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The Classic

The Registry of Bone Sarcomas as an Example of the End-Result Idea in Hospital Organization

Ernest Amory Codman MD

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Abstract This Classic Article is a reprint of the original work by Ernest Amory Codman, The Registry of Bone Sarcomas as an Example of the End-Result Idea in Hospital Organization. An accompanying biographical sketch of Ernest Amory Codman, MD, and The Classic: Registry of Bone Sarcoma: Part I.—Twenty-Five Criteria for Establishing the Diagnosis of Osteogenic Sarcoma. Part II.—Thirteen Registered Cases of "Five Year Cures" Analyzed According to These Criteria are available at DOIs 10.1007/s11999-009-1047-8 and 10.1007/s11999-009-1049-6, respectively. The Classic Article is ©1924 by the Bulletin of the American College of Surgeons and is reprinted with permission from Codman EA. The registry of bone sarcoma as an example of the end-result idea in hospital organization. *Bull Am Coll Surg*. 1924;8:34–38.

Richard A. Brand MD (✉)
Clinical Orthopaedics and Related Research, 1600 Spruce Street, Philadelphia, PA 19103, USA
e-mail: dick.brand@clinorthop.org

CHAIRMAN MACEACHERN: The Hospital Department of the American College of Surgeons is very anxious to stimulate more interest in follow-up. That is why today we have two authorities in this work with us. We will now hear from Dr. Ernest A. Codman, of Boston, Chairman of the Committee on Registry of Bone Sarcoma, American College of Surgeons, on *The Registry of Bone Sarcoma as an Example of the End-Result Idea in Hospital Organization.*

ERNEST A. CODMAN, M.D.: Ladies and Gentlemen: In the first place, what is the end-result idea? It is that every hospital should trace each patient with the object of ascertaining whether the maximum benefit has been obtained and to find out if not, why not.

Having ascertained the results of the treatment of each patient, the existing organization need not be changed until a more promising one is thought out. The end-result idea merely demands that the results shall be constantly analyzed and possible methods of improvement constantly considered. Bad results may be due to incorrect diagnoses, to lack of equipment, to errors of care, of judgment, or of skill. The end-result idea implies that the hospital should be conscious of its shortcomings, and constantly on the watch to improve its equipment and method.

This statement seems so simple that the ordinary common-sense business man on the Board of Trustees supposes that probably this is being done by the doctors—of course it's no business of his. Now as a matter of fact you and I know that until within a few years it was never done systematically in any hospital, and that even now, in spite of the efforts of the American College of Surgeons, there are very, very few hospitals which do it systematically and thoroughly.

When a hospital receives a legacy, the trustees are much more apt to put the money into a new ward to increase the numbers of its patients than into a follow-up system which may improve the quality of its work.

Hospital trustees in their individual businesses are the kind of men who deliver high class goods, and thoroughly inspect the products of their factories to make sure that they do not ship goods which will be thrown back to them

because imperfect. Why don't they apply the same common sense in their hospitals?

It is a most curious phenomenon that these astute business men universally think that common sense cannot be used in medical matters. Perhaps it is because they are as a rule dominated by the successful practitioners of their neighborhood whose very success stamps them as unfit to advise in straightforward matters. I believe it is almost axiomatic that the trusted medical advisers of hospital trustees everywhere oppose the end-result idea because they know that their own success is due not to their ability to cure the disease, but to their ability to satisfy the patient. Knowledge of anatomy and pathology have little to do with the ability to accumulate practice, and I believe it will be found that the medical advisers of hospital trustees the world over do not shine on pathology so much as in the ability to make dying men think they are getting better, to conceal the gravity of serious diseases, and to exaggerate the importance of minor illnesses to suit the occasion. Such a man can glorify the joy of birth and hallow the exit of the wretched sinner, and influence his widow to give a new ward to the hospital. But he absolutely does not want the trustees and consequently the better class of practice of his community to prove by analysis of his actual results that the recently arrived Dr. So-and-So fresh from European study and for several years resident surgeon at the University Hospital makes fewer errors in diagnosis and less errors of judgment in care and skill than he does.

Perhaps I have done this man whom I will call Dr. Wisdom an injustice. At any rate there he stands in the way of the end-result idea. I must at any cost win Dr. Wisdom. Perhaps I should mention that without this type of man many a hospital would not be as good as it is today. He has done what his time demanded. In many cases, as well as being a master of human nature, he has been an earnest student too. Even when merely a dominating personality, brushing small matters aside, he has really had the interests of his hospital at heart and now if he can find a way to retire gracefully before the end-result idea, he will make the sacrifice. He is far too shrewd not to see the justice of the idea; it is the proportion of weight that should be given to it that puzzles him. He believes in the art rather than in the science of medicine. He knows that the hospital cannot be all art or all science, so favoring art he opposes science because he is essentially a partisan. He believes that the hospital should do as he has done—look to its reputation first. If it makes an error, cover it up as soon as possible; if it makes a success let everyone in town know it. But in these times he is an ostrich with his head in the sand, for operations and diseases are dinner table talk. Strangely enough in these times of feminine knee breeches, heroic gunmen, movie queens and murders, there is an actual demand for the plain truth about operations and other medical matters. Dr. Wisdom will find it advisable to personally conduct the trustees through Bluebeard's house, even into the secret chamber where they will become parties to the guilt.

What has the Registry of Bone Sarcoma to do with all this? As the title of this paper suggests it is an example and a horrible example at that. There are many rare diseases and Bone Sarcoma is one of them. It occurs in a ratio computed to be about two or three persons to the million at any given time. Few doctors see more than an occasional case in a lifetime; few hospitals see a hundred cases in a decade.

It is a singularly fatal disease, singularly pathetic because it frequently attacks promising youth. It is difficult to diagnose clinically by the X-ray or by the microscope, and consequently usually masquerades under some other diagnosis until fully developed and hopeless. It is commonly treated by surgery, Coleys Toxins, the X-ray and Radium, and cures are claimed by the advocates of each method. However, since the diagnosis is difficult every cure is open to the challenge of mistaken diagnosis.

Since it is rare, few surgeons can study enough cases for proper comparison. Since to prove a case, good records, good X-rays, good sections and a knowledge of the outcome are necessary, it is rare that even large hospitals have many complete cases. Then too the percentage of cures is exceedingly small from any kind of treatment, in fact smaller than that of erroneous diagnoses. Also there are varieties or subdivisions and these varieties have received so many different names that an almost useless nomenclature has developed, each item of which is disputed.

Since the condition is so rare and difficult to diagnose and treat, there are few patients afflicted with it who do not suffer from hospital inefficiency. Nearly every case is misdiagnosed for a time and then imperfectly treated. They go from hospital to hospital vainly seeking relief; seldom does any one hospital see a case through. Under our present system of medical organization and hospital organization it is a fortunate chance if one of these patients happens to fall into the hands of someone who has a reasonable knowledge of the disease, in a stage early enough to be hopeful for treatment. And this unsatisfactory condition is even worse in the converse error, for many cases which are not Bone Sarcoma but benign conditions are treated erroneously as Sarcomas. Now the Registry of Bone Sarcoma asks all hospitals and all surgeons in this country to apply the end-result idea to this one condition. It is so rare that careful record and treatment of these cases is practicable without great effort. If we are in earnest the American College of Surgeons can collect the records, X-rays and specimens of every case that occurs in the United States, and see that these data are subjected to special study until some method is found to make an early diagnosis in a stage hopeful for

cure. We need not interfere in the least with treatment. Experiments in treatment must be tried, but the records of these experiments must not be lost. The Registry is an activity of the College with these objects in view.

Let us not lose sight of the fact that Bone Sarcoma is only one of many rare diseases which because of their infrequency are not recognized and are mistreated. Anyone who is intimately familiar with present hospital conditions knows that the end-result idea, as applied to all rare diseases as a whole, is an ideal to be followed rather than achieved; but that to make a practical example in this one disease is eminently attainable.

We want to put Dr. Wisdom in good company. Let the Regents register their failures in Bone Sarcoma. Let the class A hospitals register theirs, and let every Fellow of the College register his. When we have done that we can register the failures of the Christian Scientist and chiropractors, for all their cases come to the hospitals in the end. We are no better than the irregulars if we let rare cases come to our hospitals and make no provision for their receiving the best possible treatment with honest records of success of our experiments. Dr. Wisdom will not risk his reputation by registering these cases unless he feels sure all the other Doctor Wisdoms are going to also. We must make it fashionable to secure Dr. Wisdom's help. Something like 400 surgeons have already set an example. Practically every case of Bone Sarcoma that has occurred in Massachusetts since January 1, 1921, has been registered; yet we are still waiting for the Dr. Wisdoms of many of the prominent clinics in other states.

With the material we have on hand we have made some scientific headway, and in conjunction with a committee from the American Society of Clinical Pathologists we have settled on a standard nomenclature for general use in the operating room, in the laboratory, and the X-ray room. The report of this classification is out of place here, but to those of us who have endeavored to wrestle with the old forms of classification, the advent of a standard classification is like the rising of the sun.

It seems to me that it is self-evident that when the end-result idea eventually penetrates the minds of hospital trustees they will no more think of letting Dr. Wisdom treat their Bone Sarcoma cases than they would now let him treat a prize bull on their private stock farm. Any one of them today would let him treat one of their children for Bone Sarcoma, so accustomed are they to have him puff himself up and assume the necessary importance for an occasion. Some f these days Dr. Efficiency will demand a separate of the cases which are rare and difficult, and therefore need study, from the routine cases which mean simply care and work in the application of known principles, and may be cured by any well trained physician. Study in the first ward will be expected of the staff; work and results will be demanded in the second. This will be a contrast to the present condition where the trustees expect neither study nor care and shut their eyes to even indifference and neglect, and take no inventory of their product.

Personally, I should be sorry to see a hospital conducted with the mechanical routine of a packing house or cotton factory. Efficiency does not mean hardness and inhumanity, and on the other hand kindly sympathy and excellent nursing will not help a boy with Bone Sarcoma under treatment for rheumatism. The good-will of a hospital can continue in spite of the follow-up system, and sympathy should never be allowed to smoke-screen essential errors. By allowing these boys to be kindly treated for rheumatism we are postponing the time when we can kindly cure them. Some form of cure must be devised. Instead of shutting our eyes year after year and waiting for the accidental discovery of the cure, let us record and study all cases and intensively work on the problem until we solve it.

I want to see the American College of Surgeons as a pack of hounds on Bone Sarcoma, each baying when he finds a case and bringing it to the attention of lie pathologists of the country. I want to see radium experts and radiologists registering their cases as soon as they begin treating them, and keeping the College informed through the Registry of their progress. When a better treatment is found we surgeons are ready to give up surgery, for we know at the best surgery is very unsuccessful in the late cases which we ordinarily see. In three years the Registry has only found five five-year cures of true osteogenic sarcoma by amputation.

You will be surprised to know how few cases our Committee has been able to collect in three years. Only four hundred altogether, and the majority of these are not true Sarcomas in our opinion. Why is it that we have obtained so few? Why—because Dr. Wisdom opposes! For years he and his professional ancestors before him have forgotten their failures and buried their evidence as fast as they could. The entire habit of the medical profession must be changed if the Registry Bone sarcoma is to be a success. Dr. Wisdom has got to come across. There is a group of Dr. Wisdoms who form our Regents; another group direct the activities of the American Medical Association. All these Dr. Wisdoms are more or less students, but the great bulk of the Dr. Wisdoms throughout the country do not bother with these associations. They play golf, or shoot ducks with the trustees. They are too wise even to leave home for national medical meetings. They will let their young competitors go to the meetings and pull some chestnuts out of the fire for them, and later sell these chestnuts in their own practices at a good profit. Dr. Wisdom would never have become confidential adviser to the trustees if his bank account was not worth soliciting, for a business man respects a man who succeeds in his own job. Dr. Wisdom

may be a teacher or a research man as a hobby, but a rich practice is what the value of his advice is judged by. Somehow or other the end-result idea has got to be put through Dr. Wisdom, and the Registration of Bone Sarcoma is the entering point. These cases turn out badly anyway, and Dr. Wisdom's reputation and bank account will not suffer much. Once get him to see that in the end his hospital will be the better for registering the cases, and he will see that it is done. Dr. Wisdom, student or golfer, still holds the reins and he drives a covered wagon.

EDITOR'S NOTE: In order to assist the Committee of the American College of Surgeons on the Registry of Bone Sarcoma, the following is an extract from a paper by Dr. E. A. Codman, Chairman of the Committee on The Registry of Cases of Bone Sarcoma for the American College of Surgeons, appearing in SURGERY, GYNECOLOGY & OBSTETRICS, Volume 34, March, 1922, Pages 342–343.

Our Call for Help

No matter how improvement in our knowledge about Bone Sarcoma is to come, it must be founded on the facts about the cases. This committee will be fully occupied in studying the data it receives. If it does its duty in receiving and arranging and studying the data, it should be able to rely on the members of the College to collect and send in the data. Few surgeons see so many of these cases that it will be a very serious burden for them to send us histories, X-ray prints and tissue or sections.

Isolated surgeons not connected with important teaching clinics have stood by us thus far better than the men connected with large institutions in the bigger centers. One reason for this is that in large hospitals the saying, "What is everybody's business is nobody's business," holds true. We hope that each such hospital will have the *esprit de corps* to help our Registry along. An individual may be appointed to register all bone tumor cases or each individual may register his own "supposed-to-be" sarcomata. We want to make it a general custom for every surgeon to send us tissue from his cases *at once* just as he sends it to his own laboratory. And if the surgeon fails we want the pathologist to do it. If he will share what tissue he gets with us he is welcome to any information we can give him about other cases.

Data for Registration of a Case of Bone Sarcoma

Name and address—

of doctor registering case
of patient
of friend, with permanent address, who would be likely to answer follow-up letters
of family physician
of surgeon operating
of roentgenologist
of pathologist
of hospital. Record reference or hospital number.

Dictate history so as to cover following headings, and typewrite four copies on standard typing paper.

Clinical note. Date it was made. Age at this time. Race. Sex. Bone involved—part of bone. Date of trauma, if any, character of trauma— date and duration of pain, swelling, tumor, fracture, loss of function.

Any other important clinical data.

Examination. Date and by whom. Notes on local disease, especially as to swelling, tenderness, loss of function, involvement of joint. Presence or absence of bone shell. Pulsation. Size and extent of swelling.

Brief note on general examination. Especially blood, Wassermann. Urine, Bence-Jones bodies. Physical examination of chest. Date and diagnosis of first X-ray. From X-ray whether considered central or periosteal. If there are no X-rays or prints to be sent, give as complete a description of the X-rays as possible. Note as to whether X-rays of other bones and chest were made, and results.

Treatment. Date or dates of treatments. Operation—exploratory incision. Piece taken for diagnosis. Curetting. Partial excision. Complete excision, extent. Bone transplantation, from where. Amputation, exact position. Coley serum. X-ray. Radium. Any other treatment.

Gross pathology. Description at operation or of specimen.

Microscopic. Description and diagnosis.

Condition at date of last examination or report. Date of this.

Have sections been preserved by you? Sent to Registry with this? To be returned or preserved?

Have X-rays been preserved by you? Sent to Registry with this? To be returned or preserved?

Has gross material been preserved by you? Sent to Registry with this? To be returned or preserved?

Make four typewritten copies, keep one and mail three to Dr. E. A. Codman, 227 Beacon Street, Boston, Massachusetts.

How to Register a Case of Bone Sarcoma

Cases eligible for registration: Any case which has been diagnosed as Sarcoma of Bone with sufficient certainty to justify the beginning of any kind of treatment on that basis.

The investigation is not confined to the long bones, but includes instances of Sarcoma arising in any bone whether primary or secondary. For the present, we include cases of giant-cell tumor (except epulis of gum), although probably not sarcomata at all.

We do not wish to wait for certainty in diagnosis, but if an exploratory incision is to be made, we would like a good-sized piece of tissue removed. It is felt that there may be some cases in which, for good reasons, exploratory incision is inadvisable, and the clinical and X-ray diagnoses are satisfactory enough to justify the institution of treatment. We desire to follow such cases as well as microscopically proved ones. It is enough that the case is "a believed-to-be sarcoma," and is being treated in good faith.

In fact, we welcome every case of Bone Tumor for a preliminary study. Certificates with serial numbers will be issued by the Registry in each case in which we feel satisfied of the diagnosis of Sarcoma.

The history of a case for registration may be made out in two ways: Either take the record and dictate the history according to the scheme which is on the preceding page; or give the entire history to a stenographer and have it copied, just as it appears in your records.

Four typewritten copies will be of the greatest convenience, the physician registering the case retaining one for future reference, on which he can place the Registry series number when he receives the final report. The three copies go to Dr. Codman, one to be retained by him, two to be sent to the pathologists with the sections.

A most important thing to know, which usually does not appear on the history, is whether gross material, sections or X-ray plates have been preserved. In future cases, send us a good-sized piece of the tissue in 10 per cent formalin, so that it may be kept for study in later years. Be sure to send X-ray prints and to see that the original plates are permanently preserved, or sent to us to preserve.

In cases where the patient is of sufficient intelligence, it should be explained that the information given about his case is similar to what you will have access to about all other cases of the same disease in others; that his disease is a rare one; that the details about his case will help other sufferers as well as himself; that he will have the benefit of expert pathological opinion and, in fact, a national consultation for his own benefit and that of future patients with this lesion. Impress on him the importance of keeping the Registry informed, if he should become dissatisfied with your treatment, and go to some other doctor or clinic. He or his friends should understand the experimental nature of any treatment, and the importance of recording the failure or success of what you or any one else does for him.