

Anaesthetic Management of a High-risk Patient with Chronic Post-stroke Chorea undergoing Forearm Surgery: A Case Report

NIKITA SAREEN¹, JAYASHREE SEN², MITTAL GEDAM³, BHAGYESH SAPKALE⁴



ABSTRACT

Movement disorders such as chorea represent a significant challenge in anaesthetic practice due to involuntary movements, airway concerns, and associated co-morbidities, particularly when secondary to Cerebrovascular Accidents (CVA). The present case reports a 53-year-old male having chronic post-stroke choreiform movements, uncontrolled hypertension, chronic alcoholism and a potentially difficult airway, who presented with fractures of the left radius and ulna requiring surgical fixation. Neurological evaluation revealed generalised choreiform movements with ballistic components (Abnormal Involuntary Movement Scale (AIMS) score 14), likely secondary to chronic basal ganglia involvement. Neuroimaging showed features suggestive of chronic small vessel ischaemic disease without evidence of acute intracranial pathology. The patient was classified as American Society of Anaesthesiologists (ASA) physical status IV, rendering general anaesthesia high-risk because of aspiration risk, airway concerns along with potential exacerbation of involuntary movements. Ultrasound-guided supraclavicular and axillary brachial plexus blocks were performed to provide surgical anaesthesia. Persistent choreiform movements required carefully titrated monitored anaesthesia care using low-dose propofol while also maintaining spontaneous ventilation, airway reflexes. The procedure was completed successfully without any intraoperative-postoperative neurological deterioration or major complications. The uniqueness of this case lies in the successful use of peripheral nerve blocks despite persistent involuntary movements and the observed transient modulation of chorea following propofol sedation. This case underscores the importance of individualised anaesthetic planning, cautious drug selection as well as the role of regional anaesthesia with minimal sedation in managing high-risk patients with chronic post-stroke chorea undergoing peripheral surgery.

Keywords: Anaesthetic risk, Brachial plexus block, Monitored anaesthesia care, Regional anaesthesia

CASE REPORT

A 53-year-old male presented to the emergency department following an alleged assault associated with head injury as well as injury to the left forearm, having complaints of pain, visible deformity, and restricted movements of the left forearm. The patient had a significant past medical history of CVA which occurred 10 years earlier followed by another cerebrovascular event approximately one year prior to the current presentation. He was a known case of hypertension since past 10 years for which he was prescribed, amlodipine 5 mg once daily; however, he had poor compliance with medication. The patient was a chronic alcoholic since nearly 20 years, with an average intake of approximately three standard drinks per day. No relatives were available to corroborate about patient's medical history or provide previous medical records, including prior neuroimaging. There was no documented history of other co-morbid illnesses or any previous surgical interventions. Clinical examination, radiological evaluation of the patient confirmed fractures of the left radius and ulna for which closed reduction with intramedullary nailing was planned as shown in [Table/Fig-1].

On neurological examination, he was found to be conscious and well-oriented to time, place and person but also exhibited non-fluent, effortful speech. Motor examination revealed increased tone with spasticity. Involuntary movements were in the form of generalised choreiform movements with ballistic components which were present preoperatively, involving all four limbs. Muscle power assessment of the patient showed right upper limb and right lower limb power of 4/5, while left upper limb and left lower limb showed reduced power of 3/5. He had a limping gait. The history of persistent left-sided weakness following initial stroke suggested a probable lesion involving the right cerebral hemisphere. Additionally, current assault inclusive of head injury along with forearm fracture further compounding the neurological risk profile.



[Table/Fig-1]: X-ray of the patient confirmed fractures of the left radius and ulna (yellow arrow).

The involuntary movements were continuous, choreiform in nature which were aggravated during voluntary motor tasks while being partially relieved during rest and sleep, though they never completely subsided. The severity of these movements was clinically assessed using components of AIMS, with a total score of 14, indicating

moderate severity. The movements were confined to upper and lower limbs with no involvement of facial or cervical musculature. According to the available history, these abnormal movements had been present since the first cerebrovascular event 10 years earlier. Due to the temporal association with stroke as well as absence of alternative aetiologies, chorea was presumed as secondary to chronic post-stroke basal ganglia involvement.

A non-contrast Computed Tomography (CT) scan of the brain was performed in view of the recent assault and past neurological history. The non-contrast CT showed mild generalised cerebral atrophy having prominence of the ventricular system, basal cisterns, sulcal spaces, and sylvian fissures consistent with chronic changes. Bilateral periventricular, centrum semiovale, scattered subcortical white matter hypodensities were also noted which were suggestive of chronic small vessel ischaemic disease. Subtle hypodensities were observed in pontine region, for which further evaluation using Magnetic Resonance Imaging (MRI) was advised. There was no evidence of acute intracranial haemorrhage, space-occupying lesion, midline shift. Additional findings were inclusive of subcutaneous swelling with a foreign body seen in the right parietal region and cortical vein calcification.

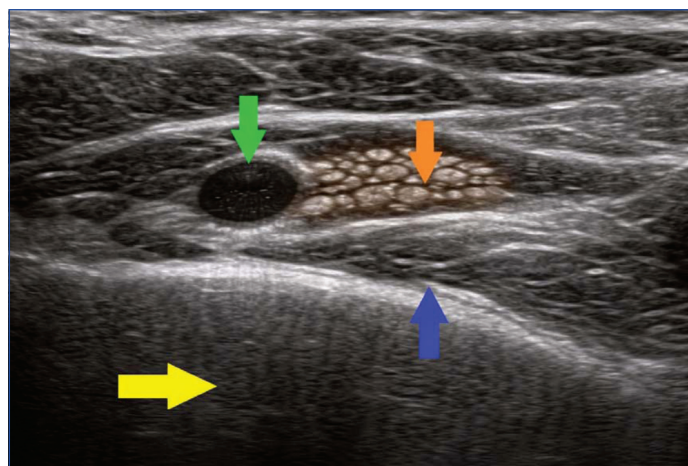
Laboratory investigations showed normal complete blood count, renal and liver function tests, coagulation profile, random blood sugar, serum electrolytes, calcium, magnesium, erythrocyte sedimentation rate, and lipid profile. Inflammatory markers like C-reactive protein, further cardiac evaluation with two-dimensional echocardiography could not be performed due to financial constraints. Electrocardiography also showed left ventricular hypertrophy with left axis deviation which was consistent with long-standing uncontrolled hypertension. Based on the overall systemic and neurological status, the patient was classified as ASA physical status IV.

Preoperative airway assessment indicated a potentially difficult airway having a Mallampati class III (3F) airway, reduced mouth opening of approximately two finger breadths, restricted temporomandibular joint mobility which was attributed to chronic kharra chewing (a smokeless tobacco mixture common in parts of South Asia), limited neck extension because of continuous involuntary movements, and poor dentition with multiple broken and a few loose teeth. All of these factors along with history of prior strokes, uncontrolled hypertension, chronic alcoholism, and aspiration risk, rendered general anaesthesia particularly hazardous.

In view of the high anaesthetic risk, regional anaesthesia was preferred. Ultrasound-guided supraclavicular and axillary brachial plexus blocks were further administered as per intraoperative protocol resulting in complete sensory blockade of the operative limb. Intraoperatively, the patient maintained a Visual Analogue Scale (VAS) score of 2 and Numeric Rating Scale (NRS) score of 2 thereby indicating adequate analgesia despite persistent involuntary choreiform movements. The left supraclavicular brachial plexus block was performed using lignocaine with adrenaline (1%, 10 mL) combined with bupivacaine (0.25%, 10 mL), supplemented by a left axillary nerve block using lignocaine with adrenaline (1%, 5 mL) and bupivacaine (0.25%, 5 mL). The total local anaesthetic dose was calculated within recommended safe limits. Ultrasound depicting supraclavicular brachial plexus block is shown in [Table/Fig-2].

The patient remained haemodynamically stable throughout the procedure, with an average heart rate of 84 beats/min, blood pressure initially recorded around 180/90 mmHg, and oxygen saturation of 100% on supplemental oxygen.

Persistent involuntary movements in patient interfered with surgical stability, necessitating minimal monitored sedation. Low-dose propofol was carefully titrated for achieving a Ramsay Sedation Score of 3 while also preserving spontaneous ventilation, airway reflexes. Ketamine was avoided deliberately because of its potential



[Table/Fig-2]: Ultrasound depicting supraclavicular brachial plexus block. (Green Arrow- Subclavian Artery, Blue Arrow-1st Rib, Orange Arrow- Brachial Plexus, Yellow Arrow-Pleura)

to exacerbate involuntary movements. After initiation of sedation, a transient worsening of choreiform movements was thereby observed in non-operated limbs; however, cautious titration further led to partial attenuation of movements, though they did not completely resolve. The surgical procedure was thus completed successfully without any intraoperative complications. Postoperatively, patient regained full consciousness and then he was shifted out of the operating room with stable vital signs. The sensory blockade lasted approximately 6.5 hours, while effective analgesia persisted for nearly eight hours postoperatively, following which intravenous analgesics were initiated. Postoperative X-ray showing intramedullary nail fixation is shown in [Table/Fig-3].



[Table/Fig-3]: Postoperative X-ray showing intramedullary nail fixation.

Blood pressure remained elevated at 160/100 mmHg while other parameters were within acceptable limits. The choreiform movements persisted in a pattern similar to the preoperative state. The patient was followed up for 3-4 days postoperatively during which involuntary movements continued without progression. Hypertension of patient

remained poorly controlled, and antihypertensive therapy was initiated and optimised. The remainder of postoperative course was uneventful.

DISCUSSION

Movement disorders represents a distinct challenge in anaesthetic practice usually when it is associated with structural brain lesions and significant systemic co-morbidities [1]. Chorea is known as a hyperkinetic movement disorder which is characterised by involuntary, irregular, non-rhythmic movements that interfere with voluntary motor activity and usually it worsens with stress or purposeful actions [2]. Although Huntington's disease remains most widely recognised aetiology, chorea can also occur secondary to CVA especially inclusive of basal ganglia as well as thalamocortical circuits [1,2]. Although uncommon, post-stroke chorea is well documented in the literature and may persist chronically, leading to functional disability and increased perioperative risk [3].

Anaesthetic management in patients with chronic choreiform movements is complex because of difficulties in positioning, monitoring, airway control, and maintenance of surgical immobility [4]. These challenges are further compounded in patients with uncontrolled hypertension, prior strokes, chronic alcoholism as well as poor airway anatomy, all of which significantly increase risk associated with general anaesthesia [4]. Moreover, several anaesthetic and perioperative drugs inclusive of ketamine, dopamine-modulating agents, and certain sedatives have been reported for exacerbating involuntary movements as well as precipitate perioperative movement disorders [5]. Consequently, individualised anaesthetic planning using cautious drug selection and vigilant monitoring is strongly advocated in patients [5]. Regional anaesthesia, when feasible offers important advantages in patients having movement disorders by avoiding airway manipulation, reducing haemodynamic stress as well as minimising the risk of aspiration and neurological deterioration [5,6]. However, persistent involuntary movements can still compromise surgical conditions thereby necessitating judicious use of monitored anaesthesia care [6].

In the present case, a high-risk patient having chronic post-stroke choreiform movements, uncontrolled hypertension was successfully managed using ultrasound-guided brachial plexus block along with monitored anaesthesia care. Difficult airway features, aspiration risk and co-morbidities made general anaesthesia hazardous thereby favouring a regional approach. Despite adequate sensory blockade, involuntary movements persisted intraoperatively thus further requiring carefully titrated propofol sedation. A transient exacerbation of movements was noted followed by partial attenuation with dose adjustment. The perioperative course remained stable without neurological deterioration thus highlighting feasibility as well as challenges of regional anaesthesia in patients with movement disorders.

Alternative anaesthetic strategies for the present patient included general anaesthesia along with endotracheal intubation, neuraxial anaesthesia, deeper sedation techniques. However, general anaesthesia was avoided due to anticipated difficult airway, aspiration risk as well as risk of haemodynamic instability in the setting of uncontrolled hypertension and prior cerebrovascular events [7,8]. Neuraxial anaesthesia was also not preferred considering the presence of continuous involuntary movements, which could increase the risk of technical difficulty and complications during block placement [1,6]. Deeper sedation or use of agents such as ketamine was deliberately avoided due to their potential to exacerbate choreiform movements [9]. Hence, a regional anaesthetic approach with monitored anaesthesia care was considered the safest and most appropriate strategy in this high-risk patient.

Similar perioperative challenges have been reported in patients with Huntington's disease or hyperkinetic movement disorders. This is

evident in cases which are reported by Kang JM et al., and Batra A et al., where both patients, having Huntington's chorea underwent major surgeries under general anaesthesia with proper airway planning. Awake fibreoptic intubation was selected in former due to excessive secretions as well as aspiration risk while the latter required standard induction along with neuromuscular blockade but still emphasised strict aspiration prophylaxis, invasive monitoring. In both cases, meticulous preoperative assessment as well as individualised airway strategies ensured uneventful intubation, stable intraoperative courses thus highlighting importance of anticipating airway and respiratory complications in such patients [7,8]. Both cases highlight similar emphasis on airway protection and aspiration risk mitigation in Huntington's disease. In contrast to these cases requiring general anaesthesia, present case was successfully managed using regional anaesthesia due to high airway risk.

A second consistent theme across multiple reports inclusive of those by Kang JM et al., Batra A et al., and Haleem S et al., is successful use of carefully titrated general anaesthetic techniques along with neuromuscular blockade, multimodal monitoring. Total intravenous anaesthesia or volatile-based maintenance using agents such as propofol, remifentanyl or sevoflurane was used safely when it is guided by BIS, train-of-four monitoring. Neuromuscular blockade with rocuronium or vecuronium followed by appropriate reversal, allowed controlled surgical conditions without exacerbation of choreiform activity. Importantly, all three cases showed haemodynamic stability and uneventful extubation suggesting that with appropriate dosing as well as monitoring, standard anaesthetic agents can be safely used in Huntington's disease without worsening of neurological symptoms [7,8,10]. These findings are consistent across the reported cases, reinforcing the safety of standard anaesthetic agents when carefully titrated. However, unlike these reports utilising general anaesthesia, present case highlights the utility of regional techniques in carefully selected high-risk patients.

A third important pattern relates to perioperative movement disorders beyond Huntington's disease usually functional or drug-associated movement abnormalities. This was observed in the case reported by Saad S et al., where a patient developed recurrent postoperative tremors and dystonia initially misattributed to drug reactions but later diagnosed as a functional neurological disorder. Interestingly, symptoms were strongly linked to propofol exposure in initial procedures but did not recur after avoidance of the suspected trigger in subsequent surgeries, even when other anaesthetic agents were reintroduced. This contrasts with the Huntington's disease cases, where no anaesthetic agent consistently triggered postoperative neurological worsening, highlighting that perioperative movement disorders may have heterogeneous aetiologies and require individualised anaesthetic planning with careful drug history analysis [9]. In present case, although propofol was used cautiously, a transient worsening of movements was similarly observed, suggesting potential drug-related modulation of symptoms.

In a case reported by Yun G et al., a 54-year-old male developed delayed-onset myoclonus after spinal anaesthesia with hyperbaric bupivacaine for below-knee surgery. Despite having an uneventful intraoperative course, he developed intermittent involuntary lower limb movements seven hours later along with normal neurological and laboratory findings. A diagnosis of spinal anaesthesia-associated myoclonus was made and symptoms resolved spontaneously by postoperative day two using conservative management. This case aligns with other reports of perioperative movement abnormalities thereby highlighting that such events are often transient, benign as well as manageable with observation, while reinforcing the need for awareness to avoid unnecessary interventions [11]. Similar to present case, the movement disorder was transiently modulated perioperatively, although the underlying aetiology differed. Collectively, these observations emphasise the importance of individualised anaesthetic planning, careful drug

Author (Year)	Patient profile	Underlying disorder	Surgery	Anaesthetic technique	Key anaesthetic considerations	Outcome
Kang JM et al., 2013 [7]	51-year-old male	Huntington's chorea (10 years)	Emergency laparoscopic hernia repair	GA with awake fiberoptic intubation; TCI propofol-remifentanyl; rocuronium with BIS and TOF monitoring	Dysphagia, excessive secretions, high aspiration risk	Stable intraoperative course; uneventful recovery
Batra A et al., 2016 [8]	52-year-old female	Huntington's chorea with bronchial asthma	Robot-assisted nephron-sparing surgery	GA with fentanyl, propofol, rocuronium; sevoflurane maintenance	Prolonged surgery, pneumoperitoneum, co-morbid asthma	Haemodynamically stable; no neurological worsening
Saad S et al., 2025 [9]	32-year-old female	Functional neurological disorder with perioperative movement disorder	TMJ arthroscopy and replacement	Initial TIVA with propofol-remifentanyl; subsequent anaesthetics excluding propofol	Drug-induced movement disorder; propofol suspected trigger	Severe postoperative movements initially; no recurrence after drug modification
Haleem S et al., 2025 [10]	65-year-old male	Huntington's disease (5 years)	Cataract surgery	GA with supraglottic airway (i-gel); sevoflurane	Severe choreo-ballistic movements; injury prevention	Uneventful perioperative course
Yun G et al., 2021 [11]	54-year-old male	Spinal anaesthesia-associated myoclonus	Below-knee orthopaedic surgery	Spinal anaesthesia with hyperbaric bupivacaine; dexmedetomidine sedation	Delayed-onset postoperative myoclonus	Self-limiting; resolved by postoperative day two
Sareen N et al., 2026	53-year-old male	Chronic post-stroke chorea with uncontrolled hypertension	Closed reduction and intramedullary nailing of radius and ulna	Ultrasound-guided supraclavicular and axillary brachial plexus block with monitored anaesthesia care (low-dose propofol)	High ASA risk (ASA IV), difficult airway, aspiration risk, persistent involuntary movements	Surgery completed safely; no neurological or anaesthetic complications

[Table/Fig-4]: Reported cases of anaesthetic management in patients with perioperative movement disorders.

TMJ: Temporomandibular joint; GA: General anaesthesia; TCI: Target-controlled infusion; BIS: Bispectral index; TOF: Train-of-four monitoring; TIVA: Total intravenous anaesthesia

selection, and vigilant perioperative monitoring in patients with diverse movement disorders. Reported cases of anaesthetic management in patients with perioperative movement disorders are depicted in [Table/Fig-4] [7-11].

CONCLUSION(S)

This case highlights about anaesthetic challenges which are posed by chronic post-stroke chorea in a high-risk patient having multiple co-morbidities. Careful preoperative assessment, avoidance of general anaesthesia, usage of ultrasound-guided brachial plexus block using judicious monitored anaesthesia care allowed safe completion of surgery despite persistent involuntary movements. Appropriate selection of drugs, vigilant monitoring was crucial in preventing neurological as well as haemodynamic complications. Regional anaesthesia when feasible, represents a valuable and safer alternative in patients having movement disorders undergoing peripheral surgeries.

REFERENCES

- [1] Tater P, Pandey S. Post-stroke movement disorders: Clinical spectrum, pathogenesis, and management. *Neurol India*. 2021;69(2):272-83. Doi: 10.4103/0028-3886.314574 PubMed PMID: 33904435.
- [2] Carbayo Á, Sarto J, Santana D, Compta Y, Urrea X. Hemichorea as presentation of acute cortical ischemic stroke. case series and review of the literature. *J Stroke Cerebrovasc Dis Off J Natl Stroke Assoc*. 2020;29(10):105150. Doi: 10.1016/j.jstrokecerebrovasdis.2020.105150 PubMed PMID: 32912504; PubMed Central PMCID: PMC7384777.
- [3] Suri R, Rodriguez-Porcel F, Donohue K, Jesse E, Lovera L, Dwivedi AK, et al. Post-stroke movement disorders: The clinical, neuroanatomic, and demographic portrait of 284 published cases. *J Stroke Cerebrovasc Dis Off J Natl Stroke Assoc*. 2018;27(9):2388-97. Doi:10.1016/j.jstrokecerebrovasdis.2018.04.028 PubMed PMID: 29793802.
- [4] Papastratigakis G, Christofaki M, Papaioannou A. Multimodal anaesthesia- analgesia for patients with Huntington's disease: A case series. *Acta Medica Acad*. 2025;54(1):36-39. Doi: 10.5644/ama2006-124.466 PubMed PMID: 39936633; PubMed Central PMCID: PMC12309296.
- [5] Tasker RC. Movement disorders: An update. *Curr Opin Pediatr*. 2017;29(6):650-51. Doi:10.1097/MOP.0000000000000545 PubMed PMID: 28906343.
- [6] Apetauerova D, Patel PA, Burns JD, Lerner DP. Movement disorder emergencies. *Neurol Clin*. 2021;39(2):615-30. Doi:10.1016/j.ncl.2021.01.005 PubMed PMID: 33896535.
- [7] Kang JM, Chung JY, Han JH, Kim YS, Lee BJ, Yi JW. Anesthetic management of a patient with Huntington's chorea -A case report- *Korean J Anesthesiol*. 2013;64(3):262-64. Doi:10.4097/kjae.2013.64.3.262 PubMed PMID: 23560194; PubMed Central PMCID: PMC3611078.
- [8] Batra A, Sahni N, Mete UK. Anaesthetic management of a patient with Huntington's chorea undergoing robot-assisted nephron-sparing surgery. *Indian J Anaesth*. 2016;60(11):866-67. Doi: 10.4103/0019-5049.193702 PubMed PMID: 27942067; PubMed Central PMCID: PMC5125197.
- [9] Saad S, Ciardi F, Praschan N, Bungart B, Fettiplace M. Propofol exposure precipitating a functional movement disorder: A case report. *Case Rep Anesthesiol*. 2025;2025:8850185. Doi: 10.1155/cria/8850185 PubMed PMID: 41031214; PubMed Central PMCID: PMC12416804.
- [10] Haleem S, Hasan J, Athar M, Pervaiz S, Akhtar H. Bilateral cataract surgery in advanced Huntington's chorea with ballism: Anesthetic challenges. *J Indian Coll Anaesthesiol*. 2025;4(1):12. Doi: 10.4103/jica.jica_34_24.
- [11] Yun G, Kim E, Do W, Jung YH, Lee HJ, Kim Y. Transient involuntary movement disorder after spinal anesthesia: A case report. *World J Clin Cases*. 2021;9(26):7917-22. Doi: 10.12998/wjcc.v9.i26.7917 PubMed PMID: 34621846; PubMed Central PMCID: PMC8462229.

PARTICULARS OF CONTRIBUTORS:

1. Junior Resident, Department of Anaesthesia, Jawaharlal Nehru Medical College, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India.
2. Professor, Department of Anaesthesia, Jawaharlal Nehru Medical College, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India.
3. Professor, Department of Anaesthesia, General District Hospital, Gadchiroli, Maharashtra, India.
4. Undergraduate Student, Department of Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Nikita Sareen,
Junior Resident, Department of Anaesthesia, Jawaharlal Nehru Medical College,
Datta Meghe Institute of Higher Education and Research, Wardha-442107,
Maharashtra, India.
E-mail: nikitasareen1997@gmail.com

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