UBT249
Anatomy and physiology for microblading techniques

Unit reference number: L/615/6166

Level: 4

Guided Learning (GL) hours: 20

Overview

The aim of this unit is to provide learners with the necessary underpinning knowledge of relevant human anatomy and physiology to enable them to perform effective and safe microblading services for eyebrow treatments. Learners will develop an understanding of the organisation within the main body systems and the associated pathologies. This will provide the learners with a sound platform to safely and confidently apply microblading services to the eyebrows.

Learning outcomes

On completion of this unit, learners will:

LO1 Know the relevant anatomy and physiology for microblading services

LO2 Understand the common pathologies associated with the systems

Assessment requirements

Learners must complete **all** assessment requirements related to this unit:

1. External examination

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All of the assessment criteria will be assessed in the external examination at the end of the period of learning. Learners should use the unit content section to aid revision.

The overarching external examination will be set and marked by VTCT. Learners must achieve a pass mark of 70%. Criteria not achieved will be identified to the tutor/assessor who will then orally question or ask learners to produce other forms of evidence as all unit criteria must be achieved.

Unit content

LO1 Know the relevant anatomy and physiology for microblading services

Define the structure and functions of the skin:

- The structure of the skin has three main layers
    - Epidermis – stratified epithelial tissue, stratum germinativum, stratum spinosum, stratum granulosum, stratum lucidum, stratum corneum
    - Dermis – blood/lymph supply, papillary layer, reticular layer, collagen, elastin, macrophages, adipocytes, mast cells, fibroblasts, hair, dermal papilla, sebaceous glands and sebum, arrector pili muscle, sweat glands (eccrine and apocrine), sensory nerve endings (Meissener's corpuscles, Pacinian corpuscles, Merkel's discs, Ruffini corpuscles)
    - Hypodermis – subcutaneous layer, adipose tissue, adipocytes
- The functions of the skin
    - Secretion
    - Heat regulation
    - Absorption
    - Protection
    - Excretion
    - Sensation
    - Vitamin D formation
    - Melanin formation
- Different skin types
    - Normal – fine texture, no visible pores, smooth, supple, flexible
    - Oily – shiny, slight thickening, sallow, coarse texture, enlarged pores, congestion, comedones
    - Combination – combination of two or more skin types, usually oily T-zone, normal or dry on cheeks
    - Dry – lacks moisture, dry to touch, flakiness, fine texture, thin, tight, small pores, broken capillaries, ageing
- Different skin conditions
    - Mature
    - Sensitive
    - Dehydrated
    - Congested
- Skin characteristics
    - Sensitive – often pale skins, dry, colour easily, redness, react to products
    - Dehydrated – normal sebaceous secretions but still flaky, tight
    - Mature – loss of elasticity, loose muscle tone, wrinkles
    - Congested – areas on the face where there are a collection of comedones, papules, pustules and/or milia
    - Examples of skin imperfections – broken capillaries, pustules, papules milia, comedones, open pores, fine lines and wrinkles, keloid scarring, scarring

Define the processes of wound healing:

- Principles of skin healing – wound healing is a complex and dynamic process of restoration of skin cell structures and tissue layers

- Wound healing – bleeding generally follows a tissue injury via an incision. The cascade of vasoconstriction and coagulation begins with clotted blood immediately impregnating the wound, leading to haemostasis, and after dehydration a scab forms. An influx of inflammatory cells follows, with the release of cellular substances and mediators
- Angiogenesis (growth of blood vessels) and re-epithelization occurs and the deposition of new cellular and extra cellular components ensues
- Phases of skin healing – inflammatory phase (occurs immediately following the injury and lasts approximately 6 days), fibroblastic phase (occurs at the termination of the inflammatory phase and can last up to 4 weeks), scar maturation phase (begins at the 4th week and can last for years)
- Factors which interfere with wound healing/trauma – initial or repetitive, scalds and burns (both physical and chemical), animal bites or insect stings, pressure, vascular compromise, arterial, venous or mixed, immunodeficiency, malignancy, connective tissue disorders, nutritional deficiencies, psychosocial disorders, adverse effects of medications

Define the structure and function of the endocrine system and its effect on skin conditions which may affect the client receiving microblading treatment:

- Functions of the endocrine system – hormone secretion into the bloodstream, maintenance of homeostasis, control of bodily functions (stimulation/inhibition of growth, induction/suppression of cell death, inhibition of immune system, regulation of metabolism, preparation for new activity, preparation for new phase in life, controlling reproductive cycle)
- Location, structure and function – endocrine glands (hypothalamus, pituitary, pineal, thyroid, parathyroid, thymus, pancreas, adrenal, ovaries, testes), associated hormones and hormone actions (thyroid stimulating hormone, adrenocorticotrophic hormone, human growth hormone, follicle stimulating hormone, luteinising hormone, lactogenic hormone, antidiuretic hormone, oxytocin, melatonin, thyroxine T3, calcitonin, parathormone, insulin, glucagon, aldosterone, cortisone, testosterone, oestrogen, progesterone, adrenalin, noradrenaline), relationship of endocrine system with other body systems (nervous, circulatory, digestive, reproductive, integumentary), growth and repair
- Pathologies – causes, signs and symptoms (e.g. thyrotoxicosis, myxoedema, goitre, Addison's syndrome, Cushing's syndrome, diabetes mellitus, diabetes insipidus)
- Effect of hormones on the skin
    - Melanin stimulating hormone (MSH) – vitiligo, a form of hypopigmentation caused by the loss of pigment-producing cells in the skin (melanocytes). It is also linked to hyperthyroidism and Addison's disease
    - Melasma (hormonal pigmentation) – due to hormonal changes, mainly in oestrogen levels during pregnancy or menopause
    - Testosterone – affects sebum levels, acne
- Effect of thyroxin on the skin:
    - Too much thyroxin – warm, smooth, sweaty, flushed appearance to the skin
    - Too little thyroxin – dry, coarse, thickening of skin, reduced ability to sweat
- Effect of loss of oestrogen on the skin
    - Drying effect, loss of elasticity, less collagen production, reduction of the number of blood vessels, paler appearance
- Effect on client receiving microblading treatment
    - Pigmentation affects may alter treatment, endocrine pathologies may be contra-indicated

Define the structure and function of circulatory system:

- Functions of blood – transport, regulation, protection, clotting
    - The structure of veins, venules and capillaries

    - The structure of arteries, arterioles and capillaries
- Main arteries of the face and head
    - Common carotid, external carotid, occipital, facial, maxillary, lingual, superficial temporal, thyroid
- Main veins of the face and head
    - External jugular, posterior external jugular, internal jugular, common facial, anterior facial, maxillary, superficial temporal
- Main arteries of the body
    - Aorta – ascending and descending, coronary, pulmonary, common carotid, subclavian, splenic, right and left iliac, renal artery, hepatic artery, superior and inferior mesenteric
- Main veins of the body
    - Superior vena cava, inferior vena cava, splenic vein, right and left iliac vein, renal vein, hepatic vein, hepatic portal vein
- Blood composition – erythrocytes, leucocytes, thrombocytes, plasma
- Circulation – heart, pulmonary circulation, capillaries, systemic circulation
- The process of blood clotting – platelets, thromboplastin, prothrombin, thrombin, fibrinogen, fibrin, calcium

Define the structure and function of the lymphatic system:

- The function of the lymphatic system
    - Fights infection by producing specialised cells
    - Transports digested fats
    - Removes waste, toxins and excess tissue fluid from tissues and cells
- The structure of the lymphatic system
    - Composition of lymphatic fluid (lymphocytes), lymphatic capillaries, lymphatic vessels, lymphatic nodes, lymphatic tissue
- Functions of lymph nodes – filter toxins, clean lymphatic fluid, produce antibodies and antitoxins, and produce lymphocytes
- The position of the main lymph nodes – body
    - Thoracic duct, right lymphatic duct, axillary, supra-trochlear, inguinal, cisterna chyli, popliteal, thymus gland, lacteals, spleen, thymus gland, superficial and deep cervical
    - Face – buccal, mandibular, mastoid, occipital, submental, submandibular, parotid (anterior auricular), mastoid (posterior auricular)
- The movement of lymph
    No central pump, skeletal/muscular contractions, pressure changes in the thorax

Define the structure and function of nerves of the face:

- The structure and function of the nerve cell
    - Neurone, neuroglia, nerve cell body, axon, Schwann cells, dendrite, myelin sheath, nodes of Ranvier, axon terminals, synapse, ganglia, reflex arc, grey matter, white matter, sensory nerve (afferent), motor nerve (efferent), mixed nerve, neurilemma, neuro-transmitters – acetylcholine and noradrenaline, synaptic cleft, plexus
- Characteristics of nervous tissue – irritability, conductivity
- The five senses – smell, sight, hearing, taste and touch
- The structure of the peripheral system, face and neck
    - 12 pairs of cranial nerves, 31 pairs of spinal nerves – 5th cranial nerve (trigeminal), 7th cranial nerve (facial) and 11th cranial nerve (accessory)
- The autonomic nervous system – sympathetic, parasympathetic

LO2 Understand the common pathologies associated with the systems

Define and describe the associated pathologies of the integumentary system:

- Allergic reaction, benign, bruise, bulla, crust, erythema, excoriation, fissures, haemangioma, hyperaemia, inflammation, keloid, macule, malignant, papule, pustule, nodule or cyst, oedema, scales, scar, tumour, ulcer, vesicle, weal, weeping, chilblains, couperose, telangiectasia, comedones, crow's feet, hyper-keratosis, milia, pseudo folliculitis, urticaria, hyperpigmentation, hypopigmentation, atopic eczema, atopic dermatitis, psoriasis, acne vulgaris, acne rosacea, boils, carbuncles, folliculitis, impetigo, herpes simplex, herpes zoster, warts, verrucae, candida, tinea corporis, albinism, chloasma, dermatosis papulosa nigra, ephelides, lentigo, leucoderma, naevae, papilloma, port wine stain (capillary naevus), vitiligo, sebaceous cysts (steatoma), skin tags (fibroma, filiformis), spider naevi, styes, xanthomas, prickly heat (miliaria rubra)

Define and describe the associated pathologies of the circulatory system:

- Anaemia, aneurism, arteriosclerosis, AIDS/HIV, coronary thrombosis, haemophilia, high and low blood pressure, high cholesterol, hepatitis A, B and C, leukaemia, phlebitis, septicaemia, stress, thrombosis, varicose veins, cardiac arrhythmia, cardiac failure, epistaxis (nosebleeds), heart disease, hole in the heart, palpitations, Raynaud's disease, sickle cell anaemia

Define and describe the associated pathologies of the lymphatic system:

- Hodgkin's disease, non-Hodgkin's lymphoma, Hashimoto's thyroiditis, lymphoma

Define and describe the associated pathologies of the nervous system:

- Bell's palsy, cancer, cerebral palsy, depression (clinical, bipolar seasonal affective disorder (SAD), post-natal), epilepsy, headache, migraine, motor neurone disease, multiple sclerosis, myalgic encephalomyelitis (ME), neuralgia, neuritis, Parkinson's disease, sciatica, stress, stroke, Alzheimer's disease, concussion, dementia, meningitis, paralysis, peripheral neuropathy, poliomyelitis, spinal cord injury, spinal bifida, tinnitus and Meniere's disease

Assessment criteria

In order to pass this unit, learners must achieve all pass criteria. The purple criteria will be tested by an external examination.

Learning outcome The learner must:	**Pass** The learner can:
LO1 Know the relevant anatomy and physiology for microblading services	**P1 Define the structure and functions of the skin**
	P2 Define the processes of wound healing
	P3 Define the structure and function of the endocrine system and its effect on skin conditions which may affect the client receiving microblading treatment
	P4 Define the structure and function of circulatory system
	P5 Define the structure and function of the lymphatic system
	P6 Define the structure and function of nerves of the face
LO2 Understand the common pathologies associated with the systems	**P7 Define and describe the associated pathologies of the integumentary system**
	P8 Define and describe the associated pathologies of the circulatory system
	P9 Define and describe the associated pathologies of the lymphatic system
	P10 Define and describe the associated pathologies of the nervous system

Version	Details of amendments	Date
v2	Clarification on which assessment criteria will be covered in the external examination – pages 2 and 7.	
v3	Amendment made to unit content, page 6 – removal of unnecessary examples	09/10/2017