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LIPOMA OF THE LARYNX.*

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Of all neoplasms occurring in the larynx, perhaps none have been so infrequently found or reported, as lipomata. The occurrence of an unusually interesting and instructive case of this character gave me the occasion and the impetus to investigate the literature of this subject, and I have taken as my task not only the minute description of my own case, but also a careful investigation of all authentic cases thus far reported.

At the outset, permit me to offer a criticism which may be considered justifiable, not only in the present instance, but in much of our laryngological literature. Those of us who have often made extensive search in the various journals, archives, and text-books of our specialties, must surely have been impressed with the many inaccuracies, discrepancies, and erroneous quotations and statements which often make our recorded subject-matter an unwieldy and unintelligible tangle. I cannot refrain from incorporating as an introductory paragraph to this monograph, the remarks of McBride, who, it seems, had similar difficulties nearly twenty years ago in his literary researches concerning lipoma of the larynx. He says:

"I should like to turn aside for a moment to point out certain discrepancies which I have discovered in my literary researches concerning a subject so limited that one might at all events expect, from those who consider themselves authorities on laryngeal diseases, an approach towards approximate accuracy. Eppinger (*Pathologische Anatomie des Larynx und der Trachea*, p. 205)

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quite correctly mentions the three examples which had been observed up to the year 1880,—to-wit, those of Wagner, Tobold and Bruns. With regard to Wagner's case, he gives the reference as *Archiv. fur Prakt. Heilkunde*, 1872, p. 108, and states, in a somewhat aggrieved tone, that the growth was as large as a hen's egg, and that there is no further account of its attachment and relation to the interior of the larynx." Now I have, shall I say, verified this reference, and found it in the corresponding part, not of the *Archiv. fur Prakt. Heilkunde*, but in the *Archiv f. Heilkunde*, (1872, p. 108), and I have further found that the lipoma referred to was attached "by a thin broad base to the middle line of the tongue and anterior part of the epiglottis." This growth, I may add, was found in the body of a girl of 13 who had died of smallpox, and Wagner further mentions that she was to have been operated upon by Wendt. From this we may, I presume, infer that no immediately urgent symptoms existed. Eppinger also mentions Tobold's case as being described in the *Archiv f. Prakt. Heilkunde*, 1872, p. 422. I do not know whether such a journal exists, but the *Archiv. f. Heilkunde* (in which the preceding case was found) does not, at the page named, contain any reference to a lipoma of the larynx. So much for Eppinger's accuracy. But if we now turn to Schrotter's paper ("Ueber das Vorkommen von Fettgewebe im Larynx," *Monatsschrift fur Ohrenheilkunde*, June, 1884), we find exactly the same inaccuracies repeated. In Gottstein's work the erroneous references are not reproduced, possibly because no exact references are found in the book, but it is expressly stated that in Wagner's case the point of attachment is not given, showing that no attempt could have been made to verify his statements (*Die Krankheiten des Kehlkopfes*, 1888, p. 149). Now, as I cannot find Tobold's case described by any other authors than those referred to, it is not surprising that I know little about it, and that also, for obvious reasons, I refrain from reproducing what little is mentioned by these authorities. I have no desire to act the part of a captious critic, but the evil illustrated by my investigations into a subject so limited as lipoma of the larynx is, I believe, widespread. Authors are too apt to follow each other like sheep without verifying data, and thus, instead of perpetuated truth we have perpetuated error. To grasp the whole of medical science is impossible for one man, but, on the other hand, it is not too much to ask of those who would be our instructors and pioneers that they should first instruct themselves."

I have personally verified all of the references above mentioned and concur in every particular with the statements of McBride.

The etiology of lipomata of the larynx is quite obscure. There are three possible etiological factors to be considered.

First: The development, by simple hyperplasia of distinctly independent or encapsulated fat masses from fat cells or small areas of adipose tissue.

Chiari, in a recent discussion with me on this subject, states that he has observed fat cells in the microscopic examination of serial sections of the normal larynx at about the plane of the ventricular fossa.

There is, perhaps, no cavity, endothelium in character, where adipose tissue or fat cells are normally so infrequent, as in the larynx.

In several of the reported cases, as well as in the author's case there is, because the existence of the growth was known to the patient for many years, a possibility of a congenital origin and hyperplasia of fat tissue.

Second: The possibility of an embryologic origin of tissue favorably disposed to such fat development must not be lost sight of. The invagination of a single cell of the mesoderm may offer the first nucleus for the development of such a fatty metamorphosis in an area normally free from fat.

In the case of von Bruns, the microscopic examination of which has been minutely reported, reference is made to a small piece of white cartilage of the size of a hemp seed, contained in the apex of the tumor and completely surrounded by connective tissue. Teratomata, in the light of cellular pathology, have their origin that way; why not lipomata?

Third: The most recent theory of cell-metamorphosis and cell-proliferation, as advanced by Gideon Wells in his chemico-pathology, may have a very pertinent bearing on fat origin in this class of neoplasms. Jonathan Wright actively supports this theory in his report of the pathological examination of the author's case.

Dr. Wright states: "To me the special interest in the growth, as lipoma is the commonest of the benign tumors elsewhere than on the mucosa, is the consideration of its etiology. I doubt if it is permissible to place it in the usual category of benign tumors, which have a more or less evident affiliation with the hyperplasias of inflammation and local hypernutrition, though I suppose, fundamentally, the forces lying behind the phenomena are parallel ones.

"Here it seems to me, in the lipomata, it is not a question of cell-division of some element in the tissue as in a fibroma, or an osteoma,

or an adenoma. It is not a question of like breeding like. We are concerned (1), with a chemical change per se, or, (2) we are concerned with some physical disturbance of equilibrium whereby lipid material ceases to be changed into something else, and (3) accumulates in the connective tissue cells. In other words, we have, (1) the conversion of albumen into fat, a thing as yet, so far as I know, not demonstrable in the test tube, or (2), we have some specific increase in the surface tension of connective tissue cells whereby oil globules are *adsorbed* and *absorbed*, or, (3), and I believe this to be the more probable, we have some disturbance of the chemistry of the cell in a fibrous hyperplasia whereby the action of a ferment is suspended, which, under normal conditions, converts the lipid material into waste products and perhaps into protoplasm. This view, I think, would account for the presence of fat in various tumors, especially those undergoing a retrograde metamorphosis.

"Essentially, therefore, I think a lipoma is a fibroma and not an independent tumor. In the sections from your specimen, while exhibiting more fat globules and less connective tissue than any of the lipomata of the mucosa I have examined, they nevertheless present considerable differences in different localities as to the amount of fibrous tissue present. It is merely a matter of degree. In Dr. Hinkel's case, the tumor repeatedly recurring, each time with varying amount of fat globules, is thus comprehensible. The fatty turgidity of these tumors of which I spoke in my other letter, I think, is especially significant of the views I have here developed. The smooth, semi-erectile state which is the cause of their frequently striking clinical appearance, is due to the strong affinity developed in the surface tension of the component connective tissue cells for fat. It is probably attracted from the circulation by this abnormal affinity, not metamorphosed as usual, but instead, stored up in, or in contact with the connective tissue cells having this pathological affinity and this local fault of metabolism.

"I hope I have made my meaning clear and that it will interest you in connection with your rare growth."

Pathologically, no definite form of growth of lipomata in the larynx have been determined. The case of Jones was a long pendulous neoplasm, attached by a thin, flat band. The cases of Golbek and v. Schroetter were of the multiple variety, scientifically classified lipoma arborescens. The microscopic report of Farlow's case is that of polypoid lipoma.

Several of the cases included in this classification are fibro-lipomata, or mixed-tissue variety.

There seems to be no limitation to the size or shape assumed by these neoplasms; lipoma ordinarily grows slowly and it may be readily assumed that where no aggravating symptoms occur, such neoplasms can grow for many years without seriously impairing the health, or physiological relations of the patient.

In Holt's case, reported as early as 1854, the patient died suddenly from suffocation, and the character of the growth was determined on the post-mortem table. This case had evidently existed for a long time, and the long period of growth may be attested by its unusual size and pendulous shape. McBride's cases were both of large size, measuring $1\frac{1}{2}$ to 2 inches in their long diameters. Koehler's case was of similar diameter.

The age of the patient in which lipoma of the larynx occurs, ranges from that of a girl of thirteen years of age (Wagner's case), to that of a man of 80 years of age (Holt's case). This form of neoplasm seems to occur with equal frequency in both male and female.

The point of attachment also has a wide variation. The cases of Holt, McBride, and Koehler, were attached by small pedicle, or thin, flat band to, or near to the base of the epiglottis. The cases of v. Bruns, Golbek, and Schroetter were attached by broader base to the ary-epiglottidean area and around the surface cartilages of the larynx.

McBride's second case had its attachment by a narrow pedicle in the right sinus pyriformis. My own case was attached by a thin, flat band to the lateral wall of the ventricular fossa.

It is a point of some interest that the several cases of pure lipomata were attached by slender pedicles, or narrow bands, while the neoplasms of mixed variety, as the fibro-lipoma, and the lipoma arborescens, had a broader base of attachment.

Recurrences after removal are reported by v. Bruns, McBride, Golbek, and Hinkel. In each of these cases it may be observed that the neoplasm was not completely extirpated, and that rapid recurrence took place at the site of the former growth. The original growth in each of these cases was slow; the recurrence was rapid.

Of the twelve cases reported, three were discovered after reaching the post-mortem table; of this series of cases, six were successfully operated on by the endo-laryngeal route. Golbek's case, one

of extensive lipoma arborescens, was operated by preliminary tracheotomy and sub-hyoid laryngotomy. Apalvin's case was one of sub-hyoid pharyngotomy.

The favorite instrument for endo-laryngeal operation was the galvano-cautery snare; the cases of Hinkel, Farlow, McBride and my own were operated by the cold wire snare and subsequent use of traction and long curved scissors, the wire snare having become caught or broken.

This form of neoplasm in the larynx has occurred so infrequently that it is rather difficult to draw any definite conclusions from the reported subject matter. In a general way we may be justified in stating that lipoma may be present in the larynx for a long time without causing aggravating symptoms, or impairing the general welfare of the patient. In fact, this neoplasm may be present without the patient's being conscious of it until it is gradually increased in size, and produces symptoms or pressure or obstruction.

There is a tendency for lipomata in the larynx to recur, unless the removal or extirpation of the mass be complete. The original growth is slow; the recurrence after imperfect removal, is rapid.

The prognosis is generally good and especially favorable in the pure lipomata, where attachment is by small pedicle, or narrow band.

REPORT OF AUTHOR'S CASE.

Mrs. P. D. P., white, married, thirty-three years of age, was referred to me by Dr. W. G. Moore of St. Louis and Dr. J. P. Baker, of Salisbury, Mo. On October 25th, 1908, I was called to the hospital to see the patient and found her in a somewhat recumbent position, lying well over to the left side, propped up by her left elbow and by pillows; her head hanging, with her chin towards the left shoulder. The patient showed evidences of extreme physical depression; complexion sallow; skin moist and clammy; pulse thready, rapid, but regular; tongue flabby and thickly coated; respiration shallow, labored, irregular; accompanied by marked stridor.

It was evident at the outset that the principal complaint of the patient was the difficulty in respiration.

No detailed examination was attempted until the following day. Dr. Moore made a physical examination and reported the heart and lungs normal, sputum negative, for t. b. c.; urine of normal specific gravity and negative in reaction for albumen and sugar.

On October 27th, 1908, I made a laryngeal examination and found a large, rounded, pale yellowish-pink mass, completely filling the glottis, extending from the left lateral wall of the ventricular fossa, pushing the ventricular band upward and overlying both vocal cords. Owing to the unusual size of this mass and its extreme convex surface, the left ventricular band was stretched and arched abnormally upwards, so that it appeared almost in a line with the left arytenoid cartilage. In the convex glistening surface of the tumor a considerable capillary net-work of vessels can be seen. The growth occupied the entire lumen of the glottis when the patient sat in an erect position, with the exception of a small chink anteriorly between the globular tumor mass and the right vocal cord. Respiration in this position was almost impossible,

Author's Case. View of neoplasm by direct inspection.

for the weight of the tumor closed the glottis as completely as a well-fitting ball-valve.

With a probe the tumor was outlined with some difficulty, and its attachment located in the left ventricular fossa. Owing to the firm resistance to the manipulation of the probe during this tactile examination, it was assumed that the attachment was by a rather broad and extensive base.

It was observed that the patient leaned the head and neck towards the left side to obtain relief from dyspnoea and that she had practiced this position for many months, unconsciously, in which the difficulty in breathing had become marked.

Digital examination of the neck externally revealed the large rounded mass, felt most definitely in the left cricothyroid space. There was appreciable movement of this mass under the fingers during every act of deglutition. No glandular enlargements of any kind were found, nor were any other data presented as the result of this examination.

The patient gave the following history:

During childhood had severe attack of measles and chicken-pox; a slight attack of scarlet fever. At six years of age had an intense attack of whooping-cough and according to the statement of the patient, these paroxysms of coughing, resembling whooping-cough in character, have recurred with uniform intensity and regularity every winter. The patient has been very susceptible to

Author's Case. Multiple lipoma of the larynx. Photograph of tumors taken immediately after operation, illustrating natural size of neoplasms, size, shape and capsule.

"colds," attacks of "la grippe" and subsequent laryngitis from childhood up to the time of her present illness. Prior to her marriage she was a teacher, for a number of years, of vocal culture and Delsarte.

The development of the present trouble seems to have been a gradual one; the tone of the voice was peculiar, and has been gradually though constantly, changing in character and volume. There was never complete aphonia, but hoarseness occurred in later years, with increasing frequency. There was pain and discomfort only when "colds" were contracted; breathing has become more labored in the past few years and especially aggravated during over-exertion, or nervous irritation. In the last few months the most marked sensation was a choking tendency and difficulty in breathing.

No evidence of tuberculosis, but grandfather and great-grandfather on father's side died of cancer; two brothers and two sisters died with throat affections following scarlet fever; the character of these infections could not be more definitely determined. There seems to have been an unusual predisposition toward affections of the throat in many members of the family. No other data in the family history, which may have a bearing on the present case, could be obtained.

Author's Case. Photograph of microscopic section. (Low power).

A point to be especially emphasized in the possible etiology of this case is the fact that the patient has complained for a period of about fifteen years of almost constant discomfort in speech and respiration; two symptoms which have become more aggravated from year to year, culminating about six weeks before this examination, in marked dyspnoea, with change in position of the body, frequent paroxysms of coughing and marked emaciation, restless nights, nervous depression, inability to eat, or to digest properly.

On October 29th, the patient was taken to the operating-room, placed in a semi-recumbent position, and the pharynx and larynx anesthetized with a spray of 5 percent solution of cocaine and 1-2000 adrenalin chloride. The area about the neoplasm in the larynx was also swabbed with a 10 percent cocaine solution.

The exact nature of the growth could not be definitely determined by its macroscopic appearance, nor by examination, other than that it seemed entirely encapsulated, was soft and elastic to

Author's Case. Photograph of microscopic section. (High power).

the touch, as determined both by the probe and the finger, and some small branching vessels were noted on the superior surface. I was unable to determine whether the attachment of the tumor was by a small pedicle, or by a broad, flat insertion; I was fairly certain, however, that this attachment was somewhere along the lateral wall of the left ventricular fossa.

There was some discussion as to what operative technique to pursue; namely, whether the attempt should be made to remove the

growth by endo-laryngeal route; by laryngotomy, or by sub-hyoid pharyngotomy. In the case of a fibroma, or any form of neoplasm, with abundant vascular supply, considerable risk of hemorrhage was to be assumed, if operated upon endo-laryngeally.

My preliminary preparations for the operation included all necessary equipment for the prompt performance of either tracheotomy or laryngotomy. I used a curved laryngeal cannula and Krause snare, threaded with a loop of No. 6 steel wire. This cold wire snare was passed around the tumor and at the first attempt the larger of the two growths was promptly removed. There was but very little bleeding and this was promptly controlled by an application of adrenalin. On inspection, after removal of this mass I was surprised to find another growth, almost equal in size to the one just removed, present in the forcibly enlarged ventricular fossa.

The patient was now given a hypodermic of strychnine and allowed to rest for five minutes. As the removal of the first growth had been accomplished with the cold wire snare so easily, I reintroduced the freshly looped cannula over the convexity of the second neoplasm. Again I was successful in engaging the growth at the first attempt, but in drawing the snare home, a portion of the capsule of the tumor, near the pedicle, must have been caught in the snare loop and an unlooked for complication arose. I was unable to disengage the snare and it was equally impossible to cut through the pedicle. Added to this, the patient became quite nervous and began to cough. I discarded the laryngeal mirror, reflected my head lamp directly into the larynx, made firm traction on the entire mass, pulling the snare, tumor, and larynx well forward and upward, and as soon as it came into direct view, cut off the pedicle with a pair of long, curved scissors.

The patient was immediately put to bed, there was no bleeding, no reaction, and no depression. Immediately after the operation, the patient could lie flat on the bed without discomfort, breathing was free, but there was considerable pain on swallowing. The patient was kept in bed for one week, fed on liquid and soft foods; subjected to constant vaporization in the room of compound tincture of Benzoin and Eucalyptol, and the throat sprayed at frequent intervals with a hot spray of Camphor, 2 grs.; Carbolic Acid, 2 grs.; Menthol, 3 grs.; Vaseline, 2 ozs. Recovery was prompt and uneventful.

Inspection of the larynx after the healing of the wound showed the left ventricle of Mogagni free, and the left ventricular band

restored to its normal plane and position. The vocal cords approximated perfectly and the voice lost the peculiar muffled character which had been noticed for many months. The exact band of attachment in the ventricular fossa could not be determined by laryngeal examination, as it seemed to be embedded deep in the lateral wall of this fossa.

At the present writing, seven months after the operation, the patient reports that she is in perfect physical condition. At the time of the operation she weighed 85 lbs.; her present weight is 127 lbs. All symptoms of cough, dyspnea, and other discomfort have ceased. I have had no opportunity of inspecting the larynx. Macroscopically the two tumors present identically the same appearance. To the touch they are soft and elastic, and each of the neoplasms completely surrounded by an independent capsule. The capsule of the larger and first removed of these growths contains a long slit, where it was no doubt attached to the convex surface of the second mass. The second of the growths has a similar and better defined pedicle. In the fresh state the vascular network embedded below the capsule could still be distinctly seen. The large specimen weighed 48 grs. (3-2/10 grams), the smaller specimen weighed 46 grs. (3-7/100 grams). The large specimen measured 1-1/3 inch in length, 7/8 inch in width, and 11/16 inch in thickness. The smaller specimen measured 11/12 inch in length, 3/4 inch in width, and 5/8 inch in thickness.

The color was a pale, yellowish-pink; the capsule was smooth and glistening throughout.

The reports of the microscopic examination, for which I am indebted to the courtesy of Dr. Jonathan Wright, of New York, and to Dr. R. L. Thompson, Director of the Pathological Department of the St. Louis University School of Medicine, are here appended.

Dr. Jonathan Wright reports:

The sections from the part of the tumor selected for microscopic examination show a tissue almost exclusively made up of fat cells. These resemble in every way the ordinary fat cells of adipose tissue as it normally occurs, except possibly they are, some of them, a little larger. There are places where there are fibrous strands running through the microscopic fields, but they are much less abundant than is usually the case in lipomata. Around the fat globules there is a well-marked limiting membrane. The nuclei belonging to each fat cell are ovoid, compressed in the periphery, and under the high power there can be made out a reticulum of intranuclear structure

to suggest that fat or lipoid particles were also contained in the nucleus.

A few thin-walled capillaries accompany the fibrous strands already spoken of. Near the periphery of the growth the fibrous connective tissue is more dense, the nuclei more numerous, the fat cells holding smaller globules. There seems to be a capsule made of translucent fibrils around the whole. The surface of the piece removed for sectioning had no epithelial covering.

It has been supposed that these tumors spring from pre-existing fat cells in the adipose tissue, but I doubt if this suffices to explain all the facts. That some of the protoplasm in the cells of fibrous tumors is convertible into fat seems very probable.

Dr. R. L. Thompson reports:

The specimen consists of two small tumors, 3x2 cm. in diameter, covered with mucous membrane. The tumors are soft in consistence and yellow in color and present to the naked eye the character of localized masses of fatty tissue. The contour of the tumors is regular and no lobulations are apparent. On section, the adipose tissue is penetrated by fine gray lines (trabeculae).

Microscopically the sections, stained with hematoxylin and eosin, show the mass to be made up wholly of adipose tissue, which is surrounded by a thin connective tissue capsule. Connective tissue septa radiate through and support the fat and carry blood vessels. A considerable number of lymphoid and plasma cells are seen in the connective tissue. At one point there is quite a distinct clump of lymphoid cells. At one edge of the section a little mucoid connective tissue is seen.

Diagnosis: Typical lipoma, with slight chronic inflammation.

REPORTS OF PREVIOUSLY REPORTED CASES OF LIPOMA OF THE LARYNX.

Altogether there have been twelve cases reported previous to the author's case which may be strictly included in the nomenclature of lipomata of the larynx, or, to express it more accurately, neoplasms originating in, or having their attachment to the larynx.

CASE I.

HOLT:—Pendulous Lipoma of the Larynx.—*Trans. Pathological Society of London*; Vol. V, p. 123, 1854.

J. A., aet. 80, a robust man of active habit, was under the care of Messrs. Randolph and Rust, of Westminster, to whom Mr. Holt was indebted for the opportunity of exhibiting the specimen. About twelve years since, the patient's attention was directed to his throat, from an occasional, but then increasing, sensation of choking, of no material moment when he was calm, but becoming urgent upon excitement; this gradually became more frequent and he was aware of some swelling, or slight bulging, at the upper part of the throat. About four years prior to his decease, during the act of vomiting, a large mass became protruded, and to prevent immediate suffocation, he was compelled to return it as speedily as possible. He was at all times better enabled to swallow solids than fluids, for, as his powers of mastication were not good, he took the precaution of cutting his food into very small pieces. In swallowing fluids he occasionally experienced great difficulty and choking, but latterly, from taking everything very slowly, he was comparatively comfortable. His voice was husky, but occasionally distinct, more especially if perfectly calm; but when excited it became gurgling and inarticulate. He died suddenly while smoking his pipe, and it is conjectured (there being no person present), that the fumes of tobacco produced sudden cough and displacement of the growth, by which immediate suffocation ensued.

Upon a post-mortem examination, the viscera generally were found in a healthy state, and there was nothing to account for immediate dissolution beyond the presence of the tumor and its attachments.

Upon examining the pharynx, a large, pendulous, fatty tumor was detected, filling the pharynx and extending downwards towards the esophagus to the extent of nine inches. It was attached by an envelope of mucous membrane and fibrous tissue to the left side of the epiglottis, dragging it downwards and to the left side, so

Case of Holt. Pendulous lipoma of larynx—post-mortem specimen. (a.) Tumor. (b.) Epiglottis. (c.) Rima glottidis. (d.) Back view of a portion of the trachea. (e.) The pharynx laid open. (f.) Bristle passed beneath the tumor to show the limit of its attachment.

as to entirely prevent closure of the larynx; it was also connected with the upper part of the pharynx and esophagus. Several fatty tumors of small size were noticed in the neighborhood.

Mr. Holt remarked, the foregoing case was especially interesting: First, from its rarity and the large size of the tumor.

Secondly, from the imperfect closure of the glottis, as a consequence of the altered position of the epiglottis, thus affording frequent opportunities for the introduction of foreign substances.

Thirdly, that it should not have produced some permanent dyspnea, or alteration of the voice.

Microscopic examination by Mr. Ferguson and Mr. Partridge:

The pendulous masses consist of adipose tissue which, in the larger mass, is arranged in layers, separated by fibrous membrane. The examination of the larger tumor under the microscope shows the interior portions to consist chiefly of fat, with an external investing layer of varying thickness situated immediately underneath the mucous membrane and composed of fibrous tissue. In some parts of the larger swelling, where it had a yellow color, apparently underneath the investing mucous membrane, the fat tissue crossed out through the fibrous tissue to the surface. The tumors are only loosely connected to the submucous tissue. The fibro-cellular investment is thicker in the largest and most pendulous mass, than in the small ones.

CASE II.

VICTOR VON BRUNS:—Large Lipoma of Larynx, with Fibrous Base, Attached to Left Arytenoid Cartilage.—*Monograph: 23 Neue Beobachtungen von Polyphen des Kehlkopfes*, p. 154. Tuebingen, 1868.

Female, aged 25 years; from Mecklenburg, Germany. Large lipoma, with fibrous basis situated on left arytenoid process; extirpation with galvano-cautery, scissors and pincers. Numerous sittings.

Has had a rough, hoarse voice since earliest childhood. At age of seventeen, pain deep in throat, variable, at times worse than others. Hoarseness increased with pain. Shortness of breath only while dancing, cannot discourse at the same time. Frequently fluids and solid particles of food would enter larynx. Saw a number of physicians who treated local condition and general state; no improvement. Was seen by v. Bruns in 1867 for first time. He found a tumor extending from the epiglottis to posterior esophageal wall and from right lateral wall of pharynx to left wall,

Surface of tumor smooth and shining. Sagittal diameter of tumor (antero-posterior) was 14-16 mm. Frontal diameter of tumor (right to left) was 25-30 mm.

The tumor emanating from left half of posterior laryngeal wall was soft and elastic. Diagnosis: lipoma. Extirpation with hot wire loop. The removed tumor was found to have an outer capsule and enclosed two firm bodies which were united by very loose connective tissue. The capsule was formed from the stretched mucous membrane covering the left arytenoid process and vicinity.

CASE OF von BRUNN. Large lipoma of larynx with fibrous base, attached to left arytenoid cartilage. (a.) View of neoplasm before operation. (b.) Part of growth removed at first galvano-cautery operation. (c.) Frontal section of same. (d.) Surface view of fibrous base of neoplasm and slough after second galvano-cautery. (e.) Final result of fifth galvano-cautery, showing cicatrices in fibrous stump of neoplasm.

Surface was smooth, shining and slippery. The tumor was dark-red and partly of a blue color; due, no doubt to the stasis of the blood produced by the constriction of the loop during operative removal. The covering or coat was composed of an external epithelial and vascular fibrous layer. The latter was composed of inelastic connective tissue, intermingled with an abundant quantity of delicate elastic fibres. The fibrous bundles were more richly supplied with nuclei peripherally than centrally; they ran parallel with the surface of the tumor. This mucus coat was very richly supplied with thin-walled blood vessels having a lumen of 0.05 to 0.1

mm. in diameter. It had no distinct membrane separating it from the epithelium. Presented no papillae; had smooth surface.

The epithelium was composed of numerous layers, about 15. The lower cells of the mucous membrane were short and cylindrical, with diffuse brown pigment. Nearer to the surface the cells assumed, first a polyhedral, then a flat shape, and were colorless. The distinctly separated pavement cells were covered by a thin cohesive layer of horny cells which could no longer be clearly differentiated.

The nucleus of the tumor thus enclosed was composed of two equally large, oblong, firm, fatty tumors, which formed flat facets at points where they came in contact with the surrounding tissues. It contained fat cells of medium size, filled with Margarín-crystal glands. Firm fibers of connective tissue coursed between the fat lobules and were observed macroscopically as whitish-yellow opaque curved lines.

The operation was followed by severe pains in mouth and throat; difficult phonation and deglutition, and slight fever. The condition improved in a few days and recovery was uninterrupted. The pain ceased entirely and the patient could breathe without difficulty. The voice was still somewhat harsh. No pain on deglutition. When seen again, five weeks later, almost no signs of a scar were left. Another tumor at the point where the plica pharyngo-epiglottica originates was found extending downwards and to the right as far as the incisura interarytenoidea. This tumor had a diameter of 25 mm. and entirely displaced the right arytenoid process. The tumor originated from the left side.

The tumor was accessible with difficulty, but was finally removed by hot wire loop. Only a portion of it was obtained. Examination showed it to be of the same consistency as the original tumor. In addition, the apex of this tumor contained a piece of white cartilage the size of a hemp seed (Hanfkorn), surrounded completely with connective tissue. The cells of the cartilage were small, inserted group-like in the pale yellow and partly hyaline cartilage, numerous elastic fibres forming the basic substance.

Condition after the operation was the same as at the previous operation. When the patient had recovered sufficiently the remaining portions of the growth were removed at many different sittings. The patient was dismissed after several months' treatment. The tissues were still a trifle larger at the affected point than normal, but it was decided to allow nature to effect further atrophy of the tissue involved.

CASE III.

E. WAGNER:—**Lipoma pes Kehlkopfes.**—*Archiv. der Heilkunde*, No. 2, p. 108, Leipzig, 1872.

This case is reported from the post-mortem records of the small-pox epidemic in Leipzig. A lipoma of the upper larynx was found in a girl thirteen years of age. This patient had been assigned for operation, but died of small-pox during the epidemic.

The growth was of the size of a hen's egg, and was attached by a thin, wide fold to the mid-line of the dorsum of the tongue and on the anterior part of the epiglottis; it was freely movable, much flattened posteriorly, otherwise irregular.

CASE IV.

SIDNEY JONES:—**A Fat Tumor of the Larynx.**—*Trans. Pathological Society of London*; Vol. XXXII, p. 243, 1880.

Pathological specimen from a man, aged 40. An irregularly-lobulated mass of fat, held together by delicate connective tissues. In one part (indicated by a bristle), is a cyst, now laid open; it is about three-quarters of an inch in diameter and probably communicated with the surface; it is lined with stratified squamous epithelium, some detached pieces of which closely resemble hydatid membrane. It was attached to the right aryteno-epiglottidean fold and hung down into the pharynx as a round, smooth tumor, of about two inches in diameter, covered with mucous membrane, with large veins. The patient could protrude this tumor into his mouth. An incision was made into the mucous membrane, and the mass forming the specimen, at once turned out.

The specimen is in the Museum of St. Thomas Hospital.

CASE V.

GOLBEK (OR HOLBECK), MARK KARLOVITCH:—**Lipoma Multiplex Arborescens Aditus Ad Laryngem.**—*Protik. Zasedamia. Imp. Kavkazsk. med. Obshtsh.*, Tiflis, Vol. XXVIII, pp. 422-427, 1 pl., 1891-92.

Male, Armenian, 61 years old. Ten or eleven years previously he had a little tumor at base of tongue, which was excised in 1883. It reappeared two or three years later and was re-excised several times without any effect. Of recent years the tumor had become so large as to interfere with respiration and deglutition. No syphilis.

On examination, the patient was found to speak indistinctly, he breathed with difficulty, and had difficulty in swallowing even

liquids. Slept in sitting position with head much inclined to one side. Impossible to examine mouth or larynx with laryngoscope, as patient suffered from dyspnoea if he changed the posture of his body, inclined forward, with head hung low. On ocular and digital examination of the oral cavity, one could see and feel anteriorly between the root of the tongue and epiglottis, two large tumors, rose-yellow in color, covered with a smooth shining mucosa. To the right, one tumor is of the size of a hen's egg, also hen-egg shaped; close to it on the left is a tumor the size of a walnut. Tumor has a broad base, no pedicle, and was attached in the glosso-epiglottic vallecula. Back of the right large tumor was another tumor; its direction was toward the larynx, the tail thereof occupying the laryngeal opening; this tumor is arch-shaped, in size and

Case of Golbek. Lipoma multiplex arborescens aditus ad laryngem.

form like the index finger of an adult, and appeared in the oral cavity when the patient coughed very strongly, or during movements of deglutition. On the left side, in the direction of the lig. glosso-epiglottici lateralis and plicae pharyngo-epiglotticae was a whole group of tumors, clearly disposed, varying in size from a large nut to a pea. This entire group aggregated in length and breadth the size of an index finger. The tumors are doughy and resemble lipomata.

The large tumor was at once removed by an ecraseur; found to be a lipoma. The other tumors were found to be on different levels, and closely adherent to the epiglottis, and had to be removed with a knife. After a preliminary tracheotomy, by local anesthesia, a tracheotomy tube was inserted by the Trendelenburg-Hahn method, the trachea being tamponed by a canulae imbedded in a compressed sponge, and covered above by a gauze sac. The pa-

tient was then chloroformed and operation begun. Two silk ligatures were put on, on the middle glosso-epiglottic ligament and apex of anterior tumor, and pulling the tumors, by the ligatures, forward, it became evident that the tumors could still not be cut out, hence the right cheek was cut open from the corner of the mouth to the anterior border of the masseter muscle. After this, and cutting the mucosa which covered the tumor with blunt scissors, the large anterior tumors were removed, then the left, then the tumors lying deeper in the direction of the lig. glosso-epiglottici lateralis and plicae pharyngo-epiglotticae. In the base of the excised tumors, three silk ligatures were placed. Very slight hemorrhage followed. The cheek was closed, the tampon-cannula was exchanged for an ordinary tracheotomy tube, and the usual antiseptic bandage ended the operation.

No temperature the first six days. The first four days food by high enemata. No suppuration. On fifth day patient began to eat in normal way, but inclining the head backward. On the seventh day temperature 38.8 degrees C. in the evening, two furuncles on the cheek and facial eczema, Temperature normal on the twelfth day; furuncles healed. Tracheotomy tube removed on the sixth day. On thirteenth day food no longer appeared in tracheotomy wound. On twentieth day the wound healed completely.

The tumors were found to consist of lipomatous, clearly disposed groups, of various sizes, covered with mucosa. The middle tumor was 6 by 5 cm.; the right lateral was 7 by 2 cm.; the left lateral consisting of numerous lipomata, was 7.5 by 5 cm.

The microscopic examination of these tumors was made by Seifert, of Wurzburg, and the description and diagnosis are included with the report on Koehler's case: Ueber Lipom des Kehlkopfes, *Sitzungsbericht d-phys-med. Gesellschaft zu Wurzburg*, pp. 32035.

CASE VI.

P. McBRIDE:—**Clinical Notes on Fatty Tumors of the Larynx.** *Edinburgh Med. Journal*, Feb., 1889.

M. W. was brought to me by Dr. Carmichael on the 23d of July, 1887. The history of the case was as follows:

About six months ago the patient felt that occasionally in breathing he made a peculiar noise, but this occurred only for two or three minutes once or twice a day. Eventually this symptom became troublesome when the patient lay down, and finally he began

to experience difficulty in swallowing. There was no pain, but deglutition required a distinct effort, and was accompanied by a sound audible to those in the neighborhood.

On examining the throat, a pale-pink, rounded tumor was seen behind the tongue. Examination with the laryngoscope and probe showed that it was attached to the epiglottis, and about the size of a pigeon's egg. As my electric cautery was not ready for use at the time of the patient's first visit, the wire of Jarvis's snare with a bent shaft was passed over the tumor and tightened. To make a long story short, it was found that the wire could not be made to penetrate the growth, and the part seized had eventually to be cut off with bent scissors. This portion comprised about a half of the tumor. The remainder was easily removed by means of the galvanocauteric snare adjusted by the aid of the laryngoscope. The first portion of the growth removed was handed over to my friend, Dr. Alex. Bruce, who described it as a fibro-lipoma. The other half I now show you. The stump which was left had a broad attachment to the right valleculae and adjacent part of the dorsum linguae. At first the sloughing resulting from the electric cautery produced foeter of the breath and a bad taste in the mouth. These symptoms soon yielded to the use of a boracic acid gargle. On the 26th of December, 1887, the condition of parts was as follows: "Only a rounded fulness filling up right vallecula and evidently attached to the epiglottis and adjacent part of the tongue." On the 3d of December, 1888, Dr. Carmichael again brought the patient to me, and the tumor had not only recurred, but reached a size equal to that when it was first examined. To this recurrence I attach little importance from the point of view of ultimate prognosis. At the same time, it is evident that a tendency to reappearance will exist so long as any part of the tumor is left, and it will be no easy task, situated as it is, to extirpate the growth together with its capsule by endo-laryngeal operation.

CASE VII.

P. McBRIDE:—**Clinical Notes on Fatty Tumors of the Larynx.** *Edinburgh Med. Journal*, Feb. 1889.

P. B., aet. 71, porter, applied for treatment at the Royal Infirmary on the 16th of November, 1888, giving the following history:

Some five or six years ago the patient felt a lump in his throat, and though aware of its presence, did not find it to obstruct the breathing, cause pain, or interfere with swallowing. It gradually enlarged, causing, last September, a thickness of speech and ob-

structing the breathing when the patient lay on his left side. Later difficulty in swallowing has been experienced, but there has been no pain at any time. Sleep has never been disturbed.

On laryngoscopic examination, a pale pink mass was seen overlying the left arytenoid cartilage. On touching this with a probe a cough resulted, which shot the tumor up to a level with the dorsum of the tongue. The growth was eventually seized with a vulsellum; the snare of the electric cautery was then passed over it and pressed well down, tightened, and the tumor removed. The latter was fully as large as a bantam's egg. A fragment removed was examined by Dr. Martin, and found to consist of fatty tissue. I now show you the lipoma in question, and it will be at once noticed that it has also a distinct capsule. After removal it was seen that the pedicle was narrow, and had been attached to the outer part of the right pyriform sinus. The patient was kindly given a bed for a day or two by Professor Annandale, because I feared that laryngitis might possibly result from the effects of the electric cautery. No such untoward result, however, supervened, and a week after the operation only a white eschar was visible on the outer and anterior part of the sinus pyriformis. From the very few cases so far published it is impossible to generalize as to the diagnosis and prognosis of fatty tumors of the larynx. We may, however, say that they are characterized—(1), by their light pink color; (2), the disproportion between their size and the symptoms they produce; and from my first case we are also entitled to conclude that unless the removal be complete, rapid recurrence may take place.

Since writing the above, I have again operated on my first case, in which, as will be remembered, recurrence took place. The tumor was seized with a strong and heavy pair of catch forceps. Over these the galvano-caustic snare was slipped, and the growth which I now show you removed. As will be observed, it has the appearance of having been enucleated rather than cut off. On examining with the laryngoscope after the operation, from which virtually no bleeding resulted, there was seen to be an excavation corresponding to the point of attachment. It was further noted that the right margin of the epiglottis was somewhat excavated, a condition probably due to the pressure of the somewhat pendulous tumor, which, although attached by a broad base, tended to hang over into the laryngeal cavity.

This last operation seems to indicate the advisability of seizing not only the capsule of the fatty tumor, but also the adipose tissue,

so that the latter may be drawn from its bed and enucleated as completely as possible. I may mention that when the patient was last examined, cicatrization was completed, but that no reaction of any note had followed the removal of the growth.

CASE VIII.

L. VON SCHROETTER:—**Lipoma des Kehlkopfes.**—*Vorlesungen über die Krankheiten des Kehlkopfes*, p. 271, 1893.

I have had occasion to observe an unusual and well defined case of lipoma of the larynx.

The case was attached to the ligamentum glosso-epiglott. med., the lateral edge of the epiglottis, the ligamentum pharyngo-epig-

Case of von Schroetter. Lipoma arborescens. (a.) Showing round, yellow eschar, following galvano-cautery. (b.) Digital prolongations of neoplasm.

lott., and the entire length of the aryepiglottic fold of the left side. The growth extended partly into the larynx; partly into the sinus pyriformis; and partly into the space between the posterior larynx and pharynx wall. The growth was freely movable, reddish in color, and extremely soft.

The mass was removed by means of the galvano-cautery. The tumor thus removed weighed ten (10) grams, and the several digital-like prolongations measured as much as thirty-seven (37) mm. in length, and twelve (12) mm. in width.

The detailed examination of the neoplasm was made by Dr. Paul-tauf; the diagnosis was that of lipoma arborescens, originating from the submucous tissue. An especially emphasized point of

this examination was that the tissue from which this origin was traced, is normally very deficient in fat.

This neoplasm consisted of small lobules and well organized fat tissue, liberally interspersed with connective tissue fibers, and fair-sized blood vessels. The overlying mucous membrane is closely intermeshed with numerous dilated and hyperaemic blood vessels, around which and diffused throughout, there appear numerous lymph cells; a fact which should not be considered unusual in this well-marked field of polyp. formation, where there is abundant opportunity for such tissue changes. The laminated pavement-epithelium occurs profusely in spots.

The accompanying drawings were made only after a part of the neoplasm had been removed by galvano-cautery; both drawings show the round, yellowish surface produced by the galvano-caustic eschar. Figure B shows the digital prolongation of the neoplasm, which extended into the pharynx and larynx.

CASE IX.

KOEHLER:—**Lipoma of the Larynx (Ueber Lipom des Kehlkopfes).** Reported by Seifert (Wurzburg).—*Sitzungsb. d. phys. med. Gesellsch. zu Wuerzburg*, pp. 32035. 1894.

Male, aged 45 years; had observed a change of voice many years before operation. Sought medical aid when impairment of breathing occurred. Examination revealed a pigeon-egg sized tumor, pale-red in color, occluding the posterior two-thirds of the lumen of the larynx. It arose from the anterior surface of the posterior laryngeal wall. Removed with galvanic loop.

The microscopic examination of the tumors in the case of Golbek and in the case of Koehler, are incorporated by Seifert in the same report:

The microscopic examination of both tumors was alike. The well-preserved epithelial coat composed of pavement epithelium which, at certain points, dipped deeply into the tissues; at some points there was an appearance of papillae-like condition. Connective tissue preponderated near surface of the tumor. Immediately beneath the epithelium were scattered fat cells, farther towards the center were numerous fat lobules composed partly of large fat cells separated by narrow or broad connective tissue strands running parallel with the surface of the tumor. In the vicinity of the fat lobules and in the connective tissue lamina a marked cellular infiltration was noticed.

The blood vessels were dilated in part; they showed considerable thickening of their walls; more marked in the arteries than in the veins. Marked cellular infiltration observed also near the vessels.

CASE X.

JOHN W. FARLOW:—**A Case of Polypoid Lipoma of the Larynx.**
New York Medical Journal, November 16, 1895, p. 610. Vol. 62.

In March, 1893, J. W., aged 63 years, consulted my colleague, Dr. W. F. Knowles, for a polypus of the throat. His health had always been good. He first noticed trouble in his throat about fifteen years before, and his family physician had removed a piece of about two inches long, two years before, with straight scissors. On bending his head forward and downward and coughing, a polypoid growth appeared, the tip of which could be drawn at least half an inch beyond the lips. When I saw him he was holding the tumor, wrapped in a fold of his handkerchief, with the fingers of his right hand outside the right side of his mouth. The growth had several projections from it and reminded one of branching coral. It almost entirely occluded the orifice of the larynx and seemed to have attachment to the posterior laryngeal wall just above the right arytenoid. When he let go of the tumor it fell back into the pharynx and one piece dropped down between the vocal cords into the subglottic and tracheal region. This piece was somewhat attenuated and constricted, probably by the action of the vocal cords.

For several months he had been much troubled by shortness of breath, which is very natural, considering how the larynx was filled up.

At the patient's first visit, Dr. Knowles attempted the removal of the growth with a cold wire snare, but an accident to the snare forced him to use long, curved scissors to free the wire and he removed two large pieces. The patient's breathing was so much improved that he refused any further treatment until December, 1894, when he again appeared on account of a decided increase in the size of the growth. With a galvano-cautery, Dr. Knowles removed the rest of the growth in three pieces. The attachment was found to be very low down in the pharynx. Three months later there had been no recurrence. Microscopic examination showed it to be a submucous polypoid lipoma. Dr. Farlow showed the specimens in alcohol and also the photograph, natural size, taken from the fresh specimens.

CASE XI.

FRANK W. HINKEL:—**Report of a Case of Fibro-Lipoma of the Larynx.** *Transactions of the 20th Annual Meeting of the American Laryngological Association, Brooklyn, N. Y., May 16, 1898, p. 75.*

Mrs. F., aged 55 years, consulted me March 22d, 1895. She gave a history of excellent general health. During the winter of 1883 she became conscious of a tumor of some kind at the back of the tongue. She consulted Dr. Roswell Park, of Buffalo, who removed a long, slender, cylindrical tumor which, as preserved in alcohol by the patient, was about an inch and three-quarters in length by a third of an inch in diameter. She reported that it had been removed with scissors, and had been cut with ease, and without pain. After some years there was a gradual return of symptoms, and ten years later, in February, 1893, Dr. Park removed in the same manner a somewhat spherical mass about a third of an inch in diameter. In August, 1894, Dr. Park again removed a tumor of shape and appearance similar to that removed in 1893. The symptoms returned speedily. There was not, when she consulted me in 1895, nor has there been since, any pain, cough, or expectoration. There was no difficulty in swallowing. Speech was normal, but there was impairment of the singing voice. At no time then, nor since, have there been other symptoms than a sensation of some foreign body in the throat.

Her father had died of "cancer of the face, beginning as a mole under the left eye."

She presented an appearance of good health. There was nothing abnormal about the nose or upper pharynx. From the upper left-hand margin of the epiglottis a pinkish-white tumor of flabby appearance depended into the left pyriform sinus, resting upon and concealing the ary-epiglottic fold and arytaenoid. It was soft and doughy under the probe. There was some varicosity of the root of the tongue. The tumor was readily engaged in the loop of a light snare. To my surprise, despite the soft appearance and feeling of the tumor, I was unable to draw the loop home. Using the snare to drag the tumor within reach, I removed it in three pieces, with curved scissors. It cut dense and hard without much pain or bleeding. There remained after healing some fullness of the left half of the glosso-epiglottic fossa, involving slightly the left perpendicular edge of the epiglottis and extending on to the anterior wall of the pyriform sinus. The color of the parts was quite normal.

On March 9, 1898, Mrs. F. again consulted me, reporting that during the past winter she had had some slight discomfort about her throat. Examination revealed a pinkish-white, smooth, elongated tumor broadly attached to the free margin of the epiglottis and depending to the right, producing an appearance as though the right side of the epiglottis were turbaned or folded upon itself vertically. The left ary-epiglottic fold was much thickened, concealing the left arytaenoid and a part of the left vocal band, encroaching upon the lumen of the vestibule of the larynx, and partly filling the left pyriform sinus. Color and motility of the vocal bands were normal, and there was no involvement of the ventricular bands. The patient was able to bring a small portion of the epiglottic tumor into view on a part of the tongue, where it presented an appearance much like a polyp. With forceps and scissors it was readily removed. It presented two digitations, and was about three-quarters of an inch in length. With a heavy snare and curved cannula I twice engaged the flabby and dependent laryngeal face of the left ary-epiglottic fold. The wire broke each time, showing great density of structure. Epiglottis after the operation presented a curious appearance. The entire glosso-epiglottic fossa was felt almost to the level of the tip of the epiglottis with tissue, presumably similar to the tumor removed. The consequent optical effect was as though the epiglottis had been amputated near the point of its attachment, when, in fact, it was of normal size and appearance on its laryngeal face.

As Mrs. F. suffers from no unpleasant symptoms at present, no further attempt was made to remove the redundancy of the left ary-epiglottic fold.

The persistent recurrence of this tumor, and its peculiar and unfamiliar appearance, led me to send the specimens presented herewith to Dr. Jonathan Wright for examination. With his usual kindness and keen interest in all cases pertaining to pathology, Dr. Wright has given these specimens careful study and has prepared the exhibits that are the chief value of this report.

From a microscopic appearance he at once suspected the tumor to be lipoma of the larynx. Later microscopic examination confirmed this opinion.

The following is his report:

"No. 644. Various specimens received at different times from Dr. Hinkel, from the larynx of the same case, show a tendency to take the form of long, finger-like projections. The one removed

in 1883, after remaining fifteen years in alcohol, is 45 millimeters long and about 8 millimeters wide at the broadest point. Other growths are more or less of the same shape, some being tuberous, while some are more sessile. Their shape seems to differ somewhat according to their structure. The following are their microscopic and general characteristics, according to the dates of their removal.

"1883. Is made up particularly of fat cells, especially at its distal part, having more fibrous tissue at its base."

"1893 and 1894. These growths, being more sessile, are largely made up of curling, elastic, fibrous tissue, but here and there some fat cells may be seen."

"1895. A long, tuberous-shaped growth shows a large predominance of fat tissue."

"1898. A more sessile growth is almost exclusively made up of the curling elastic fibers. There are one or two circumscribed areas of round-celled infiltration."

"The surface of all these growths is covered by stratified, flat epithelial cells."

This case is interesting, not only on account of its rarity, but also on account of the persistent recurrence of the growth and the gradual infiltration of the attaching tissues.

In addition there is an interesting transformation in the character of the growths that have recurred after the removal of the lipomatous tumors. This is well shown by drawings from sections made by Dr. Wright.

Figure 1 represents a section of the first tumor removed by him in 1895. This tumor was found by Dr. Wright to be entirely analogous in structure to the original growth removed by Dr. Park in 1883. They both present well-marked lipomatous structure.

Figure 2 is from the recurrent tumor removed this year, and shows it to be largely fibrous in structure.

CASE XII.

APLAVIU: (Kassan)—A Case of Lipoma Durum in the Pharyngo-Laryngeal Cavity, Removed by Sub-Hyoid Pharyngotomy.
Arch. f. Klin. Chir., Vol. XLI, 1891.

Aplaviu reports the case of a man 28 years of age in whom sub-hyoid pharyngotomy was performed for the removal of the neoplasm in the pharyngo-laryngeal cavity. On digital examination it was

determined that the growth was attached to the posterior wall of the cricoid cartilage, that it was freely movable and that the patient could at will protrude the mass upwards into the oro-pharynx, or into the mouth of the esophagus. The growth measured 10 cm. in length and 4.3 cm. in width.

Diagnosis from microscopic examination showed lipoma durum, with fairly well-developed blood vessels in the central and in the apical part of the growth.

The growth was removed by sub-hyoid pharyngotomy. The author suggests, in addition to the cross-incision of Malgaigne, the resection of the cornu of the hyoid bone by means of strong, pointed scissors. This effects an unusual mobility of the larynx, and the aditus laryngis can thereby be drawn into the same plane with the wound of incision. The preliminary performed tracheotomy does not affect the mobility produced by this technique.

In conclusion, I wish to express my thanks and appreciation to Dr. Jonathan Wright for his interest in the microscopic examination in this case; for his valuable opinion in the microscopic diagnosis, and for the excellent photographs of the slides, made under his supervision; to Dr. R. L. Thompson, for his prompt report of the pathologic diagnosis; and to Dr. I. D. Kelley, Jr., for his pen drawings of the tumor as seen by direct inspection.

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Gastric Symptoms of Arteriosclerosis. H. L. AKIN. *Journal A. M. A.*, June 5, 1909.

The writer discusses the frequency of this condition and gives the histories of some personal cases. He reviews the mechanism of the production of the symptoms as explained by Pal, Ortner and others, and states that in making a diagnosis it is of the utmost importance not to be led astray by the patient's complaints of indigestion, pain in the stomach, distention, and belching, and so neglect to make a careful physical examination. He emphasizes particularly the importance of examining the vascular system thoroughly. In treatment he advises a restricted diet, and states that in this, as in all other arteriosclerotic conditions, the iodids are the most valuable drugs.