

Role of *Mahapaishachika Ghrita* in Attention-Deficit/Hyperactivity Disorder: A Scholarly Case Report

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ABSTRACT:

Background: Attention-deficit/hyperactivity disorder (ADHD) is a common childhood neurodevelopmental disorder marked by persistent inattention, hyperactivity, and impulsivity, affecting academic, social, and daily functioning. Despite conventional treatment options, interest in complementary approaches has increased. *Ayurveda* correlates ADHD features with *Unmada*, involving *Dosha* imbalance and impairment of cognitive and behavioural functions. This case report evaluates the clinical effect of *Mahapaishachika Ghrita* on ADHD symptoms.

Case Details: An 8-year-old male presented with poor attention, excessive motor activity, and impulsive behaviour since early childhood. Clinical evaluation confirmed ADHD according to DSM-5 criteria. *Ayurvedic* assessment indicated *Vata-Pitta* predominance. *Mahapaishachika Ghrita* was administered for 60 days along with dietary modifications and regular parental counselling. Clinical assessment was

conducted at baseline and on days 15, 30, 45, and 60.

Results: At baseline, the child fulfilled 7 of 9 DSM-5 criteria in both inattention and hyperactivity-impulsivity domains. Following 60 days of intervention, improvement was observed in attention span, hyperactivity, impulse control, and behavioural regulation. Better academic participation and social interaction were also reported. No adverse effects were noted during treatment.

Conclusion: *Mahapaishachika Ghrita*, administered with dietary modifications and parental counselling, may help reduce key ADHD manifestations, including inattention, hyperactivity, and impulsivity. The observed response suggests a potential supportive role for *Ayurvedic Medhya Rasayana* therapy in holistic management of childhood neurodevelopmental disorders. Larger controlled studies are required to establish its efficacy and safety.

Keywords: *Mahapaishachika Ghrita*, Attention-Deficit/Hyperactivity Disorder,

DSM-5, *Medhya Rasayana*, *Unmada*, *Neurodevelopmental Disorder*.

1. INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (*ADHD*) is a common childhood neurodevelopmental disorder characterized by persistent symptoms of inattention and/or hyperactivity-impulsivity, leading to impairment in academic, social, and behavioural functioning. Children may present with poor attention, disorganization, excessive activity, difficulty remaining seated, and impulsive behaviour. With an estimated global prevalence of approximately 7.6%¹, *ADHD* represents an important public health concern.

The aetiology of *ADHD* is multifactorial and involves genetic, neurobiological, prenatal, perinatal, environmental, and psychosocial factors. Dysregulation of dopamine and norepinephrine neurotransmission, along with abnormalities in fronto-striatal and fronto-cerebellar circuits, contributes to inattention, impulsivity, and hyperactivity. Genetic variations in genes such as *DAT1*, *DRD4*, *DRD5*, and *SNAP-25* may also influence neurotransmitter function and neural development². Although conventional medications such as methylphenidate, amphetamines, and atomoxetine are effective, their long-term use may be associated with adverse effects, highlighting the need for safe and holistic therapeutic approaches³.

In *Ayurveda*, *ADHD* may be correlated with *Manas Roga*⁴, with several behavioural and cognitive manifestations showing similarities to *Unmada*. The *Samanya Lakshanas* of *Unmada* described in *Charaka Nidana Sthana* (7/5)⁵ can be

correlated with certain symptoms observed in *ADHD*.

Mahapaishachika Ghrita is a classical *Ayurvedic* formulation containing several *Medhya* and *Tridosha-Shamaka* drugs. The lipophilic nature of *Ghrita* may facilitate the delivery of herbal constituents across the blood–brain barrier. Important ingredients such as *Jatamansi* (*Nardostachys jatamansi*), *Markati* (*Mucuna pruriens*), *Brahmi* (*Bacopa monnieri*), and *Vacha* (*Acorus calamus*) possess potential neuroprotective, cognitive-enhancing, and behavioural regulatory properties. *Jatamansi* may influence GABAergic activity⁶, while *Mucuna pruriens*, containing levodopa⁷, may support dopaminergic pathways. *Brahmi* and *Vacha*, recognized as cognitive-enhancing⁸ herbs, may improve attention, learning, memory, and behavioural regulation⁹.

Additionally, the emerging concept of the microbiota–gut–brain axis^{10–12} suggests that gut function may influence neurological and behavioural processes. The *Anulomaka* and *Vatahara* properties of several ingredients in *Mahapaishachika Ghrita* may support gastrointestinal function and potentially influence neurobehavioural regulation.

Therefore, considering its *Medhya*, neuroprotective, cognitive-enhancing, and potential gut–brain modulatory properties, *Mahapaishachika Ghrita* may offer a promising holistic therapeutic approach for the management of *ADHD*.

2. CASE DETAILS

An 8-year-old male child was brought to the outpatient department by his parents with complaints of poor eye contact, constantly

playing or fiddling with objects, toys, or his hands, impulsiveness such as talking out of turn, running in inappropriate settings (even during mealtimes and bedtime), low attention span and concentration, forgetfulness in daily activities, poor academic results, and throwing objects in anger since the age of 6 years.

2.1 History of Present Illness

As per the statement of the informants, the child was apparently normal until 5 years of age. Gradually, the parents noticed that he had poor eye contact, hyperactivity, and impulsivity. Initially, the parents thought he was simply "energetic"; however, with increased screen time over time, his behaviour became progressively more disruptive, accompanied by difficulty in establishing peer relationships. In academic performance, the child had consistently below-average scoring and experienced difficulty in following multi-step instructions. He demonstrated forgetfulness in daily routines and frequently lost personal items such as toys, assignment notebooks, pencils, tiffin box, and water bottle.

The parents received repeated complaints from school teachers due to his inattentiveness, hyperactivity, and instances of throwing objects in anger. Consequently, they brought the child to the paediatric outpatient department of the teaching hospital for further management. The child has no known history of chronic systemic illnesses. The father had a history of impulsivity during childhood, which remained untreated. The child has a 12-year-old elder sister with no significant medical history.

2.2 Perinatal, Personal & Ashtavidha Pariksha History

The child was born via full-term normal vaginal delivery, cried immediately after birth, and required no NICU admission. Developmental milestones were achieved within normal limits, except for a slight speech delay, which corrected spontaneously by 4 years of age. The child consumes a non-vegetarian diet with a good appetite and sound sleep.

Ashtavidha Pariksha (Ayurvedic Physical Examination):

- **Nadi (Pulse):** Vata-Pitta predominant
- **Mala (Bowels):** Once or twice daily (normal)
- **Mutra (Urine):** Normal frequency and color
- **Sabda (Voice/Speech):** Vikrita (history of speech delay)
- **Sparsa (Touch):** Anushna (neither hot nor cold)
- **Drik (Vision):** Normal
- **Akrti (Body Build):** Madhyama (medium build)

2.3 Clinical Examination & Vital Signs

During consultation, the child was unable to sit still on the chair, constantly getting up and running around the OPD room. He was observed constantly playing or fiddling with objects, toys, or his hands, maintaining inconsistent eye contact, answering before questions were completed, and interrupting parents repeatedly. He was irritable and had difficulty engaging in structured conversation. Language comprehension was appropriate for age. On systemic examination, cardiovascular (CVS), respiratory (RS), and abdominal examinations were unremarkable.

General Physical Parameters:

- **General Condition:** Moderate
- **Temperature:** 98.7°F
- **Blood Pressure:** 110/70 mmHg
- **Pulse Rate:** 97 bpm
- **Respiratory Rate:** 24/min
- **Height:** 144 cm
- **Weight:** 21 kg

3. DIAGNOSTIC ASSESSMENT

The diagnosis of Attention-Deficit/Hyperactivity Disorder (*ADHD*) was established based on a detailed clinical history, direct clinical observation, parental and teacher reports, and assessment according to *DSM-5* criteria¹³. The child exhibited persistent symptoms since 6 years of age, with symptoms present for more than six months, onset before 12 years of age, occurrence in multiple settings (both home and school), and resulting in significant academic and social impairment. According to *DSM-5* criteria, the child fulfilled more than six out of nine symptoms in both the inattention and hyperactivity/impulsivity domains. Based on the presence of sufficient criteria across both domains, the child was diagnosed with *Attention-Deficit/Hyperactivity Disorder (ADHD), Combined Presentation*.

4. MANAGEMENT & TIMELINE

Internal medication was administered to the child at a dose of 7 mL¹⁴ twice daily, *Grasagrāsāntare*¹⁵ (during the interval between two morsels of food), followed by *Koṣṇa Jala*¹⁶ (lukewarm water) as *Anupāna*, for a total duration of 60 days. Follow-up assessments were conducted on

the 15th, 30th, 45th, and 60th days of treatment.

Along with the internal medication, parental counselling was provided regarding regular monitoring of the child's academic progress, limiting screen time to less than 2 hours per day, maintaining calm and supportive communication, avoiding excessive punishment, and consistently encouraging the child. Dietary advice included avoidance of junk food, processed foods, coffee, and foods predominant in *Kaṭu* (pungent) and *Amla* (sour) *Rasa*. The intake of *Go-Ghṛita* (cow's ghee) and diluted milk was recommended as part of the daily dietary regimen.

Timeline: The treatment course was carried out for a total of 60 days (29-12-2025 to 01-03-2026) with 4 scheduled follow-up evaluations.

5. INTERVENTION: CLASSICAL & PHARMACOLOGICAL PROFILE OF MAHAPAISHACHIKA GHRITA

*Ghrita*¹⁷⁻³¹ is considered an effective medium for delivering the therapeutic properties of medicinal herbs throughout the body. As cellular membranes contain lipid components, the lipophilic nature of *Ghrita* may facilitate the transport of active constituents to specific target tissues and promote their cellular uptake. Furthermore, *Ghrita* is traditionally believed to possess the ability to cross the blood-brain barrier, thereby supporting its role in neurological conditions. According to *Vāgbhaṭa*, *Mastulunga* (brain) is predominantly composed of *Meda*. *Dalḥaṇa* has described *Mastulunga* as *Mastaka Majjā*, having an appearance similar to partially melted *Ghrita*, suggesting a close relationship between the properties of *Ghrita* and brain tissue. *Ghrita* is traditionally recognized for

its beneficial effects on *Dhī* (understanding), *Medhā* (intellectual capacity), and *Smṛiti* (memory).

The *Mahapaishachika Ghrita* formulation is specifically described as promoting and rejuvenating *Medhā* (cognitive ability), *Buddhi* (intellect), and *Smṛiti* (memory). In addition to its potential cognitive benefits, it may also support the overall growth and development of children. Most ingredients of *Mahapaishachika Ghrita* possess natural *Tridoṣa-śamaka* properties and collectively contribute to its therapeutic potential. The formulation contains several medicinal substances, including approximately seven *Medhya* drugs, which are traditionally

believed to exert their effects on the brain through their specific *Prabhāva* (unique therapeutic action).

5.1 Classical Devanagari Reference Verse

जटीला पूतना केशी मर्कटी चारटी वचा ।
त्रायमाणा जया वीरा चोरकं कटुरोहिणी ।
कायस्था शूकरी छत्रा सातिच्छत्रा पलङ्कषा ।
महापुरुषदन्ता च वयस्या नाकुलीद्वयम् ।
कटम्भरा वृश्चिकाली स्थिरा चैतद्धृतं पचेत् ।
तत्तु चातुर्थिकोन्मादग्रहअपस्मारनाशनम् ।
महापैशाचकं नाम घृतमेतद्यथाऽमृतम् ।
बुद्धिमेधास्मृतिकरं बालानां चाङ्गवर्धनम् ॥ — *Charaka Samhita Chikitsasthana 9/45*³²

5.2 Pharmacodynamics of Ingredients (*Dravyaguna Composition*)

Drug	Latin Name	Rasa	Guna	Virya	Vipaka	Doshaghnata & Action
<i>Jatamansi</i>	<i>Nardostachys jatamansi</i>	<i>Tikta, Kashaya</i>	<i>Laghu</i>	<i>Shita</i>	<i>Katu</i>	<i>Tridosahara, Medhya</i>
<i>Haritaki</i>	<i>Terminalia chebula</i>	<i>Madhura, Amla, Katu, Tikta, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Tridosahara, Medhya, Rasayana</i>
<i>Keshi</i>	<i>Nardostachys jatamansi</i>	<i>Tikta, Kashaya</i>	<i>Laghu</i>	<i>Shita</i>	<i>Katu</i>	<i>Tridosahara, Medhya</i>
<i>Markati</i>	<i>Mucuna pruriens</i>	<i>Madhura, Tikta</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Kaphapittanashaka, Vatashamana</i>
<i>Charati</i>	<i>Careya arborea</i>	<i>Katu, Kashaya</i>	<i>Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphavatahara</i>
<i>Vacha</i>	<i>Acorus calamus</i>	<i>Katu, Tikta</i>	<i>Laghu, Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vatakaphahara, Medhya</i>
<i>Trayamana</i>	<i>Gentiana kurroo</i>	<i>Tikta, Kashaya</i>	<i>Sara</i>	<i>Ushna</i>	<i>Katu</i>	<i>Pittakaphahara</i>
<i>Jaya</i>	<i>Sesbania sesban</i>	<i>Katu, Tikta</i>	<i>Laghu</i>	<i>Ushna</i>	<i>Katu</i>	<i>Tridosahara, Rasayana</i>
<i>Vira</i>	<i>Desmodium gangeticum</i>	<i>Madhura, Tikta</i>	<i>Guru</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Tridosahara, Rasayani</i>

<i>Choraka</i>	<i>Angelica glauca</i>	<i>Madhura, Katu, Tikta</i>	<i>Laghu, Ruksha, Tikshna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphavatahara</i>
<i>Katurohini</i>	<i>Picrorhiza kurroa</i>	<i>Katu, Tikta</i>	<i>Laghu</i>	<i>Ushna</i>	<i>Katu</i>	<i>Pittahara</i>
<i>Kayastha</i>	<i>Elettaria cardamomum</i>	<i>Madhura, Katu</i>	<i>Laghu</i>	<i>Shita</i>	<i>Madhura</i>	<i>Deepana, Rochana</i>
<i>Shukari</i>	<i>Dioscorea bulbifera</i>	<i>Madhura, Katu, Tikta</i>	<i>Laghu</i>	<i>Ushna</i>	<i>Katu</i>	<i>Pittahara, Balya, Rasayana</i>
<i>Chhatra</i>	<i>Foeniculum vulgare</i>	<i>Madhura, Katu, Tikta</i>	<i>Laghu, Ruksha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Vatapittahara, Balya</i>
<i>Atichhatra</i>	<i>Anethum sowa</i>	<i>Katu, Tikta</i>	<i>Snigdha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphavatahara</i>
<i>Palangkasha</i>	<i>Commiphora mukul</i>	<i>Katu, Tikta, Kashaya</i>	<i>Laghu, Sara, Visada</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vatabalajit, Rasayana, Medohara, Varnya</i>
<i>Mahapurushadanta</i>	<i>Asparagus racemosus</i>	<i>Madhura, Tikta</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Pittavatahara, Medhya</i>
<i>Vayastha (Brahmi)</i>	<i>Bacopa monnieri</i>	<i>Madhura, Tikta, Kashaya</i>	<i>Laghu, Sara</i>	<i>Shita</i>	<i>Madhura</i>	<i>Vatahara, Medhya, Rasayana</i>
<i>Nakulidvayam (1)</i>	<i>Pluchea lanceolata</i>	<i>Tikta</i>	<i>Guru</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphavatahara</i>
<i>Nakulidvayam (2)</i>	<i>Alpinia galanga</i>	<i>Katu, Tikta</i>	<i>Guru</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kaphavatahara</i>
<i>Katambhara</i>	<i>Celastrus paniculatus</i>	<i>Katu, Tikta</i>	<i>Sara, Ushna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Medhya, Vatakaphara</i>
<i>Vruschikali</i>	<i>Tragia involucrata</i>	<i>Katu</i>	<i>Ushna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vatahara</i>
<i>Sthira</i>	<i>Desmodium gangeticum</i>	<i>Madhura</i>	<i>Guru</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Tridosahara, Rasayani</i>

6. OBSERVATIONS AND RESULTS

During the course of treatment, progressive improvement was observed in the child's symptoms of inattention, hyperactivity, and impulsivity. At baseline, the child fulfilled 7 out of 9 *DSM-5* criteria in both the

hyperactivity–impulsivity and inattention domains.

By the 30th day of follow-up, improvement was observed in attention, ability to remain engaged in activities, and behavioural regulation. Hyperactive and impulsive

behaviours, including excessive motor activity, running in inappropriate situations, and interrupting others, showed a gradual reduction.

During subsequent follow-ups, further improvement was noted in the child's ability to sustain attention, follow instructions, organise and complete tasks, and reduce forgetfulness and loss of essential belongings. Improvement was also observed in hyperactivity–impulsivity symptoms, including fidgeting, difficulty engaging quietly in activities, excessive

talking, blurting out answers, difficulty waiting for turns, and interrupting others.

By the 60th day of treatment, all 7 initially present symptoms in each of the inattention and hyperactivity–impulsivity domains showed clinical improvement. Additionally, improvement was observed in the child's behaviour at home, interaction with family members and peers, and academic performance. The changes observed in individual *DSM-5* symptoms before and after treatment are presented in Tables 1 and 2.

Table 1: Assessment of *DSM-5* Inattention Domain Criteria Before and After Treatment

Sl. No.	<i>DSM-5</i> Inattention Criteria	Baseline (0th Day)	Outcome (60th Day)
1	Fails to give close attention to details or makes careless mistakes	Present	Improved
2	Difficulty sustaining attention in tasks or play activities	Present	Improved
3	Does not seem to listen when spoken to directly	Present	Improved
4	Does not follow through on instructions; fails to finish tasks	Present	Improved
5	Difficulty organising tasks and activities	Present	Improved
6	Avoids/dislikes tasks requiring sustained mental effort	Absent	Absent
7	Often loses things necessary for tasks (e.g., books, tools)	Present	Improved
8	Easily distracted by extraneous stimuli	Absent	Absent
9	Forgetful in daily activities	Present	Improved
Total	Total Inattention Symptoms Present	7/9	7/7 Improved

Table 2: Assessment of *DSM-5* Hyperactivity-Impulsivity Domain Criteria Before and After Treatment

Sl. No.	<i>DSM-5</i> Hyperactivity-Impulsivity Criteria	Baseline (0th Day)	Outcome (60th Day)
1	Fidgets or taps hands or feet, squirms in seat	Present	Improved
2	Leaves seat in situations where remaining seated is expected	Absent	Absent
3	Runs about or climbs in inappropriate situations	Present	Improved
4	Unable to play or engage quietly	Present	Improved
5	Often "on the go," acts as if "driven by a motor"	Absent	Absent
6	Talks excessively	Present	Improved
7	Blurts out answers before questions are completed	Present	Improved
8	Difficulty waiting for their turn	Present	Improved
9	Interrupts or intrudes on others	Present	Improved
Total	Total Hyperactivity-Impulsivity Symptoms Present	7/9	7/7 Improved

7. FOLLOW-UP SCHEDULE

Follow-up assessments were conducted on Days 0, 15, 30, 45, and 60 to evaluate clinical progress and treatment response. Changes in behavioural symptoms, attention, hyperactivity, and impulsivity were assessed at each visit. Academic performance, social interactions, and overall functioning at home and school were periodically monitored based on parental and school feedback.

8. DISCUSSION

The neurobiological pathophysiology of *ADHD* is heavily linked to the catecholamine hypothesis, specifically a

dysregulation in dopamine and norepinephrine within the fronto-striatal circuits, alongside deficient GABAergic activity. The success of this intervention relies on the specific phytoconstituents of the formulation and their targeted delivery to the central nervous system:

- **Blood–Brain Barrier Penetration:**

The cell membrane's lipid composition makes the lipophilic nature of *Ghrita* an optimal bio-enhancer. It effectively penetrates the blood–brain barrier, acting as a carrier vehicle to deliver active medicinal properties directly to neuronal tissues.

- **Catecholamine Modulation:** *Mucuna pruriens* (Markati) seeds contain significant levels of natural Levodopa (*L-dopa*). As a direct precursor to dopamine, it addresses the fundamental dopaminergic deficit in *ADHD*, thereby improving alertness, motivation, and executive functioning without the adverse effects associated with synthetic stimulants.
- **GABAergic Regulation:** Decreased GABA levels in *ADHD* are a primary driver of impulsivity and hyperkinetic states. The active constituent jatamansone, derived from *Nardostachys jatamansi*, significantly enhances GABAergic action. This stabilization of inhibitory neurotransmission correlates directly with the reduction in the subject's disruptive behaviors, excessive motor activity, and impulsivity.
- **Neuroprotection and Synaptic Support:** Beyond their *Medhya* properties, herbs like *Brahmi* and *Vacha* act as potent nootropics. By modulating serotonin and acetylcholine pathways and protecting neuronal tissue from oxidative stress, they provide the necessary physiological support to maintain emotional reactivity and executive functioning.

From an *Ayurvedic* paradigm, the cognitive and behavioral manifestations of *ADHD* align with the *Sāmānya Lakṣaṇas* of *Unmāda*, classified under *Mānasa Roga*. The subject's baseline presentation highlighted a *Vāta-Pitta* predominance.

Mahapaishachika Ghrita exerts a vital *Tridoṣa-śamaka* (doṣa-balancing) effect. Formulated with *Kaṭu* and *Tikta rasas*, its *Uṣṇa vīrya* (hot potency) and *Pramādhī* (channel-clearing) properties actively clear metabolic blockages (*Āvaraṇa*) in neural pathways, restoring normal *Vāta* movement. *Mahapaishachika Ghrita* contains approximately seven key *Medhya* herbs that act directly on the higher cognitive centers by their *medhya prabhāva*. These *Medhya* ingredients—including *Bacopa monnieri* (*Brāhmī*), *Acorus calamus* (*Vacā*), and *Nardostachys jatamansi* (*Jaṭāmāmsī*)—work synergistically to nourish the *Manas* (mind) and *Majjā Dhātu* (nervous tissue). They specifically enhance the three core components of intellect: *Dhī* (acquisition/learning), *Dhṛiti* (retention/processing), and *Smṛiti* (recall/memory).

Furthermore, the formulation addresses the microbiota–gut–brain axis—a critical bidirectional communication network between gastrointestinal microbiota and the central nervous system. The presence of ten *Anulomaka dravyas* in the *Ghrita* facilitates *Koṣṭha śodhana* (clearing of the gut). By normalizing enteric nervous system function and facilitating the downward movement of *Vāta* (*Vātānulomana*), the therapeutic modification of the gut microbiome reduces systemic neuro-inflammation, creating a stable internal environment for cognitive and behavioral regulation.

9. CONCLUSION

This case demonstrates that a 60-day intervention of *Mahapaishachika Ghrita* safely and effectively resolved *DSM-5* symptoms of *ADHD* in an 8-year-old child.

By leveraging its lipophilic nature to cross the blood–brain barrier, the formulation corrected neurotransmitter imbalances (dopamine and GABA) while its *Medhya Prabhāva* enhanced core cognitive functions (*Dhī*, *Dhṛiti*, *Smṛiti*). By simultaneously stabilizing the gut–brain axis and acting as a *Tridoṣa-sāmaka*, *Mahapaishachika Ghrita* proves to be a promising, holistic intervention without the associated adverse effects, warranting further large-scale clinical trials.

10. DECLARATIONS

Declaration of Patient Consent: The authors confirm that written informed consent was obtained from the patient's legal guardian for publication of clinical information in the journal. All efforts have been made to protect the patient's identity; however, complete anonymity cannot be guaranteed.

Conflict of Interest: The authors declare no conflict of interest regarding the publication of this case report.

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