1. Review of Modern literature
2. Review of Ayurved literature
REVIEW OF MODERN LITERATURE

Anatomy of Eyeball

It is situated in the bony orbit slightly anteriorly and on superiomedial side and the space in between is filled up by fatty tissue. Thus it is protected from any external injury.

Dimensions of eyeball are:-

- Anteroposteriorly: 24 mm
- Horizontally: 23.5 mm
- Vertically: 23 mm

Eyeball is made up of three different coats:-

1. **Outer fibrous coat:** It consists of sclera and cornea. The function of fibrous coat is to protect the inner delicate structures of the eyeball.

2. **Middle or vascular coat:** It consists of iris, ciliary body and choroid. The vascular coat contains mostly the blood vessels which supply nutrition to various ocular structures.

3. **Inner or nervous coat:** It consists of retina and optic nerve. It plays an important role in visualizing the objects. It is concerned in reception and transformation of light stimulus.

**Contents of Eyeball:**

- Aqueous humor
- Lens
- Vitreous humor
Ocular Appendages:-

The ocular adnexa or ocular appendages comprise eyelids, orbit, extraocular muscles, the conjunctiva and the lacrimal apparatus.
Anatomy of Lacrimal Apparatus

The lacrimal system comprises structures involved in the production and drainage of tears. The secretory component consists of the lacrimal glands which are exocrine glands that produce the various ingredients of tear fluid, which is distributed over the surface of the eye by the action of blinking. The puncta, canaliculi, lacrimal sacs, and nasolacrimal ducts form the excretory elements of the system, secretions ultimately draining into the inferior meatus of the nose.

Anatomy of Main Lacrimal Gland:-

It is situated in the anterior and outer part of the roof of the orbit which forms the concavity known as the fossa of the lacrimal gland. It is in direct contact with the upper and outer side of the eyeball.

Anatomically it has 2 parts:-

1. Orbital part
2. Palpebral part

They are incompletely separated by levator palpebral muscle. Orbital portion is bigger than palpebral portion. The anterior portion of the palpebral part can be seen through the conjunctiva in the lateral portion of the superior fornix. 10 to 12 ducts from both portions open into the conjunctival sac just in front of the fornix. Few ducts open into the lateral portion of the inferior fornix also. The ducts from the orbital portion pass through the palpebral portion and hence, removal of the palpebral portion might result in loss of secretion of lacrimal fluid.

Accessory lacrimal glands4:-

1. Glands of Krause: These are microscopic glands lying beneath the palpebral conjunctiva between fornix and the edge of tarsus. These are about 42 in the upper fornix and 6-8 in the lower fornix.
2. Glands of Wolfring: These are present near the upper border of the superior tarsal plate and along the lower border of inferior tarsus.
**Structure:**
All lacrimal glands are serous acini, similar in structure to the parotid glands. Microscopically these consist of acini which consists of two layers of cells outer myoepithelial and inner layer of cylindrical cell which are secretory in nature.

**Blood supply:**
Main lacrimal gland is supplied by lacrimal artery which is a branch of ophthalmic artery. Venous drainage is into the ophthalmic vein.

**Nerve supply:**
1. Sensory supply comes from lacrimal nerve, a branch of the ophthalmic division of the fifth nerve.
2. Sympathetic supply comes from the carotid plexus of the cervical sympathetic chain.
3. Secretomotor fibres are derived from the superior salivary nucleus.

**Lacrimal passages**

1. **Lacrimal puncta:** These are two small, rounded or oval openings near posterior border of upper and lower lids, about 6mm temporal to the inner canthus. Each punctum is situated upon a slight elevation called lacrimal papilla which becomes prominent in old age. Normally the puncta dip into the lacus lacrimalis (collection of tear fluid in the inner canthus). The puncta are visible only after slightly everting the eyelids.

2. **Lacrimal canaliculi:** These join the puncta to the lacrimal sac. Upper canaliculus 8mm and lower one is 8.5mm long. First 2mm of canaliculus is vertical and rest of the horizontal which converge medially to unite and the common canaliculus open into the middle of lateral surface of the lacrimal sac. A fold of mucosa at this point forms the valve of Rosenmuller which prevents reflux of tears.

3. **Lacrimal sac:** It lies in the lacrimal fossa located in the anterior part of medial orbital wall. The lacrimal fossa is formed by lacrimal bone and frontal process of maxilla. It is bounded by anterior and posterior lacrimal crests. When distended,
The lacrimal sac is about 1.5 mm in length and 5-6 mm in breadth. It has got three parts: fundus (portion above the opening of canaliculi), body (middle part) and the neck (lower small part which is narrow and continuous with the nasolacrimal duct). The sac is enclosed by a portion of periorbita known as the lacrimal fascia which splits at the anterior and posterior lacrimal crests. Few fibres of Muller’s muscle take origin from posterior lacrimal crest. Anteriorly, the upper part of the sac is in close contact with the medial palpebral ligament to which crosses the angular vein 8mm from inner canthus.

4. **Nasolacrimal duct (NLD)**: It extends from neck of the lacrimal sac to inferior meatus of the nose. It is about 15-18 mm long and lies in a bony canal formed by the maxilla and the inferior turbinate. Direction of the NLD is downwards, backwards and laterally. Externally its location is represented by a line joining inner canthus to the ala of nose. The upper end of the NLD is the narrowest part. There are numerous membranous valves in the NLD, the most important is the valve of Hasner, which is present at the lower end of the duct and prevents reflux from the nose.

**Anatomy of glands of Eyelids**

1. **Meibomian glands**: These are also known as tarsal glands and are present in the stroma of tarsal plate arranged vertically. They are modified sebaceous glands. Their ducts open at the lid margin. Their secretions constitutes the only layer (lipid layer) of the tear film.
2. **Glands of Zeis**: These are also sebaceous glands which open into the follicles of eye lashes.
3. **Glands of Moll**: These are modified sweat glands situated near the lash follicles, the ducts of which opens either into a lash follicle or directly into the anterior lid margin between the lashes. They do not open directly onto the skin surface as elsewhere.
Secretion of tears:

Tears are continuously secreted throughout the day by accessory (basal secretion) and main (reflex secretion) lacrimal glands. Reflex secretion is in response to sensations from the cornea and conjunctiva, probably produced by evaporation and break-up of tear film. Hyperlacrimation occurs due to irritative sensations from the cornea and conjunctiva. Afferent pathway of this secretion is formed by fifth nerve and efferent by parasympathetic (secretomotor) supply of lacrimal gland.

Elimination of tears:

Tears flow downward and medially across the surface of eyeball to reach the lower fornix and then via lacus lacrimalis in the inner canthus. From where they are drained by lacrimal passages into the nasal cavity. This is brought about by an active lacrimal pump mechanism constituted by fibres of the orbicularis (especially Horner’s muscle) which are inserted on the lacrimal sac. When the eye lids close during blink, contraction of these fibres distends the fundus of the sac, creates therein a negative pressure which syphons the tears through punctum and canaliculi into the sac. When the eyelids open, the Horner’s muscle relaxes, the lacrimal sac collapses and a positive pressure is created which forces the tears down the nasolacrimal duct into the nose. Therefore, in atonia of sac, tears are not drained through the lacrimal passages, in spite of anatomical patency; resulting in epiphora.
Figure 2-Anatomy of Lacrimal Apparatus
Physiology of Tear Film\textsuperscript{7}

The presence of the pre-corneal tear film was 1\textsuperscript{st} demonstrated by Fischer in 1928. Tears wet the front of the eye and extend under the eyelids. The thin layer of tears that cover the exposed area of the globe are capped with an oily layer, and it referred to as tear film. It is essential for maintaining the transparency of cornea. It provides smooth optical surface, acts to supply nutrients and helps to protect the eye against environmental conditions.

Wolff was the first to describe the detailed structure of the fluid covering the cornea and called it precorneal film. It consists of three layers from outer layer to inner layer are:-:

1. Lipid Layer (0.1 mm Thick)
2. Aqueous Layer (7-10 mm Thick)
3. Mucinous Layer (0.2-1.0 mm Thick)

1) Lipid Layer-:

The most superficial layer of the tear film is produced by the meibomian glands in the tarsal plate, which secrete sebaceous material at the mucocutaneous junction of the lid margin. Blinking compresses and stretches this secretion over the tear film to create and maintain the superficial oily layer which has a major role in retarding evaporation from the tear film. The lipid layer prevents tear spillage from the ocular surface, prevents eyelid skin damage by tears, and forms a protective seal over the ocular surface during sleep. The functions of stabilizing the ocular surface by preventing evaporation and enhancing the solubility of tear components have also been proposed.

2) Aqueous Layer-:

The aqueous layer is secreted by the main and accessory lacrimal glands. It constitutes the largest volume of the tear film. It rests above the mucin but deep to the lipid layer. the aqueous layer consists primarily of water but also contains electrolytes (Na, K, Cl) and myriad proteins, including epidermal growth factor, immunoglobulins (IgA, IgG, IgM),
lactoferrin, lysozyme, and other cytokines. The precise role of these proteins is unknown, but they likely play both a protective and a homeostatic role for the ocular surface.

3) Mucin Layer:

The mucin layer consists of high–molecular-weight glycoproteins that adhere to surface epithelium and its secreted glycocalyx. This mucinous coating of the hydrophobic epithelial cell surface provides a level, hydrophilic surface, permitting smooth distribution of the overlying aqueous layer. It is primarily secreted by conjunctival goblet cell.

**Figure 3- Components of Tear film**

![Components Of Eye Forming Tear Film](image)
1. Physical properties of tear film:

Tear fluid is clear, salty, slightly alkaline and watery.

1. Thickness of tear film - Average volume of tear film varies from 4 μm to 8 μm.
2. Volume of tear film: The average volume of tear film has been reported to be 7 μl with a range from 4-13 μl (one to two drops) during basal condition.
3. Rate of tear secretion – 12 μl per min.
4. Refractive index – Refractive index of tear film is 1.357.
5. pH of tears – The pH of tears is nearly 7.4, pH of tears is lowest on awakening due to acid by products associated with relatively anaerobic conditions in prolonged lid closure.
6. Osmotic pressure – the osmotic pressure of the tear film in normal eye is equivalent to 0.90% to 0.95% NaCl solution.
7. Temperature of tear film – It ranges from 35°C at a limbus to a low of 30°C at the centre of cornea.

It varies with extremely cold or hot environment, under windy conditions and with the eyelids tightly closed or held open for prolonged period of time.
8. Oxygen tension (PO$_2$) – In the normal tear film, under basal condition PO$_2$ varies from 40 – 160 mmHg under a tightly fitting contact lens it may drop to a value as low as 20 mm Hg with a well fitted contact lens a more normal PO2 is retained during blinking as the tidal flow of tears changes beneath the lens.

2. Ion Composition –

The ion composition of the tear fluid is the another challenges. The concentration of potassium ions 17.0 mmol/L is important for cornea. “Sodium bicarbonate is the physiological buffer system of the tear fluid and is very important for the cornea.

Defects in the epithelium heal considerably faster in the presence of sodium bicarbonate.

Figure 5-Chemical Composition Of Tear Film

<table>
<thead>
<tr>
<th></th>
<th>TEARS</th>
<th>PLASMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)water</td>
<td>98.2g%</td>
<td>94g%</td>
</tr>
<tr>
<td>2)solids, total</td>
<td>1.8%</td>
<td>6g%</td>
</tr>
<tr>
<td>3)Na$^+$</td>
<td>142meq/l</td>
<td>137-142meq/l</td>
</tr>
<tr>
<td>4)K$^+$</td>
<td>15-29meq/l</td>
<td>5meq/l</td>
</tr>
<tr>
<td>5)Cl$^-$</td>
<td>120-135meq/l</td>
<td>102meq/l</td>
</tr>
<tr>
<td>6)HCO$_3$-</td>
<td>26meq/l</td>
<td>24.3meq/l</td>
</tr>
<tr>
<td>7)Ca$^{2+}$</td>
<td>2.29mg/100ml</td>
<td></td>
</tr>
<tr>
<td>8)Glucose</td>
<td>3-10mg/100ml</td>
<td>80-90mg/100ml</td>
</tr>
<tr>
<td>9)Total proteins</td>
<td>0.6-2gm/100ml</td>
<td>6.78g/100ml</td>
</tr>
<tr>
<td>10)Aminoacids</td>
<td>8gm/100ml</td>
<td></td>
</tr>
<tr>
<td>11)Urea</td>
<td>0.04mg/100ml</td>
<td>20-40mg/100ml</td>
</tr>
</tbody>
</table>
Functions of Tear film

1) To form an almost smooth optical surface on the cornea by filling in and smoothening out small surface irregularities in the corneal epithelium.
2) Keep the surface of cornea and conjunctiva moist.
3) Serves as a lubricant for the preocular surface and lids.
4) It transfers oxygen from ambient air to the cornea.
5) It prevents infection due to presence of antibacterial substances like lysozyme, betalysin, lactoferrin, immunoglobulins and other proteins.
6) Washes away debris and noxious irritants.
7) It provides refractive media for light.
8) It provides a pathway for white blood cells in case of injury.

Regulation of tear film components –

1. **Hormonal**: Androgens are the prime hormones that regulate lipid production. Oestrogens and progesterone receptors in the conjunctiva and the lacrimal glands are essential for normal function of these tissues.

2. **Neural**: Fibres adjacent to the lacrimal glands and goblet cells result in aqueous and mucus secretion.
COMPUTER VISION SYNDROME

INTRODUCTION

Computer Vision Syndrome is the complex of eye and vision problems related to near work which are experienced during or related to the computer use. CVS is characterized by visual symptoms which result from interaction with a computer display or its environment.

It is caused by extensive use of computers which reduces the blinking rate of a person and due to this water flow across the eyes is reduced drastically and leads to dryness.

In most cases, symptoms occur because the visual demands of the task exceed the visual abilities of the individual to comfortably perform the task.

The main ocular symptoms reported are dryness, eye strain, watering, headache, irritation, redness, blurred vision, diminished vision and may double vision.

Definition

The American Optometric Association defines CVS as that “Complex of eye and vision problems related to near work that are experienced during or related to computer use.

Technically CVS is not a true syndrome in the medical sense. It is series of symptoms that are common to those who experience Computer related eye discomfort.

Both visual and ophthalmic symptoms occur among computer users. These have collectively been called the computer vision syndrome (CVS). Visual complaints include blurred vision and the need for eyeglasses. Ocular symptoms associated with the syndrome include Dryness, Redness, Burning, Eye fatigue & Itching.

Frequency

A large percentage of computer users have ocular symptomatology and, thus, seek eye examinations. According to Thompson, the prevalence of ocular symptoms in computer users, as part of the syndrome, ranges from 25-93%. Studies by Sheedy and coworkers suggest that 1 out of 6 patients requiring eye examinations have a computer-related eye problem.
ETIOLOGY

The etiology of computer vision syndrome (CVS) is multifactorial, as several issues may lead computer users to this syndrome. These factors may be environmental, personal, or a combination of both.

Causes:

**Personal factors are as follows:**

- **Age and sex:** Previous studies have shown that female patients, as compared to male patients, tend to have a reduction in the tear film's aqueous layer with increasing age.
- **Uncorrected refractive errors** may lead to blurred vision, asthenopia, eye fatigue, and headaches. Even though presbyopes may wear bifocals, computer users who wear bifocals may have to extend their neck to focus on the monitor, reading material, and/or the keyboard, which are usually located at intermediate distances. Neck extension for prolonged periods of time may also lead to neck pain and headaches as part of the syndrome.
- **Symptoms associated with this syndrome,** such as burning sensation of the eyes, may be exacerbated in computer users with preexisting dry eyes.
- **Diseases** that widen the interpalpebral fissures or lead to lid retraction, such as thyroid disease, may lead to increased tear evaporation. Normally, patients tend to blink approximately 18 times per minute. Patel and coworkers showed that computer users blinked only 4 times per minute. A reduced blinking rate in computer users may be part of an effort to gaze attentively at the computer monitor.
- **Diminished blinking** may worsen Meibomian gland dysfunction and, thus, symptomatology in patients with the CVS.

**Environmental factors are as follows:**

- A large angle of gaze, low humidity, and excess room illumination, may exacerbate ophthalmic symptoms associated with the syndrome.
- Computer users open their interpalpebral fissures to look at their monitors, as opposed to office clerks who look downward at their desks. Therefore,
computer users have more eye surface exposure to environmental factors, which may lead to increased tear evaporation.

- When the monitor's center is positioned higher than the canthal region, both the angle of gaze needed to look at the monitor and the interpalpebral aperture are wider. On the other hand, when the monitor's center is lower than the canthal region, both the angle of gaze needed to look at the monitor and the interpalpebral aperture is smaller.

- A rule of thumb would be to advise patients that the top of their monitors should be lower than their eyebrows.

- Sheedy and coworkers believe that light sensitivity is worst in computer users, as compared to other office clerks, since computer users keep their eyes wide open to look at the monitor. Many patients with CVS complain of light sensitivity, which is worsened by high wattage fluorescent or flickering lights at the workplace. Computer users may have discomfort and glare from overhead fluorescent lights and large glass windows that are close to their workstations. Personal factors may also exacerbate the symptoms associated with CVS.

Combined factors are as follows:

- Computer users who are presbyopic may need to extend their neck to look at the monitor through the bifocals. Systemic symptomatology may be exacerbated further by having an upward gaze to look at the computer's monitor.
Figure-6  PATHOGENESIS OF CVS$^9$

Images on Computer screens
Contrast is not sharp, edges of characters are not well defined
Eyes have difficulty focusing
Eyestrain to Regain Focus
Puts Strain On Ciliary muscles of the Eye
Eye Fatigue & Headache
Dry Eyes, Burning sensation & Redness from reduced blinking
Repeated head posture change/Wrong Posture
Strain on the neck muscles and cervical spine
Neck pain & Headache
CLINICAL PRESENTATION

History:

The patient's history should be obtained, including age, chief complaint, and onset of symptoms.

- In obtaining a history of present illness, the ocular symptoms should be evaluated. Patients with computer vision syndrome (CVS) complain of several symptoms, such as blurred vision, dryness, burning sensation, itching, red eyes, tearing, and photophobia.
- Previous eyeglasses prescriptions and eye medications, including lubricants, should be evaluated.
- The review of systems may include such issues as xerostomia, thyroid disease, menopause, arthritis, carpal tunnel syndrome, Parkinson disease, and systemic medication use that may exacerbate dry eye symptoms (eg, anticholinergics, antihistamines, antidepressants, diuretics).
- Environmental factors, such as computer setup, seating, wrist position, monitor type, desktop color, window proximity, and ceiling and desk illumination sources, should be evaluated.

Physical:

Patients with CVS should undergo a comprehensive ophthalmic evaluation that includes the following:

- Best-corrected visual acuity for near, intermediate, and distance vision
- Manifest refraction at near, intermediate, and distance for refractive errors since computer users may have refractive errors, including presbyopia.
- A cycloplegic refraction is of utmost importance in the younger population (<21 y) because young computer users may have refractive errors, particularly latent hyperopia, that will lead to visual symptoms as part of the syndrome.
- A slit lamp examination to evaluate tear meniscus and corneal staining
  - Patients with this syndrome may have superficial punctate keratitis.
  - The lens should be evaluated for cataract formation.
- Intraocular pressure should be monitored.
- A fundus examination to examine optic nerve, vessels, macula, and peripheral retina is needed.
- A Schirmer test & Tear Film Break up Time is needed to assess for dry eye.
Work Up:

Lab studies:

Tear electrophores may be used when available as a tool for the diagnosis of tear film impairment in high-risk groups such as computer users. A hormonal evaluation, such as a thyroid profile and sex hormones, may be useful to diagnose metabolic risk factors leading patients to the CVS.

Imaging studies:

X-ray films of the neck may be needed to evaluate cervical vertebral curvature straightening in patients with neck pain. Orthopedic consultation or wrist MRI scans to evaluate the possibility of carpal tunnel syndrome may contribute to a complete diagnostic evaluation.

Other tests:

Luminance evaluation by electrical engineers (when feasible) conducted at the workplace is advisable.
TREATMENT AND MANAGEMENT

A primary care provider should lead and coordinate the multi-systemic evaluation of patients with computer vision syndrome (CVS). Awareness of both the ocular findings and the systemic findings is essential in the management of patients with the syndrome.

Indications used for eyeglass prescriptions in the general population are also used for patients with this syndrome. Antireflection Coating Glasses should be prescribed for patients with refractive errors, including presbyopia. Occupational glasses may be needed by some patients with this syndrome. Single vision lenses versus bifocals should be chosen according to the patient's needs and working distances.

Medical therapy:
- Topical lubricants
- Cyclosporine A ophthalmic emulsion
- Punctal occlusion

Surgical care:
Surgical indications used for patients with dry eye syndrome are also used for patients with CVS. Some patients may benefit from punctal plug insertion.

Consultations:
Since several ergonomic factors may contribute to CVS, engineer consultation is desirable at the workplace, including luminance evaluation of the working area.

Orthopedic and/or physical therapy evaluation is crucial in the diagnosis and treatment of cervical myositis and carpal tunnel syndrome in patients with this syndrome.

Medications:
Topical ocular tear replacement therapies are available with either vanishing preservatives or as preservative-free ophthalmic drops.

Refresh Tears (Allergan), a lubricant eye drop, is available with varying characteristics and viscosities. Refresh Tears is supplied in 15 cc and 30 cc bottles, for
repeated use, using the sodium chlorite Purite, a vanishing preservative system. A more viscous preparation, Refresh Liquigel is also available.

Systane (Alcon/Novartis) and Systane Preservative free (Alcon/Novartis) are lubricant eye drops that contain active demulcents such as polyethylene glycol 400 and propylene glycol buffering preservation system. Original Systane is preserved with Polyquad and formulated at a pH of 7.0.

Restasis (cyclosporine A ophthalmic emulsion) 0.05% (Allergan) is indicated to increase tear production in patients whose tear production is presumed to be suppressed due to ocular inflammation associated with chronic dry eye. Restasis has revolutionized the treatment of chronic dry eye disease. It provides a preservative-free emulsion that also replaces both the aqueous and the lipid component of the tear film. Restasis should not be used by patients with active infections of the eye or by patients with known or suspected allergies to any of the ingredients in the formulation.

**Deterrence/ prevention:**

Patients should avoid medications (e.g. antihistamines, anticholinergics) that may worsen dry eye.

Computer users who have dry eye should avoid wearing contact lenses, especially in the evening and at night when tear production is at its lowest.

**Complications**

Complications in patients with CVS are similar to those in patients with dry eye, including superficial punctate keratitis and keratitis.

Watch for optical decentration in eyeglasses by examining the patient's pupillary distance (PD). Consider using monocular PD measurements as needed. The patient's PD should be compared to the PD found in prescribed eyeglasses. Consider advising the optician on the patient's dominant eye.

**Prognosis**

Early evaluation, diagnosis, and intervention may prevent the symptoms associated with CVS. Symptoms associated with this syndrome may be improved with lubricants.
PATIENT EDUCATION

Educate employers and school administrators to conduct luminance and humidity evaluations at the workplace.

Proper monitor positioning to decrease the angle of gaze at the monitor will also help in preventing the symptoms associated with the syndrome.

Figure 7 - Viewing the Computer

Some important factors in preventing or reducing the symptoms of CVS have to do with the computer and how it is used. This includes lighting conditions, chair comfort, location of reference materials, position of the monitor, and the use of rest breaks.

- **Location of computer screen** - Most people find it more comfortable to view a computer when the eyes are looking downward. Optimally, the computer screen should be 15 to 20 degrees below eye level (about 4 or 5 inches) as measured from the center of the screen and 20 to 28 inches from the eyes.

- **Air Conditioner** - Most of the offices related to computer use are air conditioned. Air conditioner causes rapid evaporation of tears resulting in dryness. Because of this, Air conditioner is one of the contributing factors in CVS. So minimum use of air conditioner is necessary to avoid CVS.

- **One Third Rule** - View a document you use every day on your computer monitor and then move back from the screen until it just starts to become blurred. Measure this distance and divide by three your monitor should be placed at that distance.
• **Reference materials** - These materials should be located above the keyboard and below the monitor. If this is not possible, a document holder can be used beside the monitor. The goal is to position the documents so you do not need to move your head to look from the document to the screen.

• **Lighting** - Position the computer screen to avoid glare, particularly from overhead lighting or windows. Use blinds or drapes on windows and replace the light bulbs in desk lamps with bulbs of lower wattage.

• **Anti-glare screens** - If there is no way to minimize glare from light sources, consider using a screen glare filter. These filters decrease the amount of light reflected from the screen.

• **Seating position** - Chairs should be comfortably padded and conform to the body. Chair height should be adjusted so your feet rest flat on the floor. If your chair has arms, they should be adjusted to provide arm support while you are typing. Your wrists shouldn't rest on the keyboard when typing.

• **Rest breaks** - To prevent eyestrain, try to rest your eyes when using the computer for long periods. Rest your eyes for 15 minutes after two hours of continuous computer use. Also, for every 20 minutes of computer viewing, look into the distance for 20 seconds to allow your eyes a chance to refocus.

• **Blinking** - To minimize your chances of developing dry eye when using a computer, make an effort to blink frequently. Blinking keeps the front surface of your eye moist.

Regular eye examinations and proper viewing habits can help to prevent or reduce the development of the symptoms associated with Computer Vision Syndrome.
COMPUTER AND ERGONOMICS

Ergonomics:

The term "ergonomics" is derived from two Greek words: "ergon," meaning work, and "nomoi," meaning natural laws. Ergonomists study human capabilities in relationship to work demands.

Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.

Computer and Ergonomics:

Many people spend hours a day in front of a computer without thinking about the impact on their bodies. They physically stress their bodies daily without realizing it by extending their wrists; slouching, sitting without foot support and straining to look at poorly placed monitors.

These practices can lead to cumulative trauma disorders or repetitive stress injuries, which create a life-long impact on health. Symptoms may include pain, muscle fatigue, loss of sensation, tingling and reduced performance.

Ergonomics is a field of study that attempts to reduce strain, fatigue, and injuries by improving product design and workspace arrangement. The goal is a comfortable, relaxed posture.

Arrange Your Workstation: Every time you work, take time to adjust workstations that aren't quite right in order to minimize awkward and frequency performed movements.

Adapt Laptops: Laptop computers are not ergonomically designed for prolonged use. The monitor and keyboard are so close together that they cannot both be in good positions at the same time. For prolonged use, it's best to add a separate monitor and keyboard.
Modify Your Body Mechanics

Do you wear eyeglasses? Make sure they fit properly to avoid tilting your head. Type with light strokes, and try to keep your muscles relaxed.

Sit "tall," aligning your ears, shoulders and hips. When you sit, think about making yourself an inch taller. Switch hands when using a mouse, if you are able. Completely rest your wrists during breaks, including taking your hands off the mouse.

Adjust Your Work Patterns: Reduce prolonged computer time whenever possible. Break work into smaller segments and switch between tasks that use different motions. For example, alternate use of mouse with reading and searching the web.

Move: Movement has many benefits: it relaxes tissues, lubricates joints and prevents stiffness, improves circulation, reduces fatigue, and builds stamina. One study showed that heavy computer users who successfully avoided computer-related pain moved every 7 minutes.

At least every 10 minutes, take a short (10-20 second) break. Take your hands off the keyboard and move!
Every 30-60 minutes, take a brief (2-5 minute) break to stretch and/or walk around.

Exercise at Your Computer

Neck/Shoulders:
Neck Rotation: Slowly rotate your head as far as comfortable to the right, then left.
Shoulder Rotation: Circle your shoulders, then reverse directions.
Head Side to Side: Bend your neck so left ear approaches left shoulder, then repeat for right. Add a little resistance by pressing your hand against the side of your head.
Chin Tuck: Slide your chin inward, without bending your neck up or down. This is easiest to practice initially against a wall. Tuck chin in, attempting to touch back of neck to the wall while also maintaining head contact. Don't jam your chin down to your chest.
Shoulder Blade Retraction: Pull your shoulders down and back.
Shrug: Slowly raise your shoulders toward ears and hold for a few seconds. Gradually bring shoulders down and relax.
Back:
Shoulder Squeeze: Raise your arms in front of body, with elbows bent and thumbs up. Pull elbows back, squeezing shoulder blades together. Hold for a few seconds then release.
Stretch Up: Sit up straight and imagine a cable attached to the top of your head. Gradually stretch to be as tall as possible, hold for a few seconds, then relax.

Arms:
Arm Relaxation: Drop your arms and hands to your sides. Gently shake them for a few seconds.
Arm Rotation: Raise your arms in front of your body. Rotate arms so palms face up, then rotate so backs of hands face each other.

Hands/Wrists:
Wrist Flex: With your elbows on desk, gently use left hand to bend right hand back toward forearm. Hold for a few seconds, then relax. Repeat on other side.
Finger Fan: Spread your fingers as far apart as possible, hold, then clench fists, then release.

Feet:
Toe Curl: Flex toes up, then curl toes under. Release.
Foot Rotation: Circle foot slowly from the ankle, then reverse.

Eyes:
Eye Rolls: Roll your eyes clockwise then counterclockwise briefly.
Palm Eyes: Without touching your eyes, cup hands lightly over eyes for 30 seconds to rest them from light.
Look Away: Exercise your eyes by periodically looking away from your computer to focus on distant objects.

Keep fit: Physical fitness can help you avoid and treat problems related to computer use. Build your stamina with exercises for strength, flexibility, and cardiovascular health.
REVIEW OF LITERATURE ACCORDING TO ĀYURVEDA

‘Cakṣuṣyaṁdriya occupies the key position among all the other jñaneāmdriya which is responsible for’ Rūpagrahaṇa.

Eye care is one of the priorities since the ages as it is a major source of direct knowledge and damage to eyes could immerse life into an ocean of darkness (Astaṁga Sarṇgrahā Uttarataṃtra 28/146)

Eye is one of the precious organs of human body. A separate branch Śālākyataṃtra has been provided in Āyurveda, as one among the Asṭaṁga Āyurveda to care the precious parts above the clavicle ( Ṣravaṇa, Nayana, Vadaṇa, Ghrāṇa etc.) and eye (Nayana) is one among them. (Suṣruta Sūtrasthāna 1/10)

Nimī has dealt the disease of eye in detail and authored a compendium eye diseases on the basis of his clinical experience. Videha and Janaka have significant contributions to the early development of Śālākyā.

Suṣruta Saṁhitā written by Maharshi Suṣruta is the earliest available manual on surgery, provide glimpses of the strides of Nimī by describing the ancient ophthalmological considerations in detail. Suṣruta has mentioned various Netrarogas and their treatment in Uttarataṃtra.

Vāgbhatā I (Ashtang Sangraha), Vāgbhatā II (Ashtanga Hruadayā), Madhavkara(NidānaViniścaya), Śaraṇagdhara, BhāvPrakāśa, Bhāskar Govinda Ghāṇekar (Bhaiṣajya Ratnāvalī), Yogratiṅkar etc have advanced this science with new therapies and compilations of ancient views.
NETRA SHARIR

Eyes are the two srotasas, out of nine bahirmukh srotasas.

Origin of Netra is from Aātmā and Paṃca Mahābhūta during the development of garbha. It is also one of the important constituent of karmapurūṣa, which is basic of therapeutics.

Measurement, Dimension and Shape: (Suṣruta Saṃhita Uttarataṇṭra 1/9-10)

Suṣruta has mentioned measurement and dimensions of the eye as Amtapraveśa- 2 aṃgula, Āyāma-2½ aṃgula, Vistāra-2½aṃgula. Shape is Vṛttākārā and Gostānākār.

Panchabhoutikatva: (Suṣruta Saṃhita Uttarataṇṭra 1/11)

Māṃsal or solid part is made up of Pruthvī Mahābhūta, Raktavāna part is made up of Agni Mahābhūta, Śuklavāna part is made up of Jala Mahābhūta. Kṛṣṇavāna part is made up of Vāyū Mahābhūta and Āśrūmārgas are made up of Ākāśa Mahābhūta.

Suṣruta described the Netra Śārīr according to Nidāna and Cikistā into three distinct parts called Maṃḍāla, Patala and Saṃdhī (Suṣruta Saṃhita Uttarataṇṭra 1/14)

Maṃḍāla:
These are 5 in number from outer most to inner most layers and are as follows;
1) Pakṣma Maṃḍāla 2) Vartma Maṃḍāla 3) Shweta Maṃḍāla
4) Kṛṣṇa Maṃḍāla 5) Dṛṣṭī Maṃḍāla

Patal:
Netra consists of 6 patals out which two are Vartma patals and remaining four are situated in eyeball.
1) First- Tejojalāśrit 2) Second- Maṃṣasrita
3) Third- Medoṣrita 4) Fourth- Asthyaṣrita
**Saṃdhī:**

These are 6 in numbers named as-

1) Pakṣmavartmagata  2) Vartmaśuklagata  3) Śuklakṛṣṇḥagata  
4) Krushnadristigata  5) Kaninīkā  6) Apāṁga  

**Drūṣṭī:**

Drushti is described to be of the size of masūrdāla made up of paṃca Mahābhūta. Its brightness is similar to spark of fire occupied by perishable teja enclosed by patals. It is vivarākṛtif and śitasātmya.  
*(Suṣruta Saṁhitā Uttarataṁtra 7/3,4)*

**Akṣī bāṁdhanā:**

Proper alinment of the parts the eye depends upon sirā, karṇḍara, meda, kalaka, kṣleṣma etc.

**Marma:**

Apaṁga Marma is situated at the lower end of each eyebrow and on outer side of the eye. Āvarta Marma are two in number and situated above the eyebrow. Any trauma to these two marmas causes blindness and diminished vision. The place, where dhaman-ī nourshing tongue, ear, nose and eye unite is called Śṛungāṭak marma. These are 4 in number and are sadyapraṇaharaḥ.

**Sirā and Dhamaṇī:**

There are 34 Sirās, which transports Vāta(8), pitta(10), Kapha(8) and rakta(8) to the eyes

**Peśī and Snāyū:**

There are 2 peśīs and 30 snāyūs in the eye.

**Asthī and Saṃdhī:**

Akṣī koṣā or eyelids contain a Tarūnāshtī.
Strotasas:

The eyes are considered among the bahirmukha srotasas. (External orifice).

Concept of Aṣrumarga (Lacrimal Apparatus) in Āyurveda:

Aṣrumarga are formed by the Ākāśa mahābuthās and consists of Aṣru strotasas. i.e. the lacrimal passage, which conduct the tears from the conjunctiva into the nasal cavity.

Videha the founder of Indian ophthalmology has stated that two Aṣruvaha Sirās (channels) open into medial angles at canthus formed by the both upper and lower lid, i.e. kaninīkā saṃdhī respectively.
NETRA KRIYĀŚĀRĪR

External subject’s knowledge is given to soul in body by the five senses – Netra, Karna, Nāśā, Jivhā, Tvacā. Inspite of all these five senses being pāṇcabhautīk, the īaṃḍriya sense which is formed by that Mahābhūt, it takes guṇa / tanmatrā of that respective Mahābhūt. Netra Utṣattī is primarily from Tej Mahābhūt. So netra accepts only Tej Mahābhūtatamak Rūpa. Senses are present in very minute / sūkṣma form in śiro bhāga and Eye, Nose, Ear, etc. are their Stūla Adhiṣṭhana. Form Sense in Eye is done by Drūṣṭī which is place of Ālocaka Pitta. This sense via Dhamnīs doing Rūpagrahaṇa with prāṇa vāyū reaches Mana and Ātmā and then only knowledge of particular thing occurs.

Paṃcapaṃcak of Netra:-

- Jñanemḍriya – Cakṣuṣreṃdriya
- Related Mahābhūta – Teja Mahābhūta
- Jñanemḍriya Adhiṣṭhana – Netra
- Jñanemḍriya Artha – Roop Tanmatra
- Jñanemḍriya Buddhi - Cakṣuṣreṃdriya Buddhi + Mana + Ātmā

So when Ātmā combines with Mana, Mana with Īaṃḍriya Buddhi, Īaṃḍriya Buddhi with Tanmatra, Tanmatra with Adhiṣṭhana, Adhiṣṭhana with respective Mahābhūta and Mahābhūta with respective sense, then Īaṃḍriya Jñāna occurs. In the function of form sense Prāṇāvāyū and Tarpak kapha which is situated in shirobhāg plays a vital role.

Netra- Doṣa:

1) Vāta Doṣa Prāṇāvāyū -

Netra Īaṃḍriya is one of the site of Prāṇāvāyū which helps in the visual process.
2) Pitta Doṣa (Alocaka) –

Alochaka pitta is the principle pitta which is responsible for visualising the object and is situated at the Netra Iaṃḍriya.

3) Kapha Doṣa (Tarpak) –

The types of kapha which presents in the cranial cavity and which gives lubrication to eyes is called as Tarpak Kapha.

**Dhātū:**

All seven dhātū constitutes the eyeball.

Total 76 eye diseases have been described pertaining to the different part of eye. According to site they are classified as pakṣmagata, saṃdhīgata, vartmagata, śuklagata, kṛuṣṇagata, sarvagata, druṣṭīgata, and āgaṃtuja.
REVIEW OF DISEASE ŚUṢKĀKṢIPĀKA

Signs and symptoms of disease according to Āyurveda
(Suṣruta saṃhitā Uttarāṇṭra 6/26), (Aṣṭamga Saṃgraha Uttarāṇṭra 18/16)

1. Rūkṣhā,
2. Samkoca in netra and vartma,
3. Aviladarśana,
4. Darūṇapraṭibodhana,
5. Gharṣaṇa,
6. Toda, bheda, shūla,
7. Upadeha, vikūṇa, viśūṣkatvam,
8. Śīteccha etc.

Due to vitiation of Vāta and pitta doṣa in body or locally, they reach to eye in its different parts via Sirās and produce disease. This shows above signs and symptoms. Śuṣkākṣipāka is one of the Sarvagata Sādhya Vyādhī.

Nidāna(Hetū):

The hetū of Śuṣkākṣipāka is not explicit in the classics. However, Scholar of Āyurveda has explicit in the classics the common etiological factors for all the netrarogas. (Suṣruta Saṃhitā Uttarāṇṭra 1-26, 27)

1. Ahāra:
   - Vidahāṇapāna- means that which produces fermentation.
   - Asātmyahāra- Foods that inabituated to body.
   - Virūḍḍhaahāra- Foods that have opposite guṇas, which are excessive śīta – kṣāra – āmla – tīkṣṇa gurū guṇa, excess in water will create agnīmāṃdyā and indigestion and that causes vidhata.
   - Excessive intake of alcoholic preparation like śukta, aranala and dhanyāmla.
   - Excessive intake of āmala dravyas, kulatthaṃ(horsegram), maṣa(black gram)
2. Vihāra:
- Sudden plunging into cold water after exposing oneself to sun
- Looking at distant object for a prolonged period.
- Constant looking at minute object
- Improper sleeping habits like sleeping during daytime, awakening in the night, dropping of the head during sleep, or resting the head on big pillows
- Suppression of physiological urges like vomiting, micturition, weeping and flatus.
- Atiyoga of sveda
- Excessive physical exertion
- Exposure to smoke, dust
- Excessive smoking
- Unpleasant environmental situations
- Injuries to head and eyes

3. Manasika:
- Excessive Weeping, grief, Worry, fatigue
- Excessive stress and strain, emotions etc.

Pūrvarūpa:
- Symptoms of pitta vitiation such as burning sensation, redness, pain.
- Symptoms of Vāta vitiation such as pain, difficulty in lid movement are the common premonitory symptoms of netrarogas.
- Symptoms of kapha vitiation such as itching, heaviness, hardness, etc.
- The signs and symptoms are not manifested completely or distinctly. Sometime patient may feel like the presence of sand, dust or paddy grains in eyes. The slight diminution or impairment of vision is the common prodromal symptoms of eye diseases.
Rūpa:

When sthanasaṃśraya of prakūpita doṣa takes place, then only cardinal signs and symptoms of the existing disease occurs. Śuṣkākṣipāka presents with the following signs and symptoms-

- Dirty eye with discharge
- Dryness of eyes
- Lid-Dry and Rough touch.
- Burning Sensation,
- Pricking sensation,
- Difficulty in opening and closing the lids.

Table 1 - Correlations of sign and symptoms

<table>
<thead>
<tr>
<th>According to Āyurveda</th>
<th>According to modern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Śuṣktva</td>
<td>Dryness</td>
</tr>
<tr>
<td>Dāha</td>
<td>Burning sensation</td>
</tr>
<tr>
<td>Avīl darśanaṃ</td>
<td>Decreased visual acuity and excessive debris and mucus</td>
</tr>
<tr>
<td></td>
<td>strands.</td>
</tr>
<tr>
<td>Gharṣaṇa</td>
<td>Foreign body sensation</td>
</tr>
<tr>
<td>Toda, Bheda</td>
<td>Tearing, Pricking pain</td>
</tr>
<tr>
<td>Šīteccha</td>
<td>Liking for colds</td>
</tr>
</tbody>
</table>
**SAMṣRAPṬĪ**

Due to Nidāna sevana, the vitiated doṣas in the body (predominant vāta and pitta) move towards the head through the Sirā and get localized in all parts of Akṣī causing Śuṣkākṣipāka.

**Figure 8 – Flow Chart of Samprapti**

Hetū sevana, atiyoga and mithyayoga of Cakṣuiaṃdriya

It Aggravates Vāta pradhan pitta doṣa.

It vitiates raktadhatū in the Sirā

(increased rūkṣata and daha, etc.)

These vitiated doṣas move towards the eye through Sirā.

Kha-vaigūṇya present in the Sarvakṣī

Produces symptoms like rūkṣata, dāha,

kaṃdū, āraktā, avila netrata, etc

Śuṣkākṣipāka
Sādhyāsādhyatva:
Śuṣkākṣipāka is sādhya vyādhī.

Cikitsā:
In Āyurvedic classical text of Śālākya Taṃtra can see two types of treatment i.e. Bāhya and Abhyamṛtara cikitsā.

A) Local Treatment:
- Tarpaṇa- Jīvaṇīya Ghṛita ,
- Aṃjana- Snehaṃjana etc.

B) Systemic:
- Śodhana and Śamana
- Snehana- Paṃcatishta or Jīvanīya Ghṛita ,
- Svedana- steam bath
- Raktamokṣana- Jālaukā, Sīrāvedha ,
- Bastikarma
- Nasya- Anutaila
- Ghṛitpāna- Jīvanīya Ghṛita
A variety of routes employed for the administration of the drugs into the body system. In the field of ophthalmology Ācaryas has given equal importance to systemic and local administration of the drugs. The modes of applications of medicines in eye are specifically modified procedures to suit the anatomical and physiological peculiarities of eye. Treatments of eye diseases consists of specific and important drug administrative procedures called “Kriyākalpa”. They are basis of the ophthalmic disorders, as Paṃcakarma is the basis of KayaCikitsā.

**Etymology:**

Kriyā means to do, to perform or to practice. The word Kriyā denotes therapeutics, which cures the disease without causing any adverse effects.

Kalpa means practicable, feasible, proper or competent method of curing the disease. So, Kalpa indicates the specific formulations adopted to the therapeutics procedures.

Hence, the word ‘Kriyākalpa’ literally means to perform proper treatment.

**Definition:**

No specific definition of Kriyākalpa has given by the ancient Ācaryas except the commentor Dalhana who opines that Kriyākalpa includes various preparations like Aścotana, Tarpaṇa, Putapāka etc for the treatment of eye diseases, as a local measure.

**Classification:**

According to Ācarya Śuṣruta there are five types of Kriyākalpa viz  
1. Tarpaṇa  
2. Putapāka  
3. Pariṣeka  
4. Aścotana  
5. Aṃjana  
Ācarya Vāgbhata has described six therapeutics procedures in the treatment of eye diseases. They are:  
1. Aścotana  
2. Pariṣeka  
3. Viḍālaka  
4. Aṃjana  
5. Tarpaṇa  
6. Putpāka  
Ācarya Śāraṅgadhara and Bhavmiṣra have described the treatment of diseases under heading of 'Kalpa'. He has described seven types of Kalpa as;  
1. Tarpaṇa  
2. Putpāka  
3. Aścotana  
4. Pariṣeka  
5. Aṃjana  
6. Pindī  
7. Viḍālaka
AŚCOTANA KARMA

Aścotana is one of the most important procedure among all the Kriyākalpas. Ācarya Vāgbhata quoted that it is Ādya Upakarma in all the eye diseases. It can be done at any time in emergency conditions, as a treatment procedure in the complication of other Kriyākalpas and in the acute as well as severe conditions including Nayana abhīghata.

(Vāgbhata Sutrasthanā 23/1)(Suṣruta Saṃhita Uttarataṃtra 18-44)

Nirūkti:

Netra Secana or Cakṣu Pūrṇa. It means trickled, dripped and sprinkling application to the lids. So, in Aścotana, medicine is instilled drop by drop in Kaninīkā Saīḍhi (inner canthus area) from two finger height.

Advantages:

1. All Ācaryas have explained the importance of the Aścotana Karma.
2. Ācarya Vāgbhata has quoted Aścotana as the foremost procedure for treatment of all ocular ailments.
3. It is safe well as most economic procedure.
4. It eliminates Doṣas from Urdhva Jatrū effectively.
5. Aścotana is useful in acute symptoms also.
Table 2 - Aścotana, dose and time to perform according to various Ācaryas.

<table>
<thead>
<tr>
<th>Types</th>
<th>Pradhāna Doṣas</th>
<th>Time to perform</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lekhana</td>
<td>Kapha</td>
<td>Pūrvhana (Morning)</td>
<td>7-8 drops</td>
</tr>
<tr>
<td>Ropaṇa</td>
<td>Pitta-Rakta</td>
<td>Madhyānha (noon)</td>
<td>12 drops</td>
</tr>
<tr>
<td>Snehana</td>
<td>Vāta</td>
<td>Aparanha (evening)</td>
<td>10 drops</td>
</tr>
</tbody>
</table>

Table 3 - Guṇa and Rasa of the drugs of Aścotana according to predominance of the doṣas.

<table>
<thead>
<tr>
<th>Dosha</th>
<th>Guṇa</th>
<th>Rasa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vāta</td>
<td>Sukhoṣṭa, Snigdha</td>
<td>Tikta</td>
</tr>
<tr>
<td>Pitta-Rakta</td>
<td>Mrudu, Śīta</td>
<td>Madhura</td>
</tr>
<tr>
<td>Kapha</td>
<td>Uṣṇa, Tīkṣṇa, Rūkṣa, Mrudū, Viṣada</td>
<td>Tikta, Kashaya</td>
</tr>
<tr>
<td>Sannipātaja</td>
<td>Kouṣṇa, Tīkṣṇa, Uṣṇa, Mrudū, Śīta</td>
<td>Miṣra bheṣaja-acc. To Doṣa predominance</td>
</tr>
</tbody>
</table>

Indications:
- Ruṣā- pain
- Toda- Pricking pain
- Kaṃḍu- itching
- Gharṣṭa- Foreign body sensation
- Dāha- Burning sensation
- Aṣṭrustrava- Excessive lacrimation
Procedure (Vāgbhata Sūstrasthān 23/2, 3, 4)

It can be divided into three parts;

1. **Pūrva Karma**: Patient should be in lying position relaxed in Nivarṇa Sthana (a place devoid of breeze). Āscotana Dravya should be filtered through thick cotton pad or a clean cloth.

2. **Pradāna Karma**: Physician should open the eyes of the patients with left hands and medicine is dispensed drop by drop either with a seashell or a wick (held in right eye) from two finger height just above Kaninīka Sarṇḍhī (inner canthus area).

3. **Paścāta karma**: The eyes should be cleaned with soft cloth. In case of Kapha and Vātā predominant condition mrīdu Svedana (mild fomentation) should be done with a piece of cloth rinsed in warm water.

Retention period: The medicine should be retained in the eyes for 100 Matra Kala. According to Āyurveda pharmacopeia of India-Vol2.

100 Matra = 155.28 seconds = 2.58 minutes.

**Samyak yoga lakṣana:**
- Netra Vaimalya- cleanness of the eye.
- Vedanā Upaśaman-relief of pain.
- Vyādhī Nivruttī-cure of the disease.
- Netra Laghava- feeling of lightness in eye.

**Atiyoga lakṣana:**
- Raga- congestion.
- Doṣa Paristrava- Profuse discharge

**Mithyayoga lakṣana**
- Avila Netrā- dirty/muddiness of the eye.
- Gaurava- feelings of heaviness in eyes.
- Roga Vṛiddhī- more acuteness of disease.
**Duration:**

Așcotana can be performed for one day/ two days/ three days/up to patient get cured /tolerate.

**Time to perform:**

Așcotana can be performed at any time of day and first three hours of night time. However if there is severe pain and emergency conditions, it can be done at any time.

**Contraindications:**

Așcotana should be not performed in night time except first three hours. Proper care should be taken for preparation and instillation of Așcotana drava in patient’s eye. If it is Atiușna, Atișița, Bahū Matrā ,Alpa Matrā and Aparistruta, it leads to the some complications. They are as below:

- Ati Ușna: Rujā, Raga, Drușțînasha
- Ati șîta: Nistoda ,Stâmbha, Vedana
- Bahū Matrā: Kașāya Vartma , Gharșaṇa
- Apristruta: Sarâmbha Utpattī

In Āyurveda, Așcotana (eye drops) has been described in detail. In Așcotana procedure, Ācarya has described use of snigdha and madhur rasatmakadraya in Vātapittajanya Vyādhī.

Goghṛuta is Vatpittaghna, Cakṣuşya and having properties of snigdhaguṇa. It is easily available. Goghṛuta is semisolid at room temperature. So for liquification and partial free solution, we can put it in warm water before use.

Așcotana vidhi is contraindicated at night time, but if we use Goghṛuta in a daytime Goghṛuta can form a thin layer over eye which can cause blurred vision throughout day. So that Goghṛuta eye drops (Așcotana) can be done in evening time after day work.