

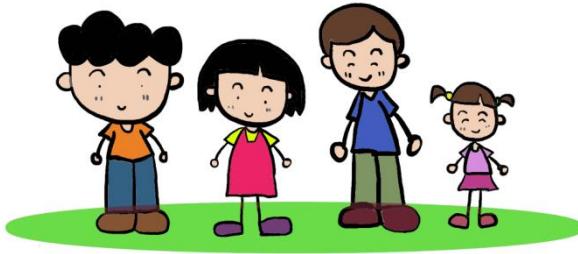


Squint and Double Vision

Published 2019

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Introduction

Have you ever watched 3D movies before? There are multiple images on the screen and the audience can enjoy the 3D effect of the movie by simply wearing stereo glasses. However, without stereo glasses, you can only see multiple images and cannot see a single 3D image. Just imagine how will your daily life be affected if you see multiple images every single day?

Some patients with squint suffer from double vision every day and it causes a lot of inconvenience to their daily lives. In addition to the problem of double vision, some patients with squint lose their three-dimensional sense, causing them to fall and bump into objects easily and resulting in injuries. Many members of the public do not have a deep understanding of squint and may not understand the difficulties encountered by patients with squint in their daily lives.

In addition to providing information for squint patients, this booklet also hopes to increase the public's understanding of squint and thereby increasing the tolerance and acceptance of squint patients.

What is squint?

Squint is an eye condition in which the patient's eyes cannot be aligned to the same point of interest; when one of the eyes looks forward, the other eye is shifted up, down, inside or outside.

Types of squint (The left eye is the squinting eye)

Right eye Left eye

Exotropia

Eye drifts outward, away from the normal position



Esotropia

Eye drifts inward (towards the nose). This is commonly known as "cross-eyed."



Hypertropia

Eye drifts upward



Hypotropia

Eye drifts downward



Squint can also be divided into constant type or intermittent type.

Intermittent squint only occurs in certain situations (such as fatigue or lack of concentration).

Causes of squint

Squint occurs when the brain and the eye muscles fail to coordinate and control the movement of both eyes.

Any conditions affecting the brain, optic nerve, cranial nerves and coordination of the eye muscles can lead to squint. Intermittent exotropia is a common type of squint in Hong Kong. However, most patients do not have any related diseases that affect the brain, the optic nerve or coordination of eye muscles.

Congenital factors

Congenital fibrosis of extraocular muscles, congenital brain disease such as cerebral palsy, hydrocephalus etc.

Refractive error

Myopia (short-sightedness) or hyperopia (far-sightedness) are related to squint to varying extent. Children with hyperopia may over-contract the eye muscles when trying to focus which may result in esotropia.

Acquired factors

Due to accident or illness such as brain tumours, stroke or hyperthyroidism etc.



Squint in children

Squint can occur at any age but is most common in children. Approximately 4% of children are affected by squint.

Squint may cause double vision. However, if the patient is under the age of eight and the visual system is not fully developed, the brain will suppress the double vision caused by the squinting eye and the patient will eventually lose binocular vision and three-dimensional sense.

The area of the brain responsible for vision of the squinting eye loses function because of long term inhibition. As a result, the squinting eye cannot develop normal vision and amblyopia (lazy eye) occurs.

How do you know if your child has squint?

- The eyes are not aligned
- Often closes one eye to eliminate double vision
- Tilting the head to one side for better balance and coordination
- Frequent falls when climbing stairs
- Lack of confidence in walking alone



If you find that your child suffers from the above, please bring your child for eye examination and seek treatment as soon as possible.

Treatment modalities

The sooner a child gets proper treatment, the less the vision will be affected.

- **Eye muscle exercise**

Through the guidance of the orthoptist, the visual axis can be appropriately adjusted to enhance binocular vision.



- **Wearing glasses**

Wearing suitable glasses can correct refractive errors.



- **Occlusion therapy**

If your child has amblyopia, the eye with better vision can be occluded to correct amblyopia in the fellow eye and to enhance its function. However, this treatment must be evaluated and guided by an ophthalmologist and an orthoptist. If not, squint and amblyopia may be aggravated.



- **Drug therapy**

Atropine eye drops (as an ancillary treatment)

Accommodative esotropia

Accommodative esotropia often occurs in children who are two years of age or older and have high hyperopia.

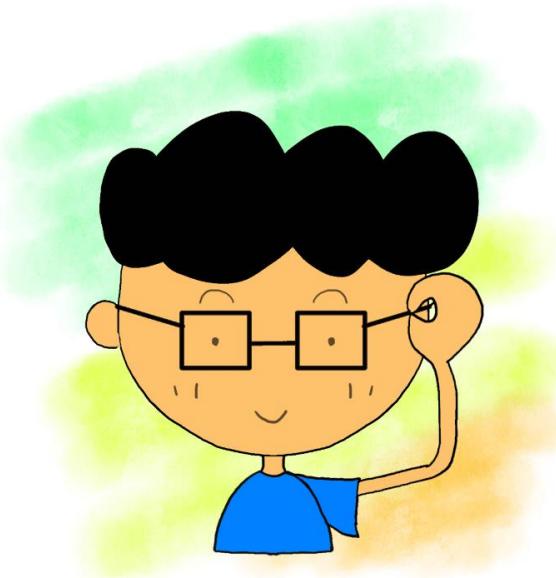
- To adapt to high hyperopia, young children will accommodate in order to see the image clearly, but accommodation may cause esotropia.
- Wearing appropriate hyperopic glasses can reduce the load on accommodation and prevent accommodative esotropia.
- In some cases, special lenses are needed to correct accommodative esotropia.

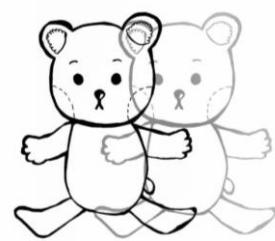


Squint in adults

Adult squint is usually caused by accidents or illnesses. Since binocular vision development has completed before the age of eight, the adult brain usually cannot suppress the images received by the squinting eye. As a result, the patient will suffer from double vision and his/her daily life will be affected.

We need to treat the disease causing the squint in the first place. On the other hand, different methods can be used simultaneously to correct squint or reduce the effects of double vision on daily life. These methods include covering one eye, wearing a prism, learning eye movement exercises, and undergoing squint surgery.





The consequences of squint

Physical

Squint causes patients to lose three-dimensional sense. Therefore, it may be difficult for them to tell the depth of the image. Some patients fall and bump into objects easily because of double vision. They may also have difficulty in assessing the distance between themselves and the cars when crossing the road and may be prone to accidents.

Psychological

Squint can affect the appearances of patients and imposes psychological stress on patients.

Patients with squint are often misunderstood by others, for example:

“Why don’t you look at me when you talk to me? It’s rude!”

“This guy’s eyes look empty and gives an impression that he is lazy.”

Squint affects patients' daily lives and social activities and causes patients to lose their self-confidence.

In summary, squint affects the physical and psychological well-being of patients. Physically, patients lose three-dimensional sense and are prone to accidents; psychologically, patients' social lives may be affected by their appearances and this may cause a negative impact on their self-confidence and psychological growth.





Case sharing 1

Question

Matthew was four months old and his mother found that there were deviations in the positions of his eyes. She was worried that he had squint and took him to the hospital for consultation.

After the doctor's examination, it was found that Matthew only had "false esotropia" (pseudosquint). The doctor reassured the mother that she did not need to worry and the pseudosquint would disappear as Matthew grew up.

Answer

Pseudosquint means that the positions of the eyes appear to be deviated, but in fact the eyes are completely normal. Pseudosquint is common in children and no treatment is required.

The cause of pseudosquint is due to a prominent skin fold in the inner corner of the eye, leading to a perceived asymmetry between the inner white part and the outer white part of the eye. As the eyeball appears to be very close to nose bridge, it is often misunderstood as esotropia.

As the baby grows up, the bridge of the nose grows taller and the skin fold in the inner corner of the eye grows nearer to the nasal bridge. The illusion of squint gradually disappears.



Case sharing 2

Question

Carolyn was three years old. Her mother found that she often fell over for no reason, so she took her to the hospital. The doctor diagnosed that Carolyn was suffering from exotropia, but the appearance of Carolyn was normal. Her mother did not understand why her daughter had squint.

Answer

If the child's face is not fully developed, the nose bridge is flat. The white part of the eye closer to the nose may also be covered by the wide skin fold at the inner corner of the eye. As a result, the exotropia may be difficult to detect. Exotropia may be present while the external appearance appears to be normal.



Case sharing 3

Question

Yvonne was three years old and suffered from squint. Her mother found that Yvonne's writing was always tilted. She thought that Yvonne's writing difficulty was due to squint and was very worried. In addition, she was also worried that squint would affect Yvonne's learning ability and concentration.

Answer

If the squint patient is under the age of eight, the visual system is not fully developed. The brain will suppress the image perceived by the squinting eye. The patient generally does not see multiple images but will lose three-dimensional sense.

Although the three-dimensional sense is lost, this does not affect the patient's eye-hand coordination. The squint patient can also write properly. Squint does not affect the child's learning ability and concentration.

In this scenario, it may be because Yvonne was still young and cannot fully control the large and small muscles of her hand, resulting in difficulty in writing.





Case sharing 4

Question

Six-year-old Jack suffered from squint. After assessment by an orthoptist, it was confirmed that the squinting eye was also amblyopic. Therefore, orthoptists and doctors told Jack to cover his better eye every day to improve the vision of the squinting eye. However, Jack was very depressed when he was teased by his classmates as "one-eyed dragon" and "single-eyed".

Answer

If the patient is under the age of eight and the visual system is not fully developed, the area of the brain responsible for the squinting is suppressed and double vision is prevented. As a result, the squinting eye will develop amblyopia.

Occlusion therapy requires the patient to cover the eye with better vision, thereby training the eye with weaker vision, improving vision and improving binocular vision.

In Jack's case, the teacher can explain to other students what squint and occlusion therapy were about, so that other students can understand Jack's situation and misunderstanding can be reduced.

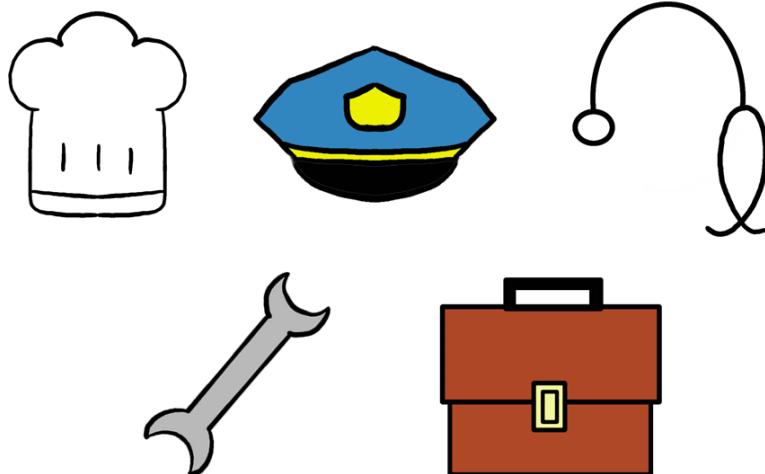
Case sharing 5

Question

Seven-year-old Cherry was diagnosed with squint, and her mother was worried. She was worried that this would affect Cherry's career choices in the future and felt very helpless.

Answer

Except for certain occupations that require binocular vision or a strong three-dimensional sense, there is no such requirement in most occupations. Many patients with squint can become outstanding professionals in various fields.



Case sharing 6

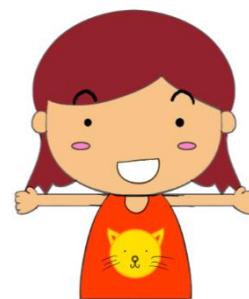
Question

Mandy was diagnosed with amblyopia when she was eight years old and received occlusion therapy. Although the vision of the amblyopic eye has improved, it was still not normal. Mandy is nine years old now. Her mother is worried that as Mandy grows older, the amblyopia will become more and more severe.

Answer

In general, the vision development of children's eyes stabilizes after the age of eight and their vision will not change much. Therefore, the crucial time to treat amblyopia is before eight years old.

In Mandy's case, her amblyopia will not worsen as she grows older.



Case sharing 7

Question

Jensen was fifteen years old and had 300 degrees of myopia. He needed to wear glasses. His mother thought that Jensen's myopia will worsen as he grew older. She was worried that his myopia may increase to 1000 degrees when he reaches the age of 20.

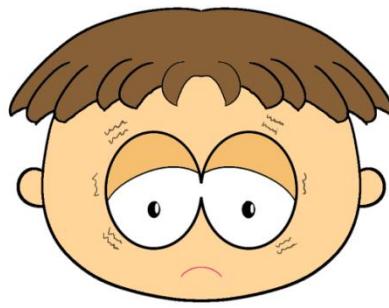


Answer

Under normal circumstances, the light reflected by distant objects enters the eye and focuses on the retina to form a clear image.

Myopia develops because the patient's eyeball is too long. Images from distant objects can only be focused in front of the retina and the patient will feel blurred when looking at distant objects.

In the case of Jensen, the development of the eyeball has been completed and the degree of myopia has mostly stabilized. However, he still needs to pay attention to daily habits and avoid prolonged near work which may worsen the myopia.



Case sharing 8

Question

Tiffany was three years old. Her mother found that her eyes moved incessantly, so she took her to the hospital. The doctor diagnosed Tiffany to have nystagmus, commonly known as "eye vibration."

Answer

Nystagmus refers to repeated and involuntary eyeball movements. The causes can be divided into congenital, acquired illnesses or injuries. The visual acuity will be affected due to repeated eyeball movements.

Most often, the nystagmus reduces when the patient looks to a certain direction. When this direction is ascertained, the nystagmus can be reduced by surgery.

In Tiffany's case, she could wear appropriate prisms to reduce the nystagmus or improve her head posture, thereby improving her vision. She could consider undergoing eye surgery when she grows older.

Case sharing 9

Question

Howard suffered from exotropia. Under the guidance of an orthoptist, Howard learned eye muscle exercises and subsequently underwent squint surgery. After the operation was completed, he continued to do eye muscle exercises to consolidate the surgical outcome.

However, during a follow-up visit, the doctor found that Howard's exotropia recurred. His mother thought that Howard had already followed the doctor's instructions. She did not understand why the squint still recurred.



Answer

After talking to Howard's mother, it was found that Howard slept at 2a.m. every night. Sleep deprivation may affect the postoperative outcome and lead to recurrence of squint.

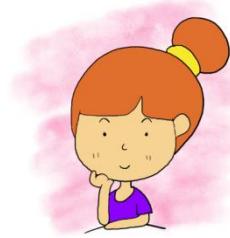
Therefore, Howard should change his habits and ensure that there was enough rest. He should do more outdoor activities and reduce prolonged near work to prevent eye fatigue.

Case sharing 10

Question

40-year-old Ms. Chan had thyroid disease. She recently found that the right eyeball was deflected downwards and could not move upwards.

Ms. Chan felt pain in her right eye whenever she looked up.



Answer

Thyroid eye disease causes swelling and inflammation of the extraocular muscles and thus the movement of the eyeball becomes restricted.

In Ms. Chan's case, she should not look up forcefully as it will increase the intraocular pressure and damage the optic nerve.

In general, most patients will gradually stabilize after having thyroid eye disease for two to three years. After that, depending on the needs of individual patient, the doctor can decide whether to perform squint surgery to correct the deviation of the eye.

Case sharing 11

Question

Mr. Li, who was 60 years old, had a stroke. The right sixth cranial nerve was damaged. As a result, his right eye could not move to the right, causing esotropia and double vision. Mr. Li was very upset so he went to the hospital to seek treatment.

Answer

Mr. Li could wear a prism to eliminate the double vision in the primary position. In addition, as Mr. Li's right eye could not move outward, the right visual field was reduced. Therefore, Mr. Li should get used to turning his head to the right to look at objects or obstacles to his right hand side in order to avoid accidents.



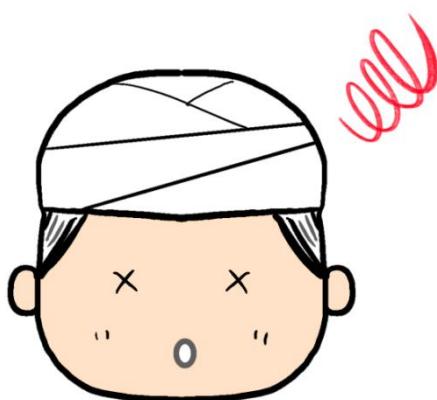
Case sharing 12

Question

Eight-year-old Harry suffered from loss of left lower quadrant visual field after brain surgery. He fell and bumped into objects easily. His mother took him to the hospital to seek treatment.

Answer

Harry could wear a prism to maximize the visual field of the left lower quadrant. At the same time, he should pay more attention to the left lower visual field and turn the head to the lower left to improve the field of view in the lower left. This could help to reduce the chances of fall and bumping into objects.





Case sharing 13

Question

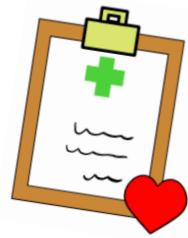
Hayden suffered from esotropia due to hyperopia since he was six. He wore hyperopic glasses to reduce the degree of esotropia.

Hayden is now eight years old, but his squint is still not properly controlled. His mother is very worried. She does not understand why Hayden still needs to wear such high dioptre hyperopic glasses despite receiving treatment for two years. She self-prescribed a pair of hyperopic glasses with lower dioptre for her son.

Answer

In general, children with esotropia due to hyperopia need to wear glasses to correct esotropia and restore three-dimensional sense and binocular vision. If the squint condition can be properly controlled after wearing glasses for a period of time, the orthoptist will gradually adjust the dioptre of the hyperopic glasses according to individual circumstances. It is hoped that the squint can be corrected by using the appropriate dioptre of hyperopic glasses.

In the case of Hayden, his mother should not reduce the dioptre of the hyperopic glasses as his esotropia is still not well controlled. This could make the esotropia difficult to be treated and may have the risk of permanently losing three dimensional sense and binocular vision.



Case sharing 14

Question

Ms. Leung recently discovered that she had drooping of eyelids. The drooping eyelids was not obvious in the morning when she woke up but worsened in the afternoon. However, the situation improved significantly after resting for a while.

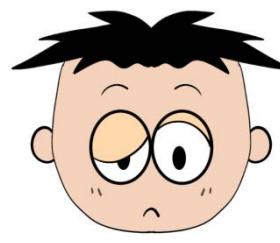
In the past few days, Ms. Leung started to have double vision and weakness of the facial muscles. She worried that there would be squint and amblyopia in the future, so she went to the hospital for check-up. The doctor diagnosed Ms. Leung to have myasthenia gravis.

Answer

Myasthenia gravis is a disorder of the autoimmune system, with onset mostly in the adult and elderly. The drooping of eyelids is an early sign and the patient will often dismiss it as lack of sleep. The disease can be accurately diagnosed and treated effectively if the patient seeks treatment in a timely manner. If left untreated, the patient may have double vision, difficulty in breathing or even die.

Ms. Leung was diagnosed with myasthenia gravis. After treatment, her squint and drooping eyelids improved significantly.

In this case, Ms. Leung's visual development has been completed. Her visual acuity was not affected and she would not develop amblyopia.



Case sharing 15

Question

Lily was diagnosed with drooping eyelids when she was born. Her parents were very worried whether this would affect her vision and whether there would be squint or amblyopia in the future.

Answer

Most cases of congenital drooping of eyelids are due to poor development of the muscle responsible for lifting the upper eyelids or developmental disorders of the nervous system. If the drooping eyelids block the pupils, visual development will be affected and amblyopia will occur in severe cases.

After detailed evaluation by the doctor, surgery can be performed to correct the drooping of eyelids. It is recommended that the child be corrected before entering school to avoid amblyopia or psychological distress caused by the droopy eyelids. Lily's parents should follow the doctor's assessment and advice.

Target measures



Visual field defect

If the patient has a visual field defect in the left lower quadrant, the following lifestyle modifications should be made:

- Place more items to the right for easy reach.
- Turn the head more to the left to look at the objects or obstacles on the lower left side to avoid accidents.
- Touch the lower left side with his/her hands more often to prevent accidents.
- Wear prisms to expand the lower left field of view.
- Slow down in daily activities and be more careful.

Regular eye checks before eight years old

The crucial period of visual development is before eight years old. Parents should take their children to the Maternal and Child Health Centre or family doctor for eye examinations from the age of two to three. They should also pay attention to their daily habits to detect squint or amblyopia early. Early intervention will increase the chances of improving vision.

If you find that your child has an abnormal head posture or moves too close when looking at objects, you should bring him/her for examination and treatment as soon as possible.

Daily life and environmental adaptations

Sufficient lighting

Ensure room lighting or natural light that is sufficient, evenly distributed, stable and soft when working or reading.

Good posture

The table and chair should be of suitable height when working and reading. Keep a good sitting posture. Do not lean on the desk or lie on the bed when reading. Do not play video games, look at the screen of mobile phones or read in moving vehicles.

Appropriate distance

When reading, the eyes should be at an appropriate distance from the book (30-40 cm); when using a computer, the eyes should be 50-70 cm away from the monitor; when watching television, the distance from the television should be six times the size of the screen.

Sufficient rest

Rest for 30 seconds after reading, writing, using computer or playing video games for 30 minutes. Relax your eyes, look at scenery six meters away, or close your eyes.



Prevent damage by ultraviolet light

For outdoor activities, you can protect your eyes by wearing a cap, using an umbrella or wearing sunglasses with sufficient protection to reduce the damage by ultraviolet light to the eyes.

Outdoor activities

Engage in more outdoor activities and look into the far distance. This can relax the eye muscles and slow down the progression of myopia.

Children can have one to two hours of outdoor activities every day to keep their eyes healthy.

Food

Keep a balanced diet and take food rich in vitamins A, C, E, carotene and antioxidants e.g. spinach, broccoli, carrots, corn, apples and oranges.



Related organizations

Some patients with eye diseases and their families formed patient support groups to help themselves and one another.

Through regular gatherings and experience sharing, patients can support and encourage one another. This can help eye patients and their families to integrate into society and promote social harmony.

The following is a list of the Hospital Authority Ophthalmology clinics and patient support groups for your information.

Hospital Authority Ophthalmic Service

Hospital	Address	Telephone
Pamela Youde Nethersole Eastern Hospital	3 Lok Man Road, Chai Wan, Hong Kong	25957778
Tung Wah Eastern Hospital	19 Eastern Hospital Road, Causeway Bay, Hong Kong	21626054
Grantham Hospital	125 Wong Chuk Hang Road, Aberdeen, Hong Kong	25182130

Hospital	Address	Telephone
Hong Kong Eye Hospital	147K Argyle Street, Kowloon	27623007
Caritas Medical Centre	111 Wing Hong Street, Shamshuipo, Kowloon	34087070
United Christian Hospital	130 Hip Wo Street, Kwun Tong, Kowloon	39494200
Tseung Kwan O Hospital	2 Po Ning Lane, Hang Hau, Tseung Kwan O, Kowloon	22080576
Prince of Wales Hospital	30-32 Ngan Shing Street, Shatin, New Territories	35053316
Alice Ho Miu Ling Nethersole Hospital	11 Chuen On Road, Tai Po, New Territories	26892398
Tuen Mun Eye Centre	4 Tuen Lee Street, Tuen Mun, New Territories	24785122
Pok Oi Hospital	Au Tau, Yuen Long, New Territories	24758702

Website:

http://www.ha.org.hk/visitor/ha_isf_result.asp?lang=ENG&service_code_id=460&service_type=SC&location=&service_item=9#resulttop

Patient support groups

Hong Kong Glaucoma Patients' Association

G/F, Block 6, Kornhill Garden, 1120 King's Road,
Quarry Bay, Hong Kong

Telephone 25737788

Fax 25733535

E-mail hkgpa@hkgpa.org

Website <http://www.hkgpa.org>

Hong Kong Cornea Concern Association

G/F, Wang Lai House, Wang Tau Hom Estate,
Kowloon

Telephone 31889484

Fax 23384820

E-mail info@cornea.org.hk

Website <http://www.cornea.org.hk>

Hong Kong Blind Union

Unit 13-20, G/F, Tsui Ying House, Tsui Ping Estate,
Kwun Tong, Kowloon

Telephone 23390666

Fax 23387850

E-mail info@hkbu.org.hk

Website <http://www.hkbu.org.hk>

Retina Hong Kong

Room 101, G/F Lai Huen House, Lai Kok Estate,
Cheung Sha Wan, Kowloon

Telephone 27089363

Fax 27088915

E-mail info@retina.org.hk

Website <http://www.retina.org.hk>

Child's Vision

Community Service & Rehabilitation Centre,
Units 1-5, G/F, Block 9, Pak Tin Estate, Kowloon

Telephone 23191396

Fax 23191696

E-mail rc@ccf.org.hk

Website <http://www.ccf.org.hk>

Hong Kong Association of Squint and Double Vision Sufferers

Community Rehabilitation Network, The Hong Kong Society for Rehabilitation, G/F Ping Chi House, Tai Ping Estate, Sheung Shui, New Territories

Telephone 27943010

Fax 26392356

E-mail hkasdvs@gmail.com

Website <http://www.sites.google.com/site/hkasdvs>

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With special thanks to the Hong Kong Orthoptists Association

The information is for general educational purpose and reference only.

Should you have any queries, please consult medical professional.

Specialty Advisory Group (Ophthalmology)

First Published 2019

Notes