

8290675

醫師閱覽室

SCOLIOSIS

A NEW STUDY
OF
AN OLD PROBLEM

BY
OSCAR H. ALLIS, M.D., LL.D.
AUTHOR OF "THE HIP"



楊忠道教授惠贈

年 月 日

PHILADELPHIA

1938

74823
R682.3
E601

外文书库

SCOLIOSIS

A NEW STUDY OF AN OLD PROBLEM

BY
OSCAR H. ALLIS, M.D., LL.D.
AUTHOR OF "THE HIP"

CONSULTING SURGEON TO THE PRESBYTERIAN, ROOSEVELT AND ONCOLOGIC HOSPITALS;
MÜTTER LECTURER, COLLEGE OF PHYSICIANS OF PHILADELPHIA, 1888 AND 1896;
LANE LECTURER, COOPER MEDICAL COLLEGE, SAN FRANCISCO, 1903;
FELLOW OF THE ACADEMY OF SURGERY, PHILADELPHIA;
MEMBER OF THE AMERICAN SURGICAL ASSOCIATION



PHILADELPHIA
1938

COPYRIGHT, 1938
BY OSWALD T. ALLIS

PRINTED IN U. S. A.

TO THE MEMORY OF
DAVID HAYES AGNEW

TEACHER, COUNSELLOR, COLLEAGUE, FRIEND

FOREWORD

THE subject of scoliosis greatly interested my father and he devoted much painstaking study to it. The conclusions which he reached regarding the cause of this deformity (that it was the result of changes in the true ribs and in the articular processes of the lumbar vertebræ produced by the faulty "penman posture") differed radically from those held by the leading orthopedists of his day, and his lack of success in winning their support for his conclusions was a keen disappointment. But this failure did not shake his conviction as to the correctness of his thesis.

Not having followed my father into the medical profession, I was naturally not in a position to form an independent opinion on so complicated a subject. But the careful, scientific manner in which my father had endeavored to establish his thesis, made me feel that he should publish and defend his conclusions. This he decided to do and the book was nearly completed when he died very suddenly on May 16, 1921. It was my intention at that time to publish the book at once; and I regret the delay which has subsequently occurred. Certain changes have been made which seemed advisable, but these have in no way modified the presentation of the thesis itself. While it is my understanding that during the decade and a half that has elapsed since my father's death the opinion of orthopedists as to the correctness of the view which he held has not changed, I still believe that it is worthy of serious consideration; and it is my earnest hope that his investigations and conclusions as set forth in the following monograph may be found to be of value, either directly or indirectly, in the solution of this most perplexing and distressing problem.

OSWALD T. ALLIS.

ERRATUM

Page 32. A mistake in the numbering of the cuts begins at this point. Fig. 21 should be Fig. 20 and so on.

REMINISCENT

It may interest the reader to learn the circumstances which first led the author to question, and finally forced him to reject, the old and established theories of scoliosis, popularly known as lateral curvature of the spine, and to advocate one, which is not merely different from but antagonistic to them all.

When the elder Gross resigned the chair of surgery in the Jefferson Medical College in 1882, his son, Dr. Samuel W. Gross, and Dr. John H. Brinton were elected to fill his place. This action caused two vacancies in the College Hospital; and Dr. W. Joseph Hearn and I were appointed to fill them.

Soon after this a Department of Orthopedics was created and added to the College curriculum, and, without the slightest prior intimation of the fact, I was placed in charge. Previous to that time I had not treated a case of lateral curvature of the spine nor of club-foot, nor had I performed a considerable plastic operation, and my appointment to this position was probably due in large measure to the occasional articles upon the mechanism of the joints that I had contributed to medical journals.

The orthopedic cases that had hitherto been treated in the general surgical dispensary of the College Hospital were now turned over to me, and few surgeons could have had more inexperience to conceal or more need of kind and capable advisors. Books were the only counsellors that would not betray me, and to them I confided my frequent embarrassments in the privacy of my office at leisure hours.

Of the many problems that now for the first time confronted me, not one elicited such interest or presented such mystifying perplexities as scoliosis.

Were it related in ancient lore that the gods, over-hearing a boast of the sons of Æsculapius that neither great Jove nor all the gods together could inflict upon mankind a disease or deformity which a disciple of their distinguished master could not cure, had led the first scoliotic into their midst, for the sole purpose of humbling their arrogance and putting their boasting to a test, their task could not have seemed more hopelessly exasperating to them than mine to me. To me the scoliotic problem was nothing short of an aggravated impossibility; the impossibility consisting in the fact that the scoliotic bones were usually mature and well seasoned, and the aggravation being due to the impossibility of applying any corrective measures save through the medium of delicate, tender, supersensitive skin. Had a blind man been offered his sight if, with fingers encased in mittens, he would disentangle a snarled and knotted skein, his handicaps could hardly have given him greater reason for discouragement than the whole subject of scoliosis did me.

Groping about for some explanation of what I deemed my own dulness and lack of insight, I at last came upon the, to me, startling confession of the elder Sayre, the foremost American orthopedist of his day, that he could explain satisfactorily to himself but *one* of the characteristic curves of this widely prevalent deformity, and that the *dorsal*; while Little, the foremost authority in Europe, regarded the *lumbar* as the original curve. To go before a class of medical students with the confession that the highest medical authorities were not agreed as to the cause or succession of the scoliotic curves was bad enough; but to be forced, in discussing the cure of the trouble, to quote the words of Keatley, another equally celebrated authority, "*After a careful study of scoliosis for a quarter of a century I have never seen a case cured and doubt the statements of others to the contrary,*" was enough to dampen the interest and enthusiasm of teacher and student alike.

In one of the European medical journals I found the record of an experiment in which an investigator had taken a normal adult cadaver and sawed through the pedicles of the vertebral column, thereby freeing the vertebral bodies from their bony attachments. The result was that the freed column immediately straightened itself. Here was a solar-plexus blow to the ancient and popular theory that the early cuneiforming of the vertebral cartilages was the initial cause of the deformity. To my mind this demonstration silenced all arguments based upon the instability or weakness of the cartilages. For observe, the experimenter selects an adult cadaver, in which the *normal* curves, acting night and day from infancy to mature life, have kept the intervertebral cartilages under pressure and constraint, and behold the column, on being freed from the attachments which have been overmastering it for a quarter of a century, instantly becomes straight. Would not this column have retained its normally established curves, if the intervertebral cartilages had molded and accommodated themselves to the constraint? They certainly were under constraint, and had been in this condition constantly for years, yet the instant they were freed they took advantage of their freedom and straightened themselves out. This, I repeat, would not have been the case had the cartilages been thinned, flattened, or molded by constraint.

In my search for pathological specimens of scoliosis I found a remarkably full collection in the Mütter Museum of the College of Physicians of Philadelphia. But all these specimens tacitly affirmed the ascendancy of the ancient and universally accepted theory of its formation, viz., that the *fons et origo* of the deformity lay in the vertebral column, since in every one of them nothing else had been deemed worthy of preservation. Here was exhibited an entire scoliotic vertebral column; there, one in which the column had been sawn, *i. e.*, divided, the entire length to better display the changes that occur in advanced cases; still others there were with partial ribs of variable lengths,

from one to several inches; but not a single specimen was to be found with ribs and sternum entire. Such a specimen I finally found in the private collection of Prof. William H. Pancoast, and this I was privileged to study. There were present in it all the structural changes characteristic of typical scoliosis, viz., a decided curve and rotation to the right in the dorsal region and an equally decided curve and rotation to the left in the lumbar region. But, when I looked for pathological changes in the bodies of the vertebræ, at the points where the dorsal and lumbar curves were greatest, for those wedge-shaped changes which were said to produce the deformity, I found no evidence of change whatever. In other words, there was not the slightest evidence that curvature was due to any defect or inequality in any part of the column itself. But when I turned my attention to the ribs that were most decidedly bent, I found that in the region of their greatest convexity they were notably increased in size, yet with no evidence of disease. What did this mean? Why were the ribs increased in size? and why should this abnormality appear at a definite point in ribs which were in other respects perfectly healthy? Why was the vertebral column which corresponded to these ribs rotated towards the concavity of these bent ribs? Could the ribs produce the curvature?

In the Wistar Museum of Anatomy I found a large collection of pelves, and was convinced that the mashed, flattened, and distorted condition of the processes of the sacrum which articulate with the fifth lumbar vertebra was due to unsymmetrical posturing. I found there also a large collection of lumbar vertebræ, in which the articular processes presented mashed, twisted, distorted conditions similar to those appearing in the articular processes of the sacrum. But how to associate these latter changes with those in the ribs did not at that time suggest itself to me.

No further progress was made for several years. I was convinced that a faulty posture, so common in schools, was largely responsible for this special deformity; but

of the vast difference between such a private conviction and a conclusive proof of its correctness, I was most profoundly conscious. That both curves were the result of the *same* faulty posture, and that both were formed at the *same* time by the *same* and a *single* force, was my settled conviction. But it was one thing to be convinced of it and a decidedly different matter to demonstrate it.

One afternoon in 1903 or thereabouts Dr. Alice R. Easby, of Media, Pennsylvania, brought to my office a young lady with typical, but not a severe grade of, right-dorsal scoliosis, with the request that I would express an opinion upon the advisability of her getting married. There was nothing unusual in either her history or her condition; but, as I noticed in the course of the examination how distinctly marked both curves were, the suggestion suddenly flashed across my mind that if the curve in the dorsal region could be produced by the ribs, there must be something in the lumbar region that was responsible for the lumbar curvature, and that this something must be the articular processes. Meeting Dr. Robert G. Le Conte, then assistant, now surgeon to the Pennsylvania Hospital, a few days later, I asked him if there were specimens illustrating scoliosis in the Hospital Museum. He replied that there was a single disarticulated vertebral column. On our way to examine it I told him I expected to find the articular processes in the lumbar region flattened and distorted as the result of the deformity; and this we found to be the case. I had now I believed the full meaning of the enlarged and sharply curved condition of the ribs and was convinced that the cause of the dorsal deformity was to be found in the ribs rather than, according to the very generally accepted doctrine, in changes in the bodies of the vertebræ and in their connecting cartilages. Since these views are essentially antagonistic, my acceptance of this position has necessarily led me to form very decided views upon the entire subject and these I have deemed it advisable to state at this point in thesis form.

THESES

I. Man came from the hand of his Maker, physically perfect, without taint or tendency to deformity. The erect posture, which is the only one that is appropriate to him as the "lord of creation" is neither a handicap, nor does it predispose to scoliotic deformity.

II. Congenital abnormalities of the spinal column cannot of themselves be the cause of, nor predispose to, scoliosis. Otherwise, the deformity would be universal, equally distributed between the sexes, and as frequent in Oriental countries as in our own.

III. Scoliosis is always acquired. It is irrational to speak of congenital scoliosis. None of the conditions necessary to its formation can possibly be present before birth. Between birth and the first independent step there is ample time for the production of irremediable scoliosis. Scoliosis is no more transmissible to offspring than are corns and bunions.

IV. Scoliosis is the legitimate product of civilization, coeval with sedentary habits and accentuated by the general use of chairs, tables and desks, in homes and school-rooms. Its chief cause is a faulty sitting posture and the deformity is mainly acquired during the years devoted to early education.

V. Scoliosis is the result of structural changes in the bony frame, which occur in parts connected with the vertebral arches. All the stability and control of the vertebral column is due to agencies applied through the arches.

VI. *Scoliosis is due to unsymmetrical, structural changes of the ribs (in the dorsal region), and of the articular processes (in the sacral and lumbar regions) which force the bodies of the vertebrae into their twisted scoliotic position. The degree of scoliotic deformity varies with the amount of structural change that has taken place in the bony parts that control the spinal column.*

VII. *In true, uncomplicated scoliosis no structural changes take place either in the bodies of the vertebrae or in their intervertebral cartilages.*

VIII. *In scoliosis there are always two spinal curves—never more and never less.*

IX. *The two curves of scoliosis result from one and the same cause and develop simultaneously. The popular doctrine that one of the curves must be fully established before the other is begun, is entirely fanciful. Hence, the terms "primary" and "secondary" as commonly applied to the scoliotic curves are mischievous since they are based upon a false conception of the mechanism of the deformity.*

X. *Scoliosis is not a disease nor the immediate result of disease and therefore it cannot have the pathology characteristic of diseased structures.*

XI. *Scoliosis is not the result of unequal muscular development in the upper extremities, nor of inequality in the proportions of the lower, nor is it in any way attributable to muscular action.*

XII. *Sex, as such, does not enter into any of the problems of scoliosis.*

XIII. *No severe cases of scoliosis have ever been restored to the normal; mild cases of this deformity are more frequently remodelled than restored.*

XIV. *Forcible restorative measures in the treatment of scoliosis cannot be regarded as scientific since they are not directed to the reestablishment of normal control; but if employed judiciously they are the best and only efficient means at present known for the amelioration of much of the ugliness of the deformity; and while mankind continues the practices which lead to its formation, there will be abundant occasion for their employment.*

XV. *Massage, Swedish movements, electricity, galvanic belts, shoulder braces, special gymnastic exercises, hump-obliterating and machine-exercising apparatuses, etc., are diverting to the patient, and may possibly be beneficial to health and strength of body, but have very little restorative value.*

XVI. *Scoliosis is, to a greater or less degree, universal in all civilized nations and is a serious handicap to man's attainment and fullest enjoyment of the physical, mental and moral possibilities of which he is capable.*

XVII. SCOLIOSIS IS PREVENTABLE; BEING PREVENTABLE ITS GENERAL PREVALENCE IN CIVILIZED COUNTRIES IS CRIMINAL AND A SERIOUS REFLECTION UPON TWENTIETH CENTURY CIVILIZATION.

PART I.

ANATOMICAL AND KINDRED TOPICS

A STUDY PREPARATORY TO THE SCOLIOTIC PROBLEM

No apology is offered because statements made in one part of the book reappear in other parts. Repetitions are often advantageous, as they present the topic under new conditions and in a new light, and emphasize its importance or clarify that which would otherwise be obscure.

The illustrations, for the most part, are such as a teacher would throw hastily upon the blackboard—designed not to be perfect copies, but rather to illustrate the particular point under discussion.

CHANGES NECESSARY IN THE INFANT SKELETON TO PREPARE IT FOR THE ERECT POSTURE

Among the problems that arise during the incubating period of the bird, that of economy of space is one of the most exacting. For a short time prior to hatching all the available space in the egg is preëmpted. Apparently no preparation for flight seems to have been contemplated during the entire term of its imprisonment. Time enough, Nature seems to say, for feathers to grow after the shell has been cast aside.

That which is true of the bird is true of every living creature. There is of necessity a period of dependence, helplessness, pupilage in the young of all animals, and the question naturally arises, Why is the period of helplessness and dependence so much longer and so much more pronounced in the human species than in any other? The hen leaves her nest within a few hours after the hatching, and her little brood is happy running about with her. The colt and the calf are able to follow their respective mothers about, within a short time after birth; while a whole year is rarely adequate to prepare an infant for its first feeble attempts at independent progression.

Prior to birth the body, as a whole, takes the curves of its environment. But while this is true, the development of the limbs and trunk is not checked or influenced harmfully by their restricted enclosure. In all animals, ample room for prenatal growth is provided; and the laws of development are obeyed without hindrance or restraint. Under this law of development the dorsal spinal curve is fashioned. It is the one curve that is common to the higher orders of vertebrates. I have seen the statement that at birth as well as during infancy and early childhood there are no curves in the spinal column