Lettsomian Lectures

ON THE SURGICAL DISEASES OF CHILDREN.

DELIVERED BEFORE THE MEDICAL SOCIETY
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LECTURE II. (*Continued.*)

DIFFERENCES BETWEEN THE SURGICAL AFFECTIONS OF THE RESPIRATORY SYSTEM IN THE CHILD AND ADULT.

WE will now pass on to consider in what way the surgical affections of the respiratory organs in children differ from those which are to be found in the adult; and, if there are not any which may be described as special to this early period of life, there are many which require surgical assistance, and which are, as a rule, observed only in young subjects.

Amongst the most important of these affections is the *œdema of the larynx* which follows upon the swallowing of boiling liquid; and the symptoms which immediately result from such an accident are mostly severe and dangerous to life. The pathological condition which is the result of the contact of the fluid is of a simple character, a severe blistering of the part being the prominent point; the *œdema* and vesication of the irritated mucous membrane readily closing the narrow rima.

The principles of treatment in such cases are not complicated, and they are the same as would be carried out under any other condition. But delay in their application is not to be allowed; for suffocation, either from the mechanical obstruction occasioned by the enlargement of the parts, or from spasm of the glottis, is most likely to ensue. If the symptoms, however, are not severe, and if, on careful watching, they do not rapidly increase, there is strong hope that the mischief is but partial, and that they will soon subside; for this blistering of a delicate membrane is a rapid process; and, if it do not take place within a few hours after the accident, it will rarely appear. Nevertheless, the child must be watched with care, so that the evils of a sudden spasm of the glottis may be averted, and the earliest indications of obstruction be successfully treated.

Dr. Bevan and others have spoken in high terms of the benefits of antimony in this affection; and the weight of evidence which they adduce in its favour must be considered strong, and therefore highly recommendatory. It is to be given in small and frequently repeated doses. I have given it in cases of the milder description with some success, when no immediate danger to life manifested itself, and when delay was, therefore, not so dangerous; but I have never yet been induced to trust to it when there was an evident fear of a momentary suffocation, and therefore an imminent danger to life. In such severe instances, some immediate means to prevent suffoca-

tion are loudly called for; and of these, tracheotomy has been the most favoured.

I possess the records of nine instances in which this practice was carried out, and in five recovery took place; in the remaining four, death followed from bronchopneumonia. I am aware that this success is greater than that usually recorded; for out of twenty-five cases recorded by Dr. Jameson in the *Medical Times and Gazette* for October 1859, and the *Dublin Quarterly Journal of Medical Science* for February 1860, but six cases recovered.

It is not an easy question to decide how much of this pneumonia is to be attributed to tracheotomy, or to the accident; but the operation is almost a necessity to prolong life, and must therefore be performed. I must confess, however, that I have derived much satisfaction from a suggestion which has been made within the last few years, but which, I believe, has not been carried into practice; and that is, to puncture or scarify the *œdematous mucous membrane*. If the pathology of the affection be such as I have indicated—merely a blistering of the mucous surface—there are great hopes that this practice may prove of value; and I shall certainly be disposed to give it a trial on a befitting occasion. It has this advantage, that on principle it is likely to succeed; and, if the practice fail, no possible harm can accrue, as other means can be at once employed.

The subject of *foreign bodies in the air-passages* is the next to which I propose to draw your attention; for, although cases illustrating the evil effects of such an accident are occasionally met with in adults, by far the larger proportion of these instances are undoubtedly found during early life.

It is scarcely necessary to dwell upon the symptoms by which this accident is to be diagnosed. The fact that obstruction to the respiratory process exists, that it came on suddenly, and is so aggravated at intervals as to endanger life, are sufficiently characteristic symptoms by which the nature of the case can be made out. The history will also, as a rule, prove of material assistance. But any one who has witnessed such an accident will find no difficulty in readily recognising a second.

There is but one principle of treatment which demands attention, and that is to procure, as speedily as possible, the expulsion of the foreign body. Without some surgical measure, it is an extremely rare thing to witness this event, if the foreign body have passed the rima, and entered the trachea; and, although I may have read of such cases, it has never fallen to my lot to witness one.

An operation, therefore, is almost always called for; and that of tracheotomy is the only feasible one. I possess the records of eight examples in which this operation was performed. In five of these, the foreign body was immediately ejected upon opening the trachea; and four of these recovered, death occurring in the fatal case from bronchopneumonia. In the remaining three cases, the foreign body was immovable, and produced death. In two, it was subsequently found to be firmly impacted within the rima; and in the third, it was impacted in the right bronchus.

It thus appears that, in a large proportion of the cases in which a foreign body has passed into the trachea, its removal can be successfully obtained by the operation of tracheotomy. Indeed, as long as any evidence exists that it is still free and moveable

and is not impacted either in the bronchi or larynx, a successful result to operative interference may with some confidence be predicated.

If the foreign body be impacted within the bronchus, there is little hope of its extraction. The use of forceps, and other instruments which have from time to time been suggested by surgeons for this end, cannot be recommended; for it is almost an impossibility to seize the foreign body when impacted within the tube, and any attempt will only tend to fix it more securely in its position. If air can pass into the lung, there must always exist a strong expulsive force, which powerfully tends to procure the removal of the body; and, if it be fixed in too firmly to allow of such a result taking place, any attempts from without will be obviously futile. In exceptional cases, however, this practice may be of use. In all cases, therefore, of foreign body in the air-passages, tracheotomy should be performed. Delay in its execution must be unhesitatingly condemned, as no possible good can follow such a line of practice; for the surgeon must not look for the natural expulsion of the foreign body through the rima, as the perfect closure of the laryngeal orifice is with tolerable certainty guaranteed by its presence, although recorded experience favours us with instances in which the foreign body was spontaneously expelled from the trachea without an operation. Chloroform should be administered preparatory to the operation, as it may be given with perfect safety; for it not only tends considerably to prevent the spasm of the laryngeal muscles by allaying their irritability, but it enables the surgeon to perform his difficult duties with calmness and precision.

A free section of the trachea is always to be made, in order to allow of a free passage for the expulsion of the foreign body; and, in the majority of cases, this foreign body will be expelled as soon as the opening in the trachea has been accomplished. If any difficulty be experienced in obtaining this result, the child's body may be tilted upwards and the head downwards, to favour the gravitation of the substance; and a good shake or pat upon the back will at times dislodge it from its position, and consequently assist in securing its expulsion. If these means fail in carrying out the object for which they were undertaken, the child must be left alone; the opening in the trachea should, however, be made large, or even valvular, and means adopted to preserve its patency; so that, should the foreign body by any chance be subsequently dislodged from its position, its expulsion may be secured.

The larynx itself should be always most carefully examined, not only before, but after the operation; for it is not an uncommon thing to find the foreign body firmly impacted within the rima, and consequently in a position from which its removal cannot be looked upon as being very difficult. In two of the cases which I have recorded, out of the three which proved fatal, after a futile attempt at the removal of the foreign body by tracheotomy had been made, I have already shown that the foreign body was subsequently found to be firmly impacted within the rima; and it is fair to believe that, if the foreign body had been previously removed from this position, a very different success would in both cases have been recorded.

This laryngeal exploration must, however, be con-

ducted with considerable care. The passage of a probe or fine catheter, or any other small body, through the rima from below upwards, is positively useless, as experience has proved that these means may be carefully employed, and yet the surgeon will fail in finding any obstruction; but the exploratory instrument must be a large one; indeed, it should be nearly as large as can be admitted through the rima; so that, if the foreign body lodge at this spot, it will necessarily be pushed upwards into the pharynx by its forcible passage. A large elastic catheter is unquestionably the best instrument for this purpose; and, if this be employed in such cases, it may be unhesitatingly asserted that a more uniformly good success will in future have to be recorded. This practice would probably have added two more successful cases to the five which I have already mentioned, making seven successful instances of the removal of the body, out of the eight in which it had taken place.

Within the last few months, I was present at the examination of a child who had died from the impaction of a bone within the rima, which had not been detected after the operation of tracheotomy, although a careful examination of the larynx was made with a fine instrument. It was impossible to see the specimen without a painful feeling of regret that a larger instrument had not been employed in the exploration, as the body was at once dislodged after death by the introduction of a catheter up the passage.

In all cases, therefore, of foreign body in the air-passages, in which an expulsion cannot be obtained by the operation of tracheotomy, let the larynx be carefully examined by means of a large catheter, and its extremity passed from below upwards through the rima; the finger at the same time making a careful examination from above; for by these means, and these only, will a foreign body be removed from the rima glottidis.

When the body is removed, convalescence may fairly be anticipated. An attack of bronchopneumonia will at times interfere with recovery, or even produce death; and, although this complication is one to which the attention and fears of the surgeon may be directed, it is not one which frequently follows, or which should produce other feelings than those of fear.

Foreign Bodies in the Nostril are common occurrences in children. It is a subject, however, which need not occupy our attention. They may readily be removed by means of a bent probe or forceps; and, if of a soft nature, a good syringing answers every purpose.

I have known a plum-stone to remain within the nostril for eight months, and to give rise to the symptoms of *ozæna*, for which the child was brought under my observation. A careful examination of the nostril in such cases will, however, invariably reveal its true nature.

The surgical affections of the upper part of the respiratory organs having received as much of our attention as we can afford to give, I propose now briefly to consider if there be any points of difference to be noted between the surgical affections of the adult and child; and I am disposed to believe that the most important difference is shown by the fact that in young life an injury to the thorax may be followed by laceration of the lung-tissue, with-

out any associated fracture or displacement of the ribs. This fact is, unquestionably, to be explained by the greater elasticity of the thoracic wall in the child than in the adult, and the greater tendency to laceration of the lung-structure. The following case will, perhaps, best illustrate its truth.

CASE. A boy, aged 7 years, when playing in the road, was knocked down by the shaft of a cart; the wheel caught him by the left side of the lower part of his abdomen, and turned him round, stopping when just about to pass over the thorax. Intense dyspnoea and severe hæmoptysis immediately resulted, and he was brought to Guy's. He was admitted under the care of Mr. Birkett; and, as I happened to be at the hospital at that time, I saw him, and noted the following facts. He was in bed, lying on his right side, half turned over on to his abdomen, with his hips drawn up and flexed. There was intense dyspnoea and cough, accompanied with hæmoptysis. He was quite collapsed, and nearly unconscious; and no indication of fractured ribs could be detected. He never rallied, but died two hours after the accident.

At the *post mortem* examination, the only external sign of injury was a bruise on the left side of the back. There was no fracture of the ribs, or any external indication of injury to the thorax. The right chest was filled with air and some ounces of blood, which had evidently proceeded from a laceration, about three inches long, of the lower edge of the middle lobe of the right lung. The lung was partially collapsed. In the abdominal cavity were a few ounces of blood, from a laceration of the upper edge of the liver. There was also effused blood about the left kidney, from laceration of the suprarenal capsules.

REMARKS. In this case, I think, there can be little doubt that the laceration of the lung was due to the injury; and, as it was not complicated with any fracture of the ribs, it must have been produced by a yielding of the bony and cartilaginous coverings, and a dragging of the lung from its fixed attachments. This is a point of considerable interest, and, not being common, is worthy of record. It is mentioned in this place as a principal point of difference between the thoracic injuries of young and adult life, and is the only one to which I will now draw attention.

Fractures of the ribs in children, like the same injury in adult life, are to be treated by strapping, and not by bandages; bands from one to one-and-a-half inch wide being fixed from the spine to the sternum round the injured side, including three ribs above and three below the seat of fracture. It must be remarked, however, that fractured ribs in young people are very rare; their natural elasticity, doubtless, being quite sufficient to explain the fact.

[To be continued.]

CHEMICAL SOCIETY. Arrangements have been made for the delivery of the following lectures respectively at the next three meetings of the Chemical Society:—May 7, Dr. Lyon Playfair, C.B., F.R.S., "On the Constitution of Salts;" May 21, W. R. Grove, Esq., Q.C., F.R.S., "On Certain effects of Intense Heat on Fluids;" June 4, M. Marcellin Berthelot, "On Synthetic Methods in Organic Chemistry."

Original Communications.

ON CONGENITAL PHIMOSIS: WITH A SIMPLE OPERATION FOR ITS RELIEF.

By FURNEAUX JORDAN, Professor of Descriptive and Surgical Anatomy, Queen's College; Assistant-Surgeon to Queen's Hospital; and Senior Surgeon to the Eye and Ear Hospital, Birmingham.

Cases of phimosi are conveniently classified under two heads—the *congenital* and the *contingent*.

The congenital variety is the more important; because, being permanent, it produces a greater abundance of evil consequences. Contingent phimosi is not only temporary, but is itself merely a symptom of other prior disease; and the clearly recognised principles of its treatment belong to the remedial surgery of the diseases of which it is a secondary phenomenon.

The effects of congenital phimosi are local and general. Locally, there may be inflammation—pain, tenderness, swelling, suppuration, ulceration, or sloughing, or adhesions; impeded urinary flow, or retention of urine (I have found retention of urine in phimosi, and also in urethral disease, without complete physical obstruction—is this due to so-called reflex action?); retained sebaceous secretion, which itself frequently causes much irritation and inflammation. Preputial calculus is occasionally met with. In cases of tight phimosi which remains unrelieved, I am convinced, from a lengthened series of observations, that atrophy of the penis is an undoubted result. It is commonly supposed also that phimotic stricture favours the accession of epithelioma in the penis. The presence of phimosi in acquired disease constitutes a very unfavourable complication. The treatment, however, when an operation is required, is simple; an incision through the whole length of the prepuce (or its complete removal when in a sloughing state) is the only measure capable of relieving phimosi when the skin and lining membrane of the prepuce are unable to glide over each other, from the presence of inflammatory products between them.

Very frequently the effects of phimosi are not local merely, but affect other organs, or even impair the general health. In these cases, the flow of urine is impeded. A tight phimosi may produce all the symptoms which follow stricture of the urethra. Indeed, I have seen, more than once, the act of micturition performed with more difficulty in congenital phimosi than is seen in ordinary cases of stricture—the prepuce being distended into a large globe at the end of the penis. Not only may there be lesion of the bladder, ureters, and kidneys, but obscure pains in distant parts may perplex the patient and his medical attendant. I was requested by a physician of great eminence in his profession to operate for a congenital phimosi in the son of a clergyman, where there were cystitis and extreme vesical irritability, and also severe inflammation of the tonsils and pharynx, with quite disproportionate pain in the throat. All the symptoms, which had caused distress for a considerable period, quickly disappeared with the removal of the phimosi. I have seen, in the large number of cases of urethral stricture which have been placed under my care, inexplicable pains in the throat vanish with dilatation of the stricture. But the anomalous symptoms of stricture may on another occasion fitly form the subject of a lengthened paper.

The seat of constriction in phimosi lies chiefly in the lining of the prepuce, and partly in the skin, and in both tissues near the preputial orifice; the skin at this