



It Could Be Something Else Than A Fungus Nail

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## 1.0. Why Are Nails So Important?

The humble nail is useless nowadays. They were not really designed with the sole intention of having nail polish attached to them. The initial uses of the humble nail have now become history. When we were foraging for scraps on the jungle floor our nails would help us:

1. Dig and root around
2. Help to defend ourselves and
3. Be used for offensive means.

So our nails had to be tough, resistant (to a point) to chemical wear (adding water to a nail will not produce an effect), they had to be strong and they had to become renewable. If in battle our nails became broken or ripped off, they had to have the ability to regenerate or else we would have a disadvantage and would die or fail to reproduce/ pass on our genes which were the main purpose of survival.

Our historic make up is still with us today. But we have adapted a nails use. A nail now serves as a simple scratching tool, attracting a mate and for picking up fine items.

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## 1.1. Nail Growth

The nail grows from the **matrix** (about 1cm underneath the base of the nail) like a tube of toothpaste with uniform pressures being applied making it flat and smooth. The toenail is slower to grow than fingers nails, roughly growing at **1mm per week**.

The nail does grow continuously throughout life, but it also grows at different rates as well. Nail plate growth is at its quickest at the first 2 decades of life.

As we become older, nail plate growth reduces. **Why is this so?** Nail growth is dependent on **2 factors**- nerve supply and blood supply. If the matrix is reduced of either then a reduction in uniform growth and stunted growth is possible. As we get older our blood and nerve supply reduces, this is also increased with certain conditions which are more prone in the aging population. Another affect on nail plate growth is trauma. If the matrix is traumatized in any way (through micro trauma or a one off trauma) then the nail will not grow uniformly.

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## 1.2. Nail Conditions.

Understanding why conditions are present can lead you to a holistic treatment regime as many medical conditions can present themselves within the feet and especially the nails. Sometimes these can be overlooked and in some cases the nails will give you an idea of what could be happening. Also in many cases unnecessary expensive medical treatments can be prescribed for certain nail conditions that will usually show **limited results**.

Sometimes just cutting the nail over and over again is not the best solution for some of these nail conditions, and in some cases it is not beneficial to the patient. So, **different treatment options** are present that with their pluses and minuses.

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## 1.3. Trauma.

Sometimes **overlooked** as a problem to more intensive treatments. Trauma to the nails is a very common problem.

You tend to find patients of both sexes and of all ages have this particular problem. Trauma, as you will find out through this report, will cause thickening of the nails, but it can also cause discolouration which then looks like a fungus nail.

What happens is the following:

The nail becomes traumatised due to one big whack or microtrauma over a period of time. If body systems become injured they tend to bruise and that is what occurs- dried blood seeps into the nail and dark discolouration occurs at the base of the nail.

Sometimes the nail can loosen and come painlessly away while a new nail grows underneath it.

In the majority of cases you will find that the discolouration moves up the nail, very slowly, as the nail grows with clear nail behind.

This then makes patients believe that they have a fungus nail because the bruise moves up the nail and when the nail is cut it looks and has the texture of a fungus nail.

There are many ways to figure out what is going on. The majority of cases can be identified by finding out a detailed history (shoes used, sports, job, when it came on, how, etc).

The **best treatment** is to leave it, as long as you know it is a bruise. Because it will just grow out as the nail grows. But remember, toenails are slow growing, so it may take **many months**.

If your nail came off with the trauma then eventually a new nail will take its place. This new nail can be normal in appearance, or it can be thickened. This is due to if the nail matrix (from where the nail grows from) is damaged from a single trauma or microtrauma then the nail will **always** grow back thickened.

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## 1.4. Long Nails.

Long nails are just excesses of a normal biological process. This may not seem like a nail condition, but long nails can cause many problems.

- Long nails if left to grow too long will start to slice into the other toes. This is very common especially with the 4<sup>th</sup> and 5<sup>th</sup> toes and 1<sup>st</sup> and 2<sup>nd</sup> because they are usually the ones that get squashed into one another. This then opens the door for fungi to complicate a wound and then bacteria will enter. Unfortunately if you have a reduced blood or nerve supply then the wound will become complicated sooner and greater than it should have been.
- Long nails have the tendency to break causing either cuts to other toes, or to cause an ingrown toenail.

### Treatment.

For a patient that wants regular nail care offered by a clinician this is not a problem, but how about if they do not want a clinician to attend to their feet? A foot file is a device that can take care of nails or most types without causing serious harm to the patient.



Using a foot file is **very simple** to do. The nails need to be dry- so filing needs to be done **before** a bath or a shower. Then the patient needs to rub the file over the nails. Dust will come off the nails and the length and thickness will reduce. This only needs to be done for 5 minutes and 3 times a week. It has been found that if the nail is too thick or too long filing will not work. It is a prophylaxis treatment- treatment before the problem arises.

Nail care itself is an easy technique for the clinician but one can get too zealous while cutting. Cutting too short can cause pain especially when the toe skin is pulled back while walking and will not encourage repeat business. A nail should

be cut with enough nail left for your **finger to touch it** if rolled around the top of the toe. The sides of a nail should not be cut down unless there is a reason to do so. The nail itself should follow the contours of the toe and then be filed after.

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### 1.5. Onychauxis (ony-cox-ix) (OX).

**Thickened nails.** This is an extremely common condition that doesn't always occur in the elderly. OX nails have the general appearance of being thick and discolored. The discoloration is usually of a dark/ mucky color. OX nails are caused by disruption of nail growth from the matrix. OX can affect all the nails, not just the big toe. Sometimes it can affect finger nails.



The causes are many:

- **Single trauma** to the nail matrix “I dropped something on my toe and my nail has grown back like this”.
- **Micro-trauma** to the nail matrix. Repetitive small traumas caused by poor length of footwear, or certain sports, can lead to an accumulated amount of damage to the matrix leading to a gradual thickening of the nail over time.
- **A reduction in blood or nerve supply.** The matrix needs a good supply of blood for good nail growth. A limited blood supply will reduce matrix nutrition and will increase nail deformity as the nail is built in a haphazard way.
- **Medical conditions.** Some conditions like Psoriasis can present itself in toe nails as OX.
- **Clawing** of the digits cause the nails to point down to the ground. Micro trauma then allows the nails to become OX over time.

Another secondary problem that is associated with OX nails is with a **fungal**

**infection** of those nails. But you must be aware that when the nail becomes damaged through being thickened this can allow a fungus to penetrate the nail.

**Treatment.**

With any OX nail, the nail should be reduced with a Chiropody drill with a dust extraction attachment.

Again education on constant nail care will suffice, but the nail will come back to the original condition especially if it is not reduced on a regular basis.

There are **2 options** for treatment: It is easy to “cut and come again”. But there are times where conservative methods should only be used with certain types of patients. **Nail surgery** is another option for OX nails especially if it is one or two OX nails which cause discomfort and pain. Not all patients are suitable (psychologically, socially and medically) and some do not wish to go through with the procedure, but it is an option that should be discussed. In some cases we have taken all the toe nails off because of Psoriasis under all the nails causing constant discomfort to the patient. Nail surgery is a simple procedure that sometimes frightens patients because of having “surgery” in its name, but it can be the procedure of choice for many patients.

As you may suspect, an OX nail will produce much more nail than an ordinary nail hence it will create more dead nail in that process. **Phosis**- the build up of dead nail and skin is prevalent with OX nails and this can cause problems. Mild prevention helps. You can apply small amounts of **Olive oil** to the toe sulci which softens the phosis. Use an old toothbrush to “massage” in the oil.

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## 1.6. Subungual HD.

A **corn** (HD: Heloma Durum) under the nail plate. This is actually more common than you would think. It is attributed to many different factors: Tight fitting shoes, pressure from above and a tight fitting nail seem to be the likely culprits.

In this category I would like to state that HDs can also form down the sulci especially which nails that are OX or involuted, triggering off the corn manufacturing process due to increased pressure and constant irritation of the skin. Subungual HDs particularly the ones under the nail plate, can be identified by a small yellow/ brown darkened area under the nail that is painful upon compression. The safest way to treat this is to see a qualified professional who will clip back the nail and then reduce the corn.

Getting deeper and wider shoes helps, but if it is a repetitive problem then Nail Surgery is an option worth considering. If the HD is down the sulci then a small dark/ grey area is most commonly seen.

Again careful reduction by a qualified professional is the main treatment option and will give relief. Then continual foot care will reduce the likeliness of a reoccurring problem especially if Olive oil is applied to the sulci as mention previously.

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### 1.7. Subungual Exostosis.

This is where a small outgrowth of bone (usually from the big toe) under the nail plate. It does look like an ingrown toenail It can also look like a subungual HD.

The nail usually comes without a spike, comes on gradually but might have had micro trauma attached to it in the past- all signs leading to an exostosis. Micro trauma to the site from ill fitting shoes,high heels, and a toe that sticks up are the main causative factors and women are more prone to this condition.

It should be noted that these exostosis can re-occur so sometimes a patient might have had one before. X-Ray is the only way to truly identify the problem and surgical excision is advised as Nail Surgery without techniques to stop the nail from re-growing is a temporary treatment option.



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### 1.8. Involuting Nails. (IN)

A **very common** condition that affects male and females. The IN nail describes a nail where the edges of the nail curl back into the direction of the main bulk of the nail plate. The severity of the IN nail can range from slight involution at the edges of the nail, through to a pincer nail where the both sides of the nail are almost touching each other.

Why does this type of nail occur? No-one really knows, but it could easily be hereditary, poor footwear choices, osteo-arthritis within the joint itself, even an exostosis.

What is certain though is that this type of nail can cause many complications.

What tends to happen is that pressure from above pushes the nail down, this in turn causes the sides of the nail to push into the skin more causing pain. There are a few things that you tend to find with this type of nail:

- The nail is open to trauma, especially the more severe IN nails, it increases the height of the nail this leads to more trauma of the actual nail and can lead to OX of the nail.



- Because the nail pincers the skin, it draws the skin closer to the nail. Degradation of the nail bed can occur.
- These nails can be painful and can lead to ingrown nails due to the fact that they are pressing in on the skin constantly.
- Because the sides of the nail curl around, they form pockets where debris can collect, increasing the pressure onto the skin.
- Cutting the nail is difficult because of the risk of causing an ingrown nail. This is because the nail is usually IN all the way down the side and cutting can leave a very sharp spike.
- Cutting too short can cause an ingrown nail.

### **Treatment.**

For this type of nail, treatment falls into two categories: short term and long term. Again it all depends upon the patient, but short term treatments are designed to make the patients toe feel comfortable. This is done by keeping the nail short (not too short), reducing debris from the sides of the nail, and possibly reducing the thickness of the IN nail by using a Chiropody drill.

Usually this type of nail needs a professional clinician to treat it.

Long term treatments would be Nail Surgery and for most patients, especially with pincer type of IN, it would be a worthy and grateful treatment option.



Some people favor inserting **cotton wool** down the sides of the nail to relieve the pressure and some people have noted success with this type of treatment. I have reservations about sticking anything foreign down the sides. I believe that people forget about the cotton wool and now you have debris that will not degrade and will become compact over time causing extra pressure and problems. I believe that this is a poor treatment option that has been around for a long time so it seems like it is “standard treatment practice”.

Another treatment option is the application of a **brace to the nail** that lifts up the sides. This is a similar technique to the cotton wool idea, but the brace is attached over the nail and can be checked and removed after a month of wearing the brace. Many people have reported success, but again I have doubts about the long term use of such a device. A brace adds more pressure to the skin especially when they are solid objects so choice of patient needs to be considered. The use of the brace means that the patient needs to revisit in one month of application to see if there is any difference. Unfortunately adherence is a problem and it is likely that the brace will be tampered with especially if it is left on for long periods of time. Also it is a nail growth problem, once the brace has been removed is the nail going to be IN free? Probably not.

**One more thought about using the brace:** If the nail is getting that painful that the patient needs a brace then why doesn't the option of nail surgery be advised. This would remove the edges of the nail, make the nail look nicer and the IN will not reoccur.

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## 1.9. Other Nail Conditions Less Commonly Found.

For some people this section will be flicked though very quickly. However the following nail conditions are found in patients, but not as common as say an OM nail. .

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### 1.10. Yellow Nail Syndrome.



This is where the nail reduces in growth or even stops growing. It occurs mainly in patients with an underlying Lymphoedema or Respiratory problem. The nail can look yellow with hints of green, thick and could show some lifting from the nail bed. It has been shown that intravenous Vit E has resolved the problem in 30% of patients.

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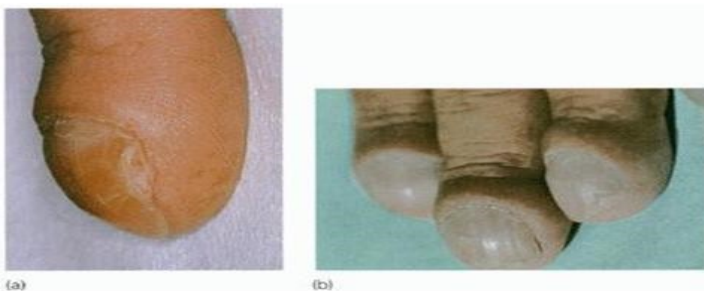
### 1.11. Koilonychia.



Spoon shaped nails. A more common condition that is found in finger nails than toenails (another reason to check finger nails as well as toenails). Nails are normally convex, but with this condition they become concave. It can occur in infancy and will resolve in time. In adults it is mainly due to an iron deficiency.

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### 1.12. Hippocratic Nails.



Also called **Clubbing**. This is where the nail has an exaggerated curvature giving the appearance of a clubbed digit. These nail types are usually associated with the following conditions: long-standing pulmonary or cardiac disorder, thyroid disease, cirrhosis and ulcerative colitis.

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### 1.13. Beau's Lines.



**Grooves across the nail plate** which represent a temporary cessation of nail growth. It can usually occur in patients who have had an illness (one off leading to one line). If it is due to micro-trauma you will see the lines but they will be rippled in appearance. There is no real treatment for this condition as it grows out naturally, but just takes some time to do so. Reassurance is the key.

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### 1.14. Onycholysis (ony-co-ly-sis).



**Separation of the nail from the nail bed at the distal end.** More common in the finger nail than in the toenails, and is more common in females. There are many causes: detergents with immersion in hot water, certain medication (like thiazides), psoriasis, sweating, Iron deficiency anemia and poor circulation. Treating the cause is a major asset, but also making sure that the loose nail is cut back to a point where it won't cause injury. With a nail that is lifted it becomes loose and these can be pulled back with hosiery or bed sheets and break or cause trauma.

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### 1.15. Paronychia (paro-ni-kia).

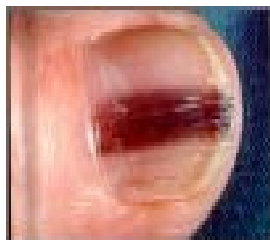


**Inflammation of the base of the nail.** This can sometimes be confused with an ingrown toenail but the difference is that it only occurs around the base of the nail. There is redness, swelling and pain and upon compression pus can be discharged. The cuticle can become detached, there can be transverse ridging and the nail becomes friable. In time the nail can shed. What causes this condition is anything that can cause bacteria or trauma to the base of the nail. From trauma and poor treatment all the way through to removal of the cuticle as a beauty measure.

**Treatment** for this condition depends upon the toe itself. Sometimes a medicated dressing is all that is needed. But sometimes a weekly dose of antibiotics is needed. In severe cases Nail Surgery is the only viable option as then you can see what was causing the problem. In one case we have found two matrices causing the problem. In another case it was dog hair that stuck under the base of the nail.

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### 1.16. Subungual Melanoma.



Rare to see, but this condition is the **most serious** in the nail. The big toe and the thumb are the most common sites. You will see longitudinal singular or multiple bands within the nail plate. Where is it common?

- 77% of African Americans over 20 years of age and 15% of Japanese present with this type of activity.
- Constant trauma of the matrix
- Endocrine disease- Pregnancy, HIV infection, Addison's.

Most sufferers have a fair complexion, aged between 50-60. It is seldom painful. There can be a variation in color from brown to black, one color or irregular. The lines do not move and stay where they are. . Eventually there can be destruction of the nail plate.

- **Early detection is the key.** As unfortunately 50% of all patients with this condition will die within about 5 years of diagnosis.
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## 1.17. To Recap.

When we consider the amount of problems that comes with just a simple nail it can concern us.

The majority of people who will read this book will have the standard nail conditions and they do not usually have any other problems or difficulties.

Knowing what the conditions are and knowing a differential diagnosis is the key to good foot health. So every time that you see a thickened nail, could it be OX, OM or even an IN nail.

I am not suggesting that you should treat your own feet if there is a problem. What I am suggesting, is that you arm yourself with knowledge and if you have a problem that you can not manage, is painful, you are concerned...then it is always the best of ideas to see a professional who can actually help.

Because you know what some things could be, or what their treatments can be...it doesn't make it that scary anymore.

Remember that this book is not supposed to be deemed as medical advise. If you have anby problems or concerns then please contact a medical professional

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