NASOPHARYNGEAL FIBROMA

WITH A REPORT OF THREE CASES

By JAMES P. FRASER (Glasgow)

NASOPHARYNGEAL fibroma is a condition which, according to most authorities, can be classed as rare in this country, and indeed, it has been claimed that it is becoming even more rare. Certainly, the bulk of the literature on this subject has come from abroad, and from the large series of cases reported from America and Egypt, one gathers the impression that the condition must be very much more common in these lands. However, two cases of nasopharyngeal fibroma have been seen and treated in this department within a year with one other case in another hospital and it, therefore, seems appropriate to review briefly the more recent literature on the subject, and describe the treatment of these cases.

Ætiology

There seems to be an overwhelming opinion that the condition is a true neoplasm, although Willis (1953) will not accept this. He maintains that true fibroblastic tumours occur only rarely in the nasal or nasopharyngeal mucosa, and that most so-called tumours in these regions are really inflammatory or allergic overgrowths. Their tendencies to recur, to spread over a wide field of diseased mucosa, and to lead to infective complications in adjacent cavities, bones and tissues have, he says, "given these a false clinical reputation of neoplastic qualities". However, Willis does not completely deny the existence of true fibroblastic tumours in this region, and this rarity of both pathological and clinical condition seems to suggest that the fibroma may still be truly neoplastic.

Age

Negus (1956) while giving their cause as obscure, suggests that they may arise from developmental irregularities at puberty. Cases have been reported, however, which have attended with the established condition at a younger age. Both the cases seen here, were prepubertal as was also Case III. Handousa (1954) reported a series of 70 cases, the age on admission varying from 8 to 50 years. He states that the disease is predominant at, but not limited to, puberty. Martin (1954) reported a series of five cases with an average age of 17 years. Martin, Ehrlich and Abels (1948) gave an

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average age of 16 in a series of 29 cases. Figi and Davis (1950) presented 51 cases with an age average of 15·1 years, and Härkönen and Malmio (1948) had an average of 16·5 years in their series of 31 cases. Martens and MacPherson (1956) reporting a series of 10 cases from the files of the Armed Forces Institute of Pathology, found an age period ranging from 13 years to 24 years with one patient aged 55 years.

Sex

Some, even recent, textbooks on Diseases of the Ear, Nose and Throat, state that the condition is exclusive to males. This is also the belief of Hayes Martin (1948) who links this to the common onset at puberty to postulate a hormonal theory of origin. He believes that there is a deficiency of androgens, or a surplus of œstrogens, producing a hyperæmia of the mucosa from which the tumour eventually arises. To support this theory, he cites two other findings. One is sexual underdevelopment in this condition—this has been refuted by other workers—the other is the tendency for these tumours to regress after the age of 25 years. This latter observation has also been contested (Handousa, 1954) and also by others. Most authorities, however, while agreeing that the condition predominates in males, do not categorically deny that it can exist in the female. Figi (1940) reported the condition in five females in his series of 63 cases. Handousa (1954) reported it in 11 females in his series of 70 cases. This author also categorically denies having seen, in his large series, any case which showed regression after the age of 25 years, or indeed, any case which showed sexual underdevelopment. These observations, supported by other writers, seem to undermine the validity of the hormone theory of origin, in fact J. S. Martin (1954) goes so far as to state that "sex hormone unbalance may have some effect on the vascularity of these tumours, but it cannot be responsible for their initiation, nor for determining their location in the nasopharynx".

Site

It is generally accepted that the commonest site of origin is from the periosteum lining the vault of the nasopharynx, usually from the lateral wall above the opening of the Eustachian tube, but also from the roof or the posterior wall at the level of the upper cervical vertebrae. A theory has been propounded that the site of origin is from the perichondrium of the embryonic cartilage between the basisphenoid and basiocciput. This cartilage ossifies at about 25 years of age. This has been offered as a reason for the spontaneous regression stated to occur after the age of 25 years. However, there is no conclusive proof to support this.

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Pathology

Macroscopically, the tumour is usually smooth or lobulated, firm to palpation but not stony hard. The colour varies from pale pink to deep red. The surface may be ulcerated or sloughing, particularly after hæmorrhage or surgical manipulation, while occasionally the tumour mass may be distinctly friable. In size there is great variation, from purely nasopharyngeal to massive extensions downwards below the soft palate, or forwards into the nose, ethmoids, antrum, orbit and cheek, or upwards into the cranial cavity. The route of extension into the cheek is interesting. Handousa (1954) asserts that, in all tumours showing this extension, the tumour "wound round" the outer border of the maxilla and not through it. The first of our cases had most likely extended into the cheek by this method and also through the antrum by erosion of the posterior and lateral antral wall.

Rate of growth is likewise as variable as the size of the tumour. Scott-Brown (1952) states that it may be so rapid as to suggest sarcoma. Certainly, one of the cases reported here showed such comparatively rapid growth that a diagnosis of sarcoma was at one time much more favoured than one of fibroma, despite negative pathological reports of malignancy. Pressure atrophy of bone and neighbouring structures is also a feature of these tumours. Malignant change with invasion has never definitely been reported, nor secondary metastases, though Batsakis *et al.* (1955) reported a case of a male, aged 54 years, who had undergone two surgical operations for removal of a nasopharyngeal fibroma, in 1949 and 1952. This was followed by irradiation for recurrence in 1954, a total of 9,000 r being given, with large doses of androgens. A third removal was done in 1954, and histological examination of the operation specimen revealed areas of fibrosarcoma. It is possible that malignant change had supervened de novo, but also that it arose following radiotherapy, so-called "radiation cancer".

Microscopically, the tumour is a vascular fibroma, in parts so vascular as to be termed an angiofibroma. There is no true capsule, the tumour having an epithelial cover, either squamous or, in parts, pseudo-stratified columnar epithelium. The surface may, however, show atrophy or ulceration, and sub-epithelial infiltration of plasma cells, lymphocytes and polymorphs is not uncommon. The blood vessels are said to be of two types, firstly, normal vascular channels with muscular coats, and secondly, primitive blood vessels without elastic tissue in the walls. Brunner (1942) states that "angiomatous tumour vessels communicate with the veins of surrounding tissue only". From this, he argues that carotid ligation as a preliminary to surgical removal is not indicated, nor effective. Hyaline degeneration of the vessel walls may cause thrombosis, with necrosis of areas of the tumour and subsequent shrinking. This may explain the

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diminution in size noted on occasion and perhaps ascribed to regression of the tumour. Myxomatous degeneration has also been noted as a feature of these tumours.

Clinical Features

Current textbooks are unanimous in two outstanding clinical features of this condition, namely, nasal obstruction and epistaxis. The former is progressive and very often becomes unilaterally or indeed bilaterally complete. Epistaxis is usually intermittent, and may be slight or most alarmingly profuse and spontaneous. It is almost always heavy following surgical manipulation of the tumour.

Other features are due to extension of the tumour, an early symptom being deafness of a conductive type, following interference with the patency of the Eustachian tube. Oddly enough, actual aural suppuration is rare. Nasal and nasal sinus suppuration, facial deformities, interference with ocular movement, dysphagia and anæmia of microcytic type are other features. Cranial nerve palsies from tumour extension are not as common as might be supposed, and one other rather surprising finding is often the absence of pain.

Diagnosis

This rests upon the gradual history, appearance and consistency of the tumour, and absence of evidence of secondary metastases in regional lymph glands. Additional aids to diagnosis are radiological examination and biopsy. The former will show the tumour as a soft tissue mass occupying the nasopharynx, with evidence of extension into the nose when present and perhaps also destruction of bone, in particular the maxilla. The latter procedure is looked upon with disfavour, perhaps on account of the very severe bleeding which may attend the removal of a biopsy specimen, but it is not impossible to do if adequate precautions are taken. Diathermy removal of a specimen has been advised to counteract the bleeding tendency. However, the biggest failing in a biopsy specimen is that it may be difficult to get one which is truly representative.

Differential Diagnosis

This rests between fibroma and other space-occupying lesions of the nasopharynx.

(1) Adenoidal hypertrophy—in this condition, the obstruction to breathing is unlikely to be so profound as in fibroma, while epistaxis is certainly much less frequent and extensive. The appearance of the vertically lobulated mass on posterior rhinoscopy is almost diagnostic in the child and adolescent, but may cause a little more difficulty in the adult in that it is less expected.

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(2) Choanal polypi—are generally soft, whitish, translucent and pedunculated, but if subject to infection and fibrosis, may assume more the appearance of a fibroma. Polypi may also be present in the nose, while radiological evidence of maxillary sinus infection is almost always present.

(3) Carcinoma—this condition occurs at a much later decade in life than fibroma. Epistaxis may often be a feature without being of massive proportion and pain is usually present, but very often the first indication of the disease is the appearance of secondary metastases in the cervical lymph nodes. Direct invasion particularly of the base of the skull with cranial nerve involvement, in particular the third, fifth and sixth and latterly the nerves of the jugular foramen, are also features. Clinically, the growth is often small and granular or ulcerated, and stony hard. Indeed it may be very difficult to see, especially if it is sub-mucosal. A biopsy will indicate its true nature.

(4) Sarcoma—this tumour, more common in the younger age groups, usually shows rapid growth, with early metastases and cachexia. Ulceration is not an early feature.

(5) Other tumours—include simple fibroma, chordoma, plasmocytoma, chondroma, scleroma and occasionally ectopic salivary gland tumours. Dermoid cysts, teratoma, Thornwaldt's bursitis and retropharyngeal abscess cause rare swellings in the nasopharynx. Diagnosis must be by clinical appearance, consistency, and site, with radiological appearances and biopsy.

Treatment

The fear of hæmorrhage has in the past tended to make the surgeon hesitate to advise surgical removal. On the other hand, these tumours may become so extensive that the oft-described regression which is said to occur around the age of 25 years, can hardly be awaited. Several non-surgical or minor surgical techniques have, therefore, been tried. Briefly, these are:

(1) *Injection of sclerosing solutions*. Forty per cent. saline injected in quantities varying from 3 to 10 cc. into various parts of the tumour at intervals of 2-3 weeks have been recommended (Watkyn-Thomas).

(2) *Diathermy removal or acupuncture*, again usually at intervals and with several applications.

(3) *Sex-hormone therapy*—Martin (1948) considers there is a deficiency of androgens, and advocates androgen replacement therapy to correct this.

(4) *Radiotherapy*. This method has been widely practised in America especially at the Mayo Clinic. The radiotherapy may be

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given as deep X-ray, or by implantation of radon seeds or radium needles, and sometimes combined with diathermy coagulation. Treatment is necessarily protracted and aims at reducing the size and vascularity of the tumour. Good results are claimed, although Handousa (1954) states that he has "never seen a nasopharyngeal fibroma that has completely disappeared after any type of irradiation". Moreover, in young children, the possible detrimental effect of radiation upon centres of ossification should be borne in mind.

Various surgical approaches have been devised, and it suffices to name the more popular routes only. These are:

(1) Moure's Lateral Rhinotomy.

(2) Denker's sublabial approach.

(3) Transpalatal approach (Ruddy, 1945; Wilson, 1951).

The aim of all these procedures is to expose and mobilize the tumour so that its attachments may be severed subperiosteally, i.e. between the tumour base and the underlying bone. In this way, many of the vascular channels remain undamaged. Former methods of avulsion and morcellement were usually attended by massive hæmorrhage, and may have contributed to the dread attending surgical intervention. Post-operative shock is usually severe and necessitates the replacement of blood by transfusion, in fact, pre-operative transfusion is often beneficial and counteracts the tendency to microcytic anæmia which most of these patients show.

In two of the cases about to be described, the approach was by lateral rhinotomy in the first case, and by the transpalatal route in the second. The first case was also undertaken with the aid of one of the newer techniques in anæsthesia, the induction of a state of hypothermia. From the surgical viewpoint, there appeared to be considerably diminished bleeding during operation, and the immediate post-operative shock was very much less severe than anticipated. So far as I am aware, this technique has not been reported in the surgery of nasopharyngeal fibroma to date.

CASE I

B.M., male, aged 11 years. First attended the E.N.T. out-patient clinic on 24.2.56, with a complaint of intermittent nasal obstruction, not complete, with slight mucopurulent discharge, for approximately 6 months. There was no pain, nor any bleeding from the nose. He had had his tonsils and adenoids removed approximately $3\frac{1}{2}$ years previously. Examination revealed hypertrophic inferior turbinals on both sides of the nose, with what was thought to be some adenoid regrowth in the nasopharynx. A radiograph of the nasal sinuses showed some clouding of the left antrum. He was treated conservatively for a month with Argyrol and

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Ephedrine nasal drops. When seen again on 6.4.56, there had been little improvement, and as a good view of the nasopharynx was difficult to obtain, admission for examination under anæsthesia was recommended. 18.5.56. Examination with Xylocaine local anæsthesia—both nostrils were occluded; on the left a firm pink swelling filled the middle meatus and was pushing the middle turbinal upwards; on the right, a similar swelling was

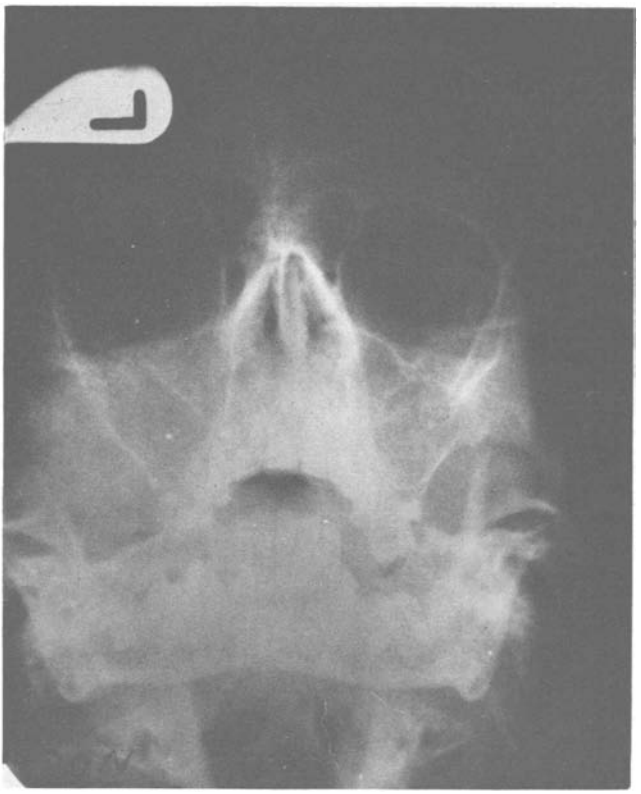


FIG. 1.

Case I. Radiograph showing an opaque left antrum, with some displacement of the medial antral wall to the right. The lateral antral wall is thin and eroded. A soft tissue mass has extended laterally beyond the left maxilla and also obscures both nares.

seen far back in the choana. Posterior rhinoscopy showed the nasopharynx to be filled with a firm mass of tissue, pink in colour and quite smooth, and completely occluding the choanae. In the mouth, there was an outward bulging of the antro-lateral wall of the left maxillary antrum, with the upper VIIth molar lying horizontally and causing a contact ulcer on the inner surface of the left cheek. There were no palpable glands, eye movements were good with no diplopia. Radiological examination showed

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(Figs. 1 and 2) an "opaque left antrum. The lateral antral wall is very thin with an erosion. P.A. view shows some displacement of the medial wall of the left antrum to the right. There is a soft tissue mass occupying most of the nasopharynx". A specimen was taken from the nasopharynx for pathological examination on 23.5.56. There was quite marked bleeding following the removal of the tissue, which was adequately controlled with a naso-



FIG. 2.

Case I. Lateral radiograph showing the nasal cavity and nasopharynx occupied by a soft tissue mass.

pharyngeal pack. The pathologist reported the specimen as showing "regular epithelium with chronic inflammatory changes in the subepithelial tissues. No evidence of a malignancy". In view of this a further biopsy was taken a week later, and this was reported as "adenoid tissue with chronic inflammatory change. No evidence of malignancy". Repeat X-ray examination, while confirming the previous findings, also reported decalcification of the left upper alveolus. The displaced upper left molar

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was extracted and this led to rapid healing of the ulcer in the cheek. As the boy's parents had arranged to take him on holiday, he was then allowed to go, to be re-admitted upon return.

20.7.56. Re-admitted, and left antrum opened as for a radical antrostomy. After two inconclusive biopsies from the nasopharynx, it was felt that a more representative specimen could be obtained from the antrum. On exposure, the antero-lateral antral wall was seen to be eroded by a tough, "rubbery" tumour mass, which filled the whole antrum. A biopsy was taken from this and was attended by heavy bleeding necessitating packing and transfusion of whole blood. Pathological examination of the tissue showed "much young, vascular fibrous tissue, confirmed by selective staining. Mitotic figures are exceedingly scanty, and there are no invasive qualities. The tumour appears to be a vascular fibroma".

However, the rapidity of growth and the obviously wide extent of the tumour still cast doubts upon its seeming innocence, and the Radiotherapist was consulted. It was still thought that, despite the negative biopsies, this might be a sarcoma. However, after further consultation and examination, any benefit likely to be gained from radiotherapy was ruled out, and accordingly surgical removal was decided upon.

30.8.56. Removal of tumour.

Anæsthesia

As this was a highly vascular tumour, a large blood loss had to be anticipated during removal. To protect the patient from shock and to reduce bleeding, induced hypothermia was chosen as the anæsthetic technique.

Sedation, the night before operation, was achieved by "soneryl" 1½ grs. and chloral hydrate 7½ grs. Premedication of promethazine 25 mgm. orally was given two hours before cooling, followed an hour later by pethidine hydrochloride 50 mgms. with scopolamine hydrobromide 0·22 mgms. by injection. A saline intravenous drip was commenced, into which was then injected, in divided doses, 4 ml. of the "lytic cocktail" (6 ml. of the cocktail contains promethazine 50 mgms., chlorpromazine 50 mgms., and pethidine hydrochloride 100 mgms.).

Cooling was achieved by the application of ice bags. A peroral endotracheal tube was inserted, aided by giving 25 mgms. of "Scoline" and general anæsthesia maintained with nitrous oxide and oxygen (5L/3L). Respiration was controlled and fractional doses of d-tubocurarine hydrochloride given whenever shivering occurred.

The icebags were removed when the rectal temperature fell to 32·5° C. and the operation commenced. The body temperature continued to fall to 30° C., and hypotension in the operative field was aided by adopting the anti-Trendelenberg position. During operation 2 pints of whole blood were given. The tumour was approached by a Moure's lateral Rhinotomy,

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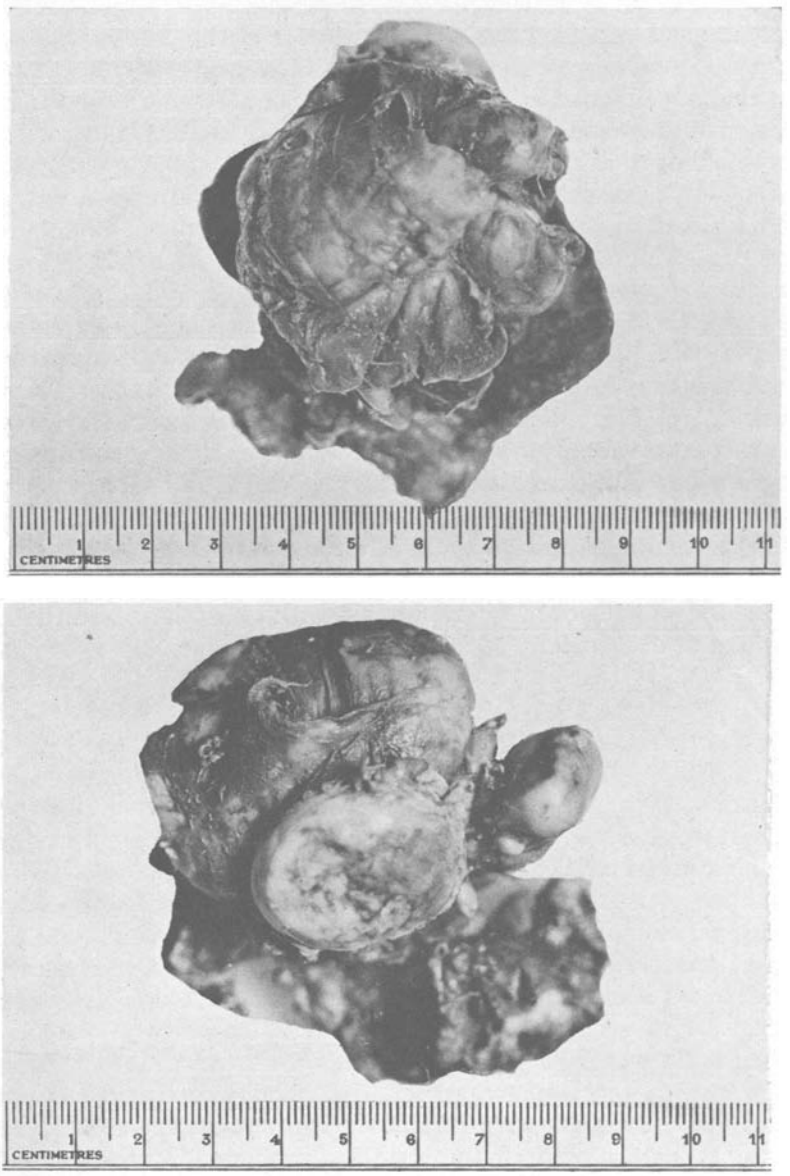
extended to split the upper lip and the incision carried along the left upper gingivo-labial fold so that the left cheek could be retracted well laterally. The tumour was once evident, having eroded the antero-lateral wall of the left antrum and extended into the soft tissues of the cheek opposite the antrum and behind in the pterygoid fossa. The whole antrum was filled with tumour. Removal of part of the remaining anterior wall of the maxilla made it possible to mobilize the tumour in the antrum. It was found to have eroded also the posterior maxillary wall, the lateral nasal wall, the bony nasal septum and part of the floor of the orbit. It appeared to be attached to the lateral nasopharyngeal wall by a broad, tough attachment, which was broken down by the use of a raspatory. The tumour was removed in three pieces, because of its size. Bleeding was not troublesome throughout. The resulting cavity was touched with diathermy coagulation and the incisions sutured over a firm packing. A further pint of blood was transfused following completion of the operation. Recovery was uneventful. During this period the patient was covered by only one sheet and allowed to re-warm spontaneously. Shivering was controlled by adding one blanket. Consciousness was regained four hours after operation. In the immediate post-operative period his condition was good, apart from vomiting a small amount of blood and mucous on one occasion. He required no form of sedation whatsoever and did not complain of pain. The packing was removed after 48 hours without mishap, and thereafter the wound healed quickly.

Histology of Tumour

"Macroscopically it is a lobulated, firm tumour approximately 6 × 6 × 4 cm. and weighing 64·1 grammes (Figs. 3 and 4). There are cystic spaces and numerous hæmorrhages on the cut surface. Microscopically (Figs. 5 and 6) it shows cellular and very vascular fibrous tissue, covered in part by stratified columnar epithelium—and stratified squamous epithelium. There is a moderate degree of acute and chronic inflammatory change, but no evidence of malignancy. The appearances are those of a juvenile nasopharyngeal fibroma."

The patient was kept under observation at regular intervals, but when examined on 22.2.57 it was apparent that there was a recurrence of the tumour. The left nostril was again filled with tumour, and examination of the nasopharynx showed a large smooth, firm, pale pink mass of tumour tissue. The mass could again be palpated in the upper left gingival sulcus, and pushing into the soft tissues of the cheek. There was no fixation. In addition, the left eyeball was proptosed and displaced laterally and downwards, with broadening of the medial canthus, and infection in the lachrymal sac. Eye movements were good, and there was no apparent diplopia.

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FIGS. 3 and 4.

Case I. Gross appearances of nasopharyngeal fibroma, showing the tumour size and extensions.

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He now began to have frequent and severe attacks of epistaxis, a symptom noticeably absent on the first occasion.

A repeat biopsy was again taken, and histological confirmation of nasopharyngeal fibroma again obtained. The obvious extent of the tumour recurrence with the possibility of wide excision for removal made it desirable on this second occasion to seek the advice of the plastic surgeon. The boy unfortunately developed an acute appendicitis on 8.3.57, necessitating appendicectomy and a delay of two weeks.

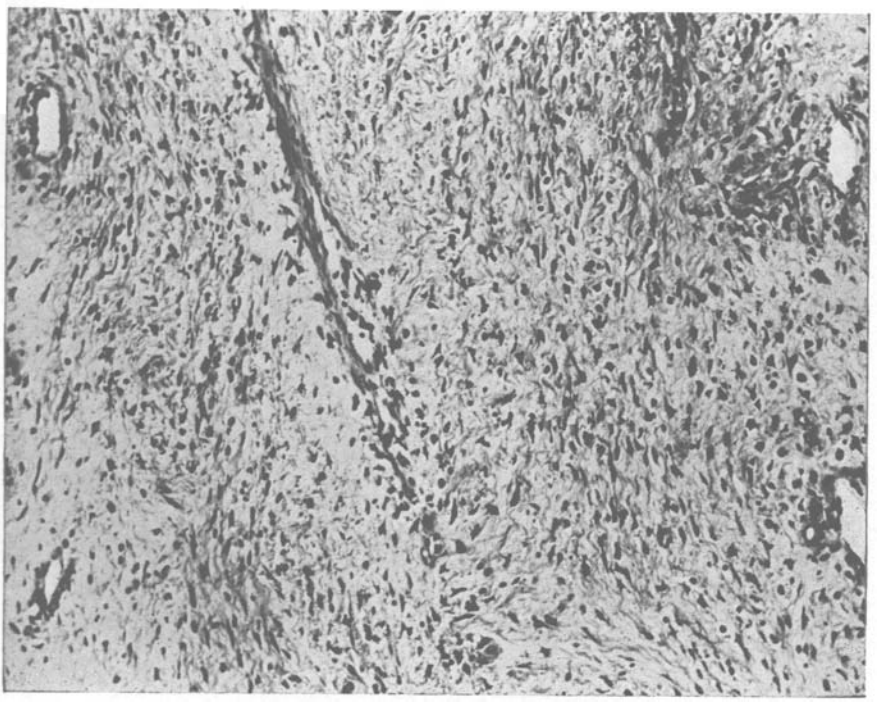


FIG. 5.

Case I. H. and E. ×240. Showing masses of young fibrocytes with fibrils. Numerous capillary blood vessels with thin walls.

The considerations in treatment in this case now were:

(1) This was a histologically simple tumour and, therefore, the ideal treatment should be adequate exposure and local removal.

(2) The tumour had again assumed massive proportions. In such cases, the tumour may have secondary attachments and, therefore, limited exposure through the nose and mouth seems to have a high recurrence rate. Such limited exposure, except in early cases, must be difficult and unsatisfactory, with danger from hæmorrhage.

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After consultation and examination by the plastic surgeon, it was decided that, as the recurrence was obviously involving the orbit and ethmoids, a complete removal of maxilla and ethmoid with exenteration of the left orbit offered the best chance of completely removing this tumour.

Operation was carried out on 24.4.57, using a hypotensive technique with anæsthesia.

The approach was by a modified Ferguson incision—the original lateral

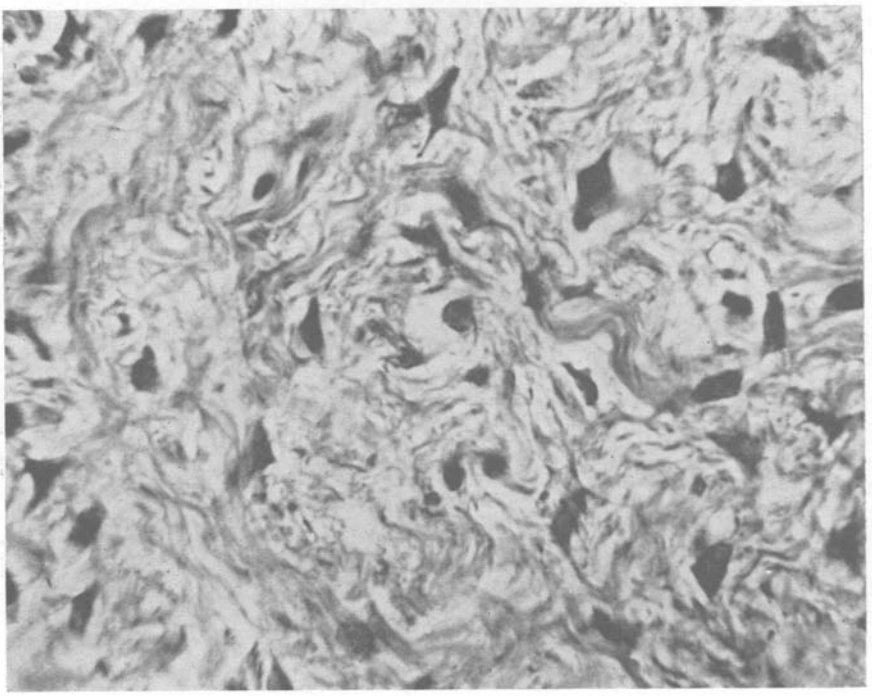


FIG. 6.
Case I. H. and E. × 880. Showing fibrocytes with the dense interweaving of connective tissue fibrils.

rhinotomy incision extended through the upper lip, and laterally along the lower border of the orbit to the outer canthus. The modifications employed were:

(1) The incision in the upper lip was angled. This prevents subsequent notching after suture.
(2) The incision in the lower eyelid is kept at 3 millimetres from the lid margin. This prevents troublesome œdema of the lower lid, which often follows the older incision along the intraorbital margin.

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The left cheek was widely reflected laterally, readily exposing the tumour, which was seen to be filling the left side of the nose and the antrum, to have eroded the posterior wall of the antrum and the orbital floor and to have extended behind the globe. The main mass, with maxilla and orbital contents, was removed complete. It was seen on removal to have a broad attachment to the posterior nasopharyngeal wall and vault

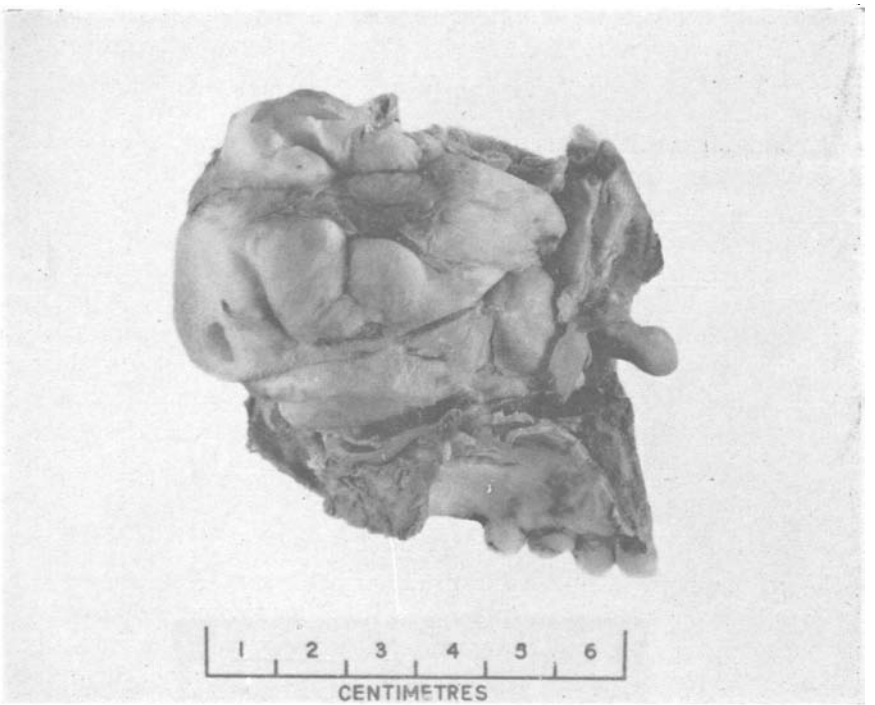


FIG. 7.

Case I. Gross appearance of tumour and maxilla removed en bloc. The tumour has completely eroded the posterior maxillary wall and occupies the antrum entirely.

and to have laid the sphenoid sinus open. A split skin graft was then used to line the raw surface of the cheek. This prevents contracture, allows inspection of the cavity, and accommodation of an internal prosthesis for support.

Recovery from the operation was uneventful. An internal prosthesis was fitted and changed at regular intervals, when adjustments were made and the cavity inspected. At a later date an external eye prosthesis was made. Apart from some nasal bleeding, due to the atrophic condition of

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the nasal mucosa on the left side, the patient has remained well and free from tumour to date.

Examination of the operative specimen (Fig. 7) showed it to be a simple nasopharyngeal fibroma, of identical pathology to the original tumour.

Case II was again a boy aged 10 years. He was first seen on 3.6.57, when the complaint was of recurrent epistaxis for approximately three months, mostly from the right nostril. This had been particularly severe for two days prior to examination. The right nostril was partly obstructed but not completely so. There was no history of trauma to the nose, nor of a familial bleeding tendency. Pain was absent, and deafness was not a feature.

Examination of the nose revealed a pinkish mucosal projection rather far back in the right nostril, in the inferior meatus, with what looked like a fresh bleeding point on the projection. This latter was very similar in appearance to a hypertrophied posterior end of inferior turbinal. Application of the electro-cautery to the suspicious area rather aggravated than controlled the bleeding, and the nose was packed firmly with ribbon gauze soaked in a liquid paraffin/penicillin/sulphamezathine preparation. This packing controlled the bleeding and was left *in situ* for 48 hours. Hæmatological examination at this time gave the following information:

Hæmoglobin 80 per cent.

Red blood cells 4·2 million/c.mm.

White blood cells 8,000/c.mm.

Packed cell volume 34 per cent.

Blood film showed no significant abnormality.

On 5.6.57 the packing was removed. Bleeding recommenced and again was not adequately controlled by cautery. A biopsy from the mucosal projection in the right nostril was taken and the nose again packed, with control of the bleeding. Histological examination of the biopsy specimen showed blood and pus cells only, with some mucosal surface epithelium. Radiological examination of the chest was negative, but the nasal sinus view showed opacity of both maxillary antra.

10.6.57. Bilateral antral lavage under general anæsthesia produced pus from both antra. Palpation of the nasopharynx revealed the presence of a smooth, firm swelling which appeared to be attached to the upper posterior wall of the nasopharynx. Examination of the right nostril again showed the firm mass in the posterior half. Biopsies were taken from both the nasopharyngeal mass and again from the right nostril, the bleeding being quite easily controlled by pressure. Polythene tubing was introduced into both antra. Culture of pus from the antra grew Gram positive diplococci, *Staphylococcus aureus* and β-hæmolytic streptococci, sensitive to Chloromycetin and Streptomycin.

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Histological examination of both biopsy specimens showed them to consist of "moderately cellular fibrous connective tissue, covered by stratified columnar epithelium. Blood vessels are very numerous, many having very thin walls and being of considerable size. The appearance is consistent with a juvenile nasopharyngeal fibroma" (Fig. 8).

Bearing in mind the experience gained with the previous case, surgical treatment was decided upon without delay. In this case the tumour was

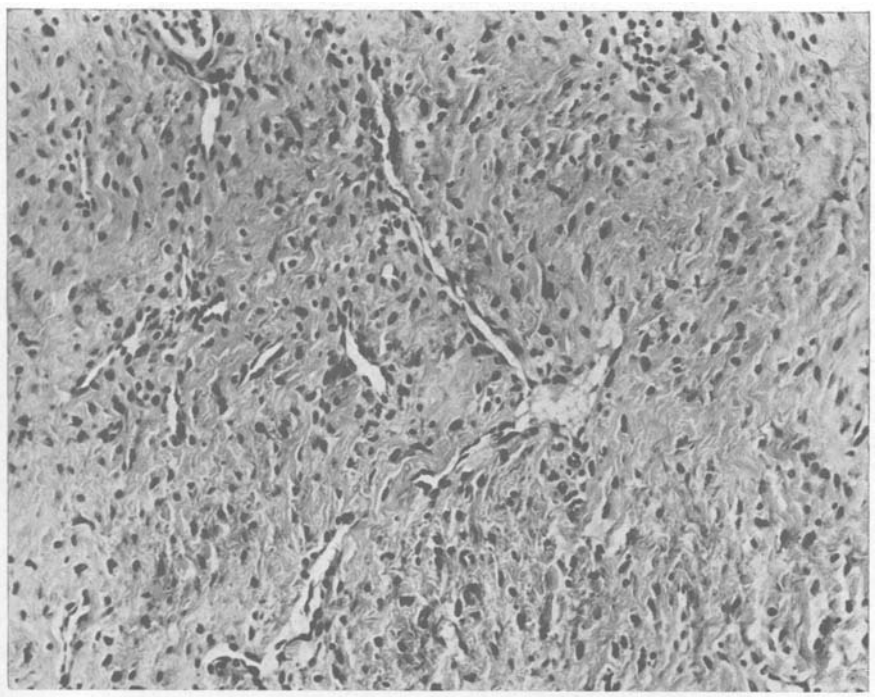


FIG. 8.

Case II. H. and E. × 240. Showing many fibrocytes and connective tissue fibrils. Blood vessels are very numerous and thin-walled.

very considerably smaller, and without any extension other than partly into the right nostril. It was felt that a transpalatal approach similar to that suggested by Ruddy or Wilson would give adequate exposure.

14.6.57. Removal of the tumour through a Wilson (transpalatal) approach. Anæsthesia was obtained by injection of thiopentone 0·4 gm. and Scoline 40 mgm., and maintained with nitrous oxide and oxygen through a per-oral endotracheal tube. An intravenous saline drip was started, containing "Arfonad" 375 mgm.—as a 0·1 per cent. solution—

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and by this means a substantial fall in blood pressure was obtained. The tumour was seen to have a fairly broad and strong attachment to the roof of the nasopharyngeal vault and to a lesser extent, the lateral wall. The nasal prolongation was lying unattached in the right nostril, and was easily manipulated backwards into the nasopharynx. The whole mass was

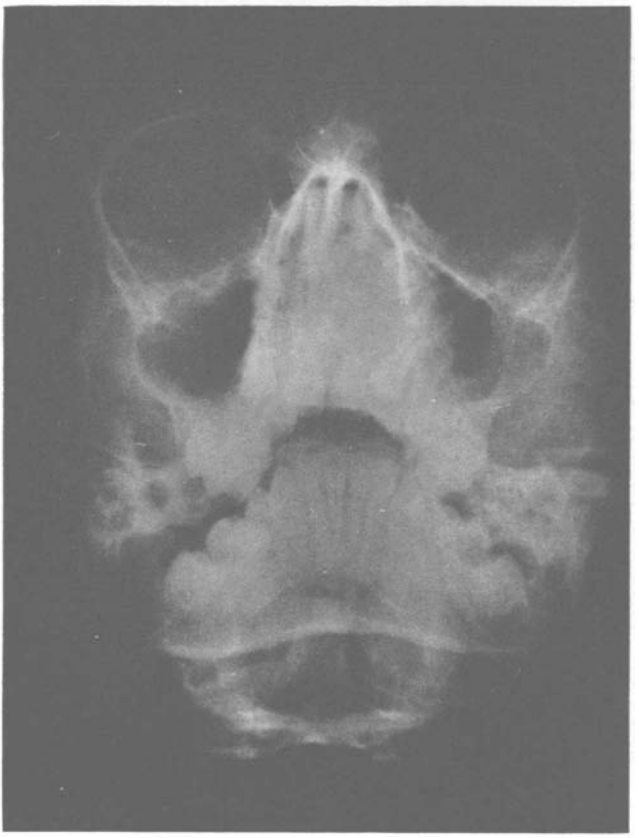


FIG. 9.

Case III. Radiograph showing a soft tissue mass occupying the left nasal cavity and expanding the lateral nasal wall laterally and the nasal septum to the right.

then removed by dissection close to the bony wall of the vault. The tumour appeared almost encapsulated. The cavity was then packed with B.I.P.P. gauze. Bleeding was minimal throughout.

The packing was removed the next day without further bleeding. On 28.6.57 both antra were again irrigated and found to be clear. There was a small perforation in the incision line at the junction of the hard and soft

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palates, but one month later this had healed. The nasopharynx was quite free from tumour, and had remained so at the last visit on 3.12.57.

The third case was first seen at the Royal Hospital for Sick Children in Aberdeen on 13.4.57, having been flown there from Orkney as a case of fractured nose with increasing nasal obstruction, of seven weeks duration. Clinical examination revealed a deviation of the cartilaginous nasal septum to the right side, with granulation tissue occluding the left nostril. The soft palate was slightly depressed on the left side. Posterior rhinoscopy revealed a round pale pink mass filling the nasopharynx, and having a large vein upon its surface. The right eardrum was healthy, the left was indrawn, with a negative Rinne result upon testing the left ear with the tuning fork. Externally, there appeared to be a soft tissue swelling presenting as an "hour-glass" deformity above and below the left zygomatic arch, and causing fullness over the left parotid.

Radiological examination revealed the following information:

"Skull, including view of the left orbit: there is a large soft tissue mass involving the left nasal cavity posteriorly which is expanding the lateral wall of the nose in the region of the pterygoid laminae and posterior maxilla. The septum is deviated to the right. Basal view shows a probable erosion of the pterygoid laminae with extension of the soft tissue mass into the temporal fossa, probably through the pterygo-maxillary fissure. The mass would appear to be mainly in the nasopharynx and posterior choana. Appearances are those of a tumour, causing displacement by expansion rather than by erosion, although there is some destruction at the lower end of the septum" (Figs. 9 and 10).

To confirm the clinical findings, examination under general anæsthesia was carried out on 16.4.57. Palpation demonstrated a smooth, hard mass in the nasopharynx, which appeared to arise from the postero-superior wall and to the left side. A biopsy was taken from the presenting nasal portion, and histological examination of this showed "pyogenic granulation tissue".

Although at this stage a definite diagnosis of nasopharyngeal fibroma had not been made, clinically the evidence was strong in favour of this. The choice of treatment lay between surgery and radiotherapy, and after consultation, it was decided to give precedence to the latter method. This was begun on 18.4.57. The first course lasted until 3.5.57. Two opposed fields 10 cm. by 10 cm. were used, with a separation of 14 cm. Treatment was given at 250 kv. with a triple Thoreaus filter to a central dose of 1,500 r, the maximum dose being 1,680 r. He was given 10 treatments.

8.5.57. Biopsy with diathermy of a large part of the nasal mass. Histologically this was reported as "cellular and highly vascular granulation tissue showing much superficial ulceration and infection. In some areas the fibroblasts are large and aberrant in form, and mitotic activity is slightly excessive. This lesion cannot be diagnosed as true neoplasia, but it seems

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to conform to the pattern of a juvenile nasopharyngeal fibroma which tends, for a time at least, to be of locally infiltrative behaviour."

The response to radiotherapy was encouraging, considerable reduction in the size of the tumour mass being evident. In view of this, a second course, identical to the one described, was given, from 26.6.57 until 11.7.57.



FIG. 10.

Case III. Basal view showing a probable erosion of the pterygoid laminae on the left, with extension of a soft tissue mass into the temporal fossa. L.

Improvement continued to be maintained, with steady regression of the tumour, and when seen on 1.12.57, the post-nasal and intra-nasal mass was lessened by 50 per cent. When seen again on 6.3.58, the post-nasal tumour had shrunk down to a small pedunculated hard mass about one-half inch in diameter, arising from the nasopharyngeal vault. Inspection of the left nostril showed the tumour to have receded to the posterior nares. X-ray examination (Fig. 11) shows the extent of improvement.

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Summary

1. Three cases of nasopharyngeal fibroma are described.

2. The treatment of these cases is described, and indicates the merits of both surgical and non-surgical forms of treatment.

3. The employment of the newer anæsthetic techniques of hypotension and hypothermia has been shown to materially lessen the danger of hæmorrhage and shock in surgery of nasopharyngeal fibroma.

4. The more recent literature on the subject has been reviewed.

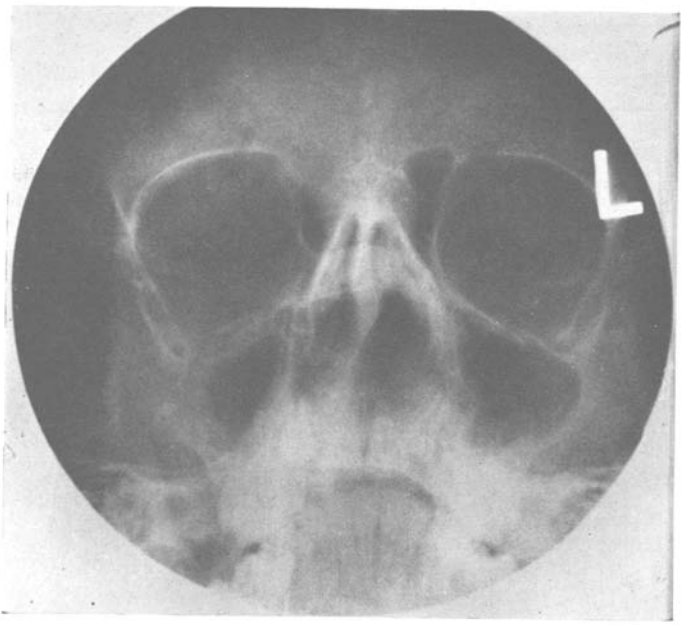


FIG. 11.

Case III. Radiograph showing reduction in size of soft tissue shadow following radiotherapy (cf. Fig. 9).

Acknowledgments

I am indebted to Dr. R. J. Watson and Mr. R. W. Bailie for permission to publish Cases I and II respectively, and to Mr. I. S. Thomson of Aberdeen who very kindly provided the details of Case III. Also, I wish to thank Mr. J. S. Tough, Regional Consultant in Plastic Surgery, who completed the second stage of the treatment of Case I, for his most useful criticism and help. My thanks are also due to Dr. A. Dick and Dr. R. Mathieson who provided the pathological reports, Dr. A. K. Boyle and Dr. A. Maciejewski for details of the anæsthetic techniques employed and to Mr. Towler and Mr. Heddon, Clinical photographers, who prepared the illustrations.

https://doi.org/10.1017/S0022215100054426 Published online by Cambridge University Press

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