Session 8
Nail signs
Session 8 Overview

Nutrient deficiency and disease associated Nail Diagnosis

Pre-Assessment Considerations:
- Working hypothesis of the pattern of disturbance
- Differential diagnoses
- Duty of care
- Medical ‘Red Flags’ - referral
Nail assessment

In the clinical setting, the nails provide a quick, easily accessible and non-invasive means of assessment. In the context of Objective data, nails can indicate overall health of the client and guide towards further questioning and investigations.

In general they give information about:
- Dietary intake
- Digestive absorption
- Blood flow
- Nutritive value of the blood
Common Causes of Nail Abnormalities

- Abnormalities in the colour, shape, texture, size or thickness of the nails are often the result of either injury, infection, disease, poisoning, nutritional deficiency or genetic pre-disposition, and can provide many clues as to underlying systemic disease long before other symptoms arise.
Nail Diagnosis
## Common Nail Signs

<table>
<thead>
<tr>
<th>Sign</th>
<th>Deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Splitting, fraying, chipping, peeling, easily broken</td>
<td>Vitamin A, C, D, calcium, protein intake and absorption, poor diet and malnutrition.</td>
</tr>
<tr>
<td>Thinning and Softening</td>
<td>Vitamin C, B12, protein intake and absorption, poor diet and malnutrition.</td>
</tr>
<tr>
<td>Horizontal Grooving or Ridging</td>
<td>Protein intake and absorption, poor diet and malnutrition.</td>
</tr>
<tr>
<td>Vertical Grooving or Ridging</td>
<td>Vitamin A, calcium, iron, silica, protein intake and absorption.</td>
</tr>
<tr>
<td>Brittleness</td>
<td>Iron</td>
</tr>
<tr>
<td>Spooning/koilonychia</td>
<td>Iron deficiency</td>
</tr>
</tbody>
</table>
Nutritional Deficiency
Splitting

Vitamin A, C, D, calcium, protein intake and absorption, poor diet and malnutrition.
Thinning & Softening

- Vitamin C, B12, protein intake and absorption, poor diet and malnutrition.
Horizontal Grooving or Ridging

- Protein intake and absorption, poor diet and malnutrition. Also signs of a systemic illness or trauma (Beaus Ridges.)
Transverse Depressions
(Beau’s Ridges)

- Interruption in protein formation and nail growth which often follows local trauma about one month after the event
- Can occur after illness, or major metabolic condition
- May reflect poor nutritional status, febrile illness, or a reaction to medication, Chemotherapy or other damaging event
- May indicate malnutrition
- Exposure to cold temperatures in patients with Raynaud's disease
Vertical Grooving or Ridging

- Vitamin A, calcium, iron, silica, protein intake and absorption.

Vertical nail ridges are fairly common with aging, probably due to the decrease in levels of moisture in our nails.

Examples of pronounced vertical ridges due to aging (healthy individuals)

buzzle.com
handresearch.com
Vertical striations

- Alopecia areata, vitiligo, atopic dermatitis, psoriasis, splinter haemorrhage
- Subacute bacterial endocarditis
- SLE
- Rheumatoid arthritis
- Peptic ulcer disease
- Oral contraceptive pill
- Pregnancy
- Ageing
Vertical (Longitudinal) Ridging

- Poor absorption of EFA's, Vitamins and Minerals (Iron, Silica); Thyroid dysfunction; Kidney failure

- May indicate a tendency to arthritis

- Occur in some patients with rheumatoid arthritis, peripheral vascular disease, lichen planus, or Darier's disease
Darier's Disease

- V-shaped nicking and red/white longitudinal striations of Darier's disease
Brittleness
Koilonychia

- Koilonychia is associated with chronic iron deficiency anaemia. It has even been reported in haemo-chromatosis.
- It can be a normal finding in infants and resolves within the first 18-24 months of life.
Spooning or Concavity

- Associated with iron-deficiency anaemia and Plummer-Vinson syndrome, as a result of thinning and softening of the nail plate
- Spoon-shaped nails are a normal, physiologic occurrence in children and tend to resolve, either with treatment or with ageing
- Indicate deficiency of iron, protein (especially sulphur containing amino acids)
- Possible precursor to haemochromatosis
- Raynaud's disease; SLE
Spooning or Concavity
Brief case scenario:

- A client presents with digestive problems (cramping and bloating after meals) and a largely takeaway vegetarian based diet. Additionally she has heavy menstrual bleeding and has been feeling very fatigued for several months.

- What appearance would you expect her nails to have? What deficiency is it most likely indicative of? How long might she have had this deficiency?
Pitting
(punctate depressions)
Pitting (punctate depressions)

- Punctate depressions in the nail plate, sometimes with yellow or brown ‘oil’ spots
- The pits represent abnormal keratinisation in the nail matrix
- Indication of connective tissue disorders
- Most commonly occurs with psoriasis, less so with alopecia areata and eczema
- Reiter’s syndrome
- Sarcoidosis
- Pemphigus
- Alopecia areata (Fawcett et al, 2004)
**Brief case scenario:**
A 75 year old client presents with long term reflux and arthritis that she manages with pain killers, the most recent of which is Panadol-Osteo which she finds helpful. On review, her diet is very refined and deficient of many nutrients, especially essential fatty acids.

What would you anticipate her nails might be like? What kind of nail signs? What nutrients or dietary changes would you suggest to improve her nails (and her overall health)?
# Nail signs indicative of Nutritional Deficiency

<table>
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<tr>
<th>Sign</th>
<th>Deficiency</th>
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<tr>
<td>White Spots</td>
<td>Vitamin A, calcium, zinc (Bakan, 1990)</td>
</tr>
<tr>
<td>Paleness or whitening</td>
<td>Iron, B12, Folic Acid, protein intake and absorption.</td>
</tr>
<tr>
<td>Yellowing</td>
<td>Vitamin E</td>
</tr>
<tr>
<td>Darkening or blackening</td>
<td>Vitamin B12</td>
</tr>
<tr>
<td>Pitted red-brown spot</td>
<td>Vitamin C</td>
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</tbody>
</table>
White Spots

- Vitamin A,
- calcium, zinc
  - (Bakan 1990)

nailsmag.com

examiner.com
Paleness or whitening

- Iron, B12, Folic Acid, protein intake and absorption.

www.tti.library.tcu.edu.tw/DERMATOLOGY/na/na0023f.htm

www.tti.library.tcu.edu.tw/DERMATOLOGY/na/na0025f.htm
White Nail

- White, Crumbly and Soft
  - May be fungal infection

- White with red at the tips
  - Cirrhosis of the liver
  - Kidney disorders
  - Anaemia
  - Fungal infection
White Nail

- Unusual whitening of the nail plate where the lunula may be obliterated, may result from:
  - Liver disease (Cirrhosis).
  - Kidney dysfunction
  - Diabetes mellitus
  - Heart Disease
  - Hyperthyroidism
  - Anaemia
  - Arsenic poisoning
  - Renal failure
  - Pneumonia
  - Hypo-albuminaemia
Muehrcke's Lines
(pairs of transverse white lines)

- Interruption of pigmentation
  (Specific for hypo-albuminaemia)
- May disappear when protein levels normalise
- May also indicate Kidney disease
- Liver disease
- Malnutrition
- Chemotherapy

(Fawcett et al, 2004)
Mees' lines (Aldrich-Mees' lines)

- Single transverse white line
- Heavy metal poisoning
- Sign of ‘interrupted’ metabolic activity;
- Hodgkin's disease
- Congestive Heart Failure
- Malaria
- Chemotherapy
- Carbon monoxide poisoning
- Renal failure.

(Fawcett et al, 2004)
Yellowing

- Usually associated with Lymphedema & Respiratory tract disorders (Tosti & Piraccini, 2000)
- Pulmonary disorders (e.g. Bronchiectasis, Tuberculosis, Pleural Effusion)
- Lymphatic dysfunction (Lymphoedema, especially of the ankles)
- Rheumatoid arthritis
- Renal disease (Nephrotic syndrome)
Yellowing

- Immuno-deficiency
- Vitamin E deficiency
- Thyroiditis
- Raynaud's disease
- Liver dysfunction
- Fungal infection
- Psoriasis
Yellow Tips

- Liver problems
- Melanoma
- Digestive disturbances
- Smoker
- Tetracycline.
- **Rx** = Oral Vitamin E at doses 600-1200 IU daily for 6-12mths may induce complete clearing of nail changes (Tosti & Piraccini, 2000)
Green

- Pseudomonas
- Candidiasis
- Bacillus infection
- Localized fungal infection
- Allergies to cleaning agent
- Serious emphysema
Pitted red-brown spot

- Pitted red-brown spots
  - May indicate psoriasis
  - Deficiency of folic acid, protein and/or Vitamin C
Red Nail

- Red Bands at the Tips (Terry’s Nails)
  - Liver disease
  - Renal disease

- Redness of the lunula
  - Excess of RBC
  - Heart disease
  - Collagen vascular disease
  - Haematological malignancy
  - Tetracycline therapy
Grey

- Arthritis
- Oedema
- Malnutrition
- Post-operative effects
- Glaucoma
- Cardio-pulmonary disease

www.health-network.co.uk
Blue or Blue-Grey Nails

- Blue or Deep Blue:
  - Indicates poor oxygenation of the blood
  - Lupus erythematosus/ RA
  - Liver disease (Hepatitis)
  - Kidney disease
  - Copper or silver poisoning
  - Anaemia (Decreased haemoglobin)
  - Increased inflammation
  - Cholesterol

Fawcett et al, 2004)
Blue, Purple, Black Nails

- Blue, Purple & Black
  - Usually due to trauma
  - May be a sign of vitamin B12 deficiency
  - Oxygen deprivation
  - Circulatory problems
  - Congenital disorder

- Blue or ‘azure’ lunula
  - May indicate Wilson’s Disease (Hepatolenticular degeneration)
  - Quinacrine therapy
  - Pulmonary disease
  - Silver poisoning
Darkening Brown

- Browning
  - Excessive fluoride ingestion; Arsenic or copper poisoning; Fungal infection
  - Brown discoloration that has spread to the surrounding tissue could indicate gastro-intestinal polyps or malignant melanoma
- Pitted brown spots or splits fingernail tips
  - May indicate psoriasis
- Brown Spots are typically a sign of infection (Fungal)
- Dark nails that are flat and/or thin
  - Indicate vitamin B(12) deficiency
- Dark pigment on distal nail: Drug-induced (Phenothiazines)
Darkening or blackening

- Vitamin B12
Darkening Black

- Blackening or Darkening
  - Excessive fluoride ingestion
  - Heavy metal poisoning (Silver)
  - Anaemia
  - B-12 deficiency
  - Bacterial infection
  - Kidney disease
  - Adrenal gland problems
  - Liver disease
  - Cancer or melanoma
  - Trauma
Darkening Black

- Black Spots
  - Typically a sign of infection
  - Any black discolouration that has spread to the surrounding tissue could indicate gastro-intestinal polyps or malignant melanoma

www.medscape.com
Longitudinal Melanonychia

- Black discoloration of the proximal nail fold at the base of the pigmented streak (Hutchinson's sign) is a sign for melanoma.
- Longitudinal melanonychia in one nail without an obvious explanation warrants a biopsy of the nail matrix. Melanoma of the nail unit has a poor prognosis.
Half White & Half Brown Nails

- Renal disease
- Increased melanin production

(Fawcett et al, 2004)
Onychomycosis (Tinea unguium)

- A fungal or yeast infection of the nail, usually caused by Tinea rubrum, T. mentagrophytes, or Candida albicans
- Most common nail disorder!

- Predisposing factors for infection include immune problems, heat, moisture, trauma, diabetes mellitus, and tinea pedis

- Affected nails are dystrophic and hyperkeratotic (thickened), often with yellow-brown discoloration
Onychomycosis (Tinea unguium)

- Treatment can be symptomatic, frequently with the aid of a podiatrist for toenail onychomycosis. If warranted, systemic treatment involves the use of either terbinafine or itraconazole (Success with either agent is less than 50%, and recurrences are common)

http://www.dermnetnz.org/fungal/candida.html

SOURCE: CDC/Dr. Edwin P. Ewing, Jr.
Nail Plate Separation (Onycholysis)

- It can be caused by any local problem, such as periungual warts or onychomycosis.
- In patients with hyperthyroidism, onycholysis is known as ‘Plummer's nails’.
- Hyperthyroidism also can cause brown discoloration of the nail plate.
- Psoriasis.
- In the absence of trauma or psoriasis, onycholysis should prompt a search for symptoms of hyperthyroidism.
- Anaemia.
Nail Plate Separation (Onycholysis)

- Fungal, Yeast or Bacterial Infections
- Medications, Drugs (e.g. Tetracycline)
- Chemotherapy
- Raynaud’s disease
- SLE
- Thyrotoxicosis
- Hyperthyroidism
- Amyloidosis
- Sarcoidosis and other connective tissue disorders
Nail Plate Separation

- Onycholysis may accompany psoriasis, when the distal portion of the nail matrix is affected
Psoriasis

- Characterised by raw, scaly skin and is sometimes confused with eczema
- When it attacks the nail plate, it will leave it pitted, dry, and it will often crumble. The plate may separate from the nail bed and may also appear red, orange or brown, with red spots in the lunula
Thickened Nails

- Unusually thick nails: may be the result of internal disorders
- May indicate a weakening of the vascular system, with circulatory problems
- Fungal infections
- Heredity
- Mild, persistent trauma to the nail
Nail Hematoma

- The result of trauma to the nail plate, such as trapping your finger in the car door or hitting the fingernail with a hammer
Pterygium of Nail

- An inward advance of skin over the nail plate
- Usually the result of trauma to the matrix due to a surgical procedure, or by a deep cut to the nail plate
- Pterygium results in the loss of the nail plate due to the development of scar tissue
In-grown Toenail (Onychogryposis)

- Claw-type nails, characterised by a thickened nail plate and often the result of trauma
- Often require surgical intervention to relieve the pain
Clubbing

- Clubbing is one example of a nail manifestation of systemic disease and was first described by Hippocrates in the fifth century B.C., and may indicate:
  - Pulmonary Disease, including Bronchiectasis, Bronchitis, Lung abscess, Empyema, Pulmonary Fibrosis, Cystic Fibrosis, Asbestosis, Malignancy
  - Cirrhosis of the Liver
  - Cardiac Disease, such as Congenital Heart Disease, Endocarditis, Atrioventricular malformations, Fistulas
  - GIT Diseases, such as: Coeliac Disease, Ulcerative Colitis or Inflammatory Bowel Disease
  - Hyperthyroidism
Clubbing

- The finding of clubbing without obvious associated disease should prompt a search for bronchial or cardiac disease
Splinter Haemorrhage

- This sign often follows trauma to the nail
- If no trauma, look for bacterial endocarditis
- They may resolve, recur, or persist (Fawcett et al, 2004)
- Possible indication of vitamin C deficiency
Verruca Vulgaris (Warts)

- Warts, or verruca vulgaris, are an infection of the proximal and lateral nail folds
- The human papilloma virus (HPV), types 1, 2, and 4 are primarily responsible
- Because of the location, these warts are particularly difficult to treat, especially if they extend subungually
- Subungual warts may cause deformity or discoloration of the nail plate
- Affected patients are often ‘nail biters’
Paronychia Infection

- Can be caused by a number of bacteria, fungi, yeast and viruses
- Usually staphylococcus, streptococcus or candidiasis infection
Acute Paronychia

- Inflammation of the proximal and lateral nail folds characterised by erythema, oedema, and pain
- Purulent drainage with compression behind the cuticle may also occur
- Trauma is often the initial event with secondary infection with *Staphylococcus aureus* or *Streptococcus pyogenes*
- Treatment usually requires compresses and an oral anti-staphylococcal antibiotic
Chronic Paronychia

- Usually a non-infectious disease that follows irritant or allergic contact dermatitis of the proximal nail fold
- The cuticle is invariably absent
- Affected individuals often trim the cuticles aggressively, or do ‘wet work’ with their hands
- Secondary infection with *Candida albicans* is common
- Treatment involves aeration, and a topical and/or oral antifungal agent
Tinea Unguis
(Ringworm of the nails)

- Fungal infection, characterised by nail thickening, deformity, and eventually results in nail plate loss.
Squamous Cell Carcinoma (SCC)

- The most common malignancy of the nail unit
- SCC is usually a verrucal (warty) plaque on the lateral nail fold of the finger, and may resemble a wart unresponsive to traditional therapy
- SCC is associated with HPV-16 infection and less so with trauma and radiation
- SCC of the nail unit grows slowly and metastasis is rare
Melanonychia
(vertical pigmented bands)

- Described as nail 'moles' which usually form in the nail matrix
- Could signify malignant melanoma or lesion
Other Nail Considerations

- **Over-Sized Moons:**
  - Overactive thyroid;
  - Genetics;
  - Self-induced trauma

- **No Moons:**
  - Under-active thyroid;
  - Genetics.

[Image](https://www.health-boundaries.com/fingernails-linesridges)
Naturopathic consultation process

Having gathered information about the patient (both subjective & objective) the next step in the Naturopathic consultation process involves analysing the various information and putting into some form of perspective.

Considerations prior to formulating an assessment of the patient should include:

- Working hypothesis of the pattern of disturbance
- Differential diagnosis
- Rule-ins/rule-outs
- Medical Red Flags – need for referral?
- Duty of care/scope of practice
Pattern of Disturbance

Via the process of gathering patient information the Naturopath begins to formulate an impression of what is going on with the patient (their pattern of disturbance).

This impression is formed from information relating to the physical, mental/psychological, emotional & “spiritual” aspects of the patient and their health condition.

Where a biomedical practitioner aims to identify/diagnose a disease entity so that the specific pathophysiology can be determined and treated, the Naturopath looks to understand:

• the pattern of disturbance;
• the disturbing factors/obstacles to cure;
• the process of disease/health (is the condition acute/sub-acute/chronic/degenerative).
Analysing the Pattern of Disturbance

• Is there a central theme or a “weak link” in the patient’s life that has led to their current condition of health?

• What are the contributing or disturbing factors to the patient’s condition?

• At this present time, what are the driving factors in the patient’s health condition?

• What tissues, organs, systems are affected?

• What degenerative processes are at play currently?

• What regenerative processes are at play currently?
The Mind Map and the Timeline of Health are useful tools for assisting to formulate an impression of the patient’s pattern of disturbance.
Tutorial

Review the Tutorial Case provided, develop a mind map and treatment strategy for the case. Consider prioritising treatment, differential diagnosis, further investigations needed, long and short term goals and treatment plan options.

Apply holistic principles to your case understanding.

If time allows look at the other case studies and apply the same considerations

Handout Cases 1, 2, 3, 4
Tutorial

Tongue and nail assessment on a partner

1. Chose a partner and conduct a Nail and Tongue assessment.
2. Explain Nail and Tongue assessment to your partner and let them know what you plan to do.
3. In easy to understand terms describe to your partner your findings. Imagine that they are a first appointment client.
4. Now allow your partner to give you feedback on your Nail and Tongue assessment skills and also how they felt with your explanation and account of your findings on their tongue and nail appearance.
Bibliography

Bibliography

20. just.health.com
22. www.health-boundaries.com/fingernails-linesridges
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