

not been exposed to a possible cause of the disease several times within a week, *i. e.* if we accept the theory that it may be caused by the emanations from putrescent animal matter.

It has been, as far as such a problem admits of proof, well nigh positively proved at home that enteric fever is associated with defective sewerage arrangements and the presence of putrescent animal matter either in the air or water. Such conditions abound almost every where in India, certainly in every large town, and owing to the greater heat of the atmosphere the changes of decomposition are more rapid, and probably more potent, and so exercise a most injurious influence on individuals exposed to them for the first time.

In his report on "enteric fever in relation to the British troops in the Madras Presidency" Surgeon-General Gordon observes, "The younger officers in this country attribute the phenomena of the disease to three principal circumstances, namely, (a) youth, (b) high temperature, (c) fæcal emanations in and around barracks. I reply, the disease so named is not confined to the young; high temperature alone will not produce it, and the third cause assigned, namely fæcal emanations in the places named, do not exist" (See *Medical Gazette* for October.)

If the disease 'so-named' is not confined in a great measure to the young, *i. e.* if more than $\frac{1}{4}$ th or $\frac{1}{3}$ th of its victims are over 30, we must conclude that it is something more than enteric fever; possibly cases of other kinds of fever get registered under this name. In this Presidency, where a large number of cases of genuine enteric fever have now been recorded, occurring amongst both Natives and Europeans, the ages of the victims have been in almost all cases, as well as I remember, and certainly in those in which I made *P. M's.* myself, below 30, *e. g.* in the 11 fatal in the 2/2nd Regt. the average age was 21.7 years. In the case which I now place on record the age was 23, and such is the general experience. If, then, the disease, as registered in the Madras Presidency, was not confined in a very large proportion of cases to the young, the Surgeon-General is probably right in surmising that it is something more than pure typhoid. But when he says that fæcal emanations in the places named, *viz.* "in and around barracks," do not exist, surely he says too much. When the soldier goes for his evening walk or for his morning walk, as the case may be, how can the Surgeon-General say that his nose has not been assailed by fæcal effluvia and emanations from all kinds of decomposing animal and vegetable matter? The surroundings of the late Prince Consort and of the Prince of Wales were unquestionably as little exposed to fæcal emanations or contamination of any kind as those of the average British soldier in this country, yet when they contracted typhoid disease no one doubted for a moment its pythogenic origin. If it is a fact that typhoid has been distinctly shown at home to be due to pythogenic influences, why should we seek to attribute its causation in this country to "climate" or other such vague and indefinite agencies? If the term climate includes the pythogenic and fæcal influences to which I have alluded, then I am all at one with those who say that it can give rise to the disease; but to charge 'climate,' in the ordinary acceptation of the term, with the causation of enteric fever, is, in my opinion, but combating with a shadow, and postponing for the time being all practical efforts to prevent the disorder.

Shillong, 10th September, 1878.

Temperature Chart.

October	18	19	20	21	22	23	24	25	26	27
Morning	101	103	101.2	101.1	100	100.2	101.2	102.4	101.2	101.1
Evening	102.3	102.3	101.1	99.2	99.1	100.1	99.1	103.1	102.1	102.2

TWO SUCCESSFUL CASES OF EXCISION OF THE LOWER JAW FOR MYELOID TUMOUR, WITH REMARKS.

By SURGEON P. J. FREYER, A. B., M. D.,

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Case 1.—A Hindoo male, named Mirhai, aged 30 years, was admitted into the Azamgarh hospital, on the 14th September, suffering from a large tumour of the lower jaw

Some three years previously he first noticed some swelling of the gum on the right side of the lower jaw. This swelling he attributed, at the time, to tooth-ache from which he was suffering. On the cessation of the pain in the tooth, however, the swelling did not subside, but, on the contrary, continued to enlarge slowly, till at the time he came under observation the tumour had attained the size of a large orange, invading the ramus and right half of the body of the lower jaw, and extending to the left slightly beyond the symphysis. The tumour measured $6\frac{1}{2}$ inches from behind forwards over its surface, and $4\frac{1}{2}$ inches vertically; it was most prominent over the angle of the jaw, and extended backwards as far as the mastoid process of the temporal bone. At some parts the tumour was of stony hardness, at others soft, elastic and fluctuating; at the inner aspect pressure elicited a crackling sensation. There was no discoloration of the skin, which was stretched over the tumour but not involved in it. The aspect of the tumour inside the mouth presented a bluish-red appearance, due to small arteries and veins coursing over it. There was some granular ulceration opposite the first molar. The teeth were displaced from their proper positions, and presented a very irregular line. The upper and lower sets of teeth could be separated for the space of one inch, but could be approximated only to within one-fourth of an inch. The glands of the neck were unaffected, there was no cancerous cachexia, and the man's health was fairly good. Such being the history and general characters of the tumour, I diagnosed it as a case of myeloid disease, and determined on the removal of that part of the lower jaw which it involved.

The patient having been subjected to preparatory treatment, the operation was accomplished on the 16th September as follows:—The patient was placed on the operating table in the supine position, with the head and shoulders well raised on pillows. Chloroform having been administered till anæsthesia was complete, a needle armed with a stout silk cord was passed through the tip of the tongue; the cord was formed into a loop which was drawn up on the left side of the mouth and fastened to the cheek by means of a strip of adhesive plaster. The point of a scalpel was entered to the left of the central line, one-fourth of an inch beneath the mucous membrane of the lower lip, and the incision carried down to the bone as far as the point of the chin. This incision was then continued boldly along the lower margin of the jaw as far as its angle, and then upwards along the posterior border of the ramus as far as the zygoma. During this incision there was considerable hæmorrhage, especially from the facial and transverse facial arteries. This was restrained by applying a ligature to the lower cut end of the facial and twisting the transverse facial artery. The flap of skin thus marked out was reflected upwards by applying the scalpel close to the bone and tumour. The lower lip of the wound was also reflected slightly downwards the knife being carried close to the bone along the whole length of its lower margin. One of the front incisors was then extracted and the jaw divided to the left of the symphysis by means of a small narrow-bladed saw. The right side of the jaw was then grasped and forcibly abducted, and freed from its internal connexions by the scalpel closely applied to the inside of the bone. In this process the

mucous membrane, the anterior belly of the digastric, the genio-hyoid, mylo-hyoid and internal pterygoid muscles, and the internal lateral ligaments were divided in succession. The inferior dental nerve and internal maxillary artery were now brought into view; the former, and branch of the latter accompanying it, were then divided; hæmorrhage from the latter was controlled by torsion. The masseter muscle was now divided and the jaw forcibly depressed, when the knife was applied to the attachments of the temporal muscle to the coronoid process which was thus set free. The bone at the ramus had become so softened by disease, that, in applying leverage to put the capsule of the joint on the stretch, the neck of the condyle was torn across, so that a few touches of the scalpel were sufficient to set the tumour free. As, however, the whole of the bone was diseased, it was deemed advisable to remove the condyle. It was accordingly grasped by forceps, the capsule cut through by a few strokes of the scalpel, and disarticulation thus completed.

The wound which now gaped frightfully was freely exposed to the air, and a stream of cold water dropped on it from a sponge. Oozing of blood was thus stopped. A small pad of lint to which a string was attached, was wrung out of carbolised water and placed in the wound, with the string protruding through the mouth. The edges of the wound were brought into apposition over this by wire sutures, strips of adhesive plaster being applied in the intervals. Carbolised lint was applied over all, and the patient put to bed. Fluid diet, administered by means of a cup provided with a spout, was ordered for the first few days.

17th. September.—No bleeding from wound since operation; no pain: feels comfortable; drinks milk freely. Temp. 101°; pulse 70; mutters merely in reply to questions.

18th.—Right cheek and lower eyelid much swollen and œdematous; complains of some pain; pulse 80; temp. 101°. Dressings changed, and pad of lint extracted with some difficulty owing to its swollen state from absorption of fluids; the cord attached to the pad of lint greatly facilitated its removal. There was some oozing of blood into the mouth after the removal of the pad. The mouth was well rinsed with carbolic water (1 in 40), when oozing ceased. No discharge of pus; wound seems to have partially united along most of its course; paralysis of the right *portio dura* is indicated by the nose and angle of the mouth being drawn slightly to the left side; can close the right eyelids, and approximate the lips completely; ordered a mixture of quinine and the tinct. ferri perchloridi three times daily.

19th.—Swelling of right side of face has much subsided; right facial paralysis more marked: cannot close right eyelids nor wrinkle right side of forehead; three sutures removed: union almost complete along the anterior part of the wound; no pus.

20th.—Temp. 99°; pulse 80. Two remaining sutures removed: union throughout the whole extent of the wound, except at point where the ligature of the facial artery protrudes, and a small portion of the vertical part of the wound whence some saliva escapes; both sides of face nearly symmetrical; speech much improved; sits up in the bed daily; appetite good.

From this time the patient continued gradually to improve, notwithstanding the occurrence of a slight attack of dysentery. The ligatures came away on the 30th September, and, save the small quantity that exuded along the course of this, there was no discharge of pus. Saliva, however, continued to dribble from the opening over the parotid gland. A mouth wash of carbolic water (1 in 40) was frequently used during the day; the appetite continued to improve, and he took his food heartily.

On the 28th September a new complication appeared in the shape of a slight greyish-white film on the cornea of the right eye. Every possible precaution had been

taken to prevent the appearance of this, by protecting the eye with a veil, &c., and after its first appearance, I endeavoured in every way to check its progress; but treatment was of little avail, as sloughing of the cornea set in, and the eye was lost as an organ of vision.

With this exception the case made an excellent recovery, and the man left hospital on the 15th October in fairly good health. Only for the facial paralysis that existed on the right side there was scarcely any difference apparent in the two sides of the face. The symmetry was much improved owing to the fact that the left half of the lower jaw had fallen in slightly towards the middle line. The wound had entirely healed, and the flow of saliva had ceased to take place externally; internally the wound had granulated so that the large space left after the operation had filled in, and, instead of the bone that was taken away, a dense band of fibrous tissue had grown in its place. The improvement in the deformity of the features dependent on section of the *portio dura* was amazing, and, when the eyes were open, scarcely noticeable.

Case 2.—Mussamat Sudhia, a Hindoo female, aged 35 years, was admitted into hospital on the 1st October suffering from an elongated tumour, the size of a pear, involving the left half of the body of the lower jaw.

The tumour had existed for three years; had increased in size gradually, and was unattended by pain. It involved the left half of the lower jaw from the symphysis to the angle; was 3 inches long from behind forwards and 2½ inches in extent vertically; the skin passing over its surface was free, and the glands in the vicinity unaffected; the facial artery could be seen and felt distinctly coursing upwards over the most prominent part of the tumour; the upper and lower sets of teeth could not be approximated nearer than one-half an inch; the teeth in the left side of the lower jaw were pushed inwards and very irregular; the tumour presented a bony feel at parts; at others it was soft and elastic, indicating that it was partly cystic. The woman's health was very indifferent, having recently suffered a good deal from fever.

On the 2nd October the tumour, with the portion of the jaw which it involved, was excised. The primary incisions were similar to those described in Case 1, except that they were commenced in the middle line and only carried half an inch upwards beyond the angle of the jaw. In this case also Fergusson's suggestion—to run the knife lightly over the facial artery and leave it uncut till the flaps are being reflected—was acted upon. In fact it was not till the jaw had been divided at the symphysis, and the flaps partially reflected, that the artery was cut and ligatured. When the jaw had been separated from its internal connexions it was divided by the small narrow-bladed saw, through the ramus, half an inch beyond the angle, the division of the bone being completed by the bone forceps. The dental artery gave no trouble; the pressure of a sponge dipped in cold water arrested the bleeding from it.

When hæmorrhage had been completely arrested the flaps were brought together much in the same way as in case 1, but no pledget of lint was placed inside the mouth. Carbolic dressings were applied and the woman ordered to wash her mouth frequently with weak carbolic water.

Notwithstanding the fact that the loss of blood was extremely small, the patient was very weak after the operation, her pulse being 120, very small and feeble. She revived, however, though slowly, under the influence of stimulants.

3rd October.—Slept well last night under the influence of an opiate; no hæmorrhage; slight oozing of blood on dressings; temp last evening, 103° F; pulse 120. Temp this morning 100° F; pulse 104; can speak quite intelligently; takes milk and other fluids freely.

4th.—Temperature last evening 100° F; pulse 82. Temp. this morning 99° F; pulse 80; patient very

cheerful; sitting up in bed; takes fluid nourishment with a hearty appetite; speaks quite plainly; feels some pain in wound; bandages removed but not strips of adhesive plaster: not a drop of pus; wound seems to be doing well. The patient's health has changed wonderfully for the better since the operation was performed.

It will be unnecessary to go minutely into the details of the daily changes. From this time the patient continued to do well, and made rapid progress towards recovery. All the sutures were removed on the 6th October, when it was found that union had taken place throughout the whole extent of the wound, except at the point where the ligature of the facial artery protruded. The ligature did not come away till the 16th October. Throughout the whole course of the case after operation not one drop of pus or discharge of any kind came away externally; even along the course of the ligature there was no discharge. After the operation there was considerable swelling of the face at the seat of the wound, but this gradually subsided and gave place eventually to some sinking-in of the face on that side. This, however, was very slight, and on the 20th October, when the woman left hospital, there was scarcely any thing in the external appearance of the face to indicate that she had had her jaw removed, save the scar. The right side of the lower jaw advanced very slightly towards the middle line of the mouth, so that an effort was necessary in order to bring the lower teeth on this side into apposition with those in the upper jaw. On the left side a dense fibrous band, which will in time of course, become much harder, had taken the place of the jaw which had been excised. There was no defect in speech, and no paralysis. No branches of the *portio dura* having been severed. The woman's health had wonderfully improved; in fact she came to hospital in the most wretched condition, and left it in thorough health.

Remarks.—Amongst the various features of interest in these two cases of myeloid disease of the lower jaw, so similar in their histories and general characters, the following are the most noticeable.

1. Springing from similar positions, the tumours were both slow-growing, and unattended by pain or constitutional disturbance of any kind. In each case the growth was simple, and there was no infection of the lymphatic system. Both occurred in young adults. In anatomical structure the tumours were exactly similar. In each case the disease had its origin in the bone and, as it extended, invaded the periosteum, but beyond this the adjacent tissues were not involved, being merely stretched over the tumour and displaced from their normal positions by it. The physical characters of bony hardness at parts, of elasticity and fluctuation at others were amply explained on section of the tumours, when it was found that each consisted of several cysts containing a yellowish viscid fluid, surrounded by solid substance varying in consistence from that of bone to that of fibrous tissue. The cysts were found mainly at the surface of the tumours with merely a coating of fibrous tissue over them. The central parts of the tumours were very hard, and the cut surface presented at spots that peculiar dark crimson color so characteristic of myeloid disease.

2. In *case 1*, before proceeding with the operation, a cord was passed through the tip of the tongue to prevent this organ falling backwards and causing suffocation,—an accident which is recorded to have actually happened more than once. In *case 2* this measure was not necessitated, owing to the more limited extent to which the connections of the tongue were divided; but in the first case the precaution was deemed advisable owing to the anterior connections of the tongue with the lower jaw being necessarily severed during the operation.

3. The suggestion of Fergusson, *viz.* in making the primary incision in this operation to run the knife lightly over the facial artery and leave it uncut till the

flaps are being turned back, I consider an excellent one. In the second of the above cases this suggestion was acted on, the facial artery having been left uncut as long as possible. In fact it was only after the jaw had been sawn through at the symphysis that the artery was divided; and in this way a considerable quantity of blood was saved. There is I believe no other artery in the body of the same calibre which bleeds so profusely as the facial, and it is advisable that it should not be divided till a stage in the operation when it can be completely controlled and ligatured.

4. The practice of placing a pad of lint in the wound inside the cheek, which seems to be advocated in all surgical text-books, I consider neither necessary nor advisable. It is not essential to the complete approximation of the flaps, nor can it prevent the tendency of the side of the face to fall inwards, since it must be removed at farthest after the elapse of 2 or 3 days. On the other hand, it forms a nidus for the absorption of discharges from the wound, saliva, and all kinds of fluids taken into the mouth. A fœtid mass is thus formed from which absorption may easily take place and blood poisoning result; or putrid exudations from this mass may mingle with the saliva and food and being swallowed, give rise to diarrhœa, dysentery, &c. The swollen state of the tissues in *case 1*, which at once subsided as soon as the pledget of lint was removed, I consider to have been caused by absorption of putrescent matter. In the second case no pad of lint was placed in the wound, and the progress towards recovery was much more rapid than in the first.

5. The practice adopted in both these cases, of thoroughly washing the mouth with a weak solution (1 in 40) of carbolic acid in water, at frequent intervals, is one of which I cannot speak too highly. If this practice be thoroughly carried into effect, the ordinary antiseptic treatment being also applied to the external wound, there should be no formation of pus throughout the whole after-course of this operation.

6. The time-honored custom of bringing the ligature of any vessels that require tying out between the margins of the wound was followed in both these cases of excision of the jaw. It is a practice, however, which I do not intend to pursue in future, but I will, instead, carry them out through the mouth so that there may be no preventative to the immediate union of the margins of the external wound throughout its whole extent. In the pre-antiseptic period of surgery the ligatures passing through the external wound afforded a passage along which discharges might pass with facility, but under the antiseptic method of treating wounds, and particularly by a rigid enforcement of the practice I have advocated in the last paragraph, there should be no discharge of any kind from the wound.

7. The ulceration of the cornea which supervened in *case 1*, was due to the paralysis attending section of the *portio dura* of the 7th nerve. Owing to the loss of power over the orbicularis muscle the eye was constantly open, and from its continued exposure during sleep as in waking hours inflammation of the cornea resulted.

Since writing out the above notes for publication, I had another case of excision of the lower jaw in a man aged 80 years. The operation was undertaken for necrosis of the bone resulting apparently from abscess in the body of the lower jaw.

Nearly the whole of the left half of the body of the jaw was involved, and the tissues around were degenerated and swollen the whole forming a tumour the size of an orange. The bone was so softened from the disease that on manipulation the jaw broke down before the finger, a fracture thus resulting at the middle of the left half of the body of the jaw. Two and a half inches of the bone between the angle and symphysis, along with all the diseased tissues around, were excised, the incisions being made as in the above cases. The ligature of the facial artery was brought out through the mouth; no pad of

lint was placed in the wound; and the carbolic acid wash was used regularly, as indicated in the above remarks. Four days have now elapsed since the operation was performed, and notwithstanding the age of the patient, union has taken place along the whole length of the wound without one drop of pus; and the patient is in every respect progressing favourably.

EXCISION OF LATERAL HALF OF LOWER JAW.

By SURGEON JOHN O'NEILL, M. D.,
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On the 1st August a male Hindoo, aged 25, came under my observation in this dispensary. Three years ago he noticed a slight swelling at the angle of the lower jaw, left side. The swelling slowly but steadily increased, while the movements of the jaw became gradually impaired. There was but little pain till about six months previous to his admission, when the integument over the site of the tumour began to ulcerate, and a thin purulent discharge was formed. The left side of the face from the malar bone to about half an inch below the inferior margin of the maxilla was uniformly swollen, and gave a hard firm feeling on pressure. By palpation, at the inferior margin of the swelling anteriorly a slight border could be detected; otherwise the impression conveyed was that of a uniform enlargement of the maxilla. On examining the buccal cavity much information was gained. A tumour, covered here by mucous membrane only, could be readily defined at all points. It was regularly round, and extended into the cavity to near the mesial line, pressing the tongue well over to the right side; its anterior margin was felt to spring from the internal surface of the inferior maxilla at a point corresponding to the second pre-molar, while its posterior border was found midway up the inner surface of the ramus. The tumour arose from the inner surface of the maxilla by a broad base. There was no discharge internally, the mucous membrane throughout seeming healthy. Probing through the ulcerated opening externally determined the bony nature of the growth. The patient could with difficulty open his mouth to allow the insertion of the little finger, though, having opened it, he could quickly and forcibly close it. He stated that a year ago he was fat and strong, though now he was very thin on account of loss of appetite, and the continual discharge of pus. As the pain in the jaw was continuous and tiring, it required only a few days' coaxing and promises of certain cure to induce him to submit to an operation.

On the 7th I proceeded to remove the growth by disarticulating the jaw at that side.

The patient having been chloroformed, and the first pre-molar having been extracted, an incision was made commencing immediately anterior to the lobe of the left ear, passing down to the normal site of the angle of the jaw, thence horizontally forwards at the inferior margin of the maxilla to a point anterior to the first pre-molar, thence directly upwards terminating midway between the inferior margin of the maxilla and the edge of the lower lip. The incision was made deeply and slowly, and ceased immediately a vessel was cut requiring a ligature. The facial artery gave a very large spurt, but needed ligaturing only at its proximal end. There was much oozing of blood, which was checked by a strong alum lotion. The maxilla was then freed from the cheek at the anterior part of the tumour, the scalpel being kept quite close to the bone so as almost to strip it of all adherent flesh. This presented no difficulty, the tumour being quite superficial and there being no reason to apprehend any danger. By means of a finger-saw the jaw was sawn through from above downwards where the first pre-molar had been extracted. The want of a chain

saw was much felt, for owing to the proximity of the palate, the motion of the saw was extremely limited, or its end would have come in contact with the roof of the mouth. At this time the tongue was well drawn over to the right side out of the way of the saw. It was considered more advisable to saw through the jaw than cut it with a bone forceps. The mylo-hyoid muscle was next detached from the bone, and the bulk of the tumour cleared internally. While using the scalpel out of sight the blade was always made to lie flat upon the forefinger, the edge of the blade not extending beyond the edge of the finger, and by this means the guarded knife almost completely cleared the bone. The attachment of the temporal muscle was removed by means of the point of the forefinger of the left hand, which armed with its nail pressed closely to the bone and forcibly peeled off the muscle. This was easily done, for the flesh readily gave way before the strong pressure of the nail against the bone. The internal lateral ligament, and some fibrous attachments of the temporal having been cut with the guarded knife, it only remained to free the condyle. By drawing out the cut end of the bone the condyle was exposed, and freed by a few touches of the scalpel. The cavity was freely sponged with alum lotion, and afterwards lightly packed with pieces of lint dipped in carbolic oil. The edges of the wound were brought together by means of harelip sutures, and in the interspaces were placed single wire sutures. The parts were further supported by strips of plaster.

Next morning the patient complained of soreness about the wound, and the face was a little swollen. There was no sign of inflammation, and he was quieted with twenty drops of solution of morphia. Forty eight hours after the operation the pledgets of lint were removed through the mouth by means of a forceps,—this causing only trivial pain. Next day the harelip pins were removed, the entire wound with the exception of where it turned up towards the mouth having healed by the first intention. The swelling of the face rapidly subsided, and after a week was scarcely noticeable. By that time he was able to open the mouth sufficiently to permit a free inspection of the interior, and so completely had the internal wound healed, there was nothing but the absence of the teeth to point out that an operation had been performed. There was no lateral displacement of the inferior maxilla, and the patient could, without any trouble, bring the molars of the lower jaw in contact with those of the corresponding side of the upper jaw.

He soon regained flesh, became quite cheerful in spirits, and expressed the greatest satisfaction at what he considered his wonderful recovery. He was discharged from hospital on the 22nd August, or 15 days after the operation.

I am inclined to think the incision was unnecessarily long, there was no need to extend it more than slightly anterior to the tumour, and its direction upwards towards the mouth gave but little more room, for the edges of the wound were easily and widely separated; moreover neat apposition at the angle of the incision was not procured, and this was the only part where union did not take place by the first intention.

The growth, as diagnosed, was osseous, and examination showed it was of the cancellous kind. The specimen has been forwarded to the Curator of the Lahore Medical School Museum.

A CASE OF VESICAL CALCULUS; LATERAL LITHOTOMY: RECOVERY.

By MOHENDRA LALL BOSE,

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Grish aged 7 years, Hindoo, male, was admitted into the Raneeungee Charitable Hospital on the 3rd October