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MEDICAL NEWS

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FOCUS: **HAND CONDITIONS**

- Trigger Fingers
- Fingertip Injuries
- Carpal Tunnel Syndrome – The Most Frequent Entrapment Neuropathy of the Upper Limb



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Trigger Fingers

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One of the very common conditions encountered by clinicians in their outpatient setting is trigger finger. As prevalent as 2% in the general population, the prevalence approaches 20% in diabetic patients.¹

Recognised as a pathological condition of the flexor tendons, it was first described by the French physician Notta in 1850.² Saldana later refined this in 2001 as a pathologic disproportion between the volume of the flexor tendon sheath and its contents.³

PATHOPHYSIOLOGY, SYMPTOMS AND SIGNS

Trigger finger results from a narrow tunnel created from an inflamed and thickened pulley. This leads to the obstruction of the free and smooth gliding of the tendons resulting in locking, clicking, reduced excursion or no excursion at all.⁴

Eventually, patients present with trigger symptoms which may vary from the initial stages of pain over volar metacarpophalangeal joint with or without evidence of locking or clicking, progressing to reduced movement of the finger joints and finally to a fixed locked finger in flexion.

The first annular pulley (A1) is usually affected in most cases of trigger fingers (Figure 1), though cases of triggering have been reported at the second (A2) and third (A3) annular pulleys, as well as the palmar aponeurosis.

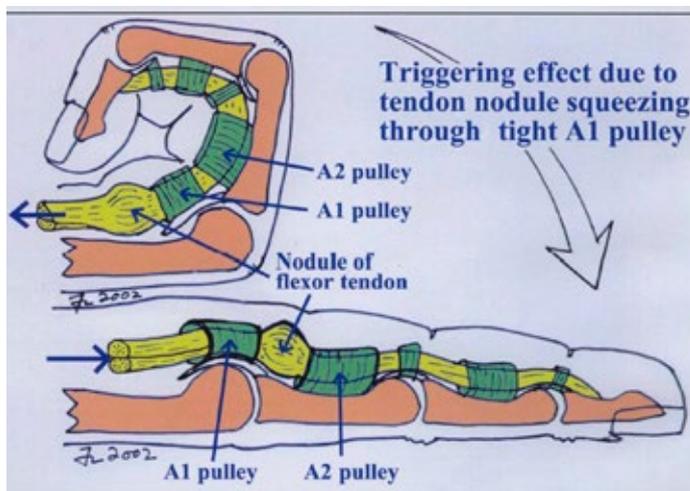


Figure 1 Mechanism of triggering in relation to the flexor pulley system⁵

Microscopic examination of normal A1 pulleys demonstrates an amorphous extracellular matrix, including chondrocytes, coating the pulley's entire innermost layer. Pathological changes involving A1 pulleys in trigger fingers show areas of extracellular matrix loss along with chondrocyte proliferation and type III collagen production. This fibrocartilagenous metaplasia is thought to result from the repeated friction and compression between the flexor tendon and the corresponding inner layer of the A1 pulley.⁶

Based on the symptoms, trigger finger can be divided into 4 grades in accordance to Green's classification⁷:

Table 1
Grades of trigger and associated signs and symptoms

Grade	Symptoms and Signs
Grade 1 (pre-triggering)	Pain; history of catching, but not demonstrable on physical examination; tenderness over the A1 pulley
Grade 2 (active)	Demonstrable catching, but the patient can actively extend the digit
Grade 3 (passive)	Demonstrable catching requiring passive extension (grade 3A) or inability to actively flex (grade 3B)
Grade 4 (contracture)	Demonstrable catching with a fixed flexion contracture of the PIP joint

A study conducted at Singapore General Hospital by Choudhury and Tay⁸ of patients with trigger finger showed a female preponderance with a female to male ratio of 2:1. The majority of cases were patients in the 6th decade. The middle finger was most commonly involved, followed by the ring finger. The least involved digit was the little finger. The most common grade at presentation was grade 2 (41%) and the least common grade was grade 4 (2%).

WHAT CAN WE DO FOR OUR PATIENTS?

Currently, the different treatment modalities include a combination of topical non-steroidal anti-inflammatory drugs (NSAIDs), occupational therapy, splinting, corticosteroid injections and trigger finger release.

CORTICOSTEROID INJECTIONS (H & L)

Multiple studies have been done on the efficacy of corticosteroid injection. In general, long-term relief can be achieved in 60 to 92% of affected digits. The efficacy of the injection drops in patients with longstanding disease (more than 6 months duration), diabetes mellitus and multiple digit involvement as it is unable to reverse the changes of fibrocartilagenous metaplasia in the A1 pulley. 60% of trigger digits receiving corticosteroid injection eventually require surgery.⁶

Nevertheless, H & L injections remain an extremely viable option for patients in the primary care setting as it can be administered immediately with relief of symptoms within a week, curtailing the need of long periods of splinting and therapy sessions and waiting for an operation date.

Traditionally, corticosteroid injection is injected into the flexor tendon sheath just over the metacarpal head. A 1 ml mixture of equal proportions of triamcinolone and 1% Lignocaine or 0.5% Marcaine is injected under aseptic conditions. The mixture is drawn into a 3 ml or 5 ml syringe and then administered via a 23G needle. The syringe is held like a pen and the needle is introduced through the skin at an angle of 45° until it pierces the flexor tendons. The needle is then gradually withdrawn whilst pressure is applied over the plunger (*Figure 2*).

Once a 'give' is felt, 1 ml of the mixture is injected into the flexor sheath which sometimes can be felt as a fluid thrill along the volar aspect of the finger. If symptoms do not resolve after the first injection, or recur afterwards, a second injection is typically half as likely to succeed as the initial treatment.

Some authors have found that the intrasynovial injection to be painful⁹ and at times associated with injury to the tendon.¹⁰ The question then arises that is it always necessary to inject into the sheath? It has been shown that the injectable load delivered just in the subcutaneous layer above the pulley appears to be as efficacious as a cumbersome intrasynovial injection.¹¹

Where complications are concerned, tendon rupture is fairly rare. It has been associated with multiple corticosteroid injections, leading us to the rule-of-thumb of administering a maximum of two injections per finger. Other complications include dermal atrophy, fat necrosis, skin hypopigmentation, transient elevation of serum glucose in diabetic patients and infection. None of the cases in the local study had any injection-related complications.⁸

WHEN TO REFER TO A HAND SURGEON?

Some patients are reluctant to endure an invasive and painful procedure like an injection. These patients can be referred to hand surgeons at a tertiary level hospital for combination therapy. Patients having recurrence after the injection or those who have already had two injections without resolution of their symptoms are more likely to benefit from surgery and would be the ideal candidates for a referral to a hand surgeon.



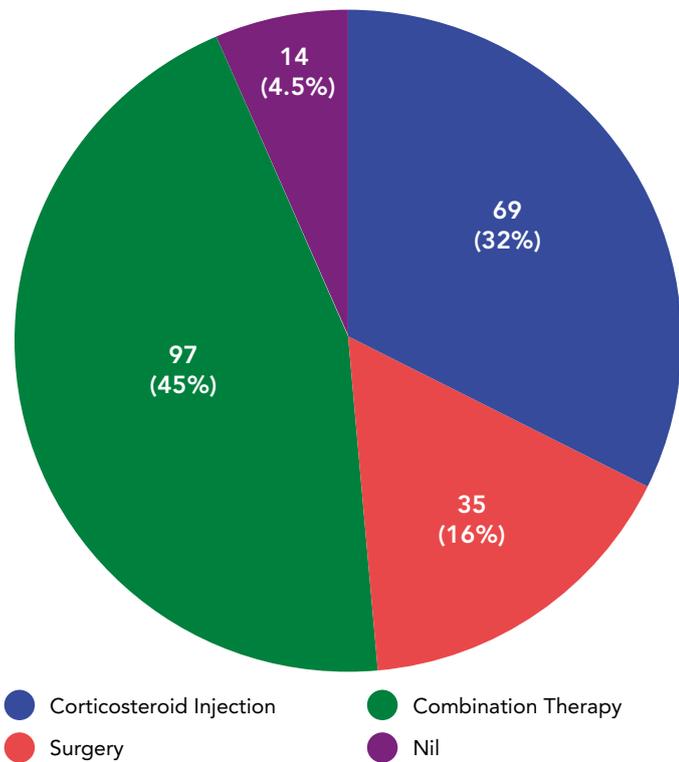
Figure 2 Corticosteroid injection



COMBINATION THERAPY

From the local study⁸, the most common initial treatment administered was combination therapy (Figure 3) consisting of trigger, splint occupational therapy sessions and topical NSAIDs (Figure 4). This was given mainly for grade 1 and 2 triggers.

Figure 3
Proportion of fingers receiving each form of treatment



Occupational therapy sessions involved laser treatment, fluidotherapy and tendon gliding exercises requiring an average of 5 occupational therapy sessions over a mean period 2 months.

The goal of splinting was to prevent the friction caused by flexor tendon movement through the affected A1 pulley until the inflammation there resolved. The combination of laser therapy and NSAIDs enhances the effect of the splint, thus making it a desirable option for patients with less severe trigger symptoms who are more adverse to the needle and scalpel.

OPEN TRIGGER FINGER RELEASE

The surgical release of trigger finger is a very common procedure bearing excellent results¹² with 97% complete resolution of triggering. Release is done by dividing the A1 pulley which is the usual site of the stenosis.

In the local study⁸, all the patients who underwent surgery had successful resolution of their symptoms. None of these patients required further operations. One patient, however, had a wound breakdown which healed eventually with dressings. There were no other complications in patients who underwent surgery.

CONCLUSION

Trigger fingers are a fairly common disorder of the digits. There is an increased prevalence amongst diabetic patients. Triggering represents a painful nuisance hampering daily activities, dampening efficiency at the workplace and at times translates to prolonged periods of absence from work.

With the availability of a simple, effective and safe procedure like the corticosteroid injection, family physicians serving the community can add to their armamentarium an early solution to the patient's painful digit.



Figure 4 Combination therapy

REFERENCES

- 1 Fitzgibbons PG, Weiss AP. Hand manifestations of diabetes mellitus. *J Hand Surg Am.* 2008 May- Jun;33(5): 771-5.
- 2 A. Notta. Research about a particular affection of the tendons of the hand, characterized by the development of a nodosity on the trajectory of the flexor tendons of the digits that impedes their movements. *Archives generales de medecine*, 4 (1850), pp. 142–161.
- 3 Saldana MJ. Trigger digits: diagnosis and treatment. *J Am Acad Orthop Surg.* 2001, 9(4): 246-252.
- 4 Ryzewicz M, Wolf JM. Trigger digits: principles, management, and complications. *J Hand Surg Am.* 2006 Jan; 31(1): 135-146.
- 5 Andrew Chin, Teoh Lam Chuan. *Painful Conditions of the Hand. Trigger digits.* P 39, Chap 5.
- 6 Sbernadori MC, Mazzarello V, Tranquilli-Leali P. Scanning electron microscopic findings of the gliding surface of the A1 pulley in trigger fingers and thumbs. *J Hand Surg [Br]* 2007;32:384.
- 7 Wolfe SW, Hotchkiss RN, Pederson WC, Kozin SH, *Tendinopathy*, in: *Green's Operative Hand Surgery*, 6th edition, Churchill Livingstone, Chap. 62, p. 5, 2011.
- 8 Choudhury MM, Tay SC. Prospective Study on the Management of Trigger Finger. *Hand Surgery*, Vol. 19, No. 3 (2014) 393–397.
- 9 K. Kazuki et al. Clinical outcome of extrasynovial steroid injection for trigger finger; *Hand Surgery*, Vol. 11, Nos. 1 & 2 (2006) 1–4.
- 10 S. Jianmongkol et al. Intra-tendon sheath injection for trigger finger: the randomized controlled trial. *Hand Surgery*, Vol. 12, No. 2 (2007) 79–82.
- 11 Taras et al. Corticosteroid injections for trigger digits: Is intrasheath injection necessary? *J Hand Surgery* 1998; 23A: 717-722.
- 12 Turowski GA, Zdankiewicz PD, Thomson JG. The results of surgical treatment of trigger finger. *J Hand Surg* 1997;22A:145–149.



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Carpal Tunnel Syndrome – The Most Frequent Entrapment Neuropathy of the Upper Limb

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Carpal tunnel syndrome (CTS) is the most common peripheral nerve entrapment syndrome, and is characterised by numbness and tingling of the radial 3 ½ digits. It is found in 1% of the general population¹ and increased incidence is noted in women, the elderly and pregnant patients. Risk factors for development of CTS include diabetes mellitus, obesity, smoking, hypothyroidism, renal failure as well as rheumatoid arthritis.

Occupational risk factors have long been recognised and primarily include repetitive, forceful hand work with wrist extension as well as vibration, cold environment, and combinations thereof.² Workers with increased risk for CTS include workers in the construction, electronic and forestry, fish processing and cannery, frozen food/meat, furniture factory, garment and textile, and metal casting industries; aircraft mechanics; appliance and automobile manufacturers; and dentists.³

CLINICAL PRESENTATION

The classic patient is usually a lady in her fifties who complains of numbness and subjective weakness in her affected hand. Occasionally, she may also present with pain and a tingling sensation. We often ask about the occurrence of night symptoms which affects the quality of life for the patient. More often than not, both hands are affected simultaneously.

Physical examination involves looking out for signs such as abnormal sensation, Tinel’s sign, Phalen’s test, abductor pollicis brevis weakness, thenar atrophy as well as decreased grip strength. It is also important to look for previous fracture of the wrist with deformity or the presence of lumps such as ganglions or gouty tophus which can compress on the median nerve and result in CTS.

A thorough history and clinical examination is usually sufficient to make the diagnosis of CTS. It is also important to be aware that there are other potential and more proximal sites of peripheral nerve compression, such as cervical root compression, thoracic outlet compression, pronator tunnel syndrome, which can coexist with CTS, resulting in the double crush syndrome. The severity of CTS can be staged as shown in *Table 1*.

Table 1 Stages of clinical severity

Stages	Clinical Features
1 (Mild)	<ul style="list-style-type: none"> • Intermittent numbness and tingling associated with overuse of the hand. • Symptoms may improve with rest and limitation of activities.
2 (Moderate)	<ul style="list-style-type: none"> • Persistent numbness and tingling worsened with activities such as prolonged gripping and repetitive activities. • Small objects may slip from hand easily.
3 (Severe)	<ul style="list-style-type: none"> • Profound loss of sensation with weakness and wasting of thenar muscles.

Nerve conduction study is routinely done to confirm the diagnosis especially when the clinical features do not follow the classical presentation and when other neurologic diagnoses, in addition to or instead of CTS, are suspected. Moreover, electrodiagnostic studies can provide baseline data and exclude other pathology that presents with similar symptoms. It also aids to ascertain the severity of the disease.

High frequency ultrasound is an increasingly popular modality which may be utilised in clinching the diagnosis of CTS when the diagnosis is uncertain and the patient cannot tolerate electrodiagnostic testing. It diagnoses CTS based on the following measurements: median nerve cross-sectional area, median nerve flattening ratio and palmar displacement of the flexor retinaculum.

MRI, on the other hand, may be used for evaluation of secondary pathologies such as a mass (ganglions or lipomas) or pathologic flexor tenosynovitis. Currently, such imaging is not necessary in the workup of uncomplicated CTS.

LIKELY TREATMENT OPTIONS BY GPs

Conservative treatments such as night splints and activity modifications are widely accepted first-line therapies for mild CTS. Such splints which keep the wrist in a neutral position, help to reduce the night symptoms that occur secondary to an increased intra-canal pressure caused by inadvertent excessive flexion or extension of the wrist during sleeping. Activities resulting in overuse of the hands should be identified and cut down. However, their effects are usually temporary.

Cochrane review by O’Conner et al⁴ stated that drug therapy, including non-steroidal anti-inflammatory medications (NSAIDs), diuretics and vitamin B6 do not have any short-term benefit when compared to placebo or control. Oral steroids, on the other hand, do have some short-term benefit.

Local corticosteroid injection into the carpal tunnel is of diagnostic and potentially therapeutic benefit. An initial positive response to the injection has been strongly correlated with a positive response to surgical release and is considered the pre-operative factor that is most predictive of outcome.

Cochrane review by Marshall et al⁵, showed that a steroid injection does provide greater clinical improvement in symptoms one month after injection compared to placebo and it also provides significantly greater clinical improvement than oral corticosteroid for up to three months. Its value relative to other nonsurgical treatments e.g. splinting has been controversial as well-controlled comparative studies are lacking, and because a prominent histological inflammatory response is not usually seen with CTS.

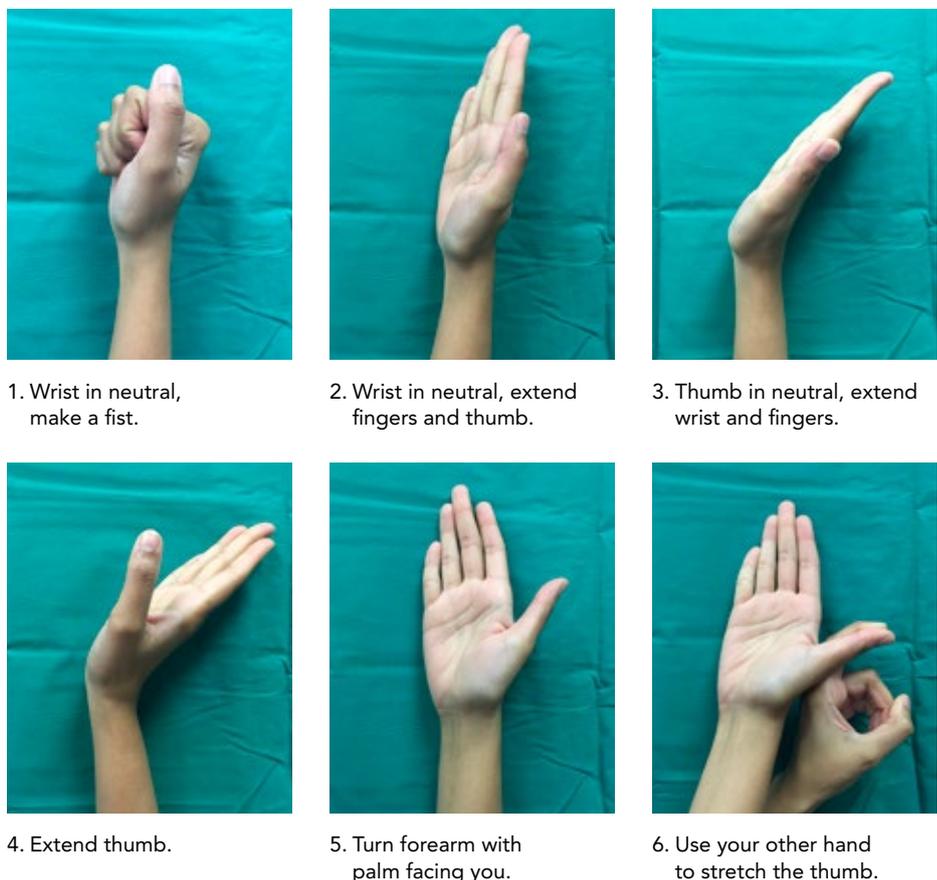
Although steroid injections appear to be generally safe, they are not routinely

performed as studies have repeatedly shown that they rarely provide relief of symptoms beyond one year. They are also associated with several risks, including exacerbation of median nerve compression, accidental injection into the median or ulnar nerves, and digital flexor tendon rupture.

Carpal mobilisation or nerve gliding exercises may be helpful for mild to moderate symptoms when combined with other treatments such as activity modification, wrist splinting or corticosteroid injections. This set of exercises is also useful in preventing nerve adhesions post-surgery or if there has been significant trauma to the area such as a fracture that requires wrist surgery or repair near the carpal tunnel.

Figure 1 demonstrates the median nerve gliding exercises. Exercises 1 to 6 should be performed as one cycle and repeated up to five cycles with a 1-2 hour interval each day.

Figure 1 Nerve gliding exercises





WHEN TO MAKE A SPECIALIST REFERRAL

The patient should be referred to a hand surgeon for surgical decompression if the non-operative options fail or as early as possible in advanced stages of nerve compression as indicated by progressive motor deficit, severe sensory deficit, or a severe electrodiagnostic abnormality to avoid further nerve damage.

In patients with secondary CTS associated with a systemic disease, treatment should be targeted at the primary disease. Consultation for diagnosis should also be considered when the diagnosis is in doubt, when conservative treatment has failed, and when surgery or other invasive treatment is being considered.

LIKELY TREATMENT OPTIONS BY SPECIALISTS

Surgical release of the carpal tunnel is indicated when conservative measures have not managed to relieve the patient's symptoms or when the compression is severe enough to avoid any further delay which will worsen the denervation of the median nerve. It consists of division of the transverse carpal ligament, which increases the space in the carpal tunnel, thereby reducing the pressure on the median nerve.

Open carpal tunnel release (OCTR) (Figure 2) is currently the gold standard surgical procedure for treatment of this condition and is associated with a high success rate of up to 90% in many studies. It is a very safe operation that can be performed under local or regional anaesthesia (Bier's block).

Endoscopic carpal tunnel release (ECTR) (Figure 3) has gained recognition as an alternative to OCTR. In ECTR, an endoscope and cutting instrument is inserted via a small incision at the level of wrist crease and the carpal ligament is divided under direct vision. This technique has gained in popularity over the years due to the perceived benefits of smaller scar, better post-operative comfort as well as less wound pain.



Figure 2 OCTR showing the division of transverse carpal ligament

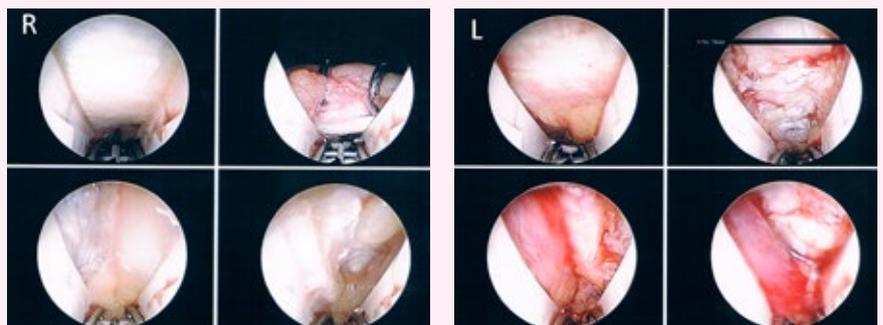


Figure 3 ECTR via 1 cm wrist crease incision

Post-surgical care includes elevation of the hand, gradual exercises of the hand, wrist and forearm. Although infrequent, complications of surgery for both endoscopic and open carpal tunnel release can still occur and are included in *Table 2*.⁶

Table 2: Surgical Complications of Carpal Tunnel Release (Open/Endoscopic)
<ul style="list-style-type: none"> • Inadequate division of the transverse carpal ligament • Injuries of the recurrent motor and palmar cutaneous branches of the median nerve • Lacerations of the median and ulnar trunk • Vascular injuries of the superficial palmar arch • Post-operative wound infections • Painful scar formation • Complex regional pain syndrome

Outcome studies have demonstrated that both open and endoscopic releases produce subjective improvement in pre-operative symptoms.⁷⁻⁸ The choice of technique is largely surgeon-dependent. Each has its advantages and disadvantages, and each technique has a learning curve, which is greater with the endoscopic technique.

Although outcome measures and results vary, no significant differences were found in terms of efficacy. Several randomised, controlled studies comparing various surgical techniques for CTS treatment have failed to demonstrate any strong evidence supporting the use of one technique over the other.⁹

A recent meta-analysis of 21 randomised, controlled trials comparing open versus endoscopic carpal tunnel release indicated that endoscopic release allows earlier return to work and improved strength during the early post-operative period. Results at 6 months or later were similar, except that patients undergoing endoscopic release were at greater risk for nerve injury and less risk for scar tenderness than those having open release.¹⁰

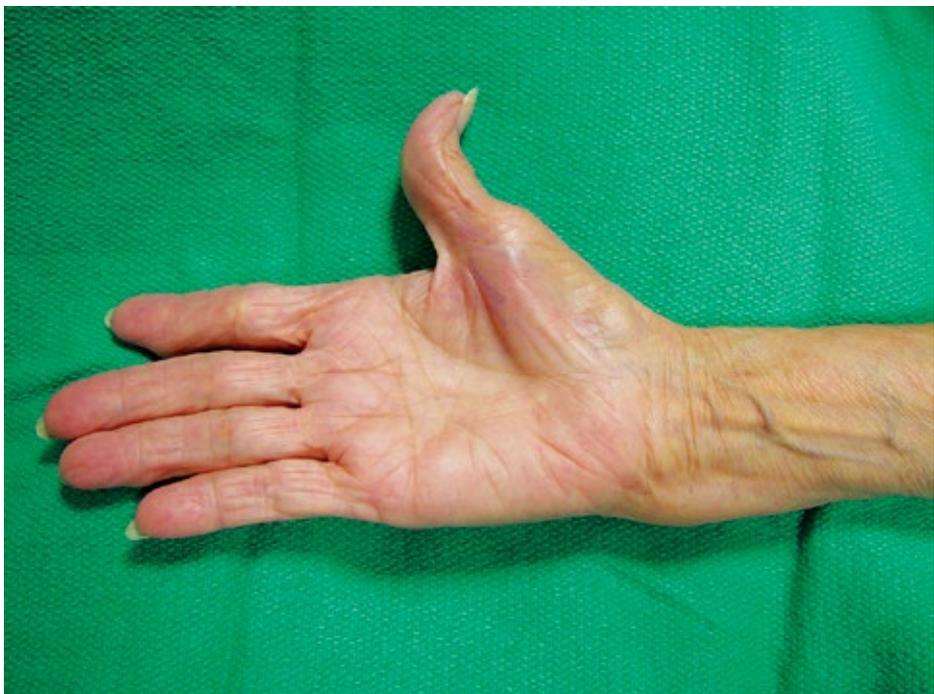
THE SINGAPORE GENERAL HOSPITAL EXPERIENCE

A prospective study conducted by the Department of Hand Surgery¹⁰, Singapore General Hospital (SGH) from 2007 to 2009 showed that all the patients experienced improvement in symptoms with 72% showing complete symptomatic relief. 74% showed improvement in function and 66% showed improvement in grip strength. 82% were either completely or very satisfied with the results of surgery. The study also found that older patients and patients with weakness associated with poorer outcomes.

Patient factors such as gender, occupation, presence of comorbidities such as diabetes mellitus, thyroid disease and rheumatoid

arthritis did not appear to significantly influence the results of operation. In addition, the duration of symptoms before surgery and degree of electrophysiological severity also did not correlate with the outcomes of surgery.

The results do not imply that patients with the negative predictive factors should be discouraged from surgery. In fact, our study showed that, regardless of age, signs and symptoms, most, if not all patients, will benefit considerably from surgery. Rather, clinicians should include these factors in their discussions with patients and inform them that the presence of these factors portend a less favourable outcome. Patients will thus have more accurate expectations of the outcomes of surgery.



Thenar atrophy of the hand



CONCLUSION

Patients should be educated about the nature of CTS, its known causes and risk factors, exacerbating activities, diagnostic methods and therapeutic options. Patients who have good information about their disease will more likely exercise secondary prevention and adhere to therapeutic interventions and follow-up care.

Many patients feel reassured by learning about their disease, particularly if they had suspected a more serious neurologic problem or other conditions. Primary care physicians are in the best position to educate patients and empowering themselves and thereby their patients with knowledge on this commonest entrapment neuropathy will only serve for the greater good.

REFERENCES

1. Atoshi et al. Prevalence of carpal tunnel syndrome in a general population. *JAMA*. 1999;282:153-8.
2. Barcenilla A et al. Carpal tunnel syndrome and its relationship to occupation: a meta-analysis. *Rheumatology*. 2012;51:250-61.
3. Herbert R, Gerr F, Dropkin J. Clinical evaluation and management of work-related carpal tunnel syndrome. *Am J Ind Med*. 2000;37:62-74.
4. O'Conner D et al. Non-surgical treatment (other than steroid injection) for carpal tunnel syndrome. *Cochrane Database Syst Rev*. 2003.
5. Marshall S et al. Local corticosteroid injection for carpal tunnel syndrome. *Cochrane Database Syst Rev*. 2007
6. Benson LS et al. Complications of endoscopic and open carpal tunnel release. *Arthroscopy*. 2006;22:919-24.
7. Chow JC. Endoscopic release of the carpal ligament for carpal tunnel syndrome: 22-month clinical result. *Arthroscopy*. 1990;6:288.
8. Louie DL et al. Outcomes of open carpal tunnel release at a minimum of ten years. *J Bone Joint Surg Am*. 2013;95:1067-73.
9. Sayegh ET et al. Open versus endoscopic carpal tunnel release: a meta-analysis of randomized controlled trials. *Clin Orthop Relat Res*. 2015;473:1120-32.
10. Kleopa KA. Carpal tunnel syndrome. *Ann Intern Med*. 2015; 163-5.
11. Tan JS et al. Outcomes of open carpal tunnel releases and its predictors. A prospective study. *Hand Surg*. 2012;17:341-5.



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Dr Rebecca Lim is currently a third year SingHealth Hand Surgery Resident. Hand Surgery is her chosen specialty at the Singapore General Hospital as it is highly intricate, challenging, pushes her boundaries and trains her powers of concentration and perseverance.

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Fingertip Injuries

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Fingertip injuries are commonly seen by Family Physicians and in the Accident and Emergency Department. In this article, we will review the anatomy of the fingertip and outline the management of common fingertip pathologies that are frequently encountered.

The primary goal of treatment in all fingertip injuries is to achieve a painless fingertip with durable, sensate skin cover.¹ A hypersensitive tip that results from suboptimal repair of a fingertip injury can be a considerable source of pain and disability to a patient.

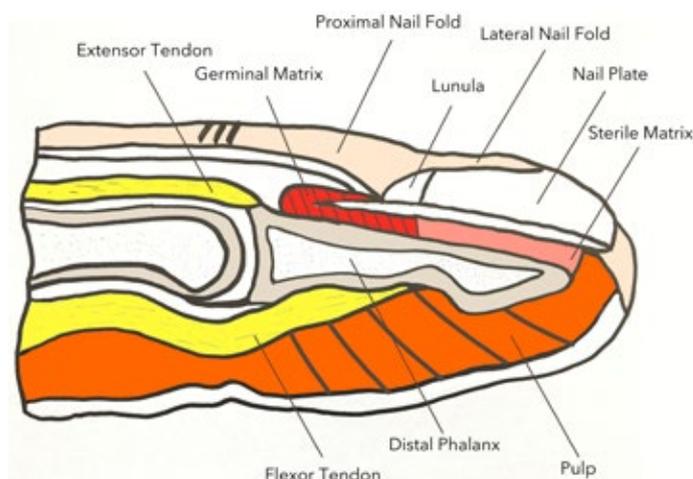


Figure 1 Fingertip anatomy

The fingertip refers to all tissues found distal to the insertion of the flexor and extensor tendons into the distal phalanx (Figure 1).² It is a complex of three tissue subunits: the nail complex, pulp (soft tissue) and distal phalanx (bone). We will briefly go through each subunit in turn.

NAIL COMPLEX

The nail complex or perionychium consists of the nail bed, nail folds and nail plate (Figure 1).

The nail bed consists of the germinal matrix, which produces 90% of the nail plate, and the sterile matrix, which allows for adherence of the nail plate. A white arc, known as the lunula,

separates the two matrices. It demarcates the point where germinal cells become transparent in the process of nail plate formation.

The proximal nail fold (eponychium) and lateral nail folds (paronychia) form the proximal and lateral borders of the nail complex respectively. The lateral folds direct the growth vector of the nail by constricting the nail plate. The proximal fold has dorsal and ventral surfaces. The dorsal surface produces the shine of the nail, and the ventral surface is contiguous with the germinal matrix.

As the most visible part of the fingertip, the nail plays important functional and aesthetic roles. It protects the dorsal fingertip, increases the sensitivity of the fingertip by acting as a counterforce, and is essential for fine pinch.

THE PULP

The pulp contributes more than 50% of the fingertip volume. It is covered with glabrous skin, which is thick and deeply-ridged. The pulp skin is anchored by fibrous septa extending from the distal phalanx to the dermis. This produces a stable, bulky surface that is critical for grip and fine touch.

DISTAL PHALANX

The distal phalanx forms the structural core of the fingertip. Proximally, the flexor and extensor tendons insert into its volar and dorsal surfaces respectively. The dorsal surface of the distal phalanx lies directly below the nail bed, with no intervening soft tissue or dermis. Consequently, in situations where the nail is avulsed, distal phalanx fractures with nail bed lacerations are considered open fractures.



In addition, the dorsal cortex of the distal phalanx plays a critical role in supporting the nail bed. If support is deficit, a hook nail deformity results (Figure 2).



Figure 2 Hook nail deformity resulting from insufficient bony support of the nail bed.

EVALUATION AND TREATMENT OF FINGERTIP INJURIES

Obtain a thorough history of the mechanism of injury (i.e. crush, avulsion, guillotine), patient age, co-morbidities, occupation and handedness. Assess the skin integrity, vascularity (capillary refill), sensation (two-point discrimination) and flexor/extensor tendon function. Evaluate two-point discrimination with both ends of an unfolded paperclip (Figure 3). Compare this with a normal digit – it should be less than or equal to 5 mm. Obtain postero-anterior and lateral X-ray films of the finger. Administer antibiotics and tetanus prophylaxis.

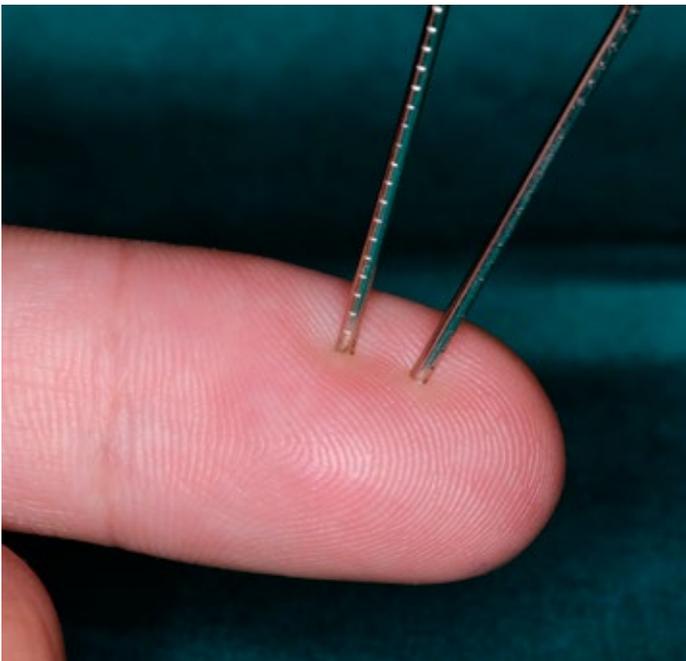


Figure 3 Two-point discrimination (2PD) is easily determined with the ends of an unfolded paper clip. Normal 2PD is 5 mm or less and should be tested on radial (pictured) and ulnar aspects of the fingertip.

Assess each tissue subunit of the fingertip. Fingertip trauma may affect a single subunit (e.g. shave injury to pulp) or multiple subunits (e.g. nail avulsion injury with concomitant pulp laceration and distal phalanx fracture). The specific wound characteristics determine the optimal method of treatment. Table 1 summarises the pertinent assessment points.

Table 1

Important aspects of fingertip subunit assessment

Nail complex	Pulp	Distal phalanx
Is the nail plate intact or avulsed?	Are any critical structures exposed? Bone/ Nerve/Vessel	What is the finger posture?
Are the nail folds lacerated?	Simple laceration or is there soft tissue loss?	Is there a mallet deformity?
Is there a subungual haematoma?	What is the plane of loss (Figure 4)?	Is there a fracture?

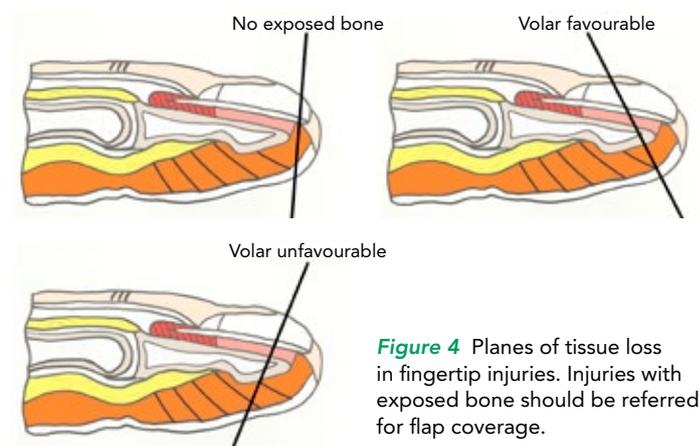


Figure 4 Planes of tissue loss in fingertip injuries. Injuries with exposed bone should be referred for flap coverage.

Administer a digital or wrist block (in cases involving multiple digits) following assessment of neurovascular status. A digital or forearm tourniquet is used to achieve a bloodless field before exploration or repair is undertaken.

Many fingertip injuries can be managed in a primary care setting, but complex injuries and amputations should be referred to a specialist.

NAIL BED INJURIES

Nail bed injuries range from lacerations to crush and avulsions of nail bed tissue. Patients who sustain a crushed fingertip may present with a subungual haematoma.

SUBUNGAL HAEMATOMA

If the nail plate is adherent and the lateral nail folds are not disrupted, painless subungual haematomas can be treated conservatively i.e. with simple analgesia and hand elevation. Painful subungual haematomas can be decompressed (trephination) under aseptic conditions.

TECHNIQUE (FIGURE 5)

1. Administer a digital or wrist block. Under aseptic conditions, trephine the nail plate with a sterile heated needle.
2. Successful trephination should result in decompression of the haematoma with immediate pain relief.
3. Apply tulle gras, gauze and crepe bandage. Prescribe antibiotics for 3 days.

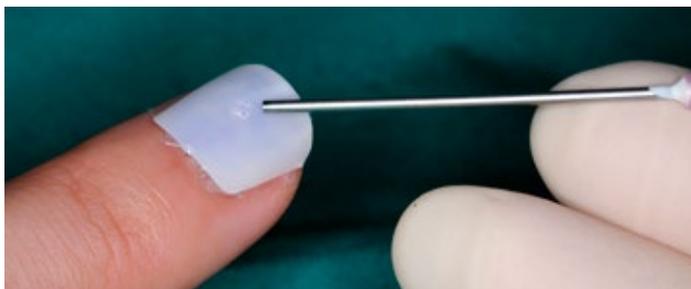


Figure 5 Technique of trephining a subungual haematoma using a heated, sterile needle. Successful trephination should result in immediate decompression and pain relief.

Subungual haematomas with concomitant distal phalanx fractures require removal of the nail plate and repair of the underlying nail bed laceration.

NAIL BED REPAIR

Table 2

There are four categories of nail bed trauma³:

- Simple lacerations
- Stellate lacerations
- Crush injuries
- Avulsion injuries

Simple nail bed lacerations may be repaired in the outpatient setting with fine, absorbable suture (Vicryl 6/0) or with Dermabond.⁴ Accurate approximation of the lacerated edges of the nail bed maximises the chance of normal nail plate growth post injury. Injuries with nail bed defects should be referred for possible nail bed grafting.⁵

TECHNIQUE

1. Administer a digital or wrist block. Apply a digital or forearm tourniquet.
2. Remove the nail plate (or remnant) with a blunt dissector.
3. Debride the nail bed conservatively and irrigate copiously with normal saline.
4. Repair the nail bed laceration with Vicryl 6/0 (*Figure 6*). Alternatively, apply Dermabond over the entire sterile matrix in three layers, with a 30-second interval between layers. Be careful not to use too much pressure during Dermabond application as this will force the lacerated edges apart, allowing adhesive to enter the wound and compromise healing.
5. Lateral incisions may be required to adequately expose the germinal matrix for repair (*Figure 7*).
6. After repair, splint the proximal nail fold open by replacing the patient's original nail, or a thin layer of tulle gras into the nail fold. This is important to prevent adhesion of the nail fold resulting in pterygium. Anchor the nail with non-absorbable sutures.
7. Remove the tourniquet. Dress the fingertip with tulle gras, gauze and crepe bandage.



Figure 6 Stellate nail bed laceration repaired with Vicryl 6/0 (white-coloured suture).



Figure 7 Lateral incisions (drawn in red) on the proximal nail fold are made to adequately expose germinal matrix lacerations for repair.



Complications of a suboptimal nail bed repair include split nail, pterygium and non-adherence of the nail plate (Figure 8). Secondary reconstructive procedures may be required.



Figure 8 Pterygium (left) and split nail deformity (right)

PULP

Wounds with no soft tissue loss may be closed primarily. Isolated defects of the pulp (e.g. shaving injuries) that are superficial (no exposed bone) and less than 1 cm² may be left to granulate with simple regular dressing changes (tulle gras, gauze and crepe bandage). Complete healing will occur within 3 to 5 weeks. The patient should be encouraged to mobilise the hand after the first week.¹

Wounds larger than 1 cm² require a full thickness skin graft for durable skin cover and to reduce excessive wound contraction. The medial forearm or hypothenar skin are the preferred donor sites. Injuries with exposed bone require coverage by local or regional flaps and specialist referral is indicated.

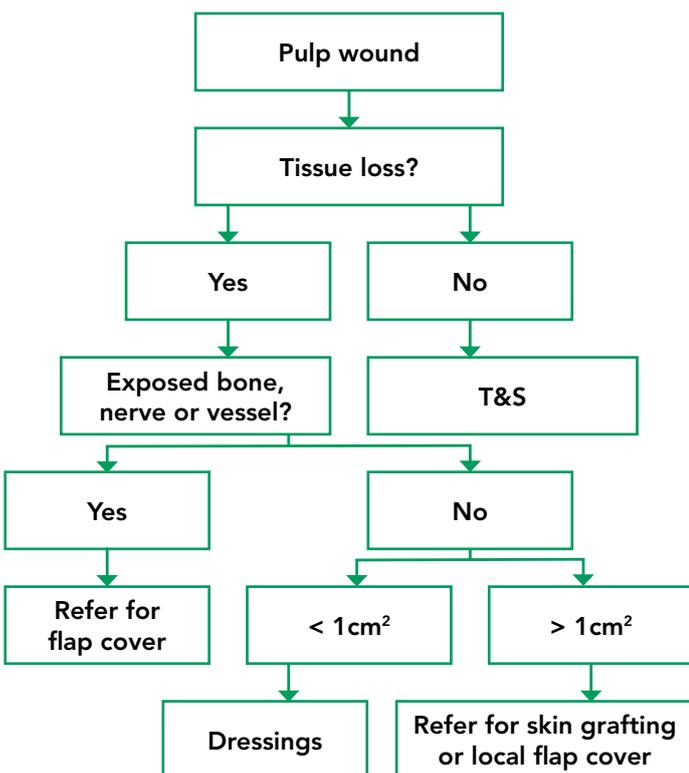


Figure 9 Algorithm for treating pulp injuries

DISTAL PHALANX

An associated distal phalanx fracture occurs with 50% of nail bed injuries.⁶ Fractures of the distal phalanx tuft are managed conservatively, and are splinted in position by the repaired nail bed. Patients should be advised that they may have a painful pulp on tip pressure for 2 to 3 months post-injury.

Displaced fractures of the shaft should be referred to a specialist for reduction and Kirschner wire fixation.

MALLET FINGER

Mallet finger injuries are caused by disruption of the terminal extensor tendon. This produces the characteristic extension lag at the distal interphalangeal joint. They are classified as soft tissue (tendon rupture) or bony (avulsion fracture) mallets (Figure 10).

Mallet injuries result from the sudden forced flexion of an extending distal interphalangeal joint. A compensatory hyperextension at the proximal interphalangeal joint results in a swan neck deformity as the central slip of the extensor tendon retracts proximally.

The vast majority of closed mallet injuries are treated with splinting. A mallet splint is worn full time for 6 to 8 weeks to maintain the distal interphalangeal joint in extension. The patient is weaned off the splint (night time splinting only) over 1 month.

For the first 6 to 8 weeks, the splint is maintained and taken off only for hygiene purposes. The distal interphalangeal joint must be kept extended when the splint is taken off.



Figure 10 Soft tissue and bony mallet injuries

Intermittent proximal interphalangeal joint flexion exercises are encouraged after 6 weeks of total immobilisation to prevent stiffness and to slacken the tension in the lateral bands. Patients should be advised that a 10° residual extensor lag at the distal interphalangeal joint is common.⁶

Open mallet injuries or mallet fractures that are associated with subluxation of the distal interphalangeal joint (*Figure 11*) should be referred to the specialist for fixation.



Figure 11 Mallet fracture associated with subluxation of the distal interphalangeal joint

CONCLUSION

Fingertip injuries are common, many of which may be treated in a primary healthcare setting. Special care must be taken in evaluating the 3 subunits of the fingertip.

Indications for specialist referral

1. Complex nail bed injuries
2. Displaced distal phalanx shaft fractures
3. Pulp wounds more than 1 cm² and/or exposed bone, nerve or vessels
4. Fingertip amputations

REFERENCES

1. Fassler PR. Fingertip Injuries: Evaluation and Treatment. *J Am Acad Orthop Surg.* 1996 Jan;4(1):84-92.
2. Zook EG. Anatomy and physiology of the perionychium. *Hand Clin.* 2002 Nov;18(4):553-9, v.
3. Zook EG, Guy RJ, Russell RC. A study of nail bed injuries: causes, treatment, and prognosis. *J Hand Surg Am.* 1984 Mar;9(2):247-52.
4. Yam A, Tan SH, Tan AB. A novel method of rapid nail bed repair using 2-octyl cyanoacrylate (Dermabond). *Plast Reconstr Surg.* 2008 Mar;121(3):148e-149e.
5. Zook EG. Reconstruction of a functional and aesthetic nail, *Hand Clin* 18:577-594, 2002.
6. Green, D. P., & Wolfe, S. W. *Green's operative hand surgery.* Philadelphia: Elsevier/Churchill Livingstone. 2011.



Dr Darryl Chew is a Consultant with the Department of Hand Surgery at the Singapore General Hospital. Hand trauma forms the bulk of his caseload at SGH. His sub-specialty interest is the paediatric hand and sees children presenting with hand problems at KK Women's and Children's Hospital.



Dr Fong Hui Chai is a Junior Resident with the Department of Plastic, Reconstructive & Aesthetic Surgery at the Singapore General Hospital. He has a keen interest in limb reconstruction, and has just completed a rotation in the Department of Hand Surgery.

GPs can call for appointments through the GP Appointment Hotline at 6321 4402 or scan the QR code for more information.





Services



SingHealth Transplant was established in 2010 as the first entity in Singapore to consolidate all transplant programmes under one umbrella. Today, we are one of the largest and most experienced transplant practices in the region, providing comprehensive and quality care to our patients and donors.

At present, there are nine transplant programmes under SingHealth Transplant, namely Kidney, Liver, Heart and Lung, Cornea, Skin, Cardiovascular Homograft, Haematopoietic Stem Cell and Umbilical Cord Blood.

The first patient to benefit from a transplant on SingHealth Campus underwent a vision-restoring corneal transplant in 1962. Since then, more than 7,000 transplants have been done on the Campus, giving new life and new hope to many patients and their families.

VISION:

To be a transplant centre of excellence, delivering the best clinical outcome for patients through clinical service, education and research.

MISSION:

- To achieve best quality outcomes and patient experience for our solid organ, cell and tissue transplant programmes
- To advance innovation in transplantation through cutting edge research and quality improvement
- To foster a positive culture towards transplantation with the realisation of organ, cell and tissue donation at every opportunity

OUR STRENGTHS:

1. Dedicated and Well-Trained Multidisciplinary Team

All healthcare professionals involved in transplant have undergone specific training in their area of expertise, most of whom are trained in renowned overseas transplant institutions. Our team is committed to providing comprehensive and compassionate clinical care and also making significant contributions to research and policies that regulate transplant practice.

2. Dedicated Infrastructure Resources

As part of continued efforts to enhance the quality of patient-centred care, we have established a one-stop transplant centre in 2013 to enable our patients to be reviewed by all relevant specialists within one day.

A 'One Queue, One Bill' system has since been introduced to help reduce waiting time as patients no longer have to collect multiple queue numbers for every service and consultation that they need. The centre has clinics, counseling rooms, a phlebotomy cubicle and a procedure unit for:

- Pre- and post- transplant education by transplant coordinators
- Donor and recipient assessment for transplantation
- Post-transplant follow-up care
- Dedicated transplant pharmacist clinics
- Dedicated ambulatory follow-up programs by dietitians and physiotherapists
- Phlebotomy services
- Outpatient biopsy of kidney transplants
- IV drugs infusions
- IV blood product infusions

Aside from our one-stop transplant outpatient centre, we also have dedicated High-Dependency rooms to care for patients who have just undergone transplant surgery. This is especially critical for immediate post-transplant patients as they are most vulnerable to infections after surgery.

3. Thriving Living Donor Programmes

We have thriving living donor programmes for kidney, liver and haematopoietic stem cell transplants, and offer our patients the best chance for excellent outcomes. To ensure the best outcomes for our donors and their recipients, our team of specialists will conduct a thorough workup which includes screening information, compatibility testing, comprehensive lab work, cardiac and radiology studies, and psychosocial support consultation for our patients.

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SingHealth Transplant

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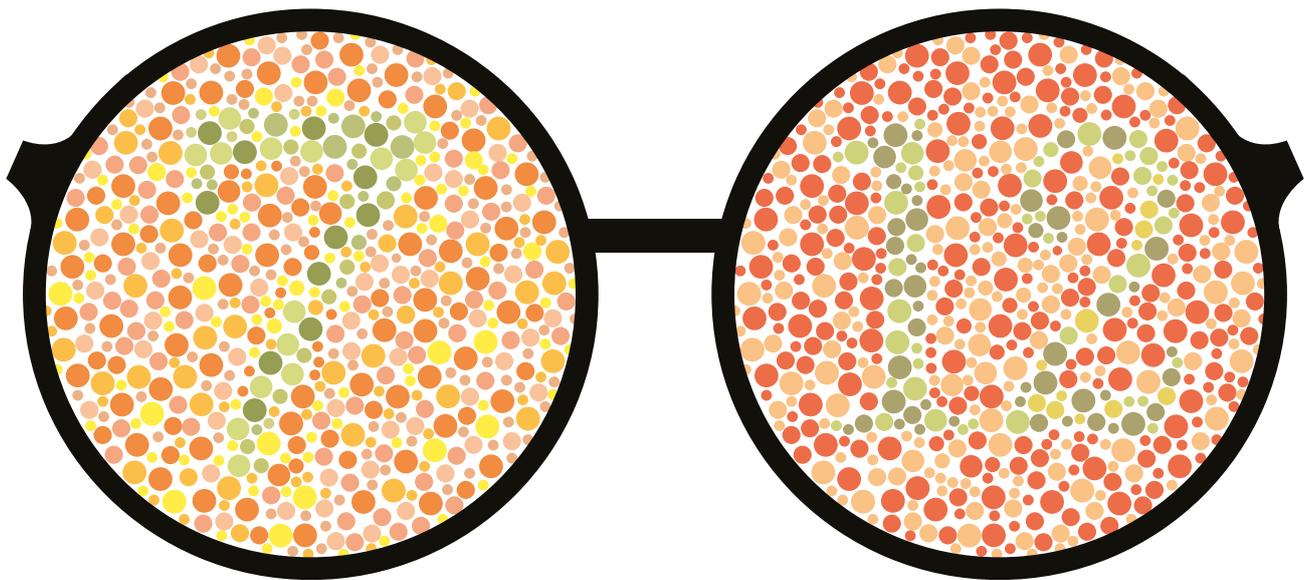
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What colour do you see?

Early detection is key to overcoming limitations created by colour vision deficiency



Colour vision deficiency (CVD) may not be a life-threatening condition but it does affect the quality of life. Some patients may even suffer long-term consequences, as they may be mistaken as slow-learners in school or as uncooperative at play. All these could lead to poor self-esteem and social withdrawal.

In one local study involving close to 1,250 teenagers, 33 were discovered to have CVD. This is a relatively high number who are only diagnosed post primary school. Early detection is therefore critical.

“This will allow parents and teachers to take pre-emptive measures to help CVD children cope. Parents could teach their children to rely on shapes and sizes instead of colour to tell various objects apart. In schools, teachers may make use of patterns, tables or labels as teaching tools instead of relying on colours,” said Dr Shermin Goh, Resident, SingHealth Family Medicine Residency Programme, and co-author of a recent review article on *CVD in Asia Pacific Family Medicine*.

However, early detection is not easy. Vision screening in local schools currently only includes visual acuity and stereopsis. In pre-schoolers it is an even harder task.

“Pre-schoolers may not understand and cooperate with the instructions in using the Ishihara chart. The accuracy of assessment will also be limited by their ability to name numbers aloud even if they actually perceived them,” shared Dr Valerie Chan, co-author and fellow Resident.

Therefore, the Colour Vision Testing Made Easy colour plates are used, which are considered the gold standard for diagnosis of CVD in paediatrics. Instead of the 38 plates with numbers and pathways of the standard Ishihara chart, the paediatric test contains 14 plates depicting simple shapes and pictures. The child is then asked to find a circle or a boat.

“This makes colour vision testing fun, so children are more likely to cooperate,” added Dr Goh.

But until mass screening for paediatrics becomes routine in schools, a high index of suspicion is necessary on the part of primary care physicians, especially in young kids presenting as perceived slow learners or with low self-esteem.

“During consults, physicians may do a quick check on their coping levels at school. Should patients express difficulty, especially with science subjects, a quick screen using the relevant diagnostic tools can help to determine any underlying CVD,” said Dr Goh.



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SingHealth is responsible for developing Sengkang Health, a new healthcare system to deliver patient-centric care to the community in the north-east of Singapore. By 2018, a general hospital and a community hospital will be fully operational in Sengkang. Sengkang Health is currently operating in Alexandra Hospital, prior to the completion of its new hospitals. The collective strengths of SingHealth and Duke-NUS, its partner in research and medical education, pave the way for the transformation of healthcare.

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Courses

Update on Benign Breast Conditions for Primary Care Practitioners

Time	Programme
1.30 pm	Registration
2.00 pm	Welcome Address <i>Dr Lim Swee Ho, Head and Senior Consultant, KK Breast Dept</i>
2.15 pm	Models of Care for Breast Pain and Breast Cysts <i>Dr Tan Yia Swam, Associate Consultant, KK Breast Dept</i>
3.00 pm	Tea Break
3.15 pm	Update on Breast Imaging: What's New? <i>Dr Teo Sze Yiun, Senior Consultant, Dept of Diagnostic & Interventional Imaging, KKH</i>
4.00 pm	The KK Breast Centre: What Can We Offer? <i>Dr Tan Yia Swam, Associate Consultant, KK Breast Dept</i>
4.15 pm	Q&A
4.30 pm	End of Programme

Date
16 April 2016 (Saturday)

Time
2.00 pm – 4.30 pm

Venue
KKH Auditorium (Training Centre),
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