

ards of medical education. If the legislature of this state has one great responsibility it is to preserve the medical standard of the State, and my efforts will always be directed to that same end."

ORIGINAL ARTICLES

"PRIMARY SARCOMA OF THE STOMACH; PRELIMINARY REPORT OF A CASE TREATED BY PARTIAL GASTRECTOMY."*

By THOMAS W. HUNTINGTON, M. D., San Francisco.

Frazier¹ states that primary sarcoma of the stomach was first discovered by Bruch, in 1857. Virchow, in 1864, referred to three cases, and Tilger, in 1893, was able to collect only 20 cases. Hesse,² in 1912, collected 235 cases of sarcoma of the stomach. Of this series, 160 were primary. His paper is exhaustive, containing much statistical information, and a very complete bibliography.

Scudder³ reports one advanced case treated, successfully, by a three-stage operation. From various sources I have found reference to about 200 cases, some of which were not operated; others were discovered at autopsy, and it is not certain that all occurred, primarily, in the stomach.

Mayo-Robson⁴ is of the opinion that more careful scrutiny of gastric malignant cases would appreciably augment the number of primary sarcomata. Nevertheless, the disease must be regarded as of exceedingly rare occurrence. In a single case, recorded in the publications of the Mayo clinic, Dr. Wm. J. Mayo⁵ states that "Sarcoma of the pylorus is so rare as to be a surgical curiosity."

No cases have been observed at the University of California or Stanford University clinics. McCleave, of Berkeley, reports one doubtful late case which was studied at autopsy.

Dr. W. I. Terry, of San Francisco, will report a sarcoma of the stomach treated by total gastrectomy.

Howard⁶ has collected 11 cases of primary sarcoma of the esophagus, and Erdman⁷ reports a case of annular sarcoma of the cardia which he removed successfully.

W. J. Mayo reports, by letter, that two cases have occurred at the Mayo clinic. One operated upon by himself, a man 38 years of age; duration of symptoms, 10 years; resection of stomach, tumor size of head, lying in pelvis. Patient died in six months from recurrence.

The second case, operated by Chas. Mayo; a man 43 years of age; duration of symptoms, 10 to 12 years; resection of stomach for intrinsic tumor, size not stated; mixo-sarcoma; patient well at the end of one year. The duration of symptoms, in both cases, 10 years or over, is peculiarly significant.

There seems to be no special predilection for sex. Early writers regarded it as an affection of the very young, ranging from two or three to 20 years.

Later observers find it distributed through all periods up to 70. Very many cases have occurred in the fourth, fifth and sixth decades.

Nearly all varieties of sarcoma are represented in a given series. The round-cell, spindle-cell, and mixed round- and spindle-cell types preponderate. Robson⁴ states that the former occurs in 60 per cent. of cases. The growth originates uniformly in the sub-mucous layer, differing in this respect from carcinoma. It may occur in any portion of the viscus wall, from the cardia to the pylorus, though its favorite location is at the pyloric end. The tumor may be diffuse, presenting a more or less flattened appearance with a marked thickening of the involved area; or it may occur as a pedunculated affair, growing extrinsically from its original seat until it assumes formidable proportions. In the same manner, it may occur intrinsically and, in time, occupy a large portion of the visceral cavity.

Whether gastric ulcer is an important factor in sarcoma, as it certainly is in carcinoma of the stomach, is not fully determined. Incipient cases seem rarely to have been detected and studied, and doubtless, in those far advanced antecedent conditions, such as chronic ulcer, will have lost their identity or have become wholly obliterated. In my own case, the significance of a co-existing ulcer is obvious. There is, however, a doubt as to whether or not the ulcer, in this case, was post-hoc or propter-hoc. The clinical history and symptomatology present no distinctive features apart from those of cancer or chronic ulcer.

It is a matter of regret that evidence bearing upon end results in gastric sarcoma, treated surgically, is very meagre. Frazier¹ tabulates 29 operated cases with four immediate deaths. Twelve of this series were not traced. Of the 13 remaining cases, there were two recurrences at the end of eight months and three years, respectively. One was well at the end of 14 years; two, at the end of two years; two, at the end of one year; and two, at the end of nine months, and four cases were too recent to possess any statistical value.

The following case history is unique in that it relates, so far as I know, the earliest operation for sarcoma of the stomach on record. It furnishes an excellent text for the comments which are hereto appended:

Mrs. P. W., resident of San Francisco; age 67 years; consulted me first, June 21, 1914.

Family history: Mother died at the age of 42 years from breast cancer. Father died of chronic tuberculosis at the age of 52 years. Patient has three children, the youngest being 38 years of age. Collateral history, unknown.

Previous history: As a young girl was well and strong and has remained in that condition until about three years ago. Never had any serious illnesses, but three years ago began to notice that ingestion of meat caused some distress which led to an elimination of meat diet in later years. Has never had typhoid fever. No icterus.

Present history: Weight, 147 pounds. During the past six months, patient has lost six pounds. Six months ago, began complaining of distress in her stomach with slight nausea accompanied by a tendency to regurgitation of acid fluid. Never vomits her food, but an hour or two after eating, experiences a feeling of distress in the upper epigastrium. Has never noticed any discoloration of stools. Has daily bowel movements spontaneously. Patient feels certain that food remains in the stomach over an undue period. Is troubled with eruc-

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tations of gas. Sleeps well and experiences no stomach distress during the night. There is evidence of moderate pyloric obstruction.

Patient looks slightly anemic, though her color is fairly good. Pulse rate, 78; red blood count, 3,900,000; hemoglobin index, 80; blood pressure, 143. Heart's action is normal. Abdomen is rounded and uniformly dome-like and resonant throughout. Superficial vessels are noticeable in the lower quadrants and slightly in the upper. At time of examination, several hours after eating, there was a definite splash in the gastric region, on palpation. No mass can be felt at any point and lymph nodes are absent. An area of tenderness, not very decisive, was found in the epigastric region, a little to the right of the median line and extending over a limited area, the size of the palm. Otherwise, abdominal examination is negative. Pelvic examination omitted. A marked excess of free and combined hydrochloric acid in gastric contents after test meal.

X-ray examination by Dr. Davenport is as follows: A marked residue in the stomach at six hours, also a persistent outline of the duodenum with bismuth at six hours, and it is still manifest in the twenty-four hour plate.

Dr. Davenport writes: "There are, probably, adhesions in or around the duodenum which cause this retention. Fluoroscopic examination shows stomach normal in size and quite movable in the upper region and at the fundus, but less so in the pyloric region. Peristalsis, active. Picture appears to be that of disease in the pyloric region rather than in the stomach itself."

A clinical study of the case impressed me deeply with the idea that the patient's symptoms proceeded from a somewhat unusual origin. The patient's mother died of cancer of the breast; a fact which, to my mind, merits very careful consideration, despite opinions to the contrary of many authorities, that heredity cuts little, if any figure, in the incidence of malignancy in a given individual.

There was lack of definiteness in the clinical picture. The main trouble seemed to have originated within a comparatively short interval extending over a period of six months, during which time her symptoms were not especially distressing. There was never any vomiting of food or evidences of hemorrhage in the stools. She suffered very little pain and only moderate distress, after the ingestion of solid food. Her appetite was fairly well maintained and her physical condition was such as not to attract attention, save in a very general way. There was a notable drop in the patient's strength and vigor.

The feature of the case which seemed of special significance was the existence of tenderness on pressure at or near the pyloric region. This was constant, and on the increase during the past two months. The patient's daughter was more insistent upon a careful analysis of the situation than was the patient herself.

The epigastric symptoms were constant, but pyloric insufficiency existed only in a comparatively moderate degree. There was, also, a slight loss of weight, six pounds in six months. The possibility of malignancy became more and more manifest in the course of the examination. So deeply impressed was I regarding this feature of the case that I repeatedly warned the patient's daughter regarding it.

Operation was advised and readily accepted. This was done at the Lane Hospital, June 24, 1914, three days after my first interview. Under gas ether anesthesia, the abdomen was opened through the inner border of the right rectus. The gall bladder was found to be quite large and slightly adherent to the omentum at its fundus. It was of normal color and free from calculi. It was readily collapsible. After separating one or two omental adhesions at the pylorus, an interesting condition was disclosed. On the stomach side of the pylorus

there was discovered a rounded mass about the size of a cherry lying apparently in the sub-mucous and muscular coat of the viscus. Between the examining fingers, the peritoneum being tightly drawn over the mass, it presented a whitish, uniformly globular tumor. It was distinctly hard and resistant, therein not conforming to the tissue which is usually found as an inflammatory base of a chronic ulcer. The lumen of the pylorus was definitely narrowed, although I doubt if it could be recorded as a typical example of pyloric stenosis. Consequently, nothing short of a pylorotomy and partial gastrectomy was indicated. I sent for the daughter and obtained assent to the foregoing procedure.

About one-fifth of the stomach and fully an inch of the duodenum were included in the resection.

The time of the operation was shortened and the procedure greatly facilitated by the use of the Payr clamp, which I found to be a most valuable accessory in this undertaking. The divided ends of the stomach wall and the duodenum were enfolded and the suture lines reinforced. A formal posterior gastro-jejunostomy was then completed.

A word regarding the technic of this procedure is justifiable. Wm. J. Mayo has called attention repeatedly to the danger of post-operative hemorrhage proceeding from the lower margin of the anastomotic stomach incision. This incident can be avoided by the following technic: After adjusting the first one-half of the outer concentric suture, the stomach and jejunal margins were joined in the following manner: A double armed chromic suture was inserted through both walls to the middle point of the thread, the needle being passed first through the lower angle of the incision. Subsequently, both needles are passed in opposite directions through the engaged walls and drawn snugly (to be held by an assistant, temporarily).

From thence to the opposite angle of the incision, this technic was continued, stitches being placed about three-sixteenths of an inch apart, after the manner of a harness maker in the stitching of tugs. On reaching the opposite angle of the incision, the double suture is tied securely and one thread is cut away. This double suture line includes all the vessels which are apt to bleed actively for the few hours following operation.

The succeeding steps were carried out in the conventional way. During the entire undertaking there was no appreciable loss of blood.

Patient returned to bed in excellent condition. At no time was there any evidence of post-operative hemorrhage into the stomach, the patient thereby escaping all the distressing incidents from this source.

Her recovery was rapid and without incident. Patient left the hospital in splendid condition at the end of ten days.

On July 21, 1914, 27 days after operation, patient reported at the office. Weight, 138 pounds, a gain of seven pounds since she left the hospital. Eats chicken, fish, chops, and vegetables without pain or distress. Bowels move spontaneously. Has a good appetite and relishes her food. Strength is gradually increasing. Her general appearance is good.

August 18, 1914, patient reports as follows: Continues to improve and her condition in every sense is satisfactory.

Pathological findings: On sectioning the gross specimen, at time of operation, the pyloric orifice was found slightly contracted and rigid. In the mucous membrane, corresponding to the inner convex surface of the tumor mass, there was a small ulcer, the size of a split pea, apparently not very active. Otherwise the mucous membrane of the excised area was normal. The tumor was found to be a globular encapsulated mass, the size of a cherry, lying between the mucous and peritoneal coverings. On dividing it, it presented a yellowish white appearance, uniform in consistency throughout. The tumor shrank rapidly after division.

There was slight induration of the immediate surrounding structures.

The pathologist's report is as follows: (Laboratory of Prof. Wm. Ophuls, Stanford University Medical Department.) June 25, 1914. "Tumor, about the size of a bean, under the mucous membrane. Fairly well circumscribed; cuts rather firmly; cut sections, smooth, seem leathery, yellowish white in color.

"Section shows tumor to consist of very numerous, round, spindle-cells. Many areas show arrangement of cells in whorls. Here and there are collections of small, round cells. In places, cells in large numbers, invade the sub-mucosa. Some fibrous tissue present. Tumor is very cellular. Sections of tissue, taken at each extremity of excised specimen, show no invasion by tumor nodule.

"Diagnosis: Fibro-sarcoma of the stomach.

"(Signed) R. H. Major."

This report has, more recently, been confirmed by Professor Ophuls.

One of the disheartening features in this connection lies in the fact that very rarely is any type of gastric malignancy recognized by the diagnostician during that brief but critical period when radical measures offer much encouragement; this in spite of the fact that the progress of the disease is insidious and unceasing and its disastrous ending inevitable. Thousands of patients are, annually, subjected to late exploratory or palliative operations with little or no other purpose than to demonstrate the fallacy of unduly protracted investigation and over-faith in routine measures.

In view of this fact I am impelled to make an earnest appeal to the profession for a change of policy when dealing with suspected and border line cases.

To the injunction, which is, certainly, official, "*Observe and observe and observe,*" there must be appended the final and not less authoritative mandate, "*Observe wisely.*" This means, if it means anything, fine appreciation of clinical evidence and large faith in an early inspection of the living pathology.

It happens altogether too frequently that patients, after a long and disheartening medical experience, pallid and attenuated, exhausted by starvation and hemorrhage, presenting a tumor mass which is unmistakable, are referred for operation. Too rarely does it happen that patients suffering from any type of gastric malignancy are surrendered by the internist while there is more than a ghastly hope of radical cure.

Despite the vast amount of time and energy and money that have been devoted to investigation of malignancy, one fact of clinical value has been determined, and but one, viz: that cancer is curable, and only curable when seen in its early stage. It is perfectly obvious that the diagnostician, in the presence of obscure visceral disease, must have his ear close to the ground to catch the faintest whisper of impending trouble. Furthermore, he should realize that a diagnostic incision may lead the way to an achievement.

In my opinion, closer communion and more thorough co-operation between the patient, the internist and the surgeon is to be encouraged.

It is an extremely delicate and often difficult task to convince the patient that his greatest, per-

haps his only safety, lies in immediate operative interference. The average individual is wary of radical measures. During the early stages of a condition marked by obscure but suggestive symptoms, he is optimistic and uniformly pleads implicit faith in drugs, diet, a trip to the springs and a general medical regime. It seems reasonable that the surgeon's point of view could be presented to the patient more forcefully and convincingly by the surgeon than by the medical attendant or the consulting internist.

I am deeply impressed with the idea that when resort to surgery is suggested, he who is to assume the greater responsibility should have an early as well as the last word as to its availability.

BIBLIOGRAPHY.

- (1) Frazier; American Journal Medical Sciences, June, 1914.
- (2) Centralblatt Fur die Grenzgebiete der Medizin, Vol. XV, 1912.
- (3) Proceedings of the American Surgical Association, Vol. XXXI, p. 589, 1913.
- (4) Keen's Surgery, Vol. III, p. 296.
- (5) Mayo Clinics, Vol. I, p. 72, 1909.
- (6) Journal American Medical Association, Feb. 8, 1902, p. 392.
- (7) Transactions of the American Association of Obstetricians and Gynecologists, Vol. LXIII, 1913.
- (8) Mayo Clinic, 1911, p. 131.

Discussion.

Dr. Paul Campiche: I would like to congratulate Dr. Huntington on his interesting paper and ask just one or two questions. In Dr. Huntington's case, we see that there was a small nodule near the pylorus. If I remember well, the books teach us that sarcoma of the stomach is generally on the body and rarely at the ends of the stomach. I would like to ask Dr. Huntington if he made a vaginal examination in this case, or if, during the operation, he took the precaution to pass his hand into the pelvis and examine the ovaries. It has been shown that in young women sarcoma of the ovaries and of the stomach are often found together, and there is a possibility that this might be a secondary growth and not a primary. At least the patient should be kept under observation for a year before the case can be pronounced a primary sarcoma.

Dr. J. Rosenstirn: I listened with a great deal of pleasure to Dr. Huntington's very interesting paper, but I regret that he did not bring a microscopical section here for the examination of this tumor. The term "fibro-sarcoma" is a rather indefinite one, and I would like to see how much of a fibroma and how much of sarcoma the microscopical picture would show. The case is a very rare one, especially as to the early diagnosis and the character of the tumor. Dr. Huntington may well be proud of the excellent result of his operation. It would be well worth while, in the publication of this case, which undoubtedly will follow, to add a figure illustrating the microscopical findings, which we would have liked very much to see here tonight.

Dr. Huntington, closing discussion: There is very little to be said further. In regard to the question of Dr. Campiche, no pelvic examination was made prior to operation, as stated. During the operation the usual pelvic examination through the operative wound was made. There was absolutely nothing to be detected in the lower portion of the abdomen. The appendix was also carefully examined and found to be, as far as I could determine, normal.

With regard to the microscopical slides, I took the precaution to have them verified by Dr. Ophuls. It did not occur to me to exhibit the slides here. I should be glad to assist any one in having them exhibited if desired. They are preserved at the

Stanford laboratory and I am sure Dr. Ophuls will demonstrate them.

With regard to the term "fibro-sarcoma," I cannot quite visualize the point made by Dr. Rosenstirn. "Fibro-sarcoma" is a well recognized clearly identified pathological entity. We do not need to go to the stomach wall for it. We find it in the ovary, in the uterus, and various other organs of the body. This, I think, is the first time I have ever heard the question raised as to the possibility of an error being made. Dr. Ophuls is thoroughly convinced of the malignancy of the tumor. The mass was apparently enclosed within a capsule, which is always a stumbling block, in my opinion, because we rarely find the original cell structure confined within the limits of the so-called capsule. Here we found that the cell structure had traversed the capsule and had invaded the tissue in its immediate environment.

BONE SPLINTING IN VERTEBRAL TUBERCULOSIS.

A YEAR'S WORK AT THE CHILDREN'S HOSPITAL, SAN FRANCISCO.

By HARRY M. SHERMAN, M. D., F. A. C. S., and GEORGE J. McCHESNEY, M. D., F. A. C. S., San Francisco.

An innovation in the rather trite treatment of vertebral tuberculosis is entitled to special consideration because of the fact that it is an innovation, for one thing, but chiefly because of the serious character of the diseased condition and the great need of an improvement in our methods of treatment. Up to the time when Hibbs and Albee practically simultaneously promulgated their operations, the treatment of tuberculosis of the bodies of the vertebrae—the most common form of bone tuberculosis in children—was still limited to the old-as-the-disease methods of braces and plaster of paris jackets and recumbency. All of these aimed to provide local rest—the so-called immobilization—and no more, and then the recession of the diseased process and the supervention of healing was expected to follow with improvement in the general health of the patient. Local rest for the skeleton of a living animal was known to be an anatomical and physiological impossibility; local rest by brace or splint or jacket was known to be a mechanical impossibility; but the means were the only ones we had, and the partial rest they gave was found in a fair percentage of instances to have a therapeutic value with which we had to be satisfied; in a certain proportion of the cases, however, the disease progressed in spite of all that we could do.

Now the orthopedic surgeon is not really fond of braces. They always represent to him a pitifully incompetent external skeletal aid, acknowledgedly cumbersome and irksome—taking hold of

the denser and heavier bone through the less dense and softer skin and fat and muscles, to the detriment of the latter if adequate support is given to the former. The ideal brace would be invisible, impalpable, imponderable, indestructible, innocuous and absolutely efficient; the braces which we have are hideous, heavy, hurtful and incompetent, and prone always to wear out or to break.

Efforts to escape the external apparatus are evidence of the viewpoint of the surgeon, but the two solitary attempts, that of wiring the spines and laminae—done by two or three operators—and that of putting in light steel rods along the laminae—done only by one—had each the fatal defect of overlooking the fact that bone is a living tissue and will absorb under a pressure that produces a local acute anemia.

With the suggestions of Hibbs and of Albee has come the nearest approach to the ideal brace; each provides an internal splinting of the affected vertebrae, a bracing that is both invisible, impalpable and imponderable, and each method avoids the error just mentioned, for each recognizes that bone is a living tissue and indeed counts on that very fact for a successful outcome. They each have done more than this, for we credit each with having copied the natural healing process of bone tuberculosis in planning their procedures, and having obeyed surgical laws in their technic. In bone tuberculosis, as the pathology ceases and repair is inaugurated, new bone is built in to restore, so far as it may, the original bony frame (Nichols and Adami). In each of the plans mentioned, osteogenesis is especially invited to add strength and rigidity to the affected parts of the skeleton. In the normal repair of tuberculosis-affected joints, a more or less complete fusing of the component bone occurs. In each of the plans a fusing or synostosing of the affected vertebrae is especially brought about. Finally, in devising their technic for securing these results, they have both carefully avoided encroaching upon the affected regions, thus obeying the surgical rule of not invading a tuberculous region unless there is a reasonable expectation of being able to remove it all.

It is not often that two new plans of treating a well-known condition are offered to the surgeon at practically the same time; especially is it remarkable that each plan recognizes and meets the same and all the conditions of success, though each in its own separate way. From having a deficiency of therapeutic measures, we seemed suddenly to have a superabundance, and the difficulty was to decide the abstract value of each and the concrete value of the better.

The Hibbs method uses the spinous processes and the laminae of the vertebrae—~~all of that part~~ which is posterior to the ~~intervertebral~~ articulariations—for the purpose. The ~~spinous~~ processes, stripped of periosteum, are ~~half cut, half broken~~ at

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