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Case Study

A CASE REPORT ON AYURVEDIC MANAGEMENT OF DELAYED SEQUEL OF POST-TRAUMATIC FACIAL NERVE SYNKINESIS

Sreepriya MP[1]*, Rahul Ravi P[2]

*[1]Shalakya Specialist Medical Officer, [2]Kayachikitsa Specialist Medical Officer, DAH Malappuram, Kerala, India.

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ABSTRACT

Facial nerve injury following temporal bone fracture can lead to long-term complications such as synkinesis due to aberrant nerve regeneration. These sequels may manifest years after apparent recovery. **Case Presentation**: We report a 35-year-old male software engineer with a history of road traffic accident–related left temporal bone fracture and left lower motor neuron facial palsy in 2018, which had improved with conservative management. Eight years later, he presented with recurrent involuntary blinking of the left eye associated with mild left upper eyelid drooping, exacerbated by sleep deprivation. Clinical evaluation suggested post-paralytic facial nerve synkinesis with mild ptosis (House–Brackmann grade II). The condition was well managed by Ayurvedic modalities adopted from *Ardita chikitsa.* **Conclusion**: This case highlights the importance of long-term follow-up in facial nerve injuries, as delayed synkinesis can significantly affect quality of life. Early recognition and appropriate management, including lifestyle modification can improve functional and cosmetic outcomes.

INTRODUCTION

Facial nerve paralysis commonly occurs following trauma, especially temporal bone fractures. Although many patients recover, delayed sequel such as synkinesis, hemifacial spasm, and ptosis may develop years later due to aberrant nerve regeneration[1-3].

Bell's palsy and traumatic facial nerve injuries are major causes of facial paralysis worldwide [4,5]. Synkinesis occurs when regenerating nerve fibers innervate unintended muscles, leading to involuntary facial movements during voluntary actions such as blinking or smiling [5].

In Ayurveda, facial paralysis is described under *Ardita*, a disorder caused by aggravated *Vata dosha* affecting one side of the face. Classical texts recommend therapies such as *Nasya*, *Abhyanga*, *Swedana*, and *Shirodhara* for its management [6-8].

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Case Presentation: A 35-year-old male software engineer presented with complaints of recurrent involuntary blinking of the left eye followed by mild drooping of the left upper eyelid. The symptoms were more pronounced during periods of sleep deprivation and prolonged screen exposure. There was no associated diplopia, facial pain, limb weakness, or sensory disturbances.

Past Medical History: In September 2018, the patient sustained a road traffic accident resulting in traumatic brain injury with a left temporal bone fracture. He developed left-sided lower motor neuron facial nerve palsy with deviation of the angle of the mouth to the right. Audiological evaluation initially revealed conductive hearing loss in the left ear, which improved over two months. One month later, he developed left-sided tinnitus followed by fever, ear pain, and a blocked sensation. Pure tone audiometry demonstrated mild-to-moderate sensorineural hearing loss (35 dB) in the left ear. He was treated with intravenous methylprednisolone, acyclovir, gingko biloba, betahistine, and methylcobalamin, followed by intratympanic dexamethasone injection. Facial nerve function improved, and he was discharged in stable condition with normal post-operative facial nerve function.

Current Examination - On presentation eight years later:

Consciousness: Alert and oriented

Cranial nerves: Facial nerve: Mild left eyelid droop with recurrent involuntary blinking, no gross facial asymmetry at rest

Ophthalmologic findings

Mild left ptosis, Pupillary reflexes normal

House–Brackmann grade: II (mild dysfunction)

No features suggestive of myasthenia gravis or hemifacial spasm. There was no active ear disease or new neurological deficit.

Clinical Impression

The findings were consistent with post-traumatic facial nerve synkinesis with mild left ptosis, likely exacerbated by sleep deprivation and occupational stress. Neurological examination revealed right-sided facial asymmetry, synkinetic movements during smiling, and mild ptosis. MRI showed no new intracranial pathology.

Investigations

The investigations following a Road Traffic Accident (RTA) that occurred in early 2018 shows that the primary clinical concerns were a left-sided traumatic facial neuropathy and left-sided sensorineural hearing loss (SNHL).

Imaging Findings

1. HRCT Temporal Bones (Feb 2018)

Performed shortly after the accident, this scan identified:

Fracture: A non-displaced longitudinal fracture of the left temporal bone. The fracture line extended from the squamous part through the mastoid and reached the anterior wall of the External Auditory Canal (EAC).

Secondary Effects: Fluid density (hemotympanum) was noted in the EAC, middle ear, and mastoid air cells.

Facial Nerve Concern: Remarks suggest a possible bony fragment impingement on the tympanic segment of the facial nerve.

Right Ear: Appeared normal

2. MRI Brain with Contrast (Sept 2018 / Jan 2020)

This study focused on the Cerebello-pontine (CP) angle to rule out masses:

CP Angle: No significant abnormality was found in the CP angle region; the VII-VIII nerve complex (facial and vestibulocochlear nerves) appeared normal.

Subdural Hemorrhage (SDH): A thin (1.5mm) chronic extra-axial collection was noted in the right temporal region, likely a chronic SDH.

Mastoid: Mild hyper intensity was noted in the left mastoid air cells.

Neurophysiological Studies (NCS/EMG)

1. Facial Nerve Conduction (April 2018)

Conducted 42 days after the trauma, this study confirmed:

Left Facial Axonopathy: The left facial nerve showed significantly reduced response (CMAP) amplitudes.

Severity: The left-side amplitude was only 19.3% of the right side, indicating significant nerve damage. This was stable compared to a previous recording on Day 17 (20.8%).

2. Further Nerve Studies (Date Unspecified/ Ongoing)

Neuropathy: Subsequent testing reaffirmed left facial neuropathy.

Blink Reflex: Testing showed absent (inelicitable) responses on the left side, further supporting the diagnosis of facial nerve dysfunction.

General Health: Nerve conduction in the upper limbs was within normal limits.

Summary of Impressions

Trauma: Left temporal bone fracture with associated bleeding in the middle ear.

Nerve Damage: Significant left facial nerve axonopathy/neuropathy, possibly due to impingement from the fracture.

Brain: Evidence of a minor, chronic subdural hemorrhage on the right side

Diagnosis

The condition was diagnosed as post-traumatic facial nerve synkinesis. Based on Ayurvedic principles, the condition was correlated with *Ardita*.

Therapeutic Intervention- The patient was intervened with *Shodhana* and *Shamana chikitsa* with both *Bahya* and *Abhyantara chikitsa*. The treatment was planned taking into consideration the etiology, clinical features, findings of clinical examination, and laboratory findings.

Table 1: Timeline of intervention

Date Range	Procedures Done	Medicines Used
11-10-25 to 14-10-25	*Snehapana*	*Rasna dasamoola ghrta (Vicharana)*
16-10-25	*Virechana*	*Avipathi churna*
17-10-25-to 24-10-25	*Ksheera dhuma*	*Baladi ksheera kashaya*
17-10-25-to 24-10-25	*Mukhabhyanga*	*Ksheerabala taila*
17-10-25-to 23-10-25	*Nasya*	*Anutaila* -10 drops each nostril
24-10-25-to 28-10-25	*Thalapothichil*	*Triphala + Yashti + Lodhra + Darvi + Gairika*
24-10-25-to 28-10-25	*Thalam*	*Ksheerabala + Kachooradi choorna*
24-10-25-to 29-10-25	*Shiropichu*	*Ksheerabala tailam* and *Triphaladi keram*
24-10-25 to 29-10-25	*Netrapichu*	*Patoladi ghrta*
24-10-25 to 29-10-25	*Anjana*	*Elaneer kuzhamb*
24-10-25 to 29-10-25	*Netra Kshalana*	*Triphala kwatha*
31-10-25-to 06-11-25	*Shirovasti*	*Dhanvantara taila*

Oral Medication

- 7/10/2025 – 10/10/2025
  Gandharva Hastadi kasaya 60 ml B/F bd
  Vaiswanara choorna 1 tsp with *kasaya* B/F bd
- 17/10/2025 – 05/11/2025
  Narasimha Rasayana 1tsp with *Triphala choorna* 1/2 tsp bd A/F
  Tab. *Gorocanadi* 1-0 -1 A/F bd
  Danadanayanadi kasaya Tab 1-0-1 A/F bd
  Pathya- milk, ghee, fibre rich foods, warm water and food items
  Apathya- cold water, dry and hard food items, excess talking etc.

BF = Before food, A/F = After food, bd= Bis daily

The patient underwent Ayurvedic management based on *Ardita Chikitsa* for a total duration of 30 days, from 07/10/2025 to 05/11/2025. Clinical assessment was carried out using the House–Brackmann Facial Nerve Grading System on Day 0 (before treatment) and Day 30 (after completion of therapy).

Outcome

At the time of initial evaluation on 07/10/2025, the patient exhibited House–Brackmann Grade II facial palsy, characterized by recurrent involuntary blinking of the left eye and mild drooping of the left upper eyelid. Following 30 days of Ayurvedic treatment, a near-complete recovery was observed. The involuntary blinking of the left eye was absent, and the drooping of the left upper eyelid had significantly improved.

On 05/11/2025, the patient demonstrated marked improvement in facial symmetry, functional ability, and overall quality of life, indicating successful management of post-traumatic facial nerve synkinesis through Ayurvedic intervention.

Before Treatment (07/10/2025)

Figure 1: Left upper eyelid drooping with recurrent involuntary blinking of the left eye, consistent with post-paralytic facial nerve synkinesis (House–Brackmann Grade II)

After Treatment (05/11/2025)

Figure 2: Near-complete recovery from left upper eyelid drooping with absence of involuntary blinking of the left eye, showing significant functional and cosmetic improvement

DISCUSSION

Post-traumatic facial nerve synkinesis is a well-recognized delayed complication of facial nerve injury. Aberrant nerve regeneration results in abnormal muscle co-contraction. Conventional management includes physiotherapy, botulinum toxin injections, and surgical interventions [3].

MRI is useful in excluding secondary causes of facial nerve dysfunction such as central lesions [4].

Ayurveda describes facial paralysis under *Ardita*, attributing it to *Vata dosha* imbalance [6,7]. Therapies such as *Nasya* and *Abhyanga* are specifically indicated for head and neck disorders [8].

This case demonstrates that Ayurvedic management may offer a non-invasive, holistic approach to managing facial nerve synkinesis, especially in chronic cases where conventional options are limited. Facial nerve synkinesis is a common long-term complication of peripheral facial palsy, particularly following traumatic or severe nerve injury. It results from aberrant axonal regeneration, where regenerating fibers innervate inappropriate muscle groups. This leads to involuntary movements such as eye closure during facial expressions or excessive blinking. In this case, the patient had a documented history of left lower motor neuron facial palsy following a temporal bone fracture, with apparent clinical recovery. The delayed onset of involuntary blinking and mild ptosis eight years later suggests progressive synkinesis rather than recurrence of acute facial palsy. Sleep deprivation and stress are known to exacerbate neuromuscular hyperactivity and synkinetic movements. The patient's profession as a software engineer likely contributed to symptom provocation due to prolonged screen exposure and irregular sleep patterns. Differential diagnoses such as hemifacial spasm and myasthenia gravis were considered. However, the absence of continuous spasms, weakness, and systemic features supported the diagnosis of facial synkinesis. Management options include facial physiotherapy, lifestyle modification, and botulinum toxin injections, which remain the gold standard for symptomatic relief in synkinesis.

CONCLUSION

This case illustrates a delayed presentation of facial nerve synkinesis with mild ptosis occurring eight years after recovery from traumatic facial palsy. Clinicians should be aware of such long-term sequel and counsel patients regarding lifestyle factors that may exacerbate symptoms. Early diagnosis and targeted treatment can significantly improve functional and cosmetic outcomes.

Patient Perspective

The patient reported that the recurrent blinking affected his work efficiency and caused social discomfort. He expressed relief after understanding the benign nature of the condition and the availability of effective treatments.

Learning Points

- Facial nerve synkinesis can develop years after trauma [2,3].
- MRI is useful for ruling out secondary causes [4].
- *Ardita Chikitsa* offers a traditional approach for facial nerve disorders [6-8].
- Ayurvedic therapies can improve functional and cosmetic outcomes.

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***Address for correspondence**
Dr. Sreepriya MP
Shalakya Specialist Medical Officer, DAH Malappuram, Kerala.
Email: drsreerini@gmail.com