

Turbinectomy for the relief of nasal obstruction and asthma / by Walker Downie, M.B., F.F.P.S., Lecturer on Diseases of the Throat and Nose, Glasgow University.

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TURBINECTOMY FOR THE RELIEF OF NASAL OBSTRUCTION AND ASTHMA.

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IN the report of the Western Infirmary for the year ending October, 1896, sixty-four turbinectomies are recorded as having been performed in the department under my care. These were performed on twenty-seven individuals, who suffered from nasal obstruction due to abnormalities of the turbinal bodies, and the separate operations were carried out at intervals as will be explained when the operation is being described. Cases of nasal blockage caused by deflections, deformities and out-growths of the septum are excluded, as are also those due to post-nasal growths and causes other than those specified.

Much has been written during the past few years on the subject of turbinal hypertrophies and their treatment, in which much diversity of opinion has been expressed, but here I will confine my remarks to the cases treated during the twelve months noted in the above report, referring in those remarks particularly to the complaint made by those who sought relief, to the conditions seen on examination, to the operative treatment pursued and the results, comparing the latter with those following operative methods advocated by others.

COMPLAINT.

The cases may be roughly divided, according to the complaint made by the patient, into three sets.

First Set.—Twelve patients complained of variable nasal

obstruction, sometimes one side being blocked, sometimes the other, rarely were both nares affected at the one time. The intra-nasal swelling causing obstruction, and which was frequently accompanied by sneezing and increased secretion, was excited by various means, amongst them being change of posture from the upright to the prone position, sudden alteration in the temperature of the air inspired such as experienced in going from a warm room to a cold one, coming from the outer air into a heated room, excessive moisture in the air, walking against a high wind, inhalation of air impregnated with dust, particular odours, etc.

Second Set.—In ten cases the complaint was that of more or less constant nasal obstruction. Nasal respiration in many of the cases was reduced to the vanishing point, the voice lacked resonance, nasal secretion passed in quantity into the throat: in some hearing had become seriously impaired, in others tinnitus was constantly present, and, in almost all, the patients had persistently those symptoms which are usually considered indicative of a cold in the head. In three of those cases the turbinal hypertrophy was associated with the presence of nasal mucus polypi, and in these turbinectomy was performed to permit of the complete extirpation of the polypi.

Third Set.—In five cases the distress complained of was asthmatic in nature. The asthma was in most of the cases of sudden onset, and the exciting cause varied even in the same individual. It might follow the inhalation of dust as in sweeping a room or in sweeping the ward as in the case of a nurse, the inhalation of fine powder during its trituration as described by a patient who is a chemist, the smell of a farm particularly the stables or wherever hay was lying about, and excitement in some cases; while in others the onset would occur during sleep and without apparent cause. The first symptom in all of those cases was sudden intra-nasal fulness, followed by violent sneezing and excessive watery discharge, and then a gradually increasing sense of tightness across the chest, followed more or less rapidly by the well-known asthmatic distress. In the remaining two sneezing was exceptional.

THE TURBINALS.

There are three turbinated or spongy bones (for brevity termed turbinals) in each nostril. The superior and middle ones are portions of the ethmoid, while the inferior one is a separate bone articulating with the superior maxilla. These different turbinals, springing from the outer wall, curve inwards and downwards towards the middle line, dividing each nostril into three meatuses, and presenting in the normal nose an extensive surface by which inspired air is warmed and moistened on its way to the lungs. Broadly it may be said that the superior and middle turbinal bones are covered with highly vascular mucous membrane continuous with that of the pharynx, along with a submucous tissue firmly incorporated with the periosteum, and rich in secreting glands. The inferior turbinal bone has a similar covering, but here the venous plexuses are particularly abundant, the structural arrangement being somewhat similar to that of the erectile tissue in the genital organs. The fibrous trabeculae support in their meshes a network of venous channels lined by endothelium, and in the main those vascular channels are surrounded by muscular fibres arranged in circular and longitudinal layers. The presence of the erectile tissue is specially for defensive purposes—air charged with deleterious particles or vapours usually acts as the excitant, the resulting fulness of the vascular tissue narrows the nares and increases the moisture of the surface—so that foreign bodies in the inspired air are attracted to the moist surface and there made captive. When the air is pure no such protection is called for, and the turbinal body, if healthy, should become collapsed, leaving the passages of the nares free. When, however, the tissue is hypertrophied, there is a permanent interference with nasal respiration; and if, in addition to permanent increase in size, there is an undue sensitiveness of the tissue implicated, then in many cases its removal becomes necessary to permit of normal respiration as well as for other reasons.

CONDITIONS FOUND ON EXAMINATION.

In the first set of cases—occasional obstruction varying in degree—the erectile tissue distributed over the anterior end

of the inferior turbinal was chiefly at fault, though in most cases there was hypertrophy of the anterior portion of that bone as well. Much comfort can be given to such patients by the application of those therapeutic agents which cause contraction of the vessels such as cocaine, menthol, and camphor, but such applications will never give permanent relief. To attain this end nothing short of removal of the hypertrophied hypersensitive tissue will suffice.

In the second set of cases—serious blockage more or less constant—there was for the most part hypertrophy of the bone (inferior turbinal) throughout its length, associated with considerable swelling of the covering mucosa. In these cases it is interesting to observe the appearance of the posterior portion of the inferior turbinal. Normally the surface of the anterior third, or even the anterior half, is smooth, and the posterior half is somewhat wrinkled; but in the abnormal structure, while the anterior portion remains smooth, even while greatly increased in size, the surface of the posterior half is markedly roughened, resembling the convolutions on the surface of the brain in miniature in many cases, while in others the posterior end looks like a raspberry. (These characteristics will be found illustrated in Plate I., where the smooth anterior portions are shown on the right, while to the left are rough posterior portions which have been excised.) This roughness of the surface is due to atrophic and oedematous changes in the muscular walls of the blood sinuses, permitting of great distension of their walls. The obstructing swelling thus, as far as the soft tissues are concerned, is the result of dilatation, or a varicose condition of the venous channels, along with a general oedema of the mucosa.

In the third set of cases—where asthma is secondary to some intra-nasal irritation—the conditions are much more complex. There is no constant nasal deformity or lesion, except it be hypertrophy of the posterior ends of the inferior turbinals, where the vascular mucosa was in each case markedly roughened and oedematous. On the other hand, a condition similar in all respects, as far as the eye could judge, was present in most of those cases included in the second set, without any reflex symptom being excited. One case in the

third set had, in addition, several mucous polypi in the superior and middle meatuses; and in two cases there was great enlargement of the anterior ends of the middle turbinals.

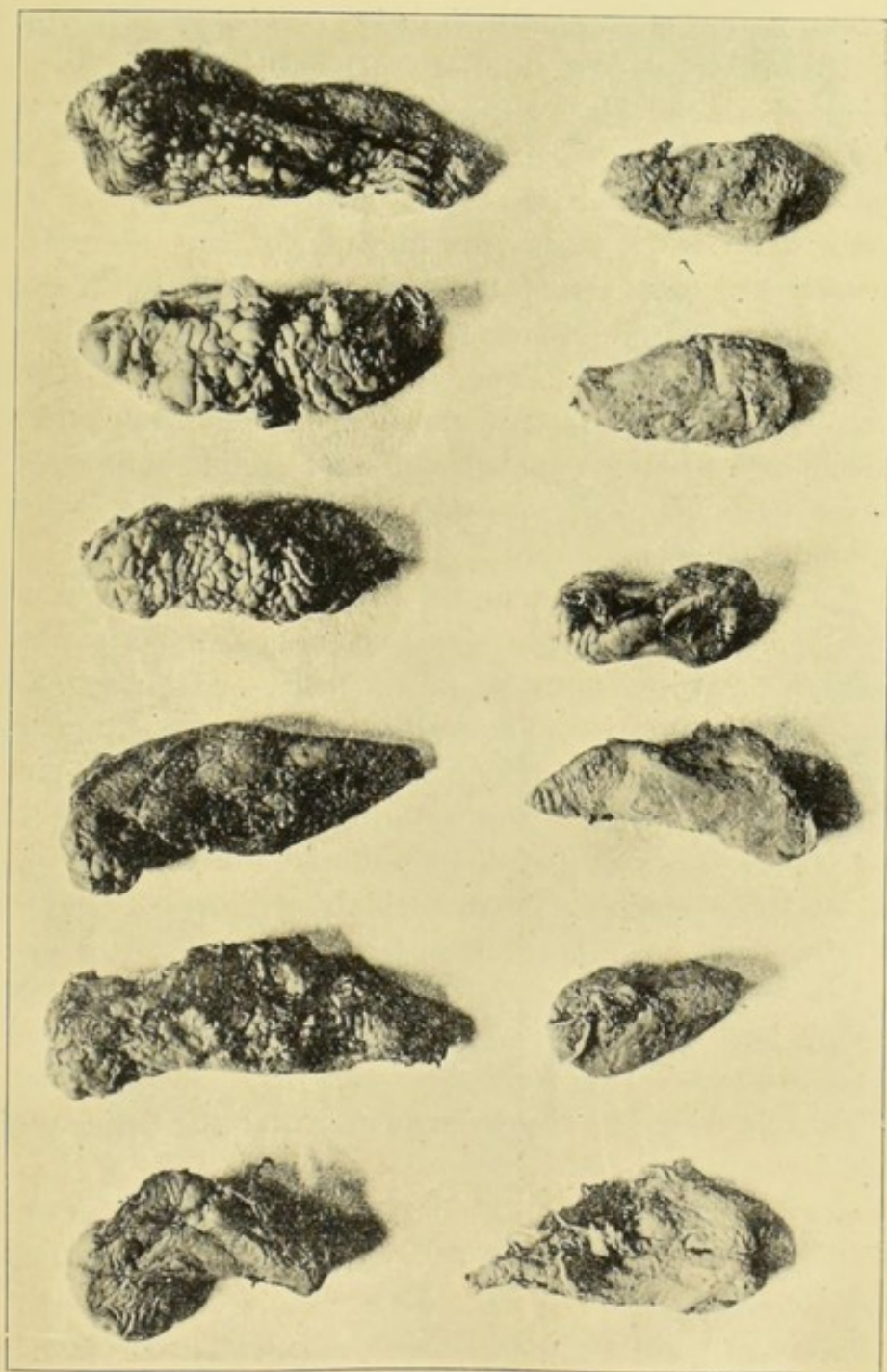


PLATE I.—ANTERIOR AND POSTERIOR PORTIONS OF HYPERTROPHIED INFERIOR TURBINALS EXCISED. Smooth anterior ends are shown in column to the right; posterior portions illustrating brain-like surfaces when hypertrophied in column on the left.

OPERATIVE MEASURES ADOPTED.

The operation of turbinectomy may be practised in the inferior or middle turbinal, and it may be partial or complete. The following terms are thus called for to indicate what parts have been removed: *anterior inferior turbinectomy*, when the anterior portion of the inferior turbinal has been excised; *posterior inferior turbinectomy*, when the posterior portion has been similarly dealt with; *total inferior turbinectomy*, when the whole of that bone has been removed.

In the first set of cases anterior inferior turbinectomy was performed, the soft structures being removed by means of cautery and snare, and the bony portion by scissors, after the pattern of elbow scissors. The results from the use of chemical caustics and galvano-puncture, recommended by some, are most unsatisfactory when compared with the relief following the measures here adopted, measures which might by some be considered somewhat severe.

In the second set, the removal of bone is absolutely necessary—it may be anterior turbinectomy alone that is called for or posterior turbinectomy alone, or both on the same side, which is the operation I advocate in such cases, or the whole inferior turbinal may be removed as first extensively practised by Dr. Carmalt Jones. The anterior end of the bone is removed with scissors as just described, and the posterior end by means of Jones' spokeshave (or turbinotome), or by means of a steel wire snare. Whatever instrument is chosen the bone should be cut obliquely, so that when the anterior and posterior ends have been removed a tongue-shaped central portion of the bone remains projecting from the outer wall. The importance of this, as bearing on the subsequent comfort of the patient, cannot be over-estimated.

In one-third of the cases of severe blockage anterior middle turbinectomy was also performed, and some of the portions removed are shown in Plate II. As will be seen, those portions of bone are in many instances hollowed out, the air spaces being abnormally developed apparently, and the resulting osseous cysts contained in most cases air (pneumatic cysts), one contained serous, and another, purulent fluid.

In the third set of cases—those with asthma—the abnormalities, as already stated, varied. In each case the affected

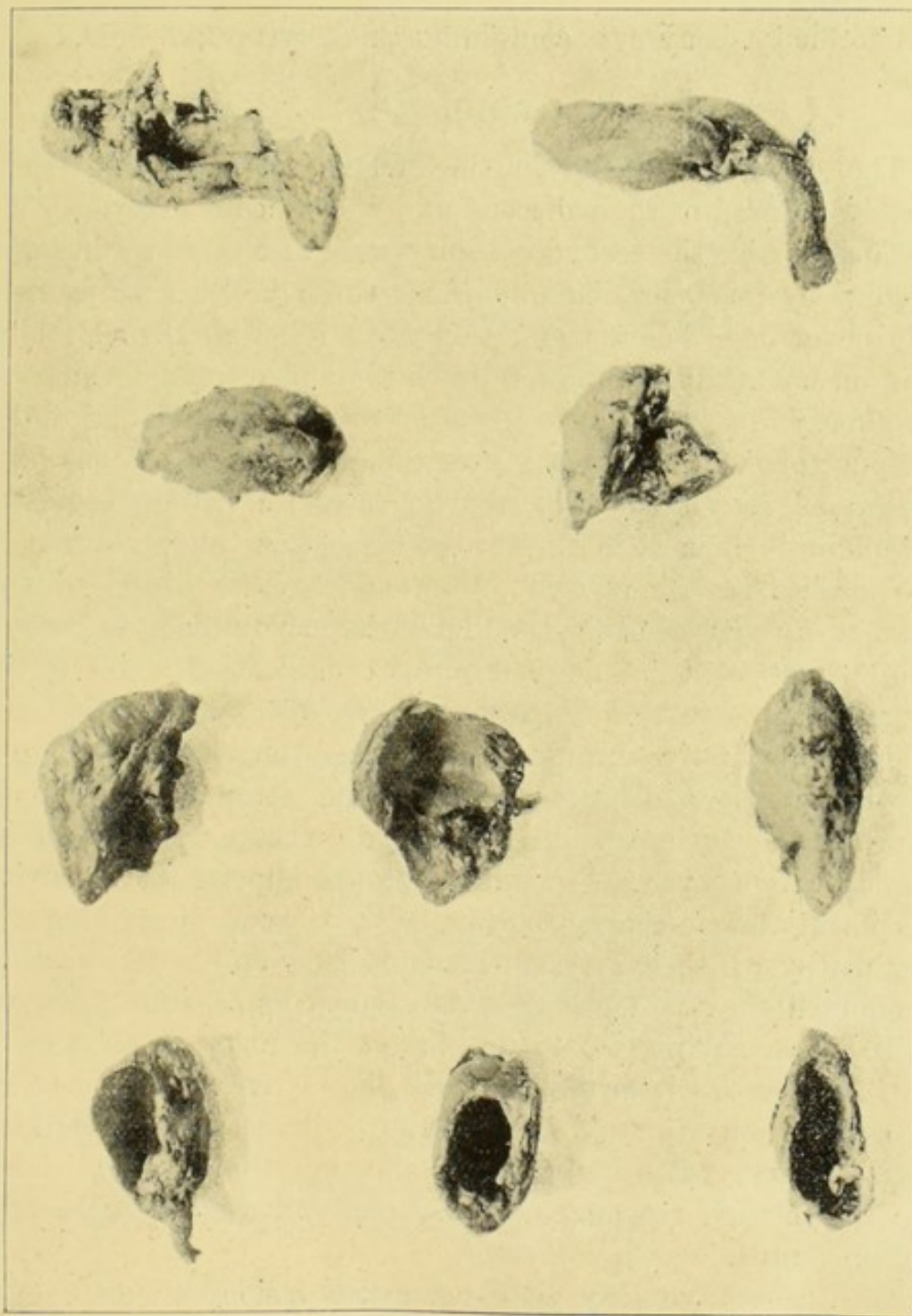


PLATE II.—ANTERIOR PORTIONS OF MIDDLE TURBINALS EXCISED. The two upper ones illustrate oedema of the mucosa accompanying hypertrophy of bone; the remaining eight illustrate cystic conditions, some intact, others cut across, referred to in text.

tissues, hypertrophic, oedematous or polypoid, were carefully and completely removed by means of the galvano-cautery

scissors, snare, and turbinotome, according to the size and position of the part at fault. Anterior middle turbinectomy was called for in two of the cases, and in each of them the enlarged end formed a bony cyst containing thick syrup-like fluid.

RESULTS.

The patients included in the first set of cases were completely relieved of their discomfort by the means described.

Those under the second category were also in every instance enabled by the operation to breathe through the nose as they had never done before; and this great relief to the breathing was in no instance followed by a dry pharyngitis which so frequently appears some time after total or complete inferior turbinectomy. Some weeks after this latter operation has been performed, in a large proportion of cases the patient begins to complain of dryness in the throat. Secretion rapidly arises on the surface of the pharynx, from which it is dislodged and hawked up with difficulty, and later the larynx tends to become similarly affected. This pharyngeal complication is due to the unnaturally wide bore of the nares after such an operation, the middle and inferior meatuses being, after the complete removal of the inferior turbinal, virtually one straight air-channel, deprived of the means to warm and moisten the air on its way to the pharynx. I remarked on the importance of leaving a central tongue-shaped portion of this bone, describing the method by which it may be accomplished; and if this method is adopted, the two lower meatuses remain as separate passages, and the central portion so distributes the inspired air that it not only becomes warm and moist, but it enters the pharynx in a more natural way, and less as a direct current, striking certain parts with undue force affecting them prejudicially. By the method recommended dry pharynx as a sequela may be prevented.

One cannot yet say that intranasal lesions predispose to spasmodic asthma, but the fact remains that many cases of asthma are dependent on some intranasal peculiarities, and it is also a fact that many of those cases are amenable to treatment involving the removal of hypertrophied oedematous vascular tissue, hypertrophied bone, and mucous polypi.

Of the five cases operated upon three were cured and the remaining two were greatly relieved.

One case, that of a hospital nurse, may be quoted as illustrating the satisfactory results of such treatment. She was subject to frequent attacks of cold in the head, which occasionally ended in bronchitis; dust in the air produced paroxysms of violent prolonged sneezing, as did also the smell of hay, and the attacks excited by the latter invariably terminated in severe asthma. Her home is at a farm, and the holiday visits to her parents were regularly in great part spent in bed. In the summer of 1895 she went home, and on the second day took asthma which kept her in bed for close on three weeks. Anterior and posterior inferior turbinectomy were performed on each side—first part in June 1896, and second operation in October, that is four months later. Since the latter date she has rarely had a nasal catarrh, and she spent nearly four weeks at her father's farm in July last (1897), going out and about freely without having either sneezing or asthma, both of which she has had as regularly as she returned home each summer during the past eight years.¹

¹ After the above was put in type (September, 1898), this patient informed me that, since the foregoing report was made, she has had neither coryza nor threatening of asthma, and that notwithstanding the spending of four weeks in the country during the hay-harvest time.

