

ROMANIAN  
NEUROSURGERY

Vol. XXXIX | No. 3

September 2025

Spontaneous rupture of hydrocephalus.  
A rare complication of neglected  
hydrocephalus

Varun Tiwari,  
Shubhamitra Chaudhuri,  
Bipin Chaurasia



# Spontaneous rupture of hydrocephalus. A rare complication of neglected hydrocephalus

Varun Tiwari<sup>1</sup>, Shubhamitra Chaudhuri<sup>1</sup>, Bipin Chaurasia<sup>2</sup>

<sup>1</sup> Department of Neurosurgery, Bangur Institute of Neuroscience, IPGMER & SSKM Hospital, Kolkata, West Bengal, INDIA

<sup>2</sup> Department of Neurosurgery, Neurosurgery Clinic, Birgunj, NEPAL

## ABSTRACT

Spontaneous rupture of hydrocephalus is an exceedingly rare and catastrophic complication, particularly in neonates from resource-limited settings. We report the case of a two-month-old male infant diagnosed prenatally with hydrocephalus but left untreated due to socioeconomic challenges. The child presented with progressive cranial enlargement and acute cerebrospinal fluid (CSF) leakage from the anterior fontanelle. Examination revealed severe craniofacial disproportion, malnutrition, and neurological impairment. Despite immediate resuscitation and closure of the rupture site, the infant succumbed within 12 hours of admission. This case underscores the impact of delayed treatment, financial constraints, and lack of awareness on hydrocephalus outcomes. It highlights the urgent need for public education, accessible healthcare, and policy interventions to address the challenges of managing hydrocephalus in developing countries. Advocacy for prenatal care and early intervention could prevent such fatal outcomes and improve survival and quality of life in affected children.

## INTRODUCTION

Advancements in the treatment of hydrocephalus have significantly improved outcomes. However, in many developing countries, barriers such as lack of skilled personnel, financial constraints, ignorance, and sociocultural beliefs hinder prompt treatment. Consequently, complications like delayed developmental milestones, cognitive impairment, visual loss, death, and rarely, spontaneous rupture, can occur [1, 4, 5]. We present a case of spontaneous rupture in an infant with neglected hydrocephalus in India, highlighting the contributing socioeconomic factors in a resource-limited setting.

## CASE HISTORY/EXAMINATION

A 2-month-old male infant was brought to our facility with progressive head enlargement from birth and significant CSF leakage from frontal area around anterior fontanelle the previous day. Prenatal hydrocephalus diagnosis was made via trans-fontanelle ultrasound at seven months gestation, and the infant was delivered by elective caesarean section at term in a rural secondary health facility.

---

**Keywords**  
hydrocephalus,  
spontaneous,  
rupture

---



Corresponding author:  
**Bipin Chaurasia**

Department of Neurosurgery,  
Neurosurgery Clinic,  
Birgunj, Nepal

trozexa@gmail.com

**Copyright and usage.** This is an Open Access article, distributed under the terms of the Creative Commons Attribution Non-Commercial No Derivatives License (<https://creativecommons.org/licenses/by-nc-nd/4.0/>) which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is unaltered and is properly cited.

The written permission of the Romanian Society of Neurosurgery must be obtained for commercial re-use or in order to create a derivative work.

ISSN online 2344-4959  
© Romanian Society of  
Neurosurgery



First published  
September 2025 by  
London Academic Publishing  
[www.lapub.co.uk](http://www.lapub.co.uk)

Although referred to a tertiary hospital with neurosurgical services on the fifth day of life, the parents did not follow through due to financial difficulties and ignorance. Over the next two months, the infant's head size increased until an acute spontaneous CSF leakage necessitated urgent medical attention.

Upon presentation, the child was afebrile but dehydrated and malnourished, with lethargy and a weak cry. Examination revealed significant craniofacial disproportion, prominent scalp veins, bilateral up-gaze paralysis [Figure-1], and no light fixation or tracking. The head was severely disfigured, with marked sutural diastasis, scaphocephaly, and sunken fontanelles [Figure-2] [3, 5]. The head circumference was 70 cm, well above the 97th percentile for age. The CSF leak site was identified as a 5mm x 5 mm opening on the anterior fontanelle [Figure-3], with no active leakage at presentation. Immediate resuscitation included intravenous fluids and broad-spectrum antibiotics. & primary closure of the leak site.



**Figure 1.** A clinical photograph of the infant showing macrocephaly, prominent scalp veins, bilateral upgaze palsy.

#### Differential diagnosis, investigations and treatment

Despite these efforts, the child died approximately 12 hours later, before any neuroimaging could be performed.

#### Conclusion and Results

Such cases with huge hydrocephalus has very poor prognosis.



**Figure 2.** A clinical photograph of the infant showing wide and sunken anterior fontanelle & sutural diastasis.



**Figure 3.** Yellow arrow showing site of Rupture at sunken Anterior Fontanelle, Now Sutured using Nylon 3-0 suture material.

#### DISCUSSION

In many developing countries, some hydrocephalus cases remain untreated [1, 4, 5]. Longstanding tension hydrocephalus can lead to complications such as ventricular diverticula formation or rupture. The ventricle may rupture into the cisterns (ventriculocisternostomy) or through necrotic scalp tissue, resulting in spontaneous brain rupture [2, 3, 5].

In neglected cases, progressive ventricular enlargement causes thinning of the cerebral mantle and scalp, with pressure necrosis leading to ulcers and spontaneous rupture.

Spontaneous rupture of hydrocephalus is extremely rare, with few cases reported [5]. At 2

months old, our patient is the youngest documented case. Most reported cases originate from resource-limited countries where poverty, ignorance, stigmatization, and sociocultural beliefs contribute to such outcomes [5]. The unequal distribution of neurosurgeons, primarily in major cities, further complicates access to care.

**Table 1.** Previously reported similar cases.

S. No.	Author & Year	Age	Presentation	Management	Outcome
1.	Rattan et al., 2019 [5]	11 months	Hydrocephalus with occipital rupture, malnourished	Refused surgery; supportive care	Died at home within 2 days
2.	Garg et al., 2013 [3]	6 months	Large head, meningocele, CSF leakage, skin dehiscence	Refused surgery, supportive care	Died
3.	Oyemolade et al., 2019 [6]	5 years	Large hydrocephalic head, scalp necrosis, spontaneous CSF leak	Emergency CSF drainage attempted	Died within hours of admission
4.	Mishra et al., 2014 [4]	8 months	Severe head enlargement, meningocele, scalp rupture	Planned VP shunt (not performed)	Died pre-surgery
5.	Mekuria et al., 2023 [7]	3 years	Chronic hydrocephalus, CSF leakage through anterior fontanelle	Emergency repair and antibiotics	Survived with residual deficits
6.	Dhyani et al., 2016 [8]	7 months	Head collapse, occipital CSF leak, hypotonia	Fluid resuscitation and antibiotics	Died within 4 hours of admission

This case highlights the challenges in managing hydrocephalus in developing economies, despite prenatal diagnosis and delivery in a health facility. The distance to the referral center (150 km), financial constraints, and misinformation about the child's prognosis led to neglect and a fatal outcome. This underscores the impact of poverty, misconceptions, and lack of understanding of neurological conditions among non-specialist healthcare providers on disease outcomes in developing countries<sup>9-17</sup>.

Previously reported similar cases in the Literature is tabulated in table 1.

## CONCLUSION

Advocacy efforts must be intensified to educate the public and healthcare providers about hydrocephalus, its treatment, and the potential for a productive life post-treatment. Forming support groups comprising parents and long-term survivors could aid in this education. Increasing the number of neurosurgeons in these settings and providing

incentives for specialists to work in rural areas are essential steps to improving care and outcomes for children with hydrocephalus in resource-limited settings.

## REFERENCES

- 1 Abdelreheem MH, Basyouni MM. Neglected case of hydrocephalus in a five-year-old child. *Int J Case Rep Images.* 2015;6(10):640-643.
- 2 Garg K, Mahapatra AK. A rare case of ventricular diverticulum in a child with occipital encephalocele. *Pediatr Neurosurg.* 2012;48:26-29.
- 3 Garg K, Gurjar HK, Singh PK, Satyarthee GD, Singh M, Chandra PS, Sharma BS. Spontaneous rupture of hydrocephalic head. *Neurol India.* 2013;61:556-558.
- 4 Mishra SS, Mohanta I, Panigrahi S, Behera SK. Spontaneous rupture of a neglected huge hydrocephalic head. *J Pediatr Neurosci.* 2014;9:203-204.
- 5 Rattan A, Rattan KN, Singh J, Dalal P. Spontaneous external rupture of hydrocephalus in the occipital region in an infant: a rare case report. *Interdiscip Neurosurg.* 2019;17:49-51.  
<https://doi.org/10.1016/j.inat.2019.02.010>

- 6 Oyemolade TA, Balogun JA. Spontaneous rupture: A rare complication of neglected hydrocephalus. *Childs Nerv Syst.* 2019;35(11):2029-31. DOI: 10.1007/s00381-019-04113-0.
- 7 Mekuria BH, Shiferaw MY, Shumbash KZ, Akililu YB, Worku BY. Spontaneous external rupture of neglected hydrocephalus at Zewditu Memorial Hospital: A case report. *Interdiscip Neurosurg.* 2023;31:101670. DOI: 10.1016/j.inat.2023.101670.
- 8 Dhyani M, Goyal S. Spontaneous rupture of congenital hydrocephalus: A case report. *Journal of Pediatric Sciences.* 2016;8:e253
- 9 Chaurasia B, Chaudhury D, Raut VK. Congenital TORCH Infections in Pediatric Patients and their Proximity to Anterior Circulation Territories of Brain: An Observational Study with Case Illustrations. *EC Neurology.* 2019;11(2):143-54.
- 10 Encarnacion D, Chmutin G, Chaurasia B, Bozkurt I. Hundred pediatric cases treated for Chiari type II malformation with hydrocephalus and myelomeningocele. *Asian Journal of Neurosurgery.* 2023 Jun;18(02):258-64.
- 11 Das S, Montemurro N, Ashfaq M, Ghosh D, Sarker AC, Khan AH, Dey S, Chaurasia B. Resolution of papilledema following ventriculoperitoneal shunt or endoscopic third ventriculostomy for obstructive hydrocephalus: a pilot study. *Medicina.* 2022 Feb 13;58(2):281.
- 12 Raut R, Shams S, Scalia G, Umana GE, Ranganathan S, Rasheed M, Vats A, Chaurasia B. Comparison of ventriculoperitoneal shunt versus endoscopic third ventriculostomy in managing hydrocephalus due to tuberculous meningitis: a randomized controlled trial with a 30-day follow-up. *Annals of medicine and surgery.* 2024 Feb 1;86(2):881-5.
- 13 Javed S, Yaqoob E, Mahmood A, Chaurasia B. Crouzon Syndrome with Hydrocephalus. *International Journal of Medical Arts.* 2023 Mar 1;5(3):3133-6.
- 14 Yaqoob E, Ahmed A, Qazi B, Zaidi DA, Khan SA, Chaurasia B, Javed S. Strength in silence: the journey of mothers raising children with hydrocephalus. *Child's Nervous System.* 2024 Nov;40(11):3601-7.
- 15 Encarnación-Santos D, Chmutin G, Chmutin E, Bozkurt I, Chaurasia B. Management of hydrocephalus after cerebellar pilocytic astrocytoma in a pediatric patient: case report and literature review. *OncoReview.* 2024;14(4(56)):88-92.
- 16 Ahmed N, Chaurasia B, Shalike N, Arifin MS, Hossain M. Rare complications of VP shunt surgery resulting in significant morbidity and mortality: report of four cases and review of literature. *Int J Neurol Neurosurg.* 2019;11(4):293-301.
- 17 Zarra F, Shahid AH, Gandhi DN, Salazar LR, Chaurasia B. Migration of the anal distal end due to ventriculoperitoneal shunt placement: an atypical case report of a 9-month-old infant with tuberculous meningitis and review of the literature. *Child's Nervous System.* 2024 Aug;40(8):2583-92.