OSTEOPATHY AND THE SKIN

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This paper will discuss the potential role of skin care in Osteopathy. The skin (cutaneous membrane) is often omitted from the overall practice of manual therapy; it is not typically considered in the whole body approach that Osteopathy is embedded in. Considering that the skin is the largest organ of the body, it would be an injustice to not consider its function, factors that affect it and benefits of its health to the whole body and its internal structures and systems.

Visceral Osteopathy is a category of Osteopathy that focuses on treating the organs, resulting in the end result of better functioning within the whole system. However, there is not much focus, if any on the skin. Being the largest organ of the body, it encases everything held within the human form and is only a few millimeters thick weighing in at around six pounds; without optimal functioning the skin can no longer perform its vitals tasks, breaking down and allowing foreign particles/bodies/free radicals to invade the delicate yet resilient interior environment of the body.

Let's take a closer look at, the skin's structure, function and factors that can affect it. What does the skin do exactly? It has various vital functions including being waterproof, protective and adaptive. As discussed by health and safety executive (hse) website in the UK its functions include but are not limited to the following:

'1.Protection

– provides a physical protective barrier between the internal and external environment The first line of defense against infection (immune organ) – provides a physical barrier to the entry of hazardous substances such as bacteria or a virus and UV rays. Sensory input – temperature, touch, pressure, vibration, and injury.

2.Temperature regulation:

- controls energy loss through radiation, convection, and conduction. The skin contains a blood supply far greater than its requirements which allows for precise control. Dilated blood vessels increase perfusion and heat loss, while constricted vessels greatly reduce cutaneous blood flow and conserve heat

3.Hydration:

-the skin is a semi-impermeable barrier to fluid loss. Prevents loss of moisture

4.Storage and synthesis:

- acts as a storage center for lipids and water

5.Absorption and excretion

6.Water resistance:

-The skin acts as a water-resistant barrier so essential oils aren't washed out of the body

7 Wound repair

8 Production of Vitamin D'

Let's talk structure. The skin has 2 main layers; the Epidermis that has five layers, the dermis that has two layers and the subcutaneous layer. Each layer and its sub layers have their own functions. As described by Boundless Anatomy (Course Hero) the layers and functions are as follows

1) 'Epidermis

The Epidermis layer is made up of five sub-layers that work together to continually regenerate the surface of the skin. Skin turnover is approximately every 28 days, but increases with age – can be as long as 45 days. It is the outermost layer of the skin and protects the body from the environment. Its thickness varies, from 0.05 mm thick on the eyelids to 1.5mm-2mm thick on the palms and soles. It contains melanocytes

(responsible for melanin production), the Langerhans cells (involved in the immune system), Merkel cells, and sensory nerves

A) Stratum Corneum/Horny Layer

The keratinocytes in this layer are called corneocytes. They are devoid of almost all of their water and they are completely devoid of a nucleus at this point. They are dead skin cells filled with the tough protein keratin. In essence, they are a protein mass more so than they are a cell. The corneocytes serve as a hard protective layer against environmental trauma, such as abrasions, light, heat, chemicals, and microorganism. The cells of the stratum corneum are also surrounded by lipids (fats) that help repel water as well. These corneocytes are eventually shed into the environment and become part of the dandruff in our hair or the dust around us.

B) Stratum Lucidum

This layer is found only on the palms of the hands, fingertips, and the soles of the feet.

C) Stratum Granulosum

This is the layer where part of keratin production occurs. Keratin is a protein that is the main component of skin. Keratin makes our skin tough and provides us with much-needed protection from microorganisms, physical harm, and chemical irritation

D) Stratum Spinosum

Responsible for giving the skin strength as well as flexibility.

E) Stratum Basale/Stratum Germinativum

is the layer that's closest to the blood supply lying underneath the epidermis. This layer is one of the most important layers of our skin. This is because skin cells grow here. It is also where the skin's most important cells, called keratinocytes, are formed before moving up to the surface of the epidermis and being shed into the environment as dead skin cells. This layer also contains melanocytes, the cells that are largely responsible for determining the color of our skin and protecting our skin from the harmful effects of UV radiation. These harmful effects include burns in the short term and cancer in the long run.

2) Dermis

The dermis is located beneath the epidermis and is divided into a papillary region and a reticular region. It is the thickest (about 90%) of the three layers and the primary function is to cushion the body from stress and strain; it also provides elasticity to the skin, stores most of the body's water supply, a sense of touch, and heat. It also contains hair roots, sebaceous glands, sweat glands, nerves, lymph and blood vessels.

- Hair Follicles – The hair follicle is a sheath that surrounds the hair shaft below the surface of the skin and allows nutrients to reach the hair.
- Sebaceous Glands –Are the oil glands. They are attached to hair follicles and are found everywhere on the body except for the palms of the hands and the soles of the feet. These glands secrete oil that helps keep the skin smooth and supple. The oil also helps keep skin waterproof and protect against an overgrowth of bacteria and fungi on the skin. Overproduction is a contributing factor to acne

- Sweat Glands – The average person has about 3 million sweat glands. There are two types: 1. Apocrine glands – are found only in the armpits and pubic region. Apocrine glands secrete a milky sweat that encourages the growth of the bacteria that cause body odor. 2. Eccrine Glands – are found over the entire body and are the true sweat glands. Eccrine glands regulate body temperature by bringing water via the pores to the surface of the skin, where it evaporates and reduces skin temperature. These glands can produce up to two liters of sweat an hour. As they secrete mostly water, they do not encourage the growth of odor producing bacteria.
- Nerve Endings – The pain and touch and receptors of the dermis transmit sensations of pain, itch, pressure, and temperature to the brain. These nerve endings can also trigger shivering if body heat is required
- Lymph Vessels – Supply the skin tissues with lymph, the milky-white substance that contains the infection-fighting cells of the immune system. These cells work to destroy infection and invading organisms as the lymph transports them to the lymph nodes.
- Blood Vessels – Supply nutrients and oxygen to the skin and remove cellular waste by-products. Vitamin D produced in the skin is transported to the rest of the body via the blood vessels.
- Collagen and Elastin – The dermis is held together by a protein called collagen, made by fibroblasts. Fibroblasts give the skin its strength and resilience. Collagen is a tough, insoluble protein found throughout the body in the connective tissues that hold muscles and organs in place. In the skin, collagen supports the epidermis, lending it its durability. Elastin, a similar protein, keeps the skin flexible and is the substance that allows the skin to spring back into place when stretched.

The Dermal Layers

A) The Papillary Layer – is the upper layer that provides the layer above it (the epidermis) with nutrients to produce skin cells called keratinocytes. I. It contains a thin arrangement of collagen fibers, supplies nutrients to select layers of the epidermis, and regulates temperature (of whole body) via a thin, extensive vascular system. Constriction and expansion control the amount of blood that flows through the skin and regulates body temperature by dispelling or conserving heat, as required.
B) The Reticular Layer – is the lower layer of the dermis. It is thicker and consists of thick collagen fibers that are arranged in parallel to the surface of the skin. Denser in structure and consistency than the papillary dermis, and the reticular dermis strengthens the skin, provides structure and elasticity, and supports the other components of the skin, such as hair follicles, sweat glands, and sebaceous glands.

3) Subcutaneous Layer/Hypodermis

Also known as the subcutis, it is the innermost layer of the skin and is made up of a network of fat and collagen cells. It insulates to conserve body heat, acts as a shock-absorber to protect the inner organs, and stores fat as an energy reserve. The blood vessels, nerves, lymph vessels, and hair follicles cross through this layer. The thickness of the subcutis layer varies throughout the body and from person to person

Factors affecting the skin as described by the HSE ‘The skin is a complex active organ, if any of its functions fail there can be serious consequences. The skin's ability to act as a barrier is especially important for health. One way to understand the barrier function of the stratum corneum is to consider the following; The corneocytes (made of tough protein) form blocks and between these a double layer of lipids (fatty materials) and water make up the space in between the blocks. Some lipids have a hard crystal-like structure and are impermeable to water. Others lipids do not have this structure and they allow water to percolate through. So, the barrier is semi-permeable. The elasticity, firmness and correct functioning of the stratum corneum depends on its moisture content. Retention of water is aided by substances in the skin called natural moisturising factors (NMFs). If the moisture content is too high or too low, it can affect the skin's barrier properties. If the skin becomes overhydrated, for example it causes NMF production to stop. If the skin dehydrates, the corneocytes are not shed as normal and the skin becomes rough, thickened and flaky, eventually leading to cracking because of loss of elasticity. The 'surface film' on the epidermis also acts as a barrier, to prevent bacteria and other contaminants from penetrating the skin. The film is slightly acidic and can help to neutralise the contaminants that are typically alkaline in nature. Excessive use of harsh alkaline soaps can destroy the acidity of the film and hence the protection it offers.
Problems occur when the skin's barrier is breached such as a material/agent penetrates the barrier layer or alters it so other materials/agents can penetrate it; and or a material/agent enters sweat ducts or hair follicles, by-passing the barrier layer. The skin has a limited range of protective responses. The most common one is inflammation. This is known as dermatitis or eczema. It is characterised by redness and heat from dilation of local blood vessels, swelling and blistering from plasma leaking from the vessels to the surrounding tissue and itch caused by stimulation of nerve fibres. Secondary changes due to infection and scratching include crusting, ulcers and thickening of the skin.’

Now that we have discussed the skin in detail, let’s discuss Osteopathy, its tenants as well as how it can be applied to the skin.
Tenet1: The body is a unit that includes the body, mind and spirit. All components must be taken into consideration when treating the person. This includes the skin as noted in detail above its functions are a vital, living, moving part of the entire
Tenet 2: Balance between structure and function; The integrity of the structure/anatomy (skin inclusive) will govern the function/physiology of that structure. Restricted integrity leads to restricted function and vice versa.
Tenet 3: The body is capable of healing itself; Health is the natural state of the body; our body possesses homeostatic, self regulatory mechanisms that it uses to heal itself from injury. In times of 'dis- ease' other parts of the body come out of their natural state of health in order to compensate for the dysfunction. The compensation may lead to imbalance and chronic dysfunction. Osteopaths aim to restore the body's self healing capacity by decreasing physiological effects of chronic body stresses and enhancing the immune system.
Tenet 4: Unimpeded flow of bodily fluids, blood and lymph are essential to maintenance of good health; As a result of physical/emotional trauma, tissues contract, twist and compress. The flow of body fluids becomes obstructed. Micro climates of under perfusion result and are considered to be a significant contributor to the onset of disease.
The aforementioned can and should be applied to dealing with the skin as well.

There are a range of techniques that are utilized in Osteopathy that are beneficial in different ways, for example, osteopathic mobilizations restore freedom in the tissues and normalizes fluid flow, triggering physiological healing; lymph drainage helps the flow of fluid, reduces water retention and swelling and so forth; techniques for conditions of the integumentary system as published by Journal of Osteopathic Medicine

TECHNIQUE	DERMATALOGIC APPLICATIONS	MECHANISM OF ACTION
Muscle Energy	Following Mohs micrographic surgery or any prolonged procedure in which the patient is in a non-neutral position for an extended period of time; dysesthesia syndromes	1) Patient performs an isometric contraction against a physician counterforce, holds for 3-5 seconds 2) Patient relaxes for 3-5 seconds 3) The restrictive barrier is further engaged by the physician 4) Steps 1-3 are repeated 2-4 times
Rib Raising	Primary hyperhidrosis; dysesthesia syndromes; herpes zoster; postherpetic neuralgia	1) Patient lies supine or lateral 2) Osteopath applies anterior, superior, and lateral pressure with finger pads on rib angles 3) Osteopath holds until release of tissues is felt 4) Physician repositions hands to treat subsequent ribs (typically treating 5 or 6 at a time)
Thoracic inlet release	Stasis dermatitis; lipodermatosclerosis; lymphedema; chronic wounds; atopic dermatitis	Physician's thumbs are placed on the transverse process of T2 and the head of the second rib, and the fourth and fifth fingers are placed between the clavicle and the first rib 2) The thoracic inlet is moved in the direction of restriction (direct) or of ease (indirect) until a release of the tissues is appreciated
Effleurage	Stasis dermatitis; lipodermatosclerosis;	1) Physician applies rotatory strokes of the palm and/ or fingers on the tissue in a

	lymphedema; chronic wounds; atopic dermatitis	distal-to-proximal (towards the heart) direction, acting as a mechanical pump to encourage venous and lymphatic return
Pedal pump	Stasis dermatitis; lipodermatosclerosis; lymphedema; chronic wounds; atopic dermatitis	1) Physician applies a pumping motion to the bilateral feet in a rhythmic fashion while patient is supine

Skin care is often associated with esthetics and this too has its place in Osteopathy, the skin is the first thing a person sees when you look at you and therefore weather conscious or unconscious you tend to be judged in some shape or form by that initial visual first impression. What I am really trying to say is that looks matter. It shapes how one feels about themselves deeply impacting their emotional well being (their spirit); An article I read stated 'Visibility hurts,' and it's unfortunately a fact in our society. Imagine for a moment you are having a flare up of a rash like rosacea (or even acne- most of us can relate to that) on your face or somewhere else visible to others. The psychological effects this has on a person can impinge on their ability to socialize, perform in everyday life and overall quality of life. The first tenant in Osteopathy is the body is a unit that includes the body, mind and spirit. The spirit is what makes us unique, it is the 'you' factor and like every other part of a human being its sub optimal functioning leads to dis-ease. Dr. Trotter says: "As an osteopathic dermatologist, you're treating this disease, but also treating the person and understanding how their skin disease affects them in a greater way." So you see the optics of the skin also plays a vital role in one's overall health. Which is a great Segway in to aging or should I say anti aging?

I struggled with anti aging and Osteopathy and how they could coincide however the pandemic lead me into this world and after learning the science and the effect aging has on some, it became clearer to me that it is something that needs focus and attention in Osteopathy. Society has engrained into most that aging (especially for women) and its effects are undesirable. Skin sags, wrinkles form, fat pads in face droop the skin becomes looser and less elastic, you don't look like what you remember; but this is natural, we are constantly changing, a baby does not look like they would as a child, a child does not look like they would as a teenager, a teenager does not look like they would as an adult and an adult does not look like they would as a senior. Life is constantly changing but sometimes change is difficult to accept especially with everything else around you says it's ugly. People can turn to things like Botox, Dermal fillers and even surgery to 'correct' their look and to maintain a more youthful appearance which are effective but is there a more natural way to enhance the look of youth? Can Osteopathy play a role? The facial muscles can tighten up just like the muscles in the rest of the body – working on releasing that tension can bring more symmetry to the face, reduce the look of fine lines and even shape the face for a more desirable look.

The following Osteopathic techniques can be utilized in the following ways for desired results.

- Lymph Drainage reduces swelling/inflammation, giving the face a slimmer appearance

- Soft Tissue Therapy for the muscles bring fresh blood and nutrients giving a healthier look to the tissues. This can also help to reduce fine lines
- Myofascial release allows the structures (muscles, tendons and ligaments) to return to a place of ease, decreasing the look of fine lines providing a smoother looking texture to the skin and can also help things look more symmetrical
- Mobilization of the facial bones allows for better flexibility and movement in the bones and the surrounding tissues that attach to it.
- Cranial Osteopathy/Craniosacral Therapy utilizes gentle manipulation of the cranium and facial bones to bring about better generalized ease throughout the body, mind and spirit, help balance symmetry of the face and relax the face, head, neck and back; Cranial Osteopathy can also help to improve posture giving you a taller more confident appearance.

In conclusion, Osteopathy and skin care go hand in hand, from inflammatory skin conditions, to excessive sweating and even anti aging techniques it is all encompassing and in fact can be an essential part of the overall treatment. Including skin care as a routine part of an Osteopathic treatment ensures one is truly providing an 'all inclusive' approach to care (Tenet1: The body is a unit that includes the body, mind and spirit.); this results in optimizing the clients ability to move to a place where the person can attain balance (Tenet 2: Balance between structure and function); From here things start to move more freely and the tissues are able to get the necessary nutrients it needs (Tenet 4: Unimpeded flow of bodily fluids, blood and lymph are essential to maintenance of good health) and as such can then continue to heal itself (Tenet 3: The body is capable of healing itself). I hope that this branch of Osteopathy is recognized for its value and positive contributions to this field of study.

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