



# An Overview of Neurotrauma Care in UCMS and GTB Hospital, New Delhi

Pragyan Sarma<sup>1</sup> Manish Garg<sup>1</sup>

<sup>1</sup>Department of Neurosurgery, University College of Medical Sciences (UCMS) and Guru Teg Bahadur (GTB) Hospital, Delhi, India

Address for correspondence Pragyan Sarma, MCh, Department of Neurosurgery, University College of Medical Sciences (UCMS) and Guru Teg Bahadur (GTB) Hospital, Delhi 110096, India (e-mail: pragyansarma@yahoo.com; pragyannimhans@gmail.com).

Indian J Neurotrauma 2024;21:13–18.

## Abstract

University College of Medical Sciences (UCMS) and the associated Guru Teg Bahadur Hospital (GTBH) is one of the largest tertiary care centers in the National capital of Delhi. It caters to a large volume of patients mainly from north east Delhi along with neighboring states of Uttar Pradesh and Haryana. Since the establishment of neurosurgery department in 1997, the department has contributed significantly toward neurotrauma care. With the upgradation of infrastructure in recent years, the department surely has a bright future in neurotrauma services benefiting a huge population. In this article, I have tried to describe the brief history of neurotrauma care, present status of manpower, and infrastructure to manage trauma patients, difficulties yet to overcome and roadmap for future.

## Keywords

- ▶ GTBH
- ▶ UCMS
- ▶ neurotrauma
- ▶ cranial
- ▶ spinal

## Introduction

UCMS under the University of Delhi was initially established in 1971 at the present location of the Safdarjung Hospital. Later on, it was integrated with the Guru Teg Bahadur Hospital, commonly known as GTBH in 1986 and was shifted to the present location in a sprawling campus at Dilshad Garden to cater to the large population based in north east Delhi and trans-Yamuna area (▶ **Fig. 1**). The hospital made a humble beginning in 1987 with 350 beds and over the years, it has established its place in the country as a premier institute and an epitome of medical excellence.<sup>1,2</sup> Though initially it was established to provide affordable tertiary and quaternary health-care meeting established standards of patient care to a large population mainly from north east Delhi, at present, the majority of the patient inflow is from neighboring states. As an ambitious project of the Delhi government, the GTBH provides quality care with optimum standards to all sections of society, more so the economically backward sections. Funds for running of the institution are provided by the government. Therefore, unlike other autonomous institutions, it does not have access

to liberal funds for frequent procurement of expensive tools of infrastructure. However, despite these limitations, the neurosurgery department has made significant progress in the recent few years. In this article, I have tried to describe the brief history of neurotrauma care, present status of manpower and infrastructure to manage neurotrauma patients, difficulties yet to overcome, and the roadmap for future.

## Brief History

The full-fledged neurosurgery department in GTBH was established in 1997 by Dr. Sanjeev Kumar Dua who was an alumnus of G B Pant Hospital. With strong support from the administration led by Prof. D. K. Srivastava (Ex-Medical Superintendent, GTBH) and guidance from Prof. A.K. Singh (Ex-Head of the Department of Neurosurgery, G B Pant Hospital) Dr. Sanjeev started to work from the ground level and assembled a team of dynamic Neurosurgeons. Initially, Neurosurgery was allotted only two elective tables per week in the ENT operation theater and the team members operated with their own personal instruments. Subsequently, the

article published online  
January 18, 2023

DOI <https://doi.org/10.1055/s-0042-1760418>.  
ISSN 0973-0508.

© 2023. The Author(s).

This is an open access article published by Thieme under the terms of the Creative Commons Attribution License, permitting unrestricted use, distribution, and reproduction so long as the original work is properly cited. (<https://creativecommons.org/licenses/by/4.0/>)  
Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India



**Fig. 1** (topmost): UCMS Building at Safdarjung Hospital (1973); (middle): Formation of UCMS (1985–87); (bottom): UCMS (2020–21).

Neurosurgery Department was allocated a space for 18 beds for indoor admission. With tremendous support from Late Dr. Ashok Walia (Ex-Health Minister, Govt. of Delhi) and Prof. D.K. Srivastava, required manpower including paramedical

staff and junior doctors were recruited and facilities were upgraded. Within a short time, neurosurgery was allotted a dedicated operation theater in the sixth floor of the hospital building for elective surgeries 3 days a week and a separate



**Fig. 2** Past and present faculty members. Top row: (from left to right) Dr. Sanjeev Dua, Dr. D K Vatsal, Dr. Iqroop Chopra. Second row: (from left to right) Dr. Ajay Mishra, Dr. Rakesh Dua, Dr. Ajay Choudhary. Third row: (from left to right) Dr. Wajid Nazir, Dr. Sanjeev Gupta, Dr. Gurubachan Singh Bottom row: (from left to right) Dr. Pragyan Sarma, Dr. Dinesh Kumar Satti.

round the clock single OT table on all days of the week in the emergency block for performing emergency cases including trauma cases. The emergency OT was further equipped with

required micro-instruments, and initially 10 posts were sanctioned for post MS senior residents who provided round the clock emergency services and catered to all

neurotrauma cases. Gradually, there was a steady increase in neurotrauma cases along with number of surgeries. Over the years, some of the faculty members left for other endeavors and in their place, new set of faculty members joined. Name of the faculty members who have worked in the Department of Neurosurgery are listed in ►Fig. 2.

One of the major hurdles at this stage was the nonavailability of a separate Neurosurgery ICU, which compromised patient care. Dr. Rakesh Dua took the initiative to start a four-bedded Neuro ICU in the Neurosurgery ward, which was later extended with three additional HDU beds. Due to the shortage of staff in the anesthesia department, ICU was managed by manpower from neurosurgery after imparting required training. Another major achievement of Dr. Rakesh Dua was the starting of DNB Neurosurgery course in 2006 with yearly intake of one candidate. With the starting of academic course, a teaching post from CHS-III cader was also sanctioned to GTBH and the first teaching faculty to join was Dr. Ajay Choudhury in October, 2007. The introduction of academic residency improved patient care significantly. During the subsequent years, the department made significant progress with a steady increase in OPD patients, indoor admissions, wide spectrum of surgeries, and increase in the number of surgical procedures. However, in the later part of 2012 following the resignation of several faculty members, the department was left with only Dr. Gurubachan Singh as the lone faculty member. Although the neurotrauma services continued, due to lack of adequate strength of faculty, DNB Neurosurgery course was withdrawn. In subsequent years, though Dr. Wajid Nazir and Dr. Dinesh Satti joined as nonteaching specialists in May 2014 and June 2015, respectively, there was no significant upgradation of infrastructure in the department from 2013 to 2017.

### Modernization of the Department with Present Infrastructure and Resources

In May 2017, Dr. Pragyan Sarma joined as the Assistant Professor of Neurosurgery from the CHS-III cader. He was an alumnus of the National Institute of Mental Health and

**Table 1** Major equipment at disposal at present

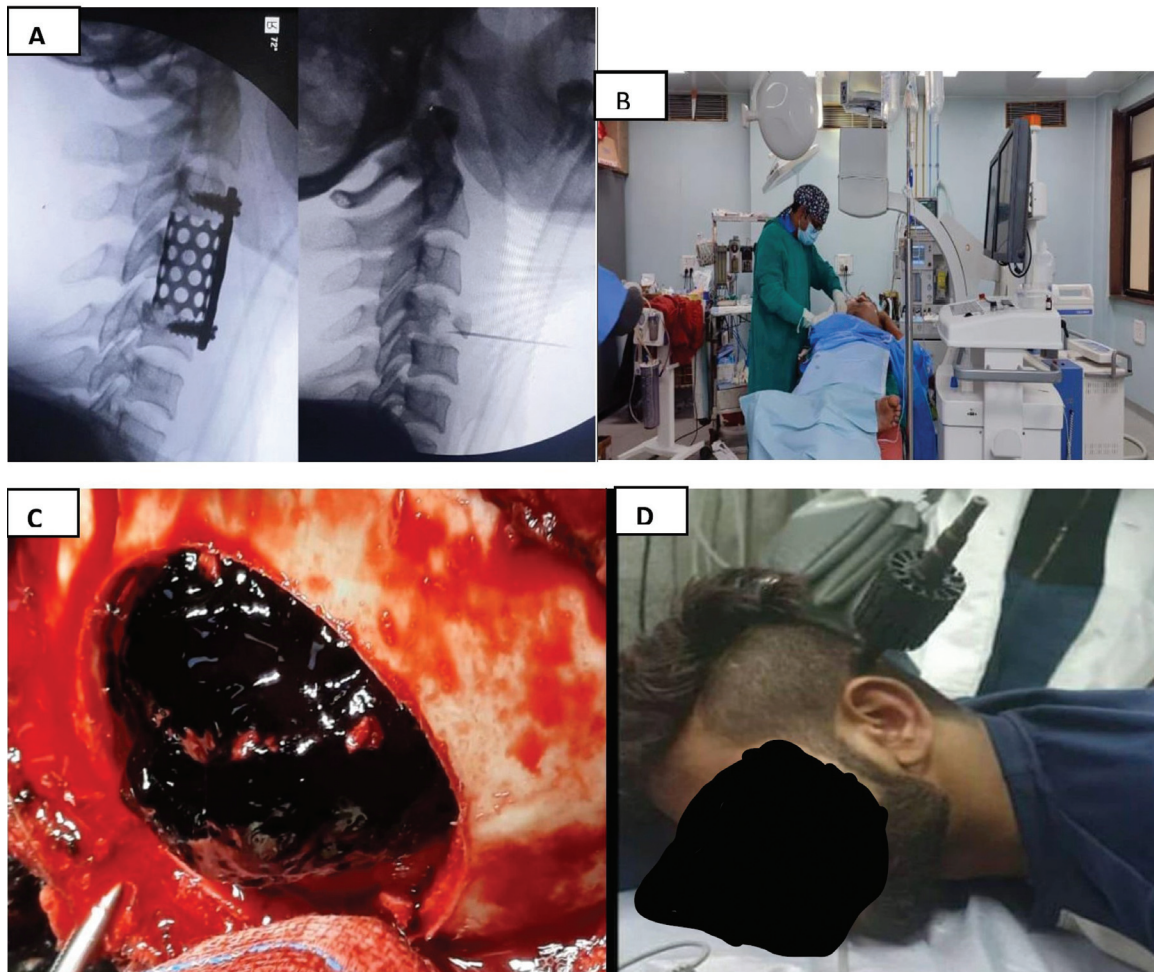
1. Operating microscope: Carl Zeiss OPMI
2. Drills-Bien air, Midas Rex, Stryker and Manman
3. Karl Storz Neuroendoscopy system (Spinal and cranial)
4. Cavitron Ultrasonic suction aspirator.
5. Neuromonitor-NIM eclipse 2
6. Neuronavigation: Stealth station-8
7. Intracranial Doppler
8. C-arm with DSA
9. Micro debrider set for endoscopic surgery
10. New operating table
11. DSA table

Neurosciences (NIMHANS). With tremendous help and encouragement from the administration and active support from Dr. Sunil Kumar, the then MD, GTBH, Dr. Pragyan along with other two faculty members of the department were instrumental in procuring many modern gadgets and upgradation of the department (►Table 1).

For surgery of cranial trauma cases, drills were regularly used for craniotomy following procurement. This shortened the operative duration of cranial trauma cases. Because the department had only one 24 hours OT table in the emergency OT complex, reduced duration of surgery meant less waiting time for cases waiting for surgery, ultimately leading to higher census and benefits to a lot of needy patients. The main volume of neurotrauma patients of GTBH belong to lower economical strata. For their welfare, tenders were floated for spinal and cranial implants. Rate contracts were formulated at the institution level and high-quality spinal implants were acquired and provided free of cost to needy patients. Also, endoscopic evacuation of intracranial hematomas was started in the emergency OT. Another very notable achievement was the starting of endovascular services free of cost for the needy patients. Dr. Pragyan, after obtaining training from Japan and Canada, took the initiative to start the endovascular procedures along with other two team members. Along with other vascular emergencies, embolization of the recurrent chronic subdural hematomas was started as a pilot project benefiting several patients (►Fig. 3). DNB Neurosurgery course too was restarted in



**Fig. 3** Pre- and postoperative images of a case of middle meningeal artery embolization in a case of chronic subdural hematoma.



**Fig. 4** (A) One of the postoperative cases of cervical corpectomy. (B) Set up in the emergency OT (C) One of the trauma cases with EDH following craniotomy. (D) One of the Delhi riot cases managed successfully.

2019 with intake of one candidate per year.<sup>3</sup> GTBH has always been a hub of post MS senior residents trying for entrance examinations of Mch course across with every year, several of them getting selected to premier institutes across India. However, the addition of DNB candidate, a vibrant academic atmosphere in the department and upgradation in infrastructure led to improvement in the overall patient care. During the 2020 Delhi riots, the neurosurgery department successfully managed the huge load of patients and was lauded for its services by many of the leading daily newspapers<sup>4</sup>. During the subsequent COVID pandemic engulfing the country in 2020 and 2021, the GTB Hospital was converted to a full-fledged COVID hospital. The neurosurgery department along with other departments provided exemplary services by managing many critical patients. Also, the huge rush of mucormycosis patients following the pandemic was successfully handled by the whole team of neurosurgery in collaboration with other departments.

Currently, the department runs with three full-time permanent faculties (one teaching and two nonteaching). It has sanctioned strengths of 14 senior and an equal number of junior residents. There is an intake of one DNB candidate per year. The department has a bed strength of 77 with a separate

dedicated 10 bedded Neurosurgery ICU and separate wards for neurotrauma emergency, and preoperative and postoperative cases. OPD runs 3 days a week and emergency services function round the clock (► Fig. 4).

The census of the number of neurotrauma procedures performed from 2014 to 2019 is shown in ► Table 2. Census for 2020 and 2021 are not included as for a major duration during those 2 years, during the COVID pandemic GTBH was converted to a COVID center dedicated exclusively to such patients.

**Table 2** Census of operated cases of Neurotrauma from 2014–2019

Year	Number of cranial cases	Number of spinal cases	Total cases
2014	236	16	252
2015	254	14	268
2016	224	22	246
2017	322	32	354
2018	348	64	412
2019	414	84	498

## Difficulties Encountered and Roadmap for Future

In modern era, the main pillars of optimal neurotrauma care are a robust neuro-critical care set up equipped with trained manpower, good infrastructure, and a hospital protocol for polytrauma and neurotrauma patients. Minimizing the cost more so in third-world countries, neurorehabilitation care and optimizing the available resources at hand are equally important. At present, though there is a dedicated neuro-ICU in GTBH, it is manned by the staff from the parent department due to lack of adequate strength in the Anesthesia Department. Imparting proper training to residents and paramedical staff is a stiff challenge more so when paramedical staffs are rotated frequently and pool of post MS senior and junior residents keep changing. At times, it can compromise patient care in critical cases at odd hours. Also, despite recent modernization of the department, at times due to increased patient load, there is paucity of ventilators and critical care beds. Though there is a provision to increase the ventilator beds, cost is a major hindrance. One of the solutions discussed in our institute was the procurement of indigenously built advanced portable ventilators in the All India Institute of Medical Sciences by Dr. Deepak Agarwal. Though initial steps were taken toward buying these, the COVID pandemic has hampered the progress. However, in the near future, we plan to take it to a logical conclusion. Another major challenge is sensitizing and training the staff in the casualty ward to follow and implement the existing hospital protocol in polytrauma patients. Neurorehabilitation is another area where much work still needs to be done in GTBH. In future, the

department aims to address these challenges and deliver the best care possible to neurotrauma patients. Steps are also being planned to address the desperate need of 24 hours availability of neuroanesthetists, critical care experts, and neuronurses. Neurosurgery department of GTBH is fully committed to the advancement and promotion of neurotrauma services in the country.

### Funding

None.

### Conflict of Interest

None declared.

### Acknowledgments

We are thankful to Dr. Sanjeev Dua (Senior Director Neurosurgery, Max Hospital, Delhi) and Dr. Rakesh Dua (Director Neurosurgery, Fortis Hospital, Delhi) for their help and support in collecting the facts for this manuscript.

## References

- 1 Guru Teg Bahadur Hospital. Accessed September 30, 2022, at: [https://en.wikipedia.org/wiki/Guru\\_Teg\\_Bahadur\\_Hospital](https://en.wikipedia.org/wiki/Guru_Teg_Bahadur_Hospital)
- 2 Govt of NCT of Delhi. Accessed September 30, 2022, at: [http://web.delhi.gov.in/wps/wcm/connect/doi\\_tgbh/GTBH/Home](http://web.delhi.gov.in/wps/wcm/connect/doi_tgbh/GTBH/Home)
- 3 National Board of Examination in Medical Sciences. Accessed September 30, 2022, at: <https://natboard.edu.in>
- 4 Accessed February 26, 2020, at: <https://www.firstpost.com/india/delhi-violence-miracle-at-gtb-hospital-as-19-year-old-survives-after-miscreants-push-drill-into-his-head-8090151.html>