthiness of the mucous membrane of the gums may serve as a valuable means of diagnosis in various morbid conditions of the gastro-intestinal mucous track.

The necessity of some knowledge of dental surgery to the general surgeon, and of medicine to the specialist, is shown from the earliest period of existence. Caries and imperfection of tooth-structure are to a very great extent, I regret to say, diseases of civilisation; and my

experience as a traveller in many parts of the world has taught me how much influence climate and *modus vivendi* have, not only upon the condition of the teeth, but upon the body generally.

As a rule, the savage or aborigine scarcely suffers from dental lesion, save in those instances where the conditions of his life are peculiarly adverse to constitutional integrity. The freedom of the aborigine from disease undoubtedly depends, to a great extent, upon the healthy life he leads. His hours are regulated by the rising and setting sun, whilst his occupations all conduce to health; but, when the country is notoriously unhealthy, his system is affected by the existing factors of disease; thus it is remarked that, on the eastern side of the Rocky Mountains, where the climate is healthy and bone-forming food abundant, caries is unknown; whereas, on their western boundary, where animal food is very scarce, and the vegetable diet deficient in those elements which are the chief ingredients of osseous tissue, disease is not unrequent. Mine has been the same experience in relation to the Zulu and Bosjesman tribes in Africa, and also with regard to various parts of China. If you ever happen to be near Hythe, in Kent, and will visit the old church there, you will see hundreds of the skulls of our Anglo-Saxon progenitors, and will find that their maxillæ are well developed and firm in structure, with not a tooth decayed in young or old; and in this specimen, at least two thousand years of age, found in a sarcophagus during excavations made at Cumæ some short time since, you see another proof that the changed conditions of modern life present important factors in the induction of disease. If you will examine more modern skulls, a very different story will present itself, decay revealing its ravages on every side. The causes of this disintegration of tissue are numerous. Change of climate may alike produce or arrest disease; thus when the healthy Irishman or Scotsman quits his home for another habitat, where potatoes and oatmeal, rich in bone-material, are not abundant, in a few years he suffers from disease alike with those amongst whom he has sought another home; whilst, on the other hand, another person may regain new health in another clime, and the tendency to disease may cease. The argument from these facts is that, inasmuch as it is proved that a constitutional condition can exist in which the teeth may be free from caries, there is no reason why, if we discover the conditions of this immunity, we should not be able, in the course of a generation or two, to bring about a like result; for all evidence tends to prove that there are constantly recurring changes of waste and repair taking place in the dental tissues as in other parts, though naturally their structure forbids these being as rapid as in other tissues. I am confident that the prevalence of dental disease in the present day is in no small proportion of cases a direct consequence of the way in which our food is overrefined and prepared, so much so, that it is too frequently almost entirely deprived of those elements which are most requisite for the formation of firmly knit bones and healthy muscle; and I fear that parents will never be taught to understand, until they are instructed in the elements of physiology and hygiene as a part of their education, how often they are unwittingly responsible for the sufferings of their offspring. The bread of our Anglo-Saxon progenitors was prepared of crushed meal, in which the husk and the flour were mixed up together, so that all the necessary constituents for tissue-formation were retained, with such results as those to which I have alluded. The pregnant mother should be enjoined to make use of food containing an excess of nitrogenous material, so as to counterbalance the extra demands upon her blood for those inorganic particles which are necessary to build up the framework of her child. The child being born—and it is after birth that the greater portion of the bony framework is deposited—its digestion and its powers of assimilation must be carefully considered in determining the character of its food; whilst, in later years, it should be amply supplied with ossific material, such as eggs and potatoes, and, above all, if its assimilative powers be intact, bread made with the bran. But the treatment of the child ought to commence with that of the parent during her pregnancy; and, to make her submit to this, she must be taught the responsibility which her condition imposes upon her in regard to the welfare of future generations. Could this be done, in a generation or two, many constitutional defects might be blotted out, and notably diseases like rickets, scrofula, and caries. I have had the good fortune to have some few children under my care from early childhood; and, by judicious attention to their digestive and assimilative powers, I have been enabled to arrest those ravages which, I am convinced, would otherwise have maintained their sway until nearly every tooth had been destroyed.

Let me next consider the subject of teething, a period so fraught with danger to the child, that no less than 5 per cent. of the deaths under one year, and 7 per cent. of the deaths between that period and three years, are ascribed to dentition. At this epoch, when the spinal predominates over the cerebral system, the slightest sources of irritation may lead to fatal results; for that which causes a shud-

der in a man may produce a convulsion in the infant. The symptoms of dental irritation may be confounded with congestion or inflammation of the brain and its membranes, and in some cases a mistaken diagnosis might be of serious import. Whilst cursorily alluding to the maladies which are dependent upon, or synchronous with, the eruptive stage, I cannot but draw your attention to the empiricism often exhibited in lancing the gums, that favourite method of treatment for actual or supposed dental irritation. There is little doubt that the gums are not only lanced during those periods of repose which characterise evolution, or when the osseous structure of the maxilla still remains unabsorbed over the advancing tooth, but that, as a rule, this operation is performed simply because, in a few cases, the relief of tension in congested tissue has sufficed to relieve an attack of convulsions. Where the tooth is just beneath the gum, or where there is manifest congestion, the incision of the parts may be productive of much benefit, but otherwise it is a procedure not only useless but barbaric. Retardation in development of the teeth is also a means of indicating future disease; for example, when their eruption is delayed beyond nine months, there is every reason to suspect that the child is suffering from rickets, a valuable means of diagnosing that disease for which we are indebted to Sir William Jenner. Next I must mention some of those diseases connected with the teeth which characterise a later period in life, than which none is of greater importance to the practitioner than neuralgia. If you will recall to mind the extensive sympathetic connections of the trigeminal or fifth nerve, it will not seem strange to you that the teeth should be often connected with reflex phenomena leading to simple spasm, neuralgic pain, or even epilepsy, whilst, in nine cases out of ten in which neuralgia attacks the upper extremity, a dental lesion will be found to be the exciting cause of irritation. This disease has the epithet "idiopathic" far too often applied to it; for in nearly every case a cause exists, though it may be concealed from us, whether it has its origin in the filament of nerve ensnared by cicatrix, in a hidden splinter or a lurking parasite. Doubtless, you are all familiar with a case quoted by Sir Thomas Watson, of a well known physician who was forced to relinquish an extensive practice and a distinguished position through the terrible agonies he suffered as a consequence of tic douloureux. Every remedy was tried in vain, until death revealed the cause, which existed in a small osseous excrescence upon the falciform process of the dura mater. If I could lay down an axiom with regard to the treatment of neuralgia, it would be, "Never rest until you have found the cause"; for it will often discover itself when least expected.

[Mr. Cartwright here related a case under his care, in which he found severe neuralgia of the parts supplied by the cervical and brachial plexuses to be due to the presence of a small piece of glass in a swelling over the third phalanx of the second finger of the right hand; the removal of which permanently cured the neuralgia.]

Like sources of irritation exist very frequently in diseased or abnormal conditions of the structures of the teeth, and my experience teaches me that this is a fact not sufficiently appreciated by medical men. The ordinary treatment of neuralgia is far too often empirical. One specific is tried after another with varying success, until all fail, whilst the oral cavity, so rich in explanations of reflex pain, is quite forgotten or overlooked. Caries is by no means the most frequent source of neural pain; for it is often to be found in exostosed cementum, or as a result of secondary dentine formed within the pulp; whilst, yet again, an osseous excrescence growing from the dentinal wall may, by its pressure on the nerve, be an exciting cause, as in the case of this beautiful and unique specimen prepared and kindly lent to me with others by Mr. Salter. It is sometimes difficult to discover the offending member; but a gentle tap, the alternate use of hot and cold water, or, if the pulp be sphacelated in a non-carious tooth, the appearance of opacity on exposure to a strong light, will make the culprit doff its disguise, and reveal a traitor in the camp.

Amongst my notes, I have recorded the case of another patient who had long been the subject of intractable neuralgia in the head and face. She had been in the hands of celebrated physicians, of quacks, of homeopaths and hydropaths, but with no relief. The pain invariably had its origin on the left side of the face, just over the malar bone. On examination, all her teeth seemed perfectly sound, and the tests mentioned above suggested no intimation of disease. One day, knowing my suspicions that the teeth might be the source of her trouble, she told me that she had an "undefined sensation" in one of the teeth, but she could not point out whether it was the canine or the bicuspid on the left side of the superior maxilla; but the renewal of the tests gave no sign of pain. After various experiments, I resorted to the use of a galvanic current, which made her say that she was certain that the canine was the tooth which had a different feeling from the others. Warned that the loss of the tooth would very probably not effect a

cure, she begged me to extract it on the chance of relief being afforded thereby. I did so, and, if you will examine this preparation of the tooth under the microscope, you will see that the cause existed in an almost total ossification of the pulp. After a week, her pain entirely ceased, and not long since she described herself to me as sitting at an open window on a cold day at the seaside—a thing which she had not dared to do for several years. Of such cases I have seen many; and the immediate relief which occurs upon the removal of the exciting cause of pain makes me somewhat question the correctness of the late Dr. Anstie's view in relation to neuralgia, that the seat of pain is invariably situated in the posterior roots of the spinal nerves, and that an essential condition of the tissue of those roots is atrophy. Then, various diseases of the ear, the nose, and antrum, and even amaurosis, have had their origin in diseased conditions of the teeth, so that an oversight as to the source of mischief might lead to the loss or impairment of the functions of at least three of the organs of special sense. Mr. Hancock, of Charing Cross Hospital, mentions a very remarkable case of amaurosis dependent upon nothing more than an overcrowded condition of the teeth. Four of these were removed with such good effect, that the sight, which was nearly entirely lost, improved at once, and was again perfect within ten days. I could quote many similar cases, many of which have occurred in my father's practice, some few in my own, but would refer all of you who are interested in the subject to Mr. Salter's valuable work on *Dental Pathology and Surgery*.

It must not be forgotten that the teeth are not only the sources of, but that they are not unfrequently the objects of, sympathetic irritation themselves, and have, doubtless, in the absence of adequate knowledge as to the cause of pain, been often condemned for the faults of other members, like certain unfortunate officers in a recent naval inquiry. Thus I have frequently seen a constipated condition of the bowels induce pain in the teeth; and in another case an attack of gout is always ushered in by intense dental suffering, which a dose of colchicum relieves at once; whilst I have long had a patient under my observation, who, suffering from hæmorrhoids, always has acute pain in his upper molar teeth when these become congested, which invariably ceases when an attack of hæmorrhage relieves the engorged vessels. Many of the tumours which afflict the maxillæ have their origin in a diseased root or an impacted tooth, these varying from the simple abscess to the cyst or odontome, in which latter tumour an appreciation of its character renders its removal the simplest of operations. A swelling occurring in connection with the unexplained absence of a member of the normal dental series should always suggest a hint in such cases, and it will be found that this class of tumour is invariably encysted, so that the removal of a little superficial bone will permit these growths to be enucleated with little loss of tissue.

Again, in a very large proportion of examples of abscess or neuroses connected with the maxillæ a local source of irritation exists, such as may be found in a wisdom tooth attempting fruitlessly to take its position where there is want of space, or, more often still, in the remnant of a fang over which the gum has grown. Such errors in diagnosis are frequently made with regard to patients of strumous and scrofulous diathesis, in whom the history of the case and the swollen glands too frequently mislead the unwary practitioner. Wherever there are sinuses in connection with the glands about the jaw, search for an errant root. You may have much trouble in discovering it; but, if you be successful, its removal will not only instantly cure the patient, but prevent that terrible disfigurement which is a result of abscesses in this position. I have witnessed the cure of long-standing suppuration diagnosed as scrofulous again and again by the extraction of a root, the presence of which was unsuspected by patient or practitioner.

Finally, every surgeon practising in the country or abroad, in places where special aid is not at hand, should be able to arrest pain and disease in the teeth, at least temporarily, whilst he should have some knowledge of the treatment of the milk-teeth, which he is often called upon to remove; indeed, with regard to the latter subject, his appreciation of the simple rule, never to remove a temporary posterior molar or canine without urgent reason, would alone prevent many subsequent deformities of the permanent denture.

Think how many teeth might be saved by the aid of a little special knowledge concerning their diseases. Such knowledge would be useful to all, but especially to those who are about to devote themselves to the preservation of the health of those who maintain England's glory and good name *per mare, per terras*. The agony which I have seen soldiers, and especially sailors, suffer from their teeth has been terrible, and in too many cases without a chance of satisfactory aid, unless it be by the extraction of the offending organs. By such unnecessary losses men are incapacitated before their time, and it is from a feeling of pure humanity that I would insist upon the necessity of army and naval officers devoting a short period to the study of diseases

of the teeth, thereby arming themselves with another weapon with which to combat pain and suffering. In future lectures, I shall hope to have opportunities of showing you examples of those direct and indirect results of dental lesion to which I have alluded to-day, whilst I shall especially demonstrate to you those operations necessary to alleviate pain or to arrest disease, whether temporarily or permanently, by more complicated means. My task will be a labour of love, if I can impress upon you the importance of my subject when considered in its highest *rappports*; whilst I shall feel that, in disseminating amongst you what little knowledge I possess, I shall be contributing in some small way towards the lightening of those burdens, and the assuagement of those many ills to which flesh is heir.

CASE OF GRAVE LESION OF BOTH CORPORA STRIATA;

RECOVERY FROM HEMIPLEGIA; EXTENSIVE CEREBRAL DEGENERATION; DEMENTIA; DEATH TWELVE DAYS AFTER RUPTURE OF INTRATHORACIC ANEURISM.

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E. B., a private in the 19th Regiment, was admitted into Grove Hall Asylum on May 10th, 1873, having previously been under treatment in India and at the Royal Victoria Hospital, Netley. He was single, aged 37; had seen eighteen years' service, sixteen of which had been passed in India. The attack of insanity for which he was admitted was stated to be the first, to be of about six months' duration, and was supposed to be the result of hereditary predisposition and tropical climate. A brother had been insane, and formerly under care in the lunatic wards at Netley. While still serving in India, E. B. suffered from an attack of hemiplegia in March 1872, but was said to have "recovered" from that, and to have subsequently become the subject, in succession, of rheumatism, of debility, and of mental derangement. Previously to his admission here, he had been fussy, childish, forgetful, demented, and, at times, confused.

On admission, his height was 5 ft. 5 in., his weight about 10½ stones. He was much bronzed by exposure to sun; the skin of the face was of a greasy parchment-like appearance; his hair was short, thin, and streaked with grey. The pupils were slightly irregular, the ocular fundus hazy. There was faintly marked right facial paralysis, and occasional very slight dragging of the right heel in walking; the grasp of the hands was about equal. His speech was low, mumbling, indistinct, but not stammering or tremulous. There was the scar of an old bubo in the right groin. The mental symptoms enumerated above still continued; there was great loss of memory, and the manner was childish and silly. He did not at all know how long he had been here, stated that he was forty-five years of age, and that his father had died two years before at the age of forty-six, and so on.

Double ophthalmata appeared during the earlier period of his residence here; but, after a few months, the traces of hemiplegia became even still less, and he seemed rather brighter, took exercise regularly, played interminable games of cribbage, etc., with his intimate companions; and his general health seemed to improve for a time under tonics. He made no special complaint of pain, or of any chest trouble, or of any symptom which might give rise to a suspicion of aneurism; but, on December 24th, 1874, it appears to have been noted that there was some cough, that the vesicular murmur generally was defective, that laterally there were large sonorous *râles*, and posteriorly some dulness. He was as usual until December 29th, when sudden profuse hæmoptysis occurred after he had retired to bed. The pulse was rapid, and there was irritable hacking cough. Absolute quietude was ordered; and ergot, gallic acid, and small doses of Dover's powder were administered. Profuse hæmoptysis recurred the same night at 3 A.M.; and, next day, there were dulness on percussion, distant respiration, and indistinct crepitation over the back of the left lung, and, in front, dry *râles* and feeble respiratory murmur, followed on the ensuing day by cooing expiratory *râles* at the front and side, and distinct crepitation and dulness posteriorly. On January 2nd, decided pleuritic friction-sound replaced the latter sign, and the dulness about the base and back was increased. Pleuritic creaking and percussion dulness continued to increase over nearly the whole posterior and lateral surfaces of the left lung, where, also, vocal resonance and fremitus were diminished or lost. But not only was there large effusion evidently present in the left pleural cavity; much of the lung, also, was consolidated; in various parts over the upper and anterior portions were increased vocal

resonance and fremitus, blowing, bronchial, or tubular breathing, with occasional large sonorous *râles*. There were exaggerated respiration and compensatory expansion on the right side; and, throughout, the measurements of the halves of the thorax were about equal. The urine became dark and smoky; dyspnoea came on, and gradually increased; the temperature was high throughout, the sweating profuse, the mind of its usual degree of clearness. The respiratory symptoms became more urgent day by day, and he gradually sank and died on January 10th, 1875. During this illness, the pulse and respiration on the successive days were: Pulse, 92, 100, 105, 114, 100, 108, 110, 120, 120, 128; respirations, 22, 25, 25, 30, 34, 32, 44, 42, 54, 60; temperature (third day), 102 deg.; last two days, 102.8 deg., and 103.6 deg.

NECROPSY, twenty-one hours after death.—*Head*: The vessels at the base were healthy. Much serum drained away during removal, etc., of the brain. The arachnoid and pia mater were thickened; the latter was oedematous. There was a considerable amount of sub-arachnoid serum over the frontal and parietal lobes, especially on the left hemisphere, filling up the wide and rounded sulci, and more particularly collected about the sulcus præcentralis, sulcus interparietalis, and fissure of Rolando. The membranes were but very slightly opaque, stripped off readily, and left scarcely any shreds in the sulci. There was moderate atrophy of the frontal and of the parietal gyri, with grooved indentation, and some wasting, of the inferior surface of the right occipital lobe. The cortical grey matter was rather thin, and of ordinary consistence and colour; its stratification was fairly marked, and its minute vessels unusually obvious. The medullary substance had a cribriform appearance from numerous dilated vascular channels; its consistence and sanguineous points were ordinary. The specific gravity of many of the convolutions was tested; but it need only be stated here that the departure from health in this respect was in two directions: firstly, the specific gravity, generally speaking, was .001 to .002 lower in the left than in the right hemisphere; and, secondly, the specific gravity of the posterior region more nearly approximated that of the middle and anterior than is usual in the healthy brain. The fornix was firm. The ventricles contained a moderate amount of serum; their ependyma was thick and firm. The choroid plexus and velum interpositum were adherent to the optic thalami; the third ventricle was dilated; the grey commissure absent. Certain areas of the intraventricular aspect of both corpora striata were softened, collapsed, shrunken, and of a drab yellowish or greyish tint. This change was more extensive in the left corpus striatum, the upper surface of which presented a patch of it, coarsely triangular in shape, of about the size of a sixpence, commencing a quarter of an inch behind the anterior border of the corpus; behind this, again, was a rounded and smaller area of *ramollissement*. There was, also, a patch of the same change on the intraventricular aspect of the right corpus striatum, similar in extent to the larger of those just described in the left ganglion, but placed more posteriorly and externally. On section, the softening and disintegration in the left corpus striatum were found to extend throughout the whole length of that body, and passed half an inch behind the level of the posterior border of the obvious change upon the superior surface; the two portions of softened, atrophied, and discoloured tissue, above described, jutting upwards, as it were, from the main body of the lesion, and cropping upon the intraventricular surface. On transverse section, the depth of the naked-eye change was found to be half an inch in the inner and middle thirds, and a quarter of an inch in the outer third. On section of the right corpus striatum, a similar lesion was seen, half an inch in depth, but less extensive, and situated slightly further back than that of the left side. In both, there appeared to be many vascular connective tissue-bands, the interstices of which were filled with disfluent material, which exuded on pressure. The optic thalami were slightly shrivelled. There were two small, firm-walled, cavities in the medullary substance, containing fluid *débris*, and traversed by minute bands, the larger of which lay immediately above the body of the left lateral ventricle, and the smaller above the anterior horn of the right. The average specific gravity of right corpus striatum was 1032½. The weight of the entire encephalon (*i.e.*, with two innies tunics, etc.) was 43 ounces; of the right cerebrum, 18½ ounces; of the left, 17¾ ounces; of the cerebellum, 4½ ounces; of the pons Varolii and medulla oblongata, ¾ ounce.

Microscopical Examination.—The vessels of the right optic thalamus, examined when fresh, were fatty, and the right corpus striatum was strewn with oil-molecules and large granular cells; there were granular and fatty deposits on its vessels. Prepared sections of the left corpus striatum exhibited fatty molecules, amyloid bodies, granular masses, and *débris*, twisted and broken nerve-fibres, fatty vessels, and points of much wavy connective tissue. In other sections, fatty-like molecules were still more prominent, and occurred either in aggregations, or widely strewn, or in fat-laden cells. The vessels of this corpus striatum pre-