

as a communication is sometimes formed between the vagina and urethra, or bladder, from the same cause.

The communication between the vagina and rectum used to be one of the opprobriums of our art, the patient's life being rendered miserable, with little or no hopes of recovery. Of late, however, a simple and scientific method of relieving the patient in these cases has been contrived by Mr. Copeland, who has succeeded in curing several patients labouring under it, simply by dividing the sphincter muscle of the anus. The sphincter muscle being divided, the feces are not retained in the rectum; they run out as fast as they enter it, so that the bowel is kept empty and contracted, and altogether in a passive state, and the communication between the rectum and vagina is thus enabled to cicatrize. I do not know whether this would answer if the communication were of large size, but I am told that it has answered very well in the cases in which Mr. Copeland has hitherto employed it. I cannot but regard the application of this operation to these cases as one of the principal improvements of modern surgery; and the simplicity of the practice forms one of its principal recommendations. Of course it can be recommended in those cases only in which, independently of the opening into the vagina, the parts are in a healthy state.

### LECTURE XXXVIII.

#### ON DISEASES OF THE MAXILLARY ANTRUM.

I SHALL draw your attention to-day to a case in one of the upper wards, that of Samuel Tovey, admitted on the 1st of this month.

Eight years ago he fell down as he was walking on the slippery pavement, by which his nose, and the whole left side of his face, were bruised. Ever since he has had pain of these parts. The left side of the face became swollen; the pain increased, and matter was discharged through the nostril. Matter also occasionally made its way through one of the alveoli of the superior maxillary bone; and he continued in this state at the time of his admission into the hospital.

On the 7th November I made an incision which separated the upper lip, or rather the cheek, from the jaw; and a probe having been introduced, it appeared to me that the extremity of it came in contact with a portion of dead bone, in the situation of the antrum maxillare. I then introduced a pair of strong sharp-pointed scissors, using them in their closed state as a chisel, to break down the thin plate of bone above the grinding teeth, so as to expose the cavity of the antrum, in which I could then feel small fragments of dead bone, some of which were extracted. On the following day some other small portions of dead bone passed through the nose. There were now

swelling and pain on the left side of the face, with a good deal of headache, and a frequent pulse. The patient was ordered to be purged. On the 9th, two days after the operation, he had shivering, and was delirious in the night. On the 10th, however, he was much improved, able to get up; and to-day, the report is, that the pulse is slower, easily compressed; the tongue clean; the bowels open.

Here was a patient who had met with a severe blow on the head and face eight years ago, who had been suffering ever since; and now I have made an opening into the antrum, and extracted fragments of dead bone which were lying in its cavity. No doubt there are other fragments there; and I expect that they will come away through the opening that has been made. There can be no question that, at the time of the injury, some mischief was inflicted on the bones, which caused portions of them to die, some of these afterwards coming away by themselves, while others could not be removed without this operation.

The occurrence of this case affords me the opportunity of speaking to you concerning diseases of the maxillary antrum generally. I am glad to draw your attention to this subject, because it is one of great interest, and also one of which I do not think there is in general any very clear account given by surgical writers. I may add another reason, namely, that cases of disease of the antrum are not sufficiently common occurrences for many of you to become masters of the subject by what you see during one or two years' attendance on hospital practice.

#### INFLAMMATION OF THE MAXILLARY ANTRUM, INDEPENDENT OF LOCAL CAUSES.

I have seen cases, and to these I shall first call your attention, in which there appeared to be inflammation of the maxillary antrum, independent of a local cause, arising out of something in the state of the constitution, and approaching in its character a good deal to that of severe rheumatic inflammation. I do not know that I can make you acquainted with the history of the disease of which I am now speaking, better than by describing to you the circumstances belonging to a particular case, of which I happen to have preserved notes. I was consulted with Mr. Clough, of Norton Street, respecting a young man who complained of excessive and constant pain referred to the situation of the maxillary antrum of the left side. There was some degree, but not much, of tumefaction of that side of the face; tenderness in the situation of the antrum everywhere; the very severe and constant pain which the patient endured being aggravated by pressure. In addition to these local symptoms, there was a good deal of febrile excitement of the general system. The disease had existed for two or three weeks, gradually increasing up to the time of my being consulted. Believing this, then, to be a case of inflammation of the maxillary antrum, and thinking it not improbable, from the time that the inflammation had lasted, that suppuration might have

already taken place in the cavity, I made a perforation into it above the second molaris. (I shall speak of the manner of making the perforation presently.) No fluid, however, of any kind escaped through the aperture. I then recommended what I had found successful in some other cases, that the patient should take pills, composed of two grains of calomel and half a grain of extract of opium, three times daily. In about three days the gums were a little sore, the pain began to abate, and at the end of three or four days more the symptoms had entirely subsided. I believe that, when you are called to a case of this kind, you will seldom find the plan of treatment which I have here described to fail.

But inflammation of the membrane lining the antrum may end in suppuration, so that there may be a collection of pus in the cavity of the antrum, and I conclude that such acute inflammation as existed in the case just described might terminate in this manner, if not artificially arrested.

#### INFLAMMATION OF THE ANTRUM DEPENDENT ON LOCAL CAUSES.

However, where matter forms in the cavity of the antrum, I certainly believe that in most instances, there is some local mischief first, and that suppuration of the membrane lining the antrum supervenes as the consequence. The cause in which the disease originates is generally a diseased tooth. The patient has a bad tooth in the upper jaw, one of the molares, or perhaps one of the bicuspides (or it may even originate in the cuspidatus when the fang comes near the antrum). The tooth is carious, and by and by the patient has the toothache. He does not like either to lose the tooth or to submit to the pain of having it drawn, and so he submits to the toothache. The inflammation on which the toothache depends then terminates, as it always does, in the death of the pulp of the tooth. Then the whole tooth dies, and it is now like a portion of dead bone, or any other foreign substance, stuck in the jaw. Such a dead tooth may remain in the jaw for many successive years, exciting no irritation, and leading to no mischief. In other cases, however, the tooth begins, even at an early period, to operate as a cause of irritation, and it almost invariably does so ultimately. Then inflammation takes place at the bottom of the alveolus, and is followed by suppuration. The matter cannot readily escape; perhaps it makes its way downwards between the tooth and the alveolus, and presents itself in the gum, forming a kind of gum-boil. At other times the tooth is so firmly wedged in the alveolus, that the abscess cannot find its way in this direction. Under these circumstances it collects at the bottom of the alveolus, and occasions the patient extraordinary pain and suffering. The matter lying upon the bone destroys the periosteum lining the alveolus; the bone itself becomes absorbed; and the inflammation extends to the mucous membrane lining the antrum. Sometimes a small fragment of bone in the neighbourhood loses its vitality, and there is then a piece of dead bone separating the alveo-

lus from the antrum, and producing suppuration in this cavity. Thus there is an abscess in the antrum, with a splinter of dead bone above, and a dead tooth also at its inferior part. While this process is going on, the patient suffers at first an extraordinary degree of pain from the matter pent up at the bottom of the alveolus; afterwards, when the antrum becomes affected, he complains of a dull constant pain in the cheek, with the addition of certain lancinating pains coming on as an aggravation of the pain which is constantly endured. There is then an effusion into the soft substance under the skin, rendering the face on that side œdematous, with a slight degree of red discoloration on the surface; and the patient may remain in this condition for a great length of time. In some cases matter is discharged by the nostril, but not always, for the inflammation of the antrum may have the effect of stopping up the orifice where it communicates with the nostril, between the two turbinated bones. When the opening of the antrum remains pervious, the patient will, of course, experience occasional relief from the matter passing into the nostril. I have said that sometimes there is, and sometimes there is not, a fragment of dead bone; but this, as far as I know, makes no difference in the symptoms, although when there is dead bone, the recovery of the patient may be expected to be more difficult and tedious.

*Treatment.*—In these cases you may relieve the symptoms for a time by applying leeches to the cheek, by the exhibition of purgatives, and by adopting what is called an *antiphlogistic* treatment of other kinds. But it is evident that such antiphlogistic treatment can only *relieve* the symptoms—it cannot strike at the root of the disease.

The first thing to be done is to extract the dead tooth; and it may be that this is all that is wanted. If, when the tooth is drawn, there is a free communication between the alveolus and the cavity of the antrum, the matter is discharged through the opening, and the patient is immediately relieved. In other cases, however, when the tooth is drawn, either the abscess of the antrum does not discharge itself at all through the aperture, or it does so only in an imperfect manner. The plate of bone between the alveolus and the antrum is generally very thin, and you may easily introduce a sharp-pointed instrument into the bottom of the alveolus after the tooth is extracted, and break it down, so as to establish the communication which is wanted. This must always be done whenever the extraction of the tooth does not leave any or a sufficient opening for the discharge of the matter from the cavity above.

The instrument with which you make the opening should be formed like a common hydrocele trocar, but a little larger (of course without a canula), and it should not be made of the best steel; for I once used a common trocar, made of steel, in an operation of this kind, and it broke while I was performing it. In this case, I extracted the broken portion very easily, but you can conceive that such an accident might occur, and you might experience great difficulty in extracting the point of the instrument. The steel, then, ought not to be very finely tempered, but such as would bend a

little instead of breaking. There is no occasion for its being otherwise; for you do not want a very sharp-cutting instrument. It is sufficient if it be strong, and will not easily break.

When the bottom of the alveolus is broken down, the matter will readily escape from the antrum, and you may introduce a probe and explore its cavity, so as to ascertain whether there be in it any dead bone or not. Sometimes there is a piece of dead bone at the bottom of the alveolus, and then you have only to wait patiently till an opportunity occurs for its removal. At other times you will feel the dead bone after the probe has entered the antrum, and the opening already made may not be sufficient for its extraction. Under these last-mentioned circumstances, the opening must either be enlarged or another made in a different place. When a free opening has been formed into the antrum, you should allow the patient at first to remain quiet, with a piece of bougie or gum catheter retained in it, in order to prevent its closing. This should be taken out two or three times daily, to allow the escape of the matter. After two or three days, being provided with a syringe having a slightly curved pipe, small enough to enter the opening, you should begin to wash out the cavity of the antrum by injecting some tepid water into it once or twice daily. The water injected will generally pass into the nostril, showing that the natural aperture of the antrum remains pervious; and if it be, then you are able to wash it out more readily and completely than you could do otherwise. If you find that the injected water does not pass out of the nose, you will know that the natural opening between the two turbinated bones is blocked up, and you will then have a little more trouble in washing the cavity of the antrum thoroughly out.

Let us suppose another case—viz.: that a dead tooth has been allowed to remain until it has produced suppuration of the antrum; that it has then been extracted; that nothing further has been done; and that the patient has been left either with no opening at the bottom of the alveolus or one that is insufficient. Under these circumstances, the bottom of the alveolus becomes filled up with new bone, the edges at the inferior part are absorbed, and the alveolar cavity no longer exists. It is absolutely necessary to the patient's recovery that an opening should be made into the antrum: but where, in such a case as this, would you make it? In the situation of the alveolus? This is an awkward place for the purpose, on account of the thickness of the bone which you have to penetrate. It may be a good situation when the tooth has just been drawn, but it is a very bad one when the jaw has become consolidated afterwards. The best mode of making the opening is this: raise up the cheek so as to expose the membrane covering the gum on the side of the face, and with a scalpel make a transverse incision down to the bone. Always make this incision through the membrane before you begin to perforate the bone. In one case I did otherwise, thinking the division of the membrane, as a separate part of the operation, was unnecessary; but the consequence was, that the blood escaped into the cellular membrane beneath, and there was an immense

ecchymosis, making the rest of the operation very difficult. Always, then, divide the membrane first, where it covers the jaw just above the alveolar processes of the grinding teeth, and then perforate the thin plate of bone as nearly as possible to what you suppose to have been the original seat of the disease.

What instrument is to be employed in making the perforation—a trephine? That is quite unnecessary. Nothing is better than a pair of sharp-pointed strong scissors; apply them to the bone in their closed state, using them as a chisel, and they will easily penetrate it, and go into the antrum. You have then only to press on the scissors, giving them at the same time a rotatory motion, and you will easily break away a circular portion of bone. If the opening be not sufficient, a broader pair of scissors may afterwards be used to enlarge it; which you may do easily, so as to make it of almost any dimensions. That is the way in which I performed the operation the other day, and you know that the finger easily penetrated through the opening thus made into the cavity of the antrum. The opening being completed, you may introduce a probe or your little finger, to ascertain if there be any dead bone. As the soft parts contract, it will become necessary for the patient to wear a plug in the orifice, to prevent it being closed. A piece of ivory or box wood answers the purpose very well. The plug should be conical in shape, so that it may not slip into the cavity of the antrum. It should be withdrawn twice daily, and a little tepid water injected into the antrum to wash it out. This practice may be continued as long as the discharge of pus continues, or as long as you have reason to suspect that there is any dead bone to come away.

In some cases the patient recovers perfectly after the operation, and in others not. A lady consulted me, who had had symptoms of abscess in the antrum for many years, being otherwise in very ill health, and there was the greatest reason to attribute her ill health in part to the putrid matter collected in the antrum passing through the nostril into the fauces, and being swallowed during sleep. There was a carious tooth, which was extracted, and I then made a wide opening from the bottom of the alveolus into the antrum, and let out a good deal of pus. A plug was kept in the opening, and the antrum washed out night and morning—the fluid used in the injection flowing into the nostril. No dead bone ever came away, nor was any ever felt by the probe; but, nevertheless, the suppurative discharge continued. The patient, some few years afterwards, died of disease of the lungs, and I believe that to the day of her death the discharge of pus from the antrum had not ceased. Where there is extensive dead bone which does not come away easily, of course you will understand that suppuration must continue; but here it continued although there was no dead bone—at least none was ever discovered.

## COLLECTION OF TRANSPARENT FLUID IN THE ANTRUM.

The next disease of the antrum of which I shall speak, is one of more rare occurrence; in fact, I have seen only two cases, and I can find only one or two instances of the kind on record. A lady consulted me with a large projection of one cheek. It looked as though she had a large plum in her mouth. I lifted up the cheek, and found a projection in the situation of the antrum of one side, elevating the membrane from the gum, and the flesh of the cheek also. This projection was as large as a pigeon's egg. The surface, where it was covered by the membrane of the cheek, gave way a little under the pressure of the finger. There was no distinct fluctuation, but a kind of crackling sensation communicated to the fingers, as if you pressed upon very thin horn, or dry parchment. This being the first case of the kind that I had met with, I did not know what it would turn out to be, and I thought it likely that there was some solid tumour in the antrum. I took a curved scalpel, not bent in the direction of the cutting-edge like a bistoury, but bent laterally, with a strong sharp point, (which I had found very useful on some other occasions), and introduced the point into what seemed the thin bony parietes or boundary of the tumour: having previously dissected the membrane of the cheek from the jaw. Immediately there escaped a large quantity of transparent fluid, like very thin mucus; something like what we find in cases of ranula. I then introduced a probe into the cavity of the antrum, and found that it might be passed in any direction. There was neither tumour nor dead bone, and the cavity seemed to be in a natural state, except that it was enormously dilated. I next enlarged the opening, cutting out a circular portion of thin bony shell formed by the expanded parietes of the antrum. After the operation the tumour subsided, and in the course of a few weeks the cheek was not larger than the other. The aperture made by the scalpel has continued pervious to this day, though it is ten years since I performed the operation. The lady wears a plug, which she takes out night and morning, and with her own hand introduces the point of a syringe, and washes out the antrum. I suppose that there can be no doubt that, in this case, from some accidental cause, the natural aperture into the nostril had become closed, and that the mucous secretion of the antrum, having no means of escape, collected and distended the cavity to this large size. The same thing happens to the gall-bladder when the ductus cysticus is obstructed: the gall-bladder then becomes enormously distended—not with bile, but with transparent mucus.

This last summer I was consulted, with Mr. Lawrence, concerning a case exactly similar to the one which I have just described, but it occurred in a boy. Mr. Lawrence made an opening into the tumour, and let out a large quantity of transparent fluid. I have not heard of the patient since, but I have no doubt he completely recovered.

## POLYPUS OF THE ANTRUM.

Surgical writers describe polypi as arising from the mucous membrane of the antrum;—nay, some have gone so far as to tell you how you are to apply a ligature round the base of this polypus, so that it may wither and drop off. The history and treatment of such a polypus is, however, altogethor hypothetical. No polypus, I believe, ever existed in the antrum, around which a surgeon could put a ligature; and I never heard of the operation being performed, though it has been described by some writers.

## MALIGNANT TUMOURS OF THE ANTRUM.

Tumours of a malignant kind, however, grow in the antrum, partaking partly of the nature of fungus hæmatodes, and partly of carcinoma. They are attached to the mucous membrane, and soon grow so as to fill up the cavity. I suppose that at first they produce but little pain, and that the patient has scarcely any symptoms of disease; at any rate there are no symptoms by the description of which the surgeon would be able to recognize the existence of disease in its very early stage. But it is otherwise as the disease advances. The tumour, growing larger, presses upon the inner surface of the antrum, and causes its bony parietes to become dilated. By and by it makes a projection in the cheek, just like that which I described in the last case, where there was a collection of mucus in the antrum. After a time there is another projection in the situation of the bony palate—that is, the tumour presses upon the floor of the antrum, as well as at the sides. Then another projection occurs at the inferior part of the orbit; and there is another still blocking up the nostril; in fact the antrum becomes distended everywhere, causing an enlargement of the cheek, bringing the bony palate to a level with the grinding teeth below, and diminishing the cavities of the orbit and nostril. The bony substance of the antrum becomes absorbed under the pressure of the tumour; the base of the alveoli is destroyed; the teeth are rendered loose, so that they merely hang in the jaw by flesh, and you can extract them with a pair of forceps, or they drop out of themselves. The tumour goes on increasing until the antrum will admit of no further distension; ulceration takes place, and the malignant growth projects through the ulcerated opening. Generally it projects, in the first instance, under the cheek. A large ulcer is formed there, and the tumour appears through it. It then makes its way by ulceration into the mouth and orbit; sometimes it pushes the eye upwards, and at other times forwards, so that it is quite out of its natural place; and in either case it occasions blindness. As the disease makes still farther progress, it forms a large tumour in the mouth, compressing the tongue, and preventing mastication.

The malignant growth having made its way externally, and being

freed from the pressure of the neighbouring parts, increases at a still more rapid rate than before. There is profuse discharge, occasional hemorrhage; and the patient is worn out partly by these causes, partly by misery and anxiety of mind, and by starvation: for now he is unable to masticate solid food; and as the destructive process of the parts in the neighbourhood goes on, there is at last great difficulty in swallowing even liquid nourishment, only a small portion of which goes down the throat, while the greater part passes out at the aperture in the cheek. I do not know anything more miserable than the death-bed of a patient who dies from this horrible disease. Such is a brief history of its progress; but if you wish for further information on the subject, you will find an excellent and very graphic account of it in Mr. Travers' paper on Malignant Diseases, published in one of the volumes of the Medico-Chirurgical Transactions.

I suppose that it is this disease of which some surgeons have conceived that it might be removed by ligature. Others have imagined that it might be got rid of by other means; that we might make an opening into the antrum before the tumour acquired a very large size, turn it out with the fingers, and apply the actual cautery to the surface from which it grew. I believe there is a case recorded by Desault, where this operation was performed, and it is spoken of as being successful. But if I remember right he gives the history of the case no later than three months after the performance of the operation; and you all know that a malignant disease may appear to be cured for a twelvemonth, and yet return. The circumstance of the patient appearing to be tolerably well three months after an operation of this kind, by no means proves that it produced a permanent cure.

I did attempt to destroy a tumour of this kind formerly, in the following manner: It was in the early stage of the malignant growth; but the cheek bulged out over the dilated antrum, and the bone of the antrum was absorbed. With a common scalpel I cut out a large portion of the membrane, which now formed the only boundary of the antrum. I then found a large tumour suspended, as it were, in the antrum, appearing to grow from a broad surface. The outer part of the tumour was of soft consistence, which I broke down with my fingers, and I then turned the tumour out, so that the antrum appeared to be perfectly empty. But this was not done without an enormous and indeed frightful hemorrhage. I introduced a quantity of what we call *blue lint*—that is, lint dipped in a solution of copper, and then dried, and filled the cavity of the antrum with it, hoping that this might make the base of the tumour to slough off. Sloughs did come away, but, nevertheless, there was no destruction of the disease. I applied caustic afterwards, and the actual cautery very extensively, but without at all checking the growth of the tumour, which went on in spite of all the plans I adopted with a view to restrain it: in short it grew faster than I could destroy it, the cheek ulcerated, and the patient died in the miserable way that I have just described.

## LECTURE XXXIX.

## ON ENCYSTED TUMOURS.

IN this lecture I shall make some observations on the case of a little girl who was in one of the upper wards with a large encysted tumour, containing watery fluid, and occupying a considerable portion of the left hypochondrium. The following are briefly the notes of the case:—

“Harriet Copeland, æt. 9, was admitted on the 12th of March, with a firm elastic tumour in the left hypochondriac region, pushing forwards the integuments, and extending backwards, beneath the lower ribs to the left side of the spine. No pain was felt on pressure. The appearance of the neighbouring skin was perfectly natural, and the patient's general health was good. Her mother states that about twelve months ago the child had received a severe blow in the left side from her schoolmistress. The pain which immediately followed soon subsided; and the occurrence was forgotten until about three weeks before she was admitted into the hospital, when, in the act of running, she struck her side with much violence against a post. Great pain followed the accident; and on examining the part, her mother first discovered the tumour, in the situation above described. At this time it was equal in size to a hen's egg, but it rapidly increased in growth, and it is now as large as an orange.”

Having inquired into this little girl's case, I was led to believe that she had an encysted tumour in the abdominal cavity, and that it was probably connected with the liver. I determined, however, to keep her for some time in a state of quiet, in order that we might watch the undisturbed progress of the disease, and that I might be able to judge whether this opinion was correct. On the 30th of April the tumour had considerably increased in size, and presented to the fingers a distinct sense of fluctuation. I now punctured it with a small flat trochar, and drew off about eight ounces of a clear watery fluid, in which was found no coagulable matter. It will be unnecessary to occupy your time with the minute details of this case, the more so as they may be seen in my Clinical Book, to which you have all access. The principal facts may be thus briefly stated:—

After the operation, the patient vomited. Inflammation, beginning at the seat of the tumour, followed, and extended to the neighbouring parts. Bleeding, purging, and other antiphlogistic remedies were of course employed. In spite of all, however, the belly became swollen, tympanitic and tender. Shortly after a swelling, which was attended with considerable pain on pressure, showed itself, occupying the place of the original tumour. On the 19th this had increased in size, and the fluctuation of fluid was perceptible in it; but in a few days more it had altogether disappeared, and pus mixed with