

MALIGNANT DISEASE OF THE NASAL ACCESSORY SINUSES.*

By E. MUSGRAVE WOODMAN, F.R.C.S., Birmingham.

MALIGNANT Disease of the Nasal Accessory Sinuses is a subject which has hardly received the attention it deserves at the hands of our profession. Hovering as it does between the embrace of the pure specialist and that of the general surgeon—it is feared by both and blessed by neither. And yet it requires the intimate knowledge of the one combined with the surgical skill of the other.

The great vascularity of the parts—the delicacy of the tissues involved and the inaccessibility and danger to the deeper structures, alike render operative interference difficult. And yet it has a fascination of its own.

I do not propose to discuss the various operations which from time to time have been put forward, but I instance the paper by G. B. New in the last volume from the Mayo Clinic. In this record the destruction of the growth by the red-hot poker followed by radium is claimed to give good results. It is in itself sufficient to show what crude methods are still in vogue.

DIAGNOSIS.

It is necessary for us to consider (*a*) The Diagnosis of Malignancy, and (*b*) The Diagnosis of the Extent of the Disease.

(a) Microscopical Diagnosis.—The question of malignancy is rarely in doubt, but the relative virulence of the growth is generally indicated by the microscopic slide. Fortunately in this area we have to deal with growths of mainly local malignancy. If partially removed they very rapidly recur, but do not usually disseminate. There is, therefore, time and opportunity for the surgeon to retrace his steps and to repair his omissions.

Squamous Epitheliomata arising primarily from the palate or gum are the most malignant, and tend to disseminate.

* Paper read at the Section of Laryngology, Royal Society of Medicine, on 3rd March 1922, introducing the Discussion upon "The Treatment of Malignant Growths of the Nasal Accessory Sinuses" (see p. 297).

E. Musgrave Woodman

There is a wide variation in malignancy in the growth of the air sinuses. Every grade is seen, from a highly malignant epithelioma and a soft vascular sarcoma down to neoplasms which are little better than infective granulation tissue. Which should be excised and which can satisfactorily be treated by radium or intensive X-rays? I would suggest that an epithelioma should always be excised, localised sarcoma treated by radium, and a diffuse pan-sinus myxo-sarcoma dealt with by operation or intensive X-rays or both. The microscopic nature of the growth should be considered in conjunction with the extent of the disease, and the surgeon's decision should balance accordingly.

(b) The Diagnosis of the Extent of the Disease.—This is important and deserves our most careful attention. Every case should be X-rayed — laterally, obliquely, and antero-posteriorly, and each possible seat of extension viewed seriatim.

Frontal Sinus.—In most cases of malignancy the frontal sinus is dull, but this is not necessarily due to direct extension; it is often due to the presence of pus and polypi from back pressure.

The Sphenoidal Sinus is seen very easily on a lateral X-ray, and should in all cases be opened up on the affected side.

The Palate is best examined by palpation, because the first sign of involvement is a softening from bone absorption, and this is later followed by fungation.

Orbit.—Proptosis is not by any means necessarily a sign of inoperability; nor is blindness, for this may be due to toxic absorption from septic ethmoiditis. Optic neuritis or atrophy is a sign of direct pressure and contra-indicates operation. Obstruction to the venous return, suggested by a reddened conjunctiva and dilated vessels, is a serious sign. Projection of the growth at the inner canthus of the eye, often considered a hopeless condition, is merely due to extension into the lachrymal sac.

Meninges.—No operation should be undertaken when a suggestion of meningitis is present. But this is often a temporary condition due to the absorption of sepsis from nasal obstruction and will yield to treatment. Lumbar puncture should be done, and the growth shrunk by cocaine and adrenaline and treated by nasal antiseptics; urotropin is given internally.

Disease of Nasal Accessory Sinuses

Mrs B., aged 40, was sent to me complaining of nasal polypi. Her nose and antra appeared full of ordinary polypoid growths. On 3rd August 1920 these were removed. On microscopical examination they proved sarcomatous and clinically recurred within a week. On 20th August 1920 I performed a complete eradication of all the sinuses on both sides. On the following day she developed intense headache, pyrexia, and all the signs of meningitis, which lasted for a week. She recovered and is strong and well to-day.

Pterygoid Fossa.—Extension through the postero-external wall of the antrum into the pterygoid fossa is a condition seriously to be reckoned with. It is not shown by the X-rays, and can only be detected by palpation. The great vascularity and lymphatic connections of the pterygoid fossa are a serious factor.

What cases, therefore, of malignant disease in this area must be considered inoperable? It is perfectly evident that many patients who would a few years ago have been considered inoperable now come well within the range of operability, and it has to be remembered that there is a relatively low degree of malignancy to be dealt with. I would suggest that the following classes of cases are inoperable—(1) Sarcoma arising primarily from the base of the skull and secondarily involving the air sinuses; (2) Extensive involvement of the ptergo-maxillary fossa; (3) Cases showing signs of persistent meningeal irritation; (4) Extensive involvement of the orbit with a suggestion of invasion of the cavernous sinus, and in which, therefore, removal of the globe of the eye will not eradicate the disease.

ANÆSTHESIA.

The question of anæsthesia is closely bound up with the technique of the operation, and the recent advances in this direction must be made use of.

The upright position has undoubtedly advantages—(1) The minimum quantity of anæsthetic is required; (2) There is no nasal congestion and the blood pressure in the head is considerably reduced; (3) Visibility is greatly improved and even photography is possible; (4) There is a remarkable absence of shock. These, I submit, are substantial advantages.

The technique now made use of is as follows:—Induction takes place by ethyl chloride and ether. When the patient is fully anæsthetised the mouth is opened by a gag, post-nasal

E. Musgrave Woodman

plugs are inserted and the intra-tracheal catheter passed through the larynx under vision. An airway is inserted to provide for the expiratory vapours and the mouth packed around this tube with aseptic gauze. Finally, a sterile towel is tucked over the airway and fastened round the back of the head. By this means ether vapour is prevented from blowing into the surgeon's face and the stream of expired air is carried away under the towels. Anæsthesia is then maintained indefinitely by positive pressure supplied by an electric motor.

Intra-tracheal anæsthesia has two distinct advantages for this class of case—(a) There is no danger whatever of the inspiration of blood, and (b) Considerably less anæsthesia is required to keep the patient under.

During the last ten minutes, when stitching up, oxygen and pure air are blown in under pressure, and at the completion of operation the swallowing reflex should always be present. Chloroform is not given.

OPERATIVE TECHNIQUE.

The incision commences above in the centre of the unshaved eyebrow, it is carried downwards midway between the bridge of the nose and the inner canthus of the eye and following the line of the lateral groove between the nose and the cheek—winds round the lateral ala to the philtrum of the upper lip which is divided vertically. The cut is then carried outwards through the mucous membrane of the mouth parallel with and about $\frac{1}{2}$ in. above the alveolar margin. The whole cheek is turned outwards, but great attention is directed to the elevation of the periosteum on the outer side of the nose and around the orbit; the nasal bone and ascending process of the superior maxilla are stripped bare and the whole orbital periosteum, including the pulley of the internal oblique muscle, is elevated and turned outwards.

The cheek flap is turned outwards and held aside by a guide suture passed through the lip—it is swabbed with tincture of benzoin and covered and protected from infection by a gauze pad, which is sewn into position. The whole of the front wall of the superior maxilla and lateral wall of the nose are removed and the growth which is exposed to view is then removed, but owing to its friable nature and the numerous

Disease of Nasal Accessory Sinuses

extensions present it is sometimes impossible to remove it without breaking it up.

The question of removal of the hard palate on the side affected is one for consideration in each individual case. In several instances of limited malignancy I have successfully left it intact and closed the mouth incision. In all cases of advanced malignancy the corresponding half of the hard palate should be removed: the opening can be immediately closed over by a denture and the facilities for thorough inspection of the nasal cavities, which the removal gives, present immense advantages. The soft palate should always be left intact if possible.

The extensions must be considered one by one. In all cases I remove the orbital floor of the frontal sinus and lay the infundibulum freely open. It is not safe to leave any of the ethmoid, and the whole of the anterior wall of the sphenoid should be removed together with the contents of the cavity. Lastly, the mesial wall of the sphenoid and the upper part of the septum must be carefully searched to eliminate the possibility of extension to the opposite side of the nose.

It is usual for the growth to have involved the posterior wall of the antrum and to have invaded the soft fat of the pterygo-maxillary fossa, and here a local recurrence from inadequate removal is most likely to be met with. Further, formidable hæmorrhage will be encountered from the internal maxillary artery. But in the upright position this vessel is easily picked up by curved tonsil forceps and owing to the elasticity of the tissues can be drawn out of the fat and tied. It is never necessary to send the patient back to bed with forceps *in situ*.

After syringing out the whole area, the cheek flap is replaced and sutured in position. This is a matter for care and artistic nicety. The principal points are fixed by silkworm gut sutures, and as many supporting catgut sutures as possible are carried through the periosteum on the inner side of the nose. This is of great importance. The skin is then approximated by a continuous silk stitch (preferably coloured for easy removal), and I am at present trying a catgut subcuticular stitch.

The lip is fixed in a slightly everted position to allow for contracture. A light packing is inserted soaked with tincture of benzoin and the patient sent to bed and placed in the Fowler position. The post-nasal plugs may be left *in situ* for twenty-four hours.

E. Musgrave Woodman

There are certain points which we should discuss in connection with this technique:—

(a) **The Frontal Incision.**—The object of this incision is to remove the necessity of the infra-orbital incision which is generally practised. The latter I have abandoned owing to the very considerable and permanent œdema of the lower eyelid which results. The frontal extension, in connection with the removal of the naso-orbital wall, enables the eye to be drawn outwards and a full exposure of the orbito-ethmoid and fronto-ethmoid cells is given. Growth frequently extends directly backwards towards the orbital fissure and can only by this means be properly removed. The eye is subsequently replaced.

(b) **The Frontal Sinus.**—A considerable difference of opinion exists as to the necessity for opening up the frontal sinus. In many cases, and often unexpectedly, I have found the cavity full of malignant tissue—in all other cases I have found pus and polypi. I open it in every case that comes under my care. The frontal sinus is merely an extension of a nasal air cell into the frontal bone and an integral part of the nasal air cavities. Should we not treat it as such? There is a surgical rule for the treatment of malignant disease which can only be disregarded at our peril: the whole of the organ involved by malignant disease should, if possible, be extirpated. Should this rule not apply here? I can hardly describe the satisfaction which comes to the surgeon watching his case month after month, to know that every sinus on the affected side has been extirpated and its secrets laid bare. Any strange tissue can be seen and probed—any recurrence dealt with at once.

(c) **Cervical Glands.**—Should the glands of the neck be systematically removed? In growths of the air sinuses it is not usual for the glands to be involved, but in malignant disease of the alveolus or palate it is another matter. It is not possible to be sure which group of glands will be involved or even on which side of the face or neck they will appear.

Mr S., aged 20. Primary endothelioma of the septum. The only gland involved was the superficial parotid on the *opposite* side of the neck, and microscopically it resembled the primary growth.

In cases in which there is no palpable gland infection it is better to wait and see.

(d) **Ligation of External Carotid.**—Is it advisable to tie the external carotid artery as a preliminary to operation? There

Disease of Nasal Accessory Sinuses

will be here considerable difference of opinion, but if the upright position is adopted there is absolutely no necessity to do this. The internal maxillary artery can easily be seen—caught up with forceps and tied. It is surprising how few vessels need a ligature and how small the loss of blood is—even when the vessel is not tied. I am quite sure it adds considerably to the difficulty which old people experience in the healing of their wounds, and in one of my cases the ligature led to sloughing of the cheek flap.

(e) **A Preliminary Laryngotomy.**—The procedure is unnecessary when this technique is adopted. A positive intra-thoracic pressure is maintained by the intra-tracheal anæsthetic and the pharynx can be packed off with mops and sponges so that no possibility of blood being sucked into the lungs remains. The operation is uncalled for.

AFTER-TREATMENT.

A single thickness of gold leaf is placed on the skin incision and after the first twenty-four hours no other dressing is applied. The packing is removed in thirty-six hours and the various cavities freely irrigated. The whole of the inside of the cheek is covered with epithelial grafts as soon as possible and the bony surfaces kept clean.

All cases are subjected to X-ray treatment for at least a year.

Recurrence.—This occurs locally from time to time; it is always due to incomplete removal and can be remedied by opening up the wound and completing the eradication. Nature has given us a wide margin of safety. I would urge, and I make a great point of this, that it is better to operate even if the tumour recur than not to operate at all. Unlike malignant disease in other parts of the body, the recurrence is usually less serious and more easily dealt with than the original growth. The mortality of operation is very low.

Deformity.—If the palate and teeth can be left intact, careful suturing reduces the deformity almost to nil. The area on the outer side of the nose is the danger-point, as the skin wound is here unsupported by bone. Here all the help we can get from suturing the periosteum is required. If it breaks down an oval ugly hole is left which has to be repaired. A portion of the septum is swung up to act as a supporting structure and a skin graft applied.

E. Musgrave Woodman

If the palate has to be excised there is a great tendency for deformity—the upper lip contracts and the cheek sinks in and œdema of the lower eyelid follows. These results can be entirely prevented by dental work. An impression of the mouth is taken before operation and again as soon afterwards as possible. A denture the size and shape of the lost upper jaw is provided and fitted with a hollow extension upwards into the antrum to maintain the cheek in the correct position. If the soft palate and uvula can be saved very little, if any, deformity of speech or deglutition results.

CONCLUSION.

There is one operation described in all surgical text-books and widely taught to students which I hope will be condemned. I refer to excision of the superior maxilla. For growths involving the palate and alveolus only, it involves an unnecessary removal of the side wall of the nose and of the floor of the orbit. For growths of the antrum it is utterly inadequate and leaves the extensions into the frontal and sphenoidal sinuses untouched. I trust that this operation will soon be a relic of the surgical museums.

The requirements for our surgical work in this sphere are a sound surgical technique and an intimate knowledge of the anatomy of the air sinuses, their variations and abnormalities. Equipped with both, a great deal better and more effective work can and must be done for the treatment and alleviation of disease in this important area.

DESCRIPTION OF PLATE.

- FIG. 1.—(*a*) The intratracheal tube; (*b*) the airway for expiratory return (this is normally covered by a towel, but is exposed for the sake of clearness); (*c*) the growth projecting from the nostril and the œdema of the eyelid.
- FIG. 2.—The cheek flap is turned back and the growth fully exposed prior to removal. Note the vertical position of the patient during operation.
- FIG. 3.—The operation completed by a continuous suture. Note the slight deformity present.

MALIGNANT DISEASE OF THE NASAL ACCESSORY SINUSES.—
E. MUSGRAVE WOODMAN.



FIG. 1.

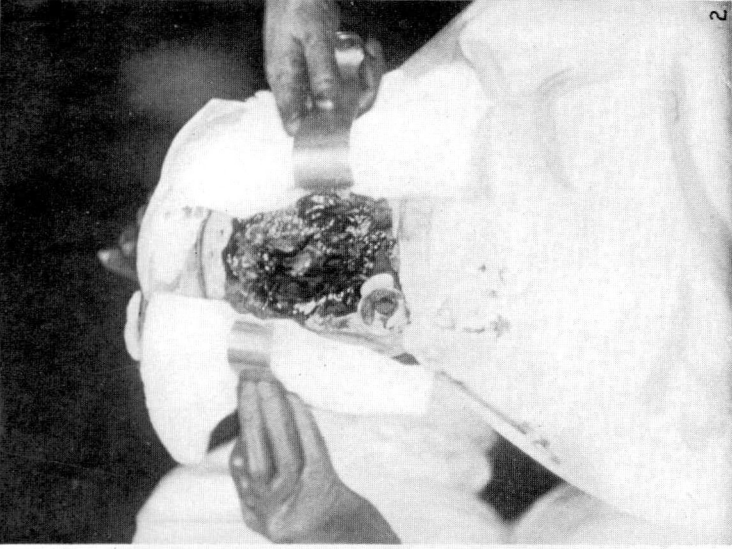


FIG. 2.



FIG. 3.

