Hair and nails

Paul Grinzi

Background

Hair and nails are elements of dermatology that can often be omitted from the dermatological assessment. However, there are common and distressing hair and nail conditions that require diagnosis and management.

Objective

This article considers common and important hair and nail presentations to general practice. General and specific conditions will be discussed.

Discussion

Hair conditions may have significant psychological implications. This article considers assessment and management of conditions of too much hair, hair loss or hair in the wrong places. It also considers the common nail conditions seen in general practice and provides a guide to diagnosis and management.

Keywords: nail diseases; hair diseases; hirsutism; alopecia; onychomycosis; skin diseases

CPD

The hair and nails are often neglected in our dermatological assessments, as the sheer number and breadth of conditions affecting the skin can seem overwhelming. This article focuses on common and important presentations to general practice, including general and specific conditions affecting both hair and nails.

Hair

Structure and function

Although hair no longer has any vital physiological function, its social and psychological role is extremely important. Abnormalities of hair often significantly affect self image and the associated psychological distress should not be ignored or dismissed.

Hair arises from the hair matrix (part of the epidermis) and is made up of modified keratin. In humans, hair follicles show intermittent activity. Over its lifecycle, each hair grows to a maximum length (this phase is called anagen and can last 3–7 years), and is retained for a short time without further growth (catagen, this phase lasts from a few days to 2 weeks), and is eventually shed and replaced (telogen, variable period) by a new anagen phase (*Figure 1*).

Hypertrichosis – too much hair

Hypertrichosis can be congenital (eg. trisomy 18 and porphyria) or acquired (eg. thyroid conditions, fetal alcohol syndrome, malnutrition), and refers to excessive hair growth which may be localised or universal (*Figure 2*).[1] Two important considerations are iatrogenic causes such as certain drugs (eg. cortisone, penicillamine, psoralens, phenytoin, diazoxide, minoxidil, cyclosporine, streptomycin), and repeated or chronic dermal inflammation (eg. chronic rubbing, burns).

Hirsutism – hair in the wrong spot

Hirsutism is when a woman's body hair is in the same pattern as normal postpubertal males, ie. hair in the midline involving the lip, chin and sternum, and male pattern of pubic hair that rises up toward the umbilicus (*Figure 3*). Hirsutism varies in severity, and its acceptability is influenced by cultural and social factors.

Assessment of a hirsute patient should include a general examination to identify an underlying endocrine abnormality (such as polycystic ovarian syndrome or congenital adrenal hyperplasia), particularly if there is a history associated with amenorrhoea and signs of virilisation, although there is debate about how far to

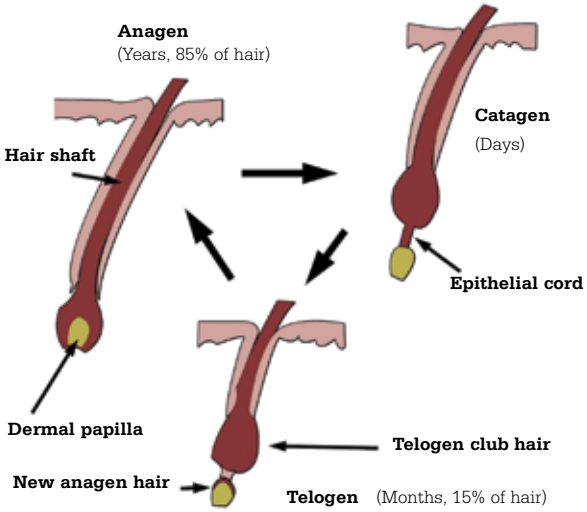

Figure 1. Hair cycle

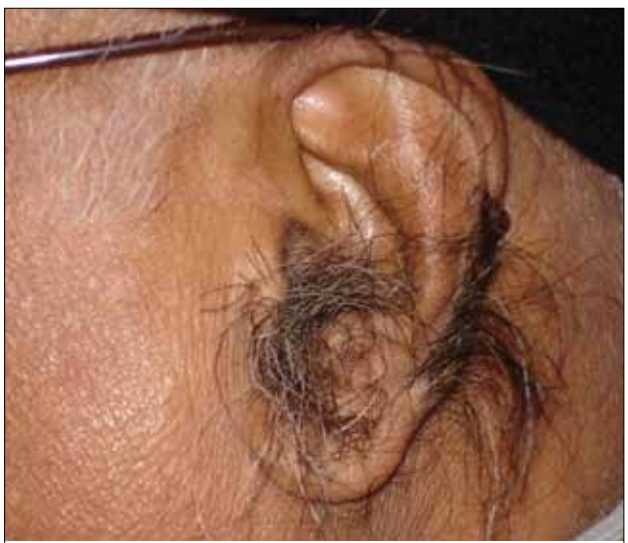

Figure 2. Hypertrichosis
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investigate patients with hirsutism.[1] It has been suggested that morning blood testosterone concentration should be measured when the hirsutism is severe, combined with menstrual irregularities, of recent onset or combined with virilisation.[2]

Treatment of both hypertrichosis and hirsutism is directed at the underlying cause (eg. ceasing a drug, treating thyroid condition) where possible. Hyperandrogenic hirsutism may also respond to cyproterone acetate and spironolactone.[2] Symptomatic options include bleaching agents, depilatory creams, shaving, waxing and electrolysis.

Alopecia – diffuse

Hair loss may be the primary reason for presenting to a general practitioner. Assessment should include whether the hair loss is diffuse or circumscribed, in addition to whether the scalp skin is also affected.

Androgenic alopecia

Androgenic alopecia is often referred to as 'male pattern baldness'. In males, the typical pattern is of recession of the frontotemporal hair with progression to affect the vertex.[3] While this condition affects mainly men (50% of males by the age of 50 years),[4] one shouldn't forget the impact this condition has on the smaller proportion of female sufferers (where the pattern usually is confined to the vertex)[4] which occurs more commonly after menopause. The scalp is unaffected (*Figure 4*).

Causes of androgenic alopecia appear to be multifactorial and are generally triggered by a genetically determined androgenic sensitivity of the hair. This leads to a reversal of the usual long anagen/short telogen phase of the hair cycle, resulting in increasingly shorter and finer hair growth which eventually transforms into vellus-type hair. While most sufferers are andogenically normal (for their gender), it is worth considering assessing clinically for signs of androgen excess such as acne, hirsutism, irregular menses or virilisation, and if present, blood testing is indicated.[2,5]

Options for treatment of this common cause of baldness include surgical (eg. hair transplantation), cosmetic (wigs, hair styling), or medical (topical minoxidil or oral finasteride) measures. Improvements from medical treatments are only sustained for the duration of treatment, so it is important to explore the patient's expectations of treatment when discussing these options.

Telogen effluvium

Telogen efflufium is a transient condition that often occurs 2–4 months following a physically or psychologically stressful event. The event, which could range from surgical stress, acute severe illness, emotional crisis, or pregnancy, leads to a number of hairs to progress from anagen to catagen. This then results in a large number of hairs being shed at the same time a few months after the event. Therefore, taking a history of the preceding few months before presentation can provide important clues.

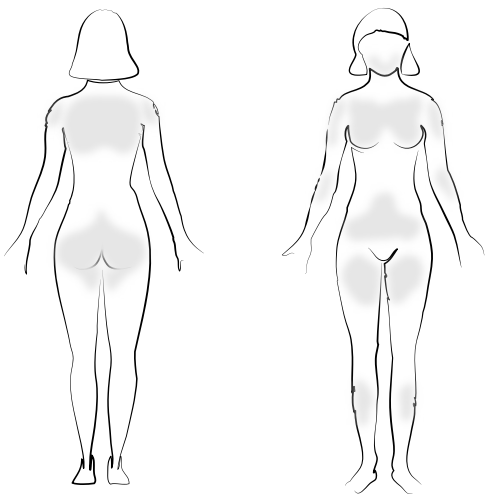

Figure 3. Pattern of hirsutism

Examination involves gently pulling the hair, which results in painless removal of a large number of telogen hairs. Investigations should focus on excluding underlying conditions such as thyroid disease, iron deficiency and protein deficiency.

Management is focused on education and reassurance of the patient, as spontaneous regrowth over a period of 2–3 months is expected. No active intervention is required.

Alopecia – localised

The assessment of a patient with patchy alopecia should include an assessment of the underlying scalp, as this will greatly assist in narrowing the possible differential diagnoses to be considered.

Alopecia areata

Alopecia areata presents as well circumscribed, totally smooth patch/patches of alopecia (*Figure 5*). Patients with this relatively common condition often have a genetic predisposition or atopic history. The exact triggering aetiology is not well understood, with autoimmune, emotional, infective and chromosomal problems being proffered in the literature.[1,3] Alopecia areata most commonly occurs in the first two decades of life and has an equal gender distribution.

Figure 4. Androgenic alopecia

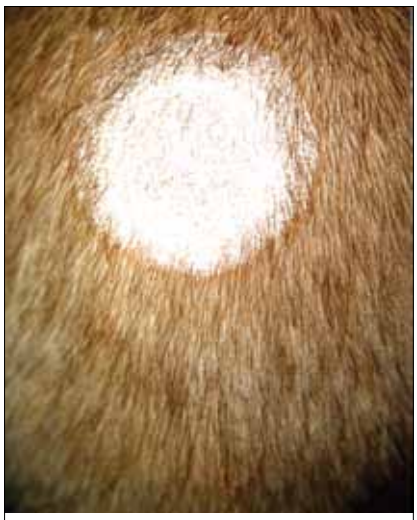

Figure 5. Alopecia areata

This condition can affect any hair-bearing body region, but commonly presents as scalp involvement. Physical examination reveals 'exclamation mark hairs' at the periphery of the affected patch with sparing of white hairs. This phenomenon may result in the perception of the hair 'going white overnight'.[1,3,5] The skin should be completely normal and a biopsy should be considered to exclude differential diagnoses.

Current management options are usually unsatisfactory, and may include potent topical, intralesional or systemic corticosteroids, cyclosporine, minoxidil, and chemotherapy. General practitioners should consider a dermatologist's opinion regarding treatment, which may result in a 'wait and see' approach, as spontaneous recovery is usual (95% in 12 months).[6] The prognosis is poorer with more widespread involvement, coexisting atopic eczema and younger age of onset (less than 5 years of age).[3–5]

Trichotillomania

Another cause of patchy hair loss, without scalp involvement, is trichotillomania. This is caused by excessive pulling or twisting of the hair (often part of a habitual behaviour). It is most commonly seen in children, but can be seen in adults with coexisting mental health concerns (when there is a poorer prognosis).[3,6] Clinically the affected area is asymmetrical (often to the side of hand dominance), revealing twisted and fragmented broken hairs of differing lengths. Differential diagnoses include traumatic (eg. traction from excessively tight hair styling), chemical and infective (eg. secondary syphilis, tinea capitus) causes.

Alopecia – scarring

The scarring forms of alopecia are permanent due to fibrotic destruction of the hair follicle (*Figure 6*). These conditions are commonly grouped together under the term 'primary cicatricial alopecia' and include lichen planopilaris, discoid lupus erythematosis and forms of folliculitis. The term pseudopelade is used to describe scarring alopecia of unknown cause.

Diagnosis of the cause of cicatricial alopecia involves assessing the scalp for signs of folliculitis, follicular plugging or broken hairs. Hairs from the edge of the bald area should be sent for microscopy and culture. In addition to a general skin examination and systemic studies (carried out where appropriate, such as if concerned about systemic lupus erythematosus), the GP should arrange to biopsy the affected area, aiming for multiple 4 mm punch biopsies of early/active lesions sent for histology and direct immunoflurescence. The clinical and histological features will permit a more specific diagnosis, which guides further management and/or referral. The prognosis of these conditions is variable, depending on the amount of scarring at the time of diagnosis. Many of these conditions tend to relapse once treatment is stopped.

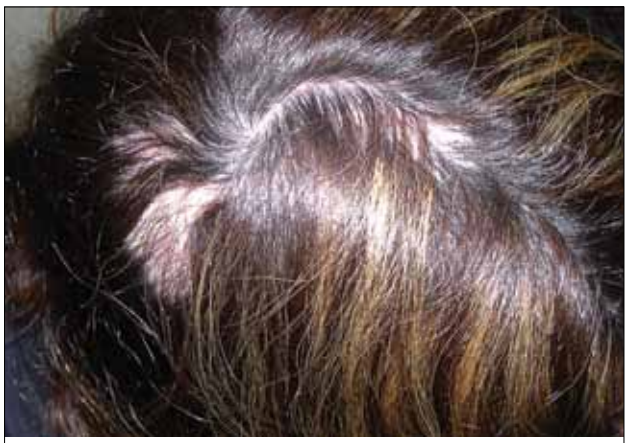

Figure 6. Scarring alopecia

Figure 7. Folliculitis decalvans

Folliculitis decalvans

This condition of unknown aetiology is characterised by induration of the scalp with pustules, scale and erosions (*Figure 7*). *Staphylococcus aureus* is invariably grown from the pustular lesions. Treatment involves a prolonged course of systemic anti-staphlococcal therapy.

Lichen planopilaris

Lichen planopilaris is essentially lichen planus affecting the scalp, resulting in alopecia. The affected skin is itchy, with a violaceous appearance, associated perifollicular erythema, follicular plugging and scarring. Lichen planopilaris is treated with potent topical steroids.

Erosive pustular dermatitis

Erosive pustular dermatitis usually occurs in elderly women. It presents as red, painful, crusted erosions of the scalp. These erosions need to be differentiated from squamous cell carcinoma.

Dissecting folliculitis

This less common, chronic, progressive scalp disorder almost exclusively affects Afro-American males. It presents as suppurative, painful, boggy, sterile abscesses of the scalp, leading to scarring and alopecia and/or keloid formation. The cause is unknown and treatment includes systemic antibiotics, intralesional steroids and/or isotretinoin. It is associated with the similar conditions, acne conglobata and hidradenitis suppurativa.[1,4]

Discoid lupus erythematosus

This itchy condition is characterised by scaring, erythema, hypopigmentation and follicular plugging of the scalp (*Figure 8*). Discoid lupus erythematosus is a common cause of scarring alopecia and is treated with potent topical steroids.[3]

Others

Other forms of scarring alopecia include loss of hair follicles secondary to burns, trauma, radiotherapy, neoplasia, leprosy, tuberculosis, kerion, pemphigoid and morphoea.

Nails

Structure and function

Like hair, nails are made of modified keratin. Their main function is as a protective covering for the fingertips and toes. Fingernails also permit precise and delicate finger functions by providing counter-pressure over the volar skin and pulp.[1] A simple task such as scratching becomes a whole lot more difficult without nails! Fingernails take about 5 months to grow out, whereas toenails can often take more than double this timeframe.

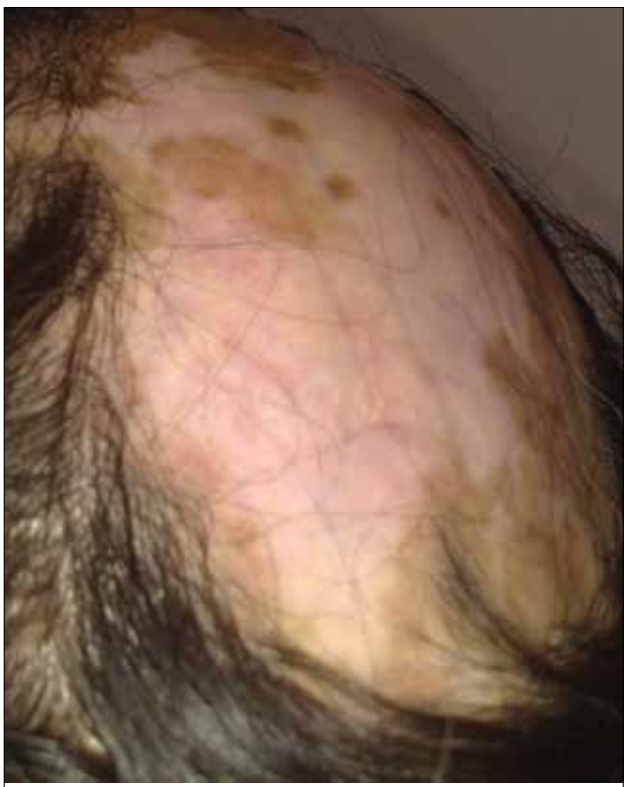

Figure 8. Discoid lupus erythematosus
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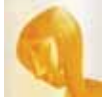

Figure 9 illustrates the anatomy of the nail. Clinical nail signs are listed in *Table 1*.

Infections of the nail

Paronychia

Paronychia, infection of the nail folds, presents in both acute and chronic forms (*Figure 10*). The former usually has a bacterial cause (often *S. aureus*) secondary to injury. Patients will often present with a solitary painful distal finger. There may be pus evident. An important differential is herpetic whitlow. Management involves antibiotics and possible drainage of any collection of pus.

Chronic paronychia is usually caused by a candida yeast infection and patients whose occupation exposes their hands to moisture (eg. dishwashing) are at most risk. It is usually painless (unless complicated by acute infection) and presents as nail fold swelling with loss of cuticle. As the infection progresses, ridging and discolouration may occur. Management focuses on keeping the skin dry (eg. using cotton lined gloves for 'wet work') and avoiding manicures which disrupt the protective barrier function of the nail cuticle. This, plus topical imidazoles and time, usually allows the condition to resolve.

Onychomycosis

Perhaps the most common nail condition, tinea infection of the nails (especially toenails), can be primary or secondary in an already traumatised nail. This condition is characterised by asymmetrical nail discolouration and nail thickening with subungal hyperkeratosis (*Figure 11*).

Table 1. Clinical nail signs

Nail sign	Description	Related conditions
Abnormalities of nail surface		
Pitting	Small nail plate depressions	Alopecia areata, eczema, psoriasis, Reiter syndrome, twenty nail dystrophy
Ridging	Visible horizontal (Beau) or longitudinal lines	Beau lines – any severe systemic illness, pemphigus, Raynaud disease, trauma (single nail) Longitudinal – physiological, lichen planus, rheumatoid arthritis, peripheral vascular disease, Darier disease
Trachyonychia	Rough surface affecting all of the nail plate ('sand blasted' nails)	Twenty nail dystrophy, alopecia areata, psoriasis, lichen planus
Abnormalities of nail shape		
Clubbing	Digit pulp hypertrophy with increased longitudinal and transverse nail curvature	Inflammatory bowel disease, bronchial carcinoma, cirrhosis, bronchiectasis
Koilonychia	Thinned concave ('spoon shaped') nails	Occupational trauma, iron deficiency anaemia, haemachromatosis, systemic lupus erythematosus (SLE), Raynaud syndrome
Abnormalities of nail colour		
Melanonychia	Melanin pigmentation	May be normal in dark skinned patients, otherwise exclude melanoma
Splinter haemorrhages	Tiny linear blue/brown/black streaks	Trauma, psoriasis, embolic disease, vasculitis, endocarditis
Terry's nail	White proximal and normal distal nail plate	Cirrhosis, congestive cardiac failure and adult onset diabetes mellitus
Oily spot	Yellow patch of dyscolouration	Specific to psoriasis
Exogenous	Colouring of the nail plate due to external causes	Nicotine (in recently quit exsmoker)
Leukonychia	White nail plate – may be diffuse, or localised	Alopecia areata, Darier disease, trauma, psoriasis, fungal infections, cirrhosis, congenital hepatic fibrosis, diabetes mellitus, hyperthyroidism, malnutrition
Abnormalities of nail attachment		
Subungal hyperkeratosis	Thickening of the undersurface of the nail plate	Onychomycosis, wart virus infection, psoriasis, pityriasis rubra pilaris, eczema, Darier disease
Onychomadesis	Complete loss of nail plate	Trauma, severe local (eg. bullous disorders, toxic epidermal necrolysis and paronychia) or systemic disease, some drugs
Onycholysis	Separation of the nail plate from the nail bed	Amyloidosis, connective tissue disorders, hyperthyroidism, phototoxicity, psoriasis, sarcoidosis, impaired peripheral circulation, hypothyroidism, hyperhidrosis, Reiter syndrome, fungal infection

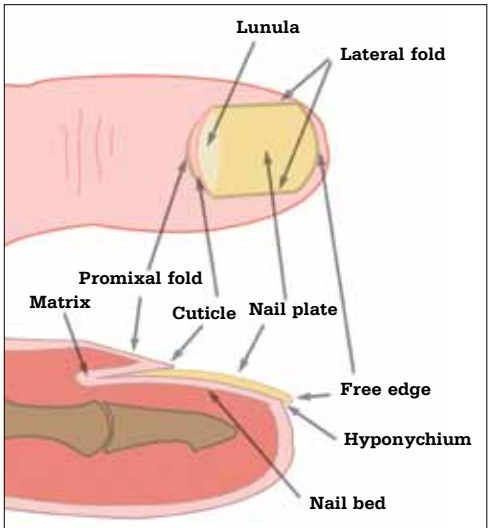

Figure 9. Nail anatomy

Infections may be superficial, proximal or distal and sampling for microscopy and/or culture may involve nail plate scraping, punch biopsying or collection of subungal debris. The collector should aim to obtain as much tissue as possible and ensure antifungals have not been used in the preceding month (which may lead to false negative results). While there are numerous contributing organisms, dermatophyte fungi are the most common cause (>95% of nail plate infections).[6]

Confirming the diagnosis (with positive microscopy and culture results) is essential before commencing treatment, as the signs of onychomycosis overlap with other conditions such as psoriasis or squamous cell carcinoma of the nail bed.

Topical antifungals are usually ineffective, although amorolfine nail lacquer does have some evidence of being effective for nonproximal involvement, if used continuously until the nail grows out.[7] Oral terbinafine is considered the systemic treatment is choice, with itraconazole and fluconazole as alternatives.[2]

Ingrowing nails

Abnormal growth of the nails (most commonly of the great toes) may lead to the distal edge of the nail plate to grow into the distal digit or lateral nail folds. This may then result in a painful and infected toe. Early ingrowing toenails can be managed with topical or systemic anti-infectives, education about correct toenail care and avoidance of tight fitting footwear. If severe, or unresponsive, this condition can be treated surgically with a partial or compete nail resection.

Nail signs of dermatological conditions

Tumours

Tumours of, or growing near, the nail, can directly alter the colour, contour or shape of the affected nails. Benign tumours include:

- warts
- enchondromas
- pyogenic granulomas

Figure 10. Chronic paronychia
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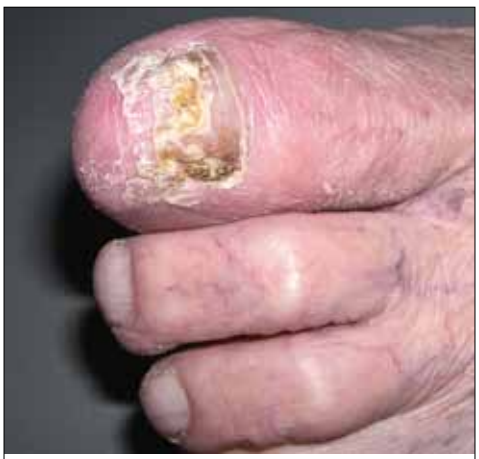

Figure 11. Onychomycosis

- benign melanocytic lesions
- subungual exostoses
- osteoid osteomas
- subungual arteriovenous tumours (cirsoid aneurysms)
- periungal fibrokeratomas
- glomus tumours
- implantation epidermoid cysts
- myxoid cysts.

Malignant tumours include:

- squamous cell carcinoma
- melanoma (*Figure 12*)
- metastatic (50% from lung).[1]

While discussion of the management of these conditions is beyond the scope of this article, it is important to exclude malignant causes (clinically, radiologically or histologically). For example, while a brown discolouration of the nail may be related to subungal haemorrhage due to trauma, an acral melanoma should be considered, especially in the absence of an acute onset related to trauma.

Psoriasis

Psoriasis is one of the most common dermatological conditions that affects the nails. Nail changes also may be the only clinically evident

signs in some individuals with psoriasis. Clinical signs to look for include pitting, transverse ridges, onycholysis, oil spots, subungal hyperkeratosis and trachyonychia). While nails changes are evident in 80% of patients with psoriasis,[8] there are no nail-specific treatments. Nail changes should improve with general psoriasis management.

Darier disease

This uncommon condition affects both the nails and general skin (presenting with brownish keratotic papules/plaques. The nails have characteristic nails signs: longitudinal streaks, distal subungal hyperkeratosis, and triangular-shaped fissuring of the free edge of the nail plate (*Figure 13*).[5]

Eczema

While eczema does not classically cause nail problems, patient may suffer from brittle nails and some nail plate changes as a reaction to the underlying inflammatory process.

Trauma

Nail trauma is relatively common and the usual mechanisms involved leveraging or compressive forces.

Compression (such as a crush injury) usually leads to a subungal haematoma (*Figure 14*). Drainage is indicated where this causes acute pain or greater than 50% of the nail plate is affected. This can easily be achieved by gently 'drilling' down over the blood-filled area with a 19 gauge needle, or gently pressing down with a heated, opened paperclip end. Either method produces a satisfying release of blood and rapid pain relief.

Nail plate avulsion (whether partial of complete) is managed by replacing the lifted nail plate back onto the nail bed and controlling the bleeding through a dressing. The nail matrix is rarely damaged and the new nail will grow out, replacing the damaged nail plate as it does so.

Trauma to the nail matrix itself (eg. laceration) is an indication for referral to a hand surgeon, to ensure the best possible nail cosmetic outcome.

Nail manifestations of systemic conditions

Clinical examination of the nail is not just important when assessing patients for dermatological conditions, but can also provide important clues in the assessment of other bodily system disorders. *Table 1* provides a summary of various signs and the conditions that are commonly related.

Summary

Conditions affecting the hair and nails are very common and are easily examined within the setting of most general practice consultations. In doing so, the GP can gain important diagnostic insights into a patient's dermatological, psychological and systemic health.

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Figure 12. Acral melanoma
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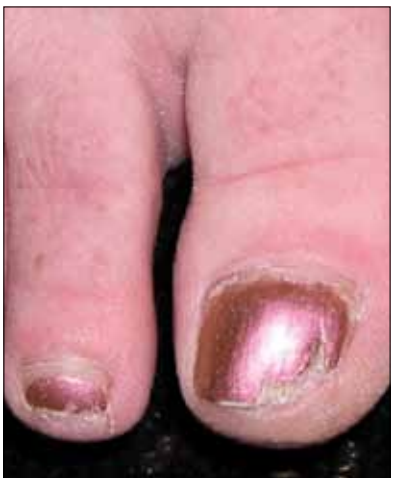

Figure 13. Darier disease

Figure 14. Subungal haematoma
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