

FUNCTIONAL MEDICINE: A MESSIAH FOR THE CHRONICALLY INFLAMMED!!! USHERING FUNCTIONAL DENTISTRY???

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ABSTRACT:

Functional medicine is a personalized, system-oriented model that enables patient and health care practitioners to achieve a healthy and disease free society. It deals with listening and noting down the patient's personal history in minute details and thus helps us to identify predisposing factors, triggers and events that shift the status from health to illness. Instead of being focused on the disease, functional medicine addresses the patient as a whole and not just an isolated set of symptoms. It has its own unique style of taking patient's detailed case history and noting signs & symptoms, thus helping to get to the root cause of disease. Functional medicine has paved way for functional dentistry as well. The oral cavity is a mirror of the general health status of the patient, and hence it is one of the most important functional systems of our biologic orchestra. It is a diagnostic window to the overall body health and has the premonition about dysfunction that is going to happen before symptoms occur.

Key Words: Functional Medicine, Functional dentistry, Micro-current therapy, Balanced occlusion, Lasers.



INTRODUCTION:

Inflammation is a "hot" topic in medicine and is associated with almost every known chronic disease, like cancer, heart disease, diabetes, obesity including depression. Other inflammatory disorders like allergies, asthma, arthritis and autoimmune disorders are increasing at a phenomenal rate. Generally the clinicians are trained to shut off the inflammation with various anti-inflammatory and immune suppressive medications which have serious side effects, and there is generally a reluctance to find out and

treat the root cause of inflammation in chronic diseases. Actually various infections, environmental toxins, hidden allergens, stress and inflammatory diet are the real cause of these inflammatory conditions. Here is where, functional medicine steps in and using its concept of thorough investigations of the root cause, health and diet analysis, and the patient and the doctor working in coordination to find the real culprits.

Functional medicine is a patient-centered rather than disease-centered

concept with extraordinary healing abilities. Instead of treating the disease it believes in treating the individual and the bodily symptoms, imbalance and dysfunctions.^[1]

Chronic disease is the leading cause of death worldwide.^[2] Many reports and studies has projected that over the next 10 years, over 60 million people will die from chronic diseases in India. The total foregone national income, as a result of the impact of heart diseases, stroke and diabetes is estimated to be US \$54 billion by 2015.^[3] However, the conventional health care systems work very well for acute conditions giving relief instantly and enjoying patient's gratification, the chronic conditions generally show lot of resistance to treatment with conventional medical therapy.

Functional medicine works on the following two basic principles: ^[4]

1. Add what's lacking in the body to nudge its physiology back to a state of optimal functioning.
2. Remove anything that impedes the body from moving toward this optimal state of physiology.

Functional medicine is the personalized medical care system, which is scientifically proven and a natural way to become healthy again. It is based on the following principles:^[4]

1. Biochemical individuality: describes the importance of individual variations in metabolic function that derive from

genetic and environmental differences among individuals.

2. Patient-centered medicine: emphasizes "patient care" rather than "disease care".
3. Dynamic balance of internal and external factors.
4. Web-like inter-connections of physiological factors.
5. Health as a positive vitality – not merely the absence of disease.
6. Promotion of organ reserve as the means to enhance health span.

Functional medicine practitioners use advanced laboratory tests to find out the root cause of a disease and address it as against the conventional medicine system which uses medication to treat the symptoms, which generally returns after stopping it.^[1] Functional medicine aims to remove the cause of the disease itself. Thus major principle of the functional medicine is that, using science, clinical wisdom and innovative tools we can identify many of the underlying causes of chronic diseases and intervene to remediate the dysfunctions before and after frank disease is present.^[5]

Preventing and treating chronic disease has become an urgent need, because its epidemic is spreading rapidly and thus threatening to bankrupt both national and global economy.^[6]

Functional medicine involves the examination of the core clinical

imbalances that underlie various chronic disease conditions. The core clinical imbalances that addressed the malfunctions within the body are as follows:^[4]

1. Hormonal and neurotransmitter imbalances
2. Oxidation-reduction imbalances and mitochondriopathy
3. Detoxification and biotransformational imbalances
4. Immune imbalances
5. Inflammatory imbalances
6. Digestive, absorptive, and microbiological imbalances
7. Structural imbalances from cellular membrane function to the musculoskeletal system

Functional medicine nips the disease at the bud, by intervening at multiple levels of the core clinical imbalances and to restore each patient's functionality and health.

The various treatment modalities that functional medicine uses are as follows:

1. Micro-current therapy^[7]
2. Heart rate variability analysis^[8]
3. Mind/body medicine^[9,10,11]
4. Meditation and other Relaxation techniques^[12,13,14]
5. Pulsed electromagnetic field therapy^[15]

6. Cognitive behavioral therapy
7. Guided imagery
8. Hypnosis^[16]
9. Biotherapeutic Drainage^[17]
10. Orthomolecular Medicine^[18]
11. Prolotherapy^[19]
12. Wholistic nutrients
13. Herbal medicine^[20]
14. Flower essences^[21]
15. Biofeedback^[22]
16. Acupuncture^[23,24,25]
17. Detoxification^[26,27,28]
18. Social support

Functional medicine is ushering us in to an era of functional dentistry, as oral cavity not only plays a key role in the overall health of the person and ideal oral health cannot be achieved without a healthy body. Oral cavity may be one of the most important functional and sensory rich systems of the human body. Mouth is a mirror of the body system and many times may disclose warning signs of any dysfunction before symptoms occurs in other areas of the body. Dysfunction or imbalance in the oral cavity may have a deep impact on the overall health. The mouth is the body's immediate gate way to the external environment and plays an important role in its immune defense system.

Functional dentistry advocates following modalities for maintaining good oral and thus general health.

1) Amalgam removal:^[29]

Today, the amalgam filling removal is being the controversial topic in dentistry. The safety measures while removing the amalgam fillings should be taken because of its hazardous effects on human body. Dental amalgam causes mercury poisoning and toxicity, which results in disorders related to the central nervous system; the head, neck and oral cavity; the gastrointestinal tract; the cardiovascular, renal and immune systems.

HEPA is a high efficiency particulate air filter. HEPA removes at least 99.97% of airborne particles of 0.3 µm in diameter. Placing rubber dam over patient's mouth and wearing oxygen mask, should be done as an added safety features. Dentist should take care that no vapours or fine particles of amalgam affects the individual during its removal.

2) Balanced occlusion:^[30]

Balanced occlusion can be defined as the harmonious contact between teeth of maxillary and mandibular arches. There exists a direct/ indirect relationship between "dental occlusion" and the biomechanical functions of whole body skeleton, from cranium to cervical spine to ribs to pelvis to feet.

Chronic dysfunction of occlusion affects the general health of the body. Imbalance in occlusion many a times is

associated with signs and symptoms of an underlying problem, like neck and backache, stress, headache etc. Dentist deals with this in day to day clinical practice.

T-scan is one of the recent technologies for occlusal analysis. It is the ultrathin, grid-based sensor and dental arch shaped unit which is connected to digital output system. Using the software it displays the information of minute tooth contact details, forces exerted by the areas of tooth in contact during occlusion accurately and instantaneously. With the help of this data, dentist can analyze the dysfunction in occlusion, their manifestations to achieve overall dental as well as general health.

3) Digital radiography:^[31]

Digital radiography has many advantages over the conventional radiography. The most important advantage is the minimal patient's exposure to radiation. It is eco-friendly and time saving technique.

4) Lasers in dentistry:^[32]

Patients are generally petrified of the drill and its vibrations, and also use of needles in the dental chair. High speed drills causes hairline fractures and cracks in the tooth, which can leads to further dental problems. Lasers help to alleviate patient fear.

They can be used in removal of caries and hence results in vibration less cavity preparation. There are many other

indications of laser like enameloplasty, excisional and incisional biopsies, exposure of unerupted teeth, removal of fibroma, flap surgery, frenectomy, gingivectomy, gingivoplasty, leukoplakia, herpetic and aphthous ulcers, vestibuloplasty, operculectomy, endodontic treatment, ostectomy etc. Lasers can be used to diagnose caries at a very early stage.

5) Micro-current therapy:^[7]

It is the therapy, in which small amounts of electric current is used to get rid of pain and fast healing of inflamed soft tissues of the body. It works by penetrating the micro current in to the inflamed cells, restoring the essential blood supply, removing inflammatory exudates and bringing pain relief. In addition to inflammation it can be used to reduce swelling, bruising and post-surgical pain in dental patients. It is used to reduce infection of root canal which are difficult to access, to reduce pain and inflammation during orthodontic treatment, in headache, arthritis, post herpetic neuralgias, oral ulcers, sinus congestion, TMJ disorders, cancer pain and even in fracture pain.

6) Pulsed electromagnetic field (PEMF) therapy:^[15]

It is mainly used in orthopedics for the treatment of non-union fractures, congenital pseudoarthrosis, failed fusion and depression as a reparative technique. Electrical energy is used to direct series of magnetic pulses through injured tissue to stimulate cellular repair.

In oral and maxillofacial surgery PEMF is being used for healing of mandibular fractures treated with closed reduction.

7) Prolotherapy:^[19]

Prolotherapy is also known as nonsurgical ligament reconstruction, and is permanent treatment for chronic pain. It involves injecting a non-pharmacological and non-active irritant solution (tannic acid, guaiacol, dextrose glycerine, sodium morrhuate) in joint space, tendons and ligament.

The principle of prolotherapy is to reinitiate the inflammatory process by stimulating proliferation of fibroblast and thus strengthening the joints, tendons and ligaments. It produces hypertonic extracellular environment which leads to lysis of adjacent cell membrane and migration of the microphages and granulocytes. It is efficiently used as an alternative treatment modality for many TMJ disorders such as clicking, hypermobility, lock jaw etc.

8) Orthomolecular medicine:^[18]

Orthomolecular medicine involves the use of high doses of vitamins, minerals, trace elements, hormones and amino acids to prevent and treat various diseases. It is also called as megavitamin therapy. Due to the over use of pesticides and modern-intensive agricultural growing methods, the availability of the essential nutrients in the food is decreasing day by day. Hence to compensate these deficiencies,

requirement of the body is constantly increasing for the nutrients.

Recent researches proved that many oral lesions like OSMF, leukoplakia, aphthous ulcer are associated with nutritional deficiency, for treating these conditions dentist needs orthomolecular medicine therapy.

9) Acupuncture:[³³]

Many studies have demonstrated its effectiveness in treating various conditions that are encountered in dentistry. Acupuncture is used in conditions like TMJ (temporomandibular joint) pain, TMJ disorders, facial pain, muscle spasm, chronic stress, headache, migraine, trigeminal and other neuralgias, rhinitis and sinusitis, prominent stretch reflex, dental anxiety, xerostomia (Sjogrens disease), altered sensations in the mouth, post-operative pain.

10) Flower essences:[²¹]

Extracts of various flowers and plants are used in this therapy. Good, mild, soothing fragrance, in dental office reduces the mental stress of the patient as well as of the dentist. Before surgery flower essences help to reduce stress of surgery by inducing positive feeling and peace. After surgery it helps to reduce problems related to sleep, feeling of helplessness and fear of inability to do day to day work. Chamomile flower essence is given before and after the dental surgery to reduce stress. Arnica, Calendula, Belladonna improves healing.

11) Hypnosis:[¹⁶]

Complex moving visual stimuli are used to induce states of relaxation and hypnosis. Many methods like contemplation of an aquarium, contemplation of a poster, poster contemplation with hypnotic induction, aquarium contemplation with hypnosis, and a non-intervention control, prior to elective oral surgery being used to control blood pressure, heart rate, and subjective and objective measures of anxiety. Pretreatment hypnosis helps to achieve significantly greater degrees of relaxation during dental surgery.

12) Herbal medicine:[²⁰]

Traditional allopathic medicines have many side effects on body. Many herbs in the nature have medicinal value on various diseases, with minimal side effects. Herbal medicines have dramatically fewer side effects and are safer to use than conventional medications. The herbs like Bloodroot, Caraway, Chamomile, Echinacea, Myrrh, Peppermint, Rosemary, Sage, Thyme, Aloe Vera, Propolis, etc. that are useful in dentistry.

Cayenne (Capsium annum) used in herpes zoster, recurrent aphthous stomatitis. Chickweed (Stellariasps) helps to relieve pain from canker sores and other mouth sores. Cloves (Laung) (Sisygiumaromatium) oil of clove on sore gums and teeth to ease pain, diminish bad breath. Elderberry (Sambuou) mouthwash after gum surgery prevents scars. Marjoram

(*Origanum majorana*) use to ease headaches and relieve toothache pain. Sage (*Salvia*), Myrrh (*Commiphara opobalsamum*) is been use in gum disease. *Curcuma longa* (Turmeric) has range of therapeutic actions like antioxidant, anti-inflammatory and antimutagenic and use to eliminates pain and swelling, gingivitis and periodontitis, oral submucous fibrosis (OSMF), lichen planus, leukoplakia.

13) Biofeedback:^[22]

“What can be measured can be changed”, is the principle of biofeedback. It is a real time monitor of the constant changes that a body goes through. Electromyography measures, muscle tension e.g myositis of muscles of mastication. Thermal biofeedback measures, skin temperature. Neuro-feedback measures brain wave activity, controlling certain involuntary processes such as heart rate, blood pressure, muscle tension and skin temperature.

14) Other modalities:^[9-14]

Dental fear comprises of fear of the unknown; pain; swelling; tooth loss; fear of drill; gagging and x-rays. To reduce this stress there are many relaxation therapy like meditation which helps as a functional medicine. Mind/ body medicines based on the inseparable

connection between the mind and the body - the complicated interactions that take place among thoughts, the body, and the outside world. It includes Art, Music, or Dance therapies.

CONCLUSION:

The concepts of functional medicine when applied to dental treatment and diagnosis, transforms the standard of the dentistry and dentist to another level. Dentist from “molar mechanics” become a true “physicians of the mouth.”

As a dentist, we should treat the patient using the most thorough and effective methods available today. Dentistry is an ever-changing and demanding medical field that requires a sophisticated knowledge of the biological, chemical and physical sciences. The dental treatment affects the whole body. Dentist should work along with the patient’s physician and other health care practitioners when needed. We should deliver dental care that will sustain the ongoing health of their teeth, gingiva, and entire body. It is the practice, to procure the overall health of the body. It is designed for patients who take their health seriously and recognize the importance of conscious, comprehensive dental care as an important part of their overall body health and well-being.

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