WHAT IS CHELATION

Chelation (key-lay-shun) is a chemical process by which a metal or mineral (like lead, mercury, copper, arsenic, aluminum, calcium, etc.) is bonded to another substance. It is a process basic to life itself and goes on naturally in our body at all times. The **chelation** that we do artificially is similar to just using a chemical (EDTA) instead of the natural chemicals of the body. **Chelation** is one mechanism by which such common substances such as aspirin, antibiotics, vitamins, minerals, and trace elements work in the body.

Hemoglobin, the red pigment in blood which carries oxygen, is a chelate of iron.

WHAT IS CHELATION AS A MEDICAL TREATMENT

Chelation is a treatment by which a man-made amino acid called ethylene diamine tetraacetic (EDTA) is administered to a patient intravenously, prescribed by and under the supervision of a fully-licensed physician (possessing an M.D. or a D.O. degree). The fluid containing EDTA is infused through a small needle placed in the vein of a patient's arm. The EDTA in solution bonds with metals in the body and carries them away in the urine. Abnormally-situated nutritional metals, which speed free radical damage, and toxic metals, such as lead, are most easily removed by EDTA.

Is it done just once?

On the contrary, **chelation therapy** is a course of treatments which usually consists of anywhere from 20 to 50 separate infusions, depending on each patient's individual status. Thirty treatments is the average number required for definite benefit in patients with symptoms of arterial blockage. Some patients eventually receive more than 100 infusions. Each treatment takes from three to four hours or longer and patients normally receive one or more treatments each week. Over a period of time, these injections halt the progress of the free radical disease, which is the underlying condition triggering the development of atherosclerosis and many other degenerative diseases of aging giving the body time to heal and time to restore blood flow through diseased blood vessels. After several months these injections bring profound improvement to many metabolic and physiologic processes in the body. The body's regulation of calcium and cholesterol is improved by normalizing the internal chemistry of cells.

Chelation benefits every blood vessel in the body, from the largest to the tiniest capillaries and arterioles, most of which are far too small for surgical treatment or are deep within the brain and other vital organs where they cannot be safely reached by surgery. In many patients, the smallest blood vessels are the most severely diseased. The benefits of **chelation** occur from the top of the head to the bottom of the feet, not just in short segments of a few large arteries which can be bypassed or opened by other invasive treatments.

Do you have to go to a hospital to be chelated?

No, in most cases it is an outpatient treatment available in a physician's office or clinic.

Does it hurt? What does it feel like to be chelated?

Being "chelated" is quite a different experience from other medical treatments. There is no pain, and in most cases, very little discomfort. Patients are seated in reclining chairs and can read, nap, watch television, do needlework or chat with other patients while the fluid containing the EDTA flows into their veins. If necessary, patients can walk around. They can visit the restroom, eat and drink as they desire, or make telephone calls, being careful not to dislodge the needle attached to the intravenous infusion they carry with them.

Are there risks or unpleasant side effects?

EDTA is relatively non-toxic and risk-free, especially when compared with other treatments. The risk of serious side effects, when properly administered, is less than 1 in 10,000 patients treated. By comparison, the overall death rate as a direct result of bypass is approximately 3 out of every 100 patients undergoing surgery, varying with the hospital and the operating team. The incidence of other serious complications
following surgery *is* much higher, including heart attacks, strokes, blood clots, permanent brain damage with personality changes and prolonged pain. **Chelation** is more than 300 times safer than bypass surgery. Occasionally, patients may suffer minor discomfort at the site where the needle enters the vein. Some temporarily experience mild nausea, dizziness, or headache as an immediate aftermath of treatment, but in the vast majority of cases, these minor symptoms are easily relieved. When properly administered by a physician expert in this type of **therapy, chelation** is as safe as taking aspirin. Patients routinely drive themselves home after treatment with not difficulty.

If EDTA is given too rapidly or in too large a dose, it may cause harmful side effects, just as an overdose of any other medicine can be dangerous. Reports of serious and even rare fatal complications have stemmed from excessive doses of EDTA, improperly administered. If you choose a physician with proper training and experience, one who is an expert in the use of EDTA, the risk of **chelation therapy** will be kept to a very low level. The American College of Advancement in Medicine (ACAM) provides training and examines physicians for competence in the

specialized field of **chelation therapy.** A physician who has successfully completed the ACAM courses is knowledgeable in the safe and effective use of EDTA **chelation therapy.**

While it has often been stated that EDTA **chelation therapy** is damaging to the kidneys, the newest research (in one study consisting of kidney function tests done on 383 consecutive **chelation** patients, before and after treatment with EDTA for chronic degenerative diseases) indicates the reverse is often true. On the average, there is significant improvement in kidney function following **chelation.** An occasional patient may be unduly sensitive, however, and physicians expert in **chelation** monitor kidney function very closely to avoid overloading the kidneys. Treatments must be given more slowly and less frequently if kidney function is not normal. Patients with some types of severe kidney problems should not receive EDTA.

What types of examinations and testing must be done prior to beginning chelation therapy?

Prior to commencing a course of **chelation therapy,** a complete medical history must be obtained. A detailed listing of diet will be analyzed for nutritional adequacy and balance. Copies of pertinent medical records and summaries of hospital admissions will be obtained. A thorough, head-to-toe physical examination will be performed. A complete list of current medications will be recorded, including the time and strength of each dose. Special note will be made of any allergies.

Blood and urine specimens will be obtained for a battery of tests to insure that no conditions exist which may be worsened by **chelation therapy.** An electrocardiogram and chest x-ray will be ordered. A hair specimen will be tested for tissue levels of various nutritional and toxic metals. Non-invasive tests will be performed, as medically indicated, to determine the status of arterial blood flow prior to **therapy.** A consultation with other medical specialists may be requested. Follow-up examinations and testing will be performed at regular intervals during and after **therapy.**

Is chelation therapy new?

Not at all. Its earliest application with humans was during World War II when the British used another **chelation** agent, British Anti-Lewesite (BAL) as a poison gas antidote. BAL is still used today in medicine.
EDTA was first introduced into medicine in the United States in 1948 as a treatment for industrial workers suffering from lead poisoning in a battery factory. Shortly thereafter, the U.S. Navy advocated **chelation therapy** for sailors who had absorbed lead while painting government ships and dock facilities. Physicians then observed that adults receiving EDTA **chelation** treatments who had atherosclerosis also experienced health improvements diminished angina, better memory, sight, hearing, sense of smell and increased vigor. A number of physicians then began to treat individuals suffering from occlusive vascular conditions with **chelation therapy** and reported consistent improvements.

Chelation therapy remains the undisputed treatment of choice for lead poisoning, even in children with toxic accumulations of lead in their bodies as a result of eating leaded paint from toys, cribs or walls.

But from 1964 on, despite continued documentation of its benefits and the development of refined treatment methods, the use of **chelation** for the treatment of arterial disease has been the subject of controversy.

Is it legal?

Absolutely. There is no legal prohibition against a licensed physician (M.D. or D.O.) using **chelation therapy** for whatever conditions he deems it to be correct, even though the drug involved, EDTA, does not yet have atherosclerosis listed as an indication on the FDA-approved package insert. The FDA does not regulate the practice of medicine, but merely approves marketing, labeling and advertising claims for drugs and devices in interstate commerce.

It costs millions of dollars to perform the required research and to provide the FDA with documentation for a new drug claim, or even to add a new use to marketing brochures of a long-established medicine like EDTA. Physicians routinely prescribe medicines for conditions not yet included on FDA approved advertising and marketing literature.

Several respected physician organizations sponsor educational courses in the proper and safe use of intravenous EDTA chelation. The American College of Advancement in Medicine publishes a physicians' protocol for the safe and effective method of treatment with EDTA. This protocol is used in training courses and in a certification program for chelating physicians. ACAM's educational programs for physicians, followed by oral and written examinations, lead to credentials which certify demonstrated competence in the proper use of EDTA **chelation therapy.**

On the question of legality, the interpretation of laws pertaining to "informed consent" is evolving in the courts and it is now possible that a physician who withholds information about the availability of other treatment choices, such as **chelation therapy,** prior to performing vascular surgery (along with all other treatment modalities) could be found legally liable. Withholding information about a different form of treatment may be tantamount to medical malpractice, if as a result, a patient is deprived of possible benefits. Thus, it is the doctors who refuse to recognize and inform their patients of chelations who are risking legal liability not those chelating physicians who provide an

innovative treatment which they feel to be the safest, the most effective and the least expensive for many of their patients.

What proof do you have that it works?

Physicians with extensive experience in the use of **chelation therapy** observe dramatic improvement in the vast majority of their patients. They see angina routinely relieved, patients who suffered searing chest pains when walking only a short distance are frequently able to return to normal, productive living after undergoing **chelation.** Far more dramatic, but equally common, is seeing diabetic ulcers and gangrenous feet heal. Many individuals who had been told that their limbs would have to be amputated because of gangrene are thrilled to watch their feet heal with **chelation,** although some areas of dead tissue may have to be trimmed away surgically. The approximately one thousand American physicians practicing **chelation therapy** have countless files to prove they are able to reverse serious cases of arterial disease. Men and women often arrive at their offices near death with diseases caused by blocked arteries. Weeks or months later, they're remarkably improved. There is a wealth of evidence from clinical experience that symptoms of reduced blood flow improve in more than 75 percent of patients treated.

In addition, several research studies have been published with results of before-and-after diagnostic tests using radioscopes which prove statistically that blood flow improves following **chelation.** Regardless of blood flow studies, if cladication is relieved, if angina becomes less bothersome, and if physical endurance or mental acuity improves, such benefits would be quite enough to justify EDTA **chelation therapy.** Quality of life and relief of symptoms are far more important than the results of laboratory tests.

What does it cost?

A course of treatment for a patient with advanced hardening of the arteries generally requires from six weeks to six months and costs up to $3,000 or more for 30 treatments. This is considerably less than bypass surgery, which often costs over $35,000. A person who receives fewer treatments for preventive benefits can expect to pay approximately $100 for each 3-4 hour treatment. There are, of course, the costs of tests prior to, during, and after **therapy.** Insurance companies only cover **chelation therapy** if there is heavy metal toxicity found prior to **therapy.** This will be discussed on an individual basis.

What about bypass surgery?

Coronary artery bypass surgery, the popularly-prescribed procedure in which occluded portions of major coronary arteries are bypassed with grafts from a patient's leg veins, has never been proven by properly controlled studies to offer an advantage over non-surgical treatments, other than relief of pain in a minority of patients who cannot be controlled with medicine. It has even been suggested that the relief of pain following surgery might result from the cutting of nerve fibers which carry pain impulses from the heart and which also stimulate spasm of coronary arteries. It is not possible to perform bypass surgery without interrupting those nerves.

Indeed, the most recent research suggests that many of the 400,000 or more bypasses and other invasive procedures performed each year for the relief of pain and other symptoms brought on by clogged or blocked arteries are not necessary. A good case against rushing into surgery is made by the findings of a ten-year, $24 million study conducted by the National Institute of Health (NIH) which compared post-operative survival rates of "bypassed" patients with a matched group of equally diseased patients treated non- surgically.

The study uncovered no additional benefits for most patients who had been operated upon, compared with non-surgical **therapy.** It is important to note that the non-surgical **therapy** reported in that study did not include either **chelation therapy** or the new calcium blocker drugs, and that only half of the patients received beta blocker drugs. Having surgery didn't improve their chances to live longer, live healthier, live better, or enjoy life more, when the results where statistically analyzed. The incidence of heart attacks (myocardial infarction) and both employment and recreational status were the same in patients treated surgically and non-surgically, even without using **chelation therapy** for the non-surgical treatment group.

Most important, cardiovascular surgery does nothing to arrest or reverse the underlying disease which exist in varying degrees throughout the body. It is at best a piece- meal "cure" for a system-wide problem. Bypassing a restricted portion *of* the body's blood vessels can have little lasting benefit when the same degenerating condition which caused the most extreme blockage at one or two sites must of necessity be taking place everywhere, throughout the circulatory network.

One thing the general public is not fully aware of is that many people who have one bypass operation later have a second bypass. Sometimes the blood vessels that weren't bypassed become clogged; sometimes the transplanted vessels used in the first graft become filled with new plaque; sometimes the transplants malfunction or turn out to be too small for the job. As a matter of fact, studies have shown that by ten years after surgery, grafted vessels had closed in 40 percent of patients, and in the remaining 60 percent, half developed further coronary narrowing. Once you've had a bypass, your chances of having another go up about five percent a year. After five years, some specialists estimate your chances of receiving a second operation could be as high as thirty to forty percent. And some patients go on to even a third operation, or more. And approximately two to three out of every 100 patients

undergoing bypass surgery die as a result of the procedure even more if they are severely ill at the time of surgery. The balloon treatments and other invasive procedures to open arteries are also risky.

Chelation patients are frequently able to return to work and to resume their sports and other activities, without the need to undergo surgery. **Chelation** is equally as effective in patients who have previously undergone one or more bypass operations or balloon procedures. If they stay on a proper diet, exercise regularly, continue to take the prescribed program of nutritional supplements and receive periodic maintenance **chelation** treatments (monthly, more or less, depending on the severity of the underlying medical diagnosis) they can usually go many years without suffering further heart attacks, strokes, senility or gangrenous extremities.

If you, like most people eager for additional information about **chelation therapy,** have been told you have advanced arterial disease, you may have been advised to have vascular surgery. If so, it is essential for you to understand the nature of your disease and all possible treatment choices, before you can make an intelligent decision concerning the various options. Even if **chelation** and other non-surgical therapies should fail, bypass still remains a choice.

Why can't chelation be taken by mouth in pill form, instead of by intravenous injection?

Chelation therapy is gaining recognition so rapidly that there is growing interest in developing a safe and effective oral chelator. Many nutritional substances administered by mouth are known to have weak chelating properties. But, none have the spectrum of activity of intravenous EDTA. Many nutrients such as vitamin C and the amino acid cysteine have the ability to weakly chelate metals. To label nutritional supplements containing vitamins and amino acids as "oral **chelation"** however, is misleading.

EDTA can be taken by mouth in small doses but less than 5 percent is absorbed and only if taken without food. The utilization of EDTA by mouth is not adequate to treat established disease, although preventive and maintenance benefits might be obtained by that route.

Claims are being increasingly made for the use of vitamin supplements containing weak chelators in patients with atherosclerosis. There is nothing new about the benefits of vitamin-mineral supplements, which have recently been aggressively and deceptively marketed as "oral **chelation."** The use of vitamin-mineral supplements by mouth is a routine adjunct to a total program of **chelation -therapy,** but they do not provide significant **chelation** by themselves. There are no potent oral chelating agents now available which are safe to take by mouth and which produce improvement comparable to intravenous EDTA.

Is it true that **chelation therapy** combats atherosclerosis by acting like a "liquid plumber" by leeching calcium out of the atherosclerotic plaque? No. Before recent medical breakthroughs in the area of free radical pathology, it was hypothesized that EDTA **chelation therapy** had its major beneficial effect on calcium metabolism that it stripped away the excess calcium from the plaque, restoring arteries to their pliable precalcified state. This frequently offered explanation the so-called "roto-rooter" concept is not the real reason, as previously postulated, that **chelation therapy** produces its major health benefits. The fact that EDTA does remove some abnormal calcium is now felt to be one of the less prominent aspects of its benefits.

More importantly, EDTA has an affinity for the so-called transition metals, iron and copper, and for the related toxic metals, lead, mercury, cadmium and others, which are potent catalysts of excessive free radical reactions. Free radical pathology, it is now believed, is the underlying process triggering the development of most age-related ailments, including cancer, dementia and arthritis, as well as atherosclerosis. Thus EDTA's primary benefit is that it greatly reduces the ongoing production of free radicals within the body by removing accumulations of metallic catalysts which accumulate as a person grows older at abnormal sites in the body, speeding the aging process.

This is a greatly oversimplified explanation of what actually occurs. For those of you with a decided interest in the scientific technicalities, you can send for the manuscript entitled "Free Radical Pathology in Age-Associated Diseases: Treatment with EDTA, Nutrition and Antioxidants" by Doctors Elmer M. Cranton and James P. Frackelton. For a fuller explanation of the many issues involved, written in popular form for the general public, you might enjoy reading ""Bypassing Bypass" by Dr. Elmer M. Cranton and Arline Brecher. Both publications, as well as others, are available from the American College of Advancement in Medicine, 23121 Verdugo Drive Suite 204, Laguna Hills CA 92653, (714) 583-7666. Telephone before ordering to find out costs, or you may purchase them from our office or in the bookstore.

Why haven't I heard about chelation before?

If EDTA **chelation therapy** is as safe and effective as indicated by scientific studies and by the experience of hundreds of doctors, why haven't you heard more about it? That is a good question!
Until quite recently, relatively few patients have been informed that this **therapy** is available. Most heart specialists may not have even heard of the treatment and would be reluctant to prescribe it if they had. The American Medical Association has not yet approved **chelation -therapy** for atherosclerosis, although it does endorse its use in the treatment of lead and other heavy metal poisoning. Many insurance companies will not compensate policy holders for **chelation therapy** unless it is given for lead poisoning. If **chelation therapy** is given for atherosclerosis, it is often labeled "experimental" or "not customary" by medical insurance companies and payment is denied. They

deny payment to patients even though they do pay for bypass surgery, and even though **chelation** might have saved them tens of thousands of dollars.

Traditional medical organizations, politically powerful, have consistently attempted to suppress **chelation therapy,** perhaps because of large vested interests in other methods of health care. The cost of all medical care for victims of heart disease in the United States in 1986, including coronary bypass surgery and prescriptive drugs, exceeded $40 billion. Obviously, many hospitals and physicians would be in serious financial difficulty, and might even have to find other outlets for their services, if this procedure, which might displace a gigantic industry, become universally popular.

Physicians who remain skeptical about **chelation** are those who have never used it. They are either completely uninformed about the extensive research that has been done to document the safety and effectiveness of **chelation therapy,** or they are committed by training or source of income to other therapeutic procedures, such as vascular surgery.

What else is involved in a complete program of chelation?

Your Lifestyle Counts. **Chelation therapy** is only part of the curative process. Improved nutrition and improved lifestyle are absolutely imperative for lasting benefit from **chelation** treatments. **Chelation** is not in and of itself a "cure- all" it merely reduces abnormal free radical activity, allowing normal control mechanisms to come into play so that free radical damage can be repaired and health can be restored with the help of applied clinical nutrition, antioxidant supplementation and lifestyle corrections. **Chelation therapy** involves all of these factors. **Chelation** is also compatible with other forms of **therapy,** including bypass surgery.

In addition to receiving the necessary number of **chelation** treatments, patients eager for long term benefits should be warned: **chelation** alone won't last for long. Individuals suffering any form of free radical disease must be prepared to improved the diet that started the disease, take nutritional supplements, be physically active and eliminate destructive lifestyle habits such as tobacco and excessive alcohol.

Nutritional Supplements. A scientifically balanced regimen of nutritional supplements reinforces the body's antioxidant defenses and should include vitamins E, C, Bl, B2, B3, B6, B12, pantothenate, PABA, and beta carotene. A balanced program of mineral and trace element supplementation should include magnesium, zinc, selenium, manganese and chromium. The exact prescription for nutritional supplements is determined individually for each patient, based on nutritional assessment and laboratory testing.

Destructive Habits. It is important to eliminate the use of tobacco altogether, but if that is not possible, a marked reduction in exposure would be helpful. This applies to cigarettes, pipe tobacco, cigars, snuff or chewing tobacco. It has been consistently observed that patients who
continued to smoke following **chelation** have demonstrated less improvement and for a much briefer time in comparison to non-smokers.

Only relatively healthy adults are able to tolerate alcoholic beverages without generating more free radicals than they can detoxify. Anyone who drinks more than one or two ounces of pure ethanol in 24 hours (four eight-ounce glasses of beer, four small glasses of wine, or two to three shot glasses of hard liquor) risks free radical damage. Even that amount is harmful on a regular basis. Victims of chronic degenerative diseases should usually avoid the consumption of alcohol.

Exercise. Finally, physical exercise is very helpful. Even a brisk 45-minute walk several times per week will help maintain the health benefits and improved circulation resulting from **chelation therapy.** Lactate normally builds up in tissues during sustained exercise and lactate is a natural chelator produced within the body.

Which brings us to the final question! Is chelation therapy for you? Only you can make that decision.

Chances are your doctor won't help you decide. Patients who choose **chelation** often do so against the advice of their personal physicians or cardiologists. Many have already been advised to undergo vascular surgery.

Occasionally, a patient never hears about **chelation** until he is hospitalized and a friend or relative begs him to look into this non-invasive **therapy** before proceeding to surgery. In an impressively large number of instances, a new patient comes for **chelation** on the recommendation of someone who has been successfully chelated.

Chelation therapy is probably the most successful method to extend maximum life span but this has yet to be proven by the scientific method. It certainly is the best procedure for having a healthy and more symptom-free time as you age.

For information on related topics, please read:

* Detoxification * Functional Requirements for Chemical Detoxification) 1995 Stephen B. Edelson, M.D., F.A.A.F.P., F.A.A.E.M.

NOTICE: This information is provided for educational purposes. Any medical procedures, dietary changes, or nutritional supplements discussed herein should only be undertaken on the advice of a qualified physician.

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