The Mechanism of Anatomical Structure in Its Relation to Osteopathy

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The theory of osteopathy is that obstruction to the free flow of the blood stream or of the nerve impulse will cause disease. To follow this theory in its entirety demands that the osteopathic practitioner have a thorough knowledge of the mechanism of anatomical structure, both normal and abnormal. He should be a mechanic first of the normal human body, for it is not a difficult matter to figure out a movement necessary to remedy an abnormal condition if one knows the mechanism of the normal.

It is to explain the mechanism of the human body, both normal and abnormal, how lesions are formed, how to find them and how to correct them, that this paper is written; also to explain how the formation of lesions, etc., conform to the first, last and all the time principles of osteopathy as laid down by our Father Osteopath, Dr. Andrew Taylor Still. To do this it will be necessary to touch on the history of Osteopathy.

When the writer was a boy living in Kirksville, Mo., he had the good fortune to know Dr. Still and his family. The first time I ever saw the "Old Doctor," he took hold of me and ran his fingers up and down my spinal column. What was he doing? He was studying the normal relations of anatomical structure. He was figuring out the principles of bodily mechanism, so that he might be able to prove his theory of the cause of disease, for already he had the idea that structural derangement would cause functional disorder. I wonder where osteopathy would have been today had he at that time been sidetracked. Suppose he had given a general rubbing, or a pulling of all the tissues, using to the extreme almost every normal movement in the body with the hope that he would accidentally remedy a structural derangement, of the location of which he knew nothing. He might have done this, or by that kind of massage procedure, which helped the circulation of the blood, the case might have been benefited. I say he might but he did not. He knew that he must be able to find the derangement. He knew that he must be able to understand the mechanism of its formation, and he knew that he would have to give specific movements to remedy it. Therefore he studied the subject. I have seen him many times sitting on a stump in the woods with two bones in his hands. These bones would be joined together with slingshot rubbers. He would displace and replace these bones over and over again. He was studying the normal and the abnormal relations of the joints. He was studying movements of the anatomical structure. He was studying osteopathy.

One day in 1876 the "Old Doctor" asked me if my mother was sick. I informed him that she was, and she had been sick two or three days with a very bad headache. He said: "Come with me and I will cure her." The "Old Doctor" went into the house and put his fingers on my mother's neck and said, "When did you hurt your neck?" She told him that she had been thrown from a carriage a good many years ago, and had been suffering from headaches ever since. At that very instant he gave her head a sudden twist. I for the first time in my life heard the "good old pop." He had reduced a lesion and she has never had a headache since. Just one movement cured her. I defy any man living to say that he ever saw the "Old Doctor" give any more than one, or two, or three movements in treatment. I do not mean to say that we can do as he does. It is necessary for us, who are
not so proficient as he is, to loosen the
tissues before we are enabled to adjust
the disturbed articulation. His fingers
are so trained that he is able to detect
a slight derangement much quicker than
we; and, while we have to work around
the area of the disturbance to locate it,
he is able to put his finger right on the
spot.

It is a regret to me that we moved
away from Kirksville about this time,
and I heard no more of Dr. Still for
about fifteen years, when I became
interested in the work his sons were doing.
They explained to me the theory. The
"Old Doctor" had then developed his
system of therapeutics and had given it
the name "Osteopathy." I took many
notes of what they told me and have
followed this practice and have the notes
by me as this paper is written.

First, I shall explain how a lesion is
formed. To do this it is necessary to
consider the mechanism of a normal
anatomical area. In these explanations
I shall use the neck principally, as I
consider the anatomy of the neck easier to
work with than that of any other region of
the body, although these descriptions of
lesions, etc., are applicable to any other
region of the human anatomy. In a
normal neck every bone, cartilage, lig-
ament, muscle, fascia, blood vessel and
nerve is in its normal position, working
one with the other and all together in
absolute harmony. The cartilages and
ligaments are so placed, all with the
necessary degree of flexibility, to allow
free play of the articulation, just enough
yellow elastic in their formation to bal-
cane muscle contraction—no more, no
less. The arrangement of cartilage and
ligament with the natural tonicity of
surrounding muscles keeps the articula-
tion so perfectly balanced that when a
joint is not in action, the soft tissues
should be relaxed. When all tissues are
in this mechanical position of perfection
there can be no interference one with
the other, no friction and no obstruction
nor irritation to blood vessel or nerve.

All movements of the neck, flexion, ex-
tension, rotation and lateral movement
are perfectly normal in all respects.

Now for the abnormal. Should any
of the neck tissues become contracted
or unduly relaxed, hyperaemic or ana-
emic, from whatever cause, then we have
the beginning of the formation of an
osteopathic lesion. This lesion may be
disturbed relation of bones, or soft
tissue contraction from congestion or
relaxation from exhaustion.

There may be just as many osteopathic
lesions as there are movements in the parts.
In considering the formation of a struc-
tural lesion, let me mention injury first
as a very common cause of creating les-
ions, the formation of which does not
need any description, as it is easily under-
stood how an injury may form a primary
lesion by violently deranging tissue.

I will now describe how a lesion is
formed from exposure to cold. One
takes a cold from a draught, let us say,
blowing directly on his neck; a stiff neck
results. All or only a part of the tissues
in the neck are contracted from conges-
tion, the tissues on one side usually con-
tracting more than on the other side.
Gradually these tissues become more
normal, the congestion being eliminated
through their natural recuperation; but
the greater strain of this tissue contrac-
tion, let us say, has been put on the
Rectus Capitis Posticus Major of one
side of the neck. The origin of this
muscle is the spinous process of the axis
and running diagonally upward and out-
ward it is inserted into the inferior
curved line of occipital bone. This
muscle is congested; it is being weakened
from congestion, and just exactly as it
weakens, its fellow of the opposite side
takes up the slack. Now remember the
fellow muscle which is now doing the
pulling has not been weakened; there-
fore by its normal muscle strength it
will pull or rotate the axis toward its
side of the neck, crowding the bone to
the side of its articulation and holding
it there. The Rectus muscle which had
been weakened will naturally accommodate itself to this new order of things as it gradually comes back to normal strength. And we have an atlas-axis lesion. This process may take place in almost any of the articulations of the skeleton, other muscles or sets of muscles being involved, of course, and the resulting derangement may be explained purely upon the basis of anatomical mechanism. The axis in this mal-position becomes an osteopathic lesion by interfering with cellular interchange, deranging the tissues all around the joint, causing pressure on blood vessels and nerves. I want to state right here that I believe all lesions in their effect are the pressure of the soft tissues. The bone is displaced, it is true, but it is displaced only in its own articulation. It is the deranged and congested soft tissue that causes the pressure, never the bone. If a bone should press a nerve against another bone, it would destroy the integrity of the nerve and cause paralysis of the parts supplied by it. If you will look closely at the articular facets of a vertebra, you will see that it is utterly impossible to close or lessen the diameter of an intervertebral foramen without breaking the facets or rupturing the ligaments. One would be fracture, the other complete dislocation. These cases are met with and are usually fatal. They are caused by injury wherein an extremely violent wrench is given the vertebra. The injury that creates an osteopathic lesion is only sufficient to strain the tissue and cause congestion; the formation taking place as I have described in the lesions caused by exposure to cold except the lesion in this case is formed suddenly. I believe all osteopathic lesions of the spinal articulations in their formation go through the procedure that I have explained, with this exception, that a muscle is sometimes weakened by exhaustion instead of by congestion.

Now for the lesion that is caused by influences within the body. Let us consider lesions caused from acute diseases. Every osteopath has noticed the great number of spinal lesions found in a patient who has an attack of typhoid fever. One of these lesions may have been the primary cause in weakening the resistance of the intestinal wall, making the entrance of typhoid bacilli possible. The other lesions found are secondary and are caused by irritation to the end organs of the nerves of the intestines. This form of secondary lesion is mostly muscular contractures. The irritation to the end organs of the intestinal nerves will naturally exhaust the nerves somewhat, and we know exhausted nerves lose their tone, as they do when we over treat them. This exhaustion allows the irritation to work backward over the affected nerves to their origin, naturally lowering the free impulse through the rami communicantes connecting the ganglia to the spinal nerves. The spinal nerves in resisting this loss of tone in their sympathetic fellows become irritated themselves, causing the muscles they supply to first contract, then to relax, becoming exhausted through over stimulation, and we have the beginning of what is called secondary lesions. The formation of this lesion takes place as I have before described.

Next we will consider how lesions are caused by errors in diet. For illustration, let us say that a man persists in eating what does not agree with him, or constantly over-eats, or eats too rapidly, or masticates insufficiently, so that the gastric juices are unequal to taking care of it. In any of these cases the gastric digestion is slow or incomplete, and if these errors are continued the strain upon the stomach walls eventually impairs them; and the glands within them are weakened by overwork; the gastric juices become chemically imperfect; the end organs of the stomach nerves are irritated or exhausted; and secondary lesions in the spine are created by this means just as I have previously...
explained in the case of those formed by acute diseases.

Now, these secondary lesions may be caused by mental attitudes in this way: We all know that the brain uses an enormous amount of blood during mental concentration, and that there is nothing which calls for such much concentration as worry. For instance, a woman will think that she has a cancer, that she must have a cancer, just because her aunt or some one else in the family had a cancer, and died of cancer. Is it any wonder that this combined abnormal mental picture prepares the body for the very disease which causes the worry? The extra amount of blood, which is thus constantly called to the brain, must be taken from some other part of the body which is in need of it for functioning. When the stomach needs the blood, the person is probably worrying, and the poor stomach does not get enough blood to properly perform its function, its juices are slightly impaired chemically, and we have what is called nervous indigestion. \(\text{?}\) Who ever saw a case of nervous gastritis or neurasthenia without the stomach being involved in this way. If this worry keeps up we are bound to have a functional disorder of the parasmagastic as well as of the sympathic system. The secondary lesion will be formed the same as those in dietary errors, with the exception that in these cases of mental worry the parasmagastic becomes overstimulated by irritation to its end organs in the stomach, is thrown out of harmony and will cause other functional disturbances such as palpitations of the heart, etc.

These nervous irritations may be traced further than I have traced them. There is the consideration of the inactivity of overactivity of cells in a lesion's formation which I shall not touch upon, other than to say that perfect functioning of cells is necessary to perfect structures of cells as perfect cell structure is to perfect cell function. A book might be written on the local lesions caused by the breaking down of cells, allowing the entrance into the body of poisons, etc.; but as I do not consider this phase important as it is, as belonging to an explanation of the formation and results of a mechanical disturbance in anatomical structure, I shall not consider it at this time, although there is a disturbance of cellular activity as well as destruction of cells in an osteopathic lesion.

The secondary lesions that I have described are, as I said before, usually no more than contraction or exhaustion of soft tissues, and nature may bring them back to a normal condition through natural recuperative effort, after the irritation that caused them is gone. But if the tissue contraction or exhaustion remains or displaces a bone to its articulation and maintains this displacement, so that the bone is unable to return to its normal position, then these secondary lesions become primary spinal lesions, and will in turn keep up the functional disorder of the organs or organs that caused their formation.

How to find an osteopathic lesion is the next thing we have to consider. This consists in nothing more nor less than having the fingers so trained on normal surface anatomy that they will be able to detect abnormal abnormalities. It is much better to know when one's fingers touch a sore spot than to ask the patient if it hurts him. Training the tactile corpuscles in the fingers is the most important part of an osteopathist's work.

It is all right and necessary for us to study descriptive anatomy, physiology, pathology, chemistry and the kindred subjects, but it is most important to study surface anatomy on a living model, than all other subjects combined. If an osteopathist knows everything in the world except how to locate a lesion, he is not thoroughly equipped to practice osteopathy. Of course delivery of infants comes from experience in handling patients. I believe, however, it is much better to study normal surface anatomy by touch as a regular course work than to depend upon the slower way of developing the fingers by examining and treat-
ing patients. The guide to the osteopathist's fingers in locating a lesion is the tension or relaxation of tissue. When either one of these is present in area, the examination carried further will disclose the kind of lesion; and, if it is a displacement, it must be figured out by making all the normal movements possible to that joint in order to know the movement that is limited; this with the use of the eye and fingers will inform the examining osteopathist as to whether the displacement is anterior, posterior, lateral or rotated, and just what structures are involved.

To correct an osteopathic lesion, it is first necessary that the patient be placed in a position on the operating table where the greatest amount of natural relaxation can be obtained to the area upon which the operator intends working. Tell the patient that you are trying to get relaxation. He will help you by letting loose. Then all tensed tissue must be worked on until it relaxes; this is hardly possible at one treatment, as great care should be taken not to overtreat. The tissues surrounding and included in an osteopathic lesion are so easily stimulated through mechanical irritation in some cases that it demands the very lightest treatment to obtain the result necessary at that particular time. In other cases a much harder treatment can be given. A good way to know when a tissue has had enough stimulation to help its blood supply is that it will get warmer than normal bodily heat of that area. This is the clue to stop, or too much friction will cause congestion and the object for which the treatment has been given will be defeated. When the tension has been taken out of the tissues, or exhausted tissues have been strengthened, all the movements possible to that area should be made to the limit. The movement that is limited is the one that should be forced a little beyond the limit, if possible, at each treatment. In this way nature may line up this articulation without any further work.

If it becomes necessary to overcome a pull exerted by some deep tissue that you have been unable to reach, always break the articulation worse, which means work hard against the greatest resistance, then with a movement that will stretch or extend the vertebra rotate the spine toward the same side (if lateral displacement), to which the vertebra has been drawn or crowded when the lesion was formed. During the same time that this movement is being made, a pressure upon the spinous process of the vertebra will push it back into place. If the displacement is anterior or posterior the movement must be modified to suit, always remembering that there must be extension and rotation at the time the vertebra is moved. In this way the ligaments surrounding the articulation help in replacing the bone.

Now as to our stimulation and inhibition idea: Such stimulation is brought about by mechanical irritation of the nerves with the fingers in order to bring more blood to them. Irritating the posterior spinal nerves in this way will carry a stimulating impulse through the rami communicantes to the sympathetic chain. But I would adviseirrating only the nerve or nerves that are necessary to carry the impulse to the organ or organs you wish to stimulate. There is only so much reserve blood, you know, and it is not necessary to distribute it all over the spinal area, when it is only needed in one place. I do not know much about the inhibition idea. I rather think there isn't any such thing. I have an idea that in holding a nerve for a time the nerve tissue is relaxed and more blood is brought there than by a sudden pressure. In this way the nerve becomes more normal, not inhibited. Over stimulation may have an inhibiting effect up to or near the point of congestion; but I would advise against too long or hard a pressure upon nerves in any case. It might damage the nerve sheath or at least cause congestion.

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