Dr. Djunga: First Congolese Neurosurgeon

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Key words
- Democratic republic of Congo
- History of neurosurgery
- Kinshasa University Clinic
- Lovanium School of Medicine
- Medical education
- Shako Djunga

Abbreviations and Acronyms
DRC: Democratic Republic of Congo
KUC: Kinshasa University Clinic

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Antoine Shako Hiango Omokanda Djunga was the pioneer of neurosurgery in the Democratic Republic of Congo (DRC), a country located in Central Africa. He was born in 1938 in Sankuru, a province of the DRC. He graduated from the Free University of Brussels medical school and later trained there in neurosurgery. Thereafter, he completed a fellowship at Bellevue Hospital in New York. As a neurosurgeon, he worked at the Kinshasa University Clinic of Lovanium School of Medicine in the DRC, where he introduced neurosurgery and advocated for the construction of the first dedicated neurosurgical operating room. His leadership helped ensure sustainability in the field in the DRC. He died at the age of 48, leaving a void in neurosurgery and an unfulfilled mission of advocating for the construction of an independent neurosurgery hospital in the DRC.

Shako Hiango Omokanda Djunga (Figure 1) was born on April 8, 1938, in Katako-Kombe, a territory of Sankuru province, situated in the central region of the Democratic Republic of Congo (DRC). He completed his primary education in Katako-Tshumbe. From 1954 to 1963, he pursued his secondary curriculum in the technical schools for agricultural assistants in Kamponde and in the Kinshasa Medical Education Institute.

In 1963, he obtained a scholarship to study medicine at the Free University of Brussels in Belgium. After completion of his medical degree in 1967, he returned to the DRC as an assistant surgeon and trained at the Kinshasa University Clinic (KUC), the teaching clinic of the DRC's oldest medical school—Lovanium. During that period of time, the DRC had just gained independence and Belgian doctors were training Congolese medical personnel to ensure a professional transfer of leadership and responsibility. Dr. Djunga was one of the Congolese medical graduates who benefited from such training.

He developed interest in neurosurgery after Dr. Richard Werth expressed the need to establish the field in the DRC.[1] Dr. Werth was the dean of Lovanium in the postcolonial era, and his major contributions include establishing sustainable on-site presence by training local physicians to build a "boots on the ground" workforce and mentorship structure. In 1969, after consultation with the senior members of the department of surgery, Dr. Werth made known his strong desire to introduce neurosurgery into the DRC.[1] Thus with help from Dr. Werth and the surgery department at KUC in Lovanium, Dr. Djunga obtained a grant from the Belgian Ministry of Foreign Affairs to travel to Belgium for neurosurgery training.[1] He trained at the Free University of Brussels under Dr. Jean Brihaye, the former president of the European Association of Neurological Surgery from 1979 to 1983. The training in Brussels was supplemented with a fellowship to train in the United States at New York University at Bellevue Hospital Center under Dr. Joseph Ransohoff, a pioneer neurosurgeon and an honorary member of the American Society of Neuroradiology. After completion of the program, he returned to the DRC in 1971 as the first Congolese neurosurgeon and one of the earliest in central Africa.

In conversation with Dr. Antoine Beltchika Kalubye (July 2021), Dr. Djunga's mentee and the third neurosurgeon in the history of DRC, Dr. Djunga was frustrated by the lack of neurosurgical infrastructure, notably dedicated operating suites and equipment. In "Perspectives in International Neurosurgery: Neurosurgery in Zaire" published in 1983, Dr. Djunga[1] reported: "Our ability to carry out perfectly straightforward operations was frequently frustrated by the lack of appropriate equipment. The limited budgets available to our medical institutions make capital investment in equipment difficult and in premises almost impossible." He was inspired to use his connections from Belgium and New York to acquire much-needed surgical equipment. Initially, he used the general surgery operating rooms at KUC for neurosurgery cases. At the end of 1973, he sought and obtained financial help from the president of the country, Joseph Mobutu, via a discretionary budget allocated to the executive office of the president to build surgical suites at KUC capable of accommodating both general and neurosurgical procedures.[1] Though the funding accomplished its purpose, this one-time donation was not enough to sustain the practice of neurosurgery. However, it was an important step.

With new rooms and equipment, Dr. Djunga performed many surgeries, and a report from 1977 indicated that roughly 60% of his surgical cases were cranial and the remainder spinal (Table 1).[1] The most common cranial operations performed

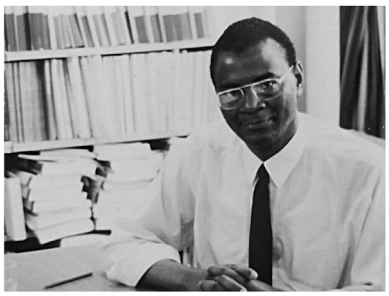

Figure 1. Photograph of Dr. Shako Djunga. Photograph shared by Dr. Okitundu-Luwa E-Andjafono Daniel, current head of the department of neurology at Kinshasa University School of Medicine in the Democratic Republic of Congo, with permission from Dr. Djunga's family.

included elevation of depressed skull fractures and craniotomy for traumatic intracranial hemorrhages. The most common indications for spinal surgery were infection due to tubercular spondylitis causing neurologic symptoms.[1]

Dr. Djunga, affectionately known as *Papa Docteur* by his patients, made a huge impact in the field of medicine in general and neurosurgery in particular. He was highly valued by both his patients and his colleagues. Dr. Kalubye remembered: "I had the opportunity to know him on a personal and scientific level and he was a humble man and the pride of the entire country." He added: "He helped me a lot and he facilitated my trip to Toulouse to pursue my formation in neurosurgery."

Dr. Djunga died in March of 1986, following a disease whose diagnosis had never been publicly revealed. He died while preparing his neurosurgery thesis in Belgium. His passing left a significant void in the practice of neurosurgery in the DRC. During that year, neurosurgery cases were handled by Belgian general surgeons until the return of Dr. Djunga's mentee, Dr. Kalubye, in 1987. Upon Dr. Kalubye's return, he inherited the mantle and mission of his mentor as the region's only neurosurgeon. Dr. Kalubye, therefore, immediately spearheaded mentorship efforts, and much of the DRC's modern neurosurgical workforce is derived from his continued commitment and expansion of his mentor's vision. The current local neurosurgical task force in the DRC includes 9 neurosurgeons who trained abroad but reside and practice in the DRC and 5 local general surgeons with

Table 1. Synopsis of 142 Neurosurgical Operations Performed at the Kinshasa University Clinic, 1977[2]

Type of Procedure	Number of Cases
Cranial and Intracranial Procedures	
Head trauma	49 (34.5%)
Depressed skull fracture (elevation and restoration of the normal contour)	25
Traumatic intracranial hemorrhage (evacuation of clot)	17
Subdural hematoma	14
Cranial defect (acrylic cranioplasty)	3
Epidural hematoma	2
Intracerebral hematoma, local contusion of temporal lobe (removal of necrotic brain tissue), carotid-cavernous fistula (ligation of internal carotid above and below fistula), CSF fistula (intracranial closure of defect), osteomyelitis of bone flap (sequestrectomy)	Single cases
Congenital disorders	19 (13.4%)
Hydrocephalic syndromes (shunting of CSF)	15
Encephalomeningocele and disorders of midline fusion (removal of sac and reconstruction of wall)	2
Anomalies of the craniocerebral border: Klippel-Feil syndrome and platybasia (surgical decompression), craniostenosis and craniofacial dysmorphism (orbit decompression)	Single cases
Intracranial infections	12 (8.5%)
Intracranial suppuration (evacuation of collection and resection of abscess capsule)	9
Cerebral abscess	8
Infantile subdural effusions	2
Subdural empyema, tuberculoma of brain (resection)	Single cases
Tumors	3 (2.1%)
Glioblastoma, frontal lobe (subtotal resection), meningioma, convexity (radical resection), nonsecreting pituitary adenoma (transsphenoidal removal)	Single cases
Cerebrovascular disease	2 (1.4%)
Cerebral aneurysm of the internal cerebral artery (clipping of the aneurysmal sac), cerebral angioma of the centroparietal region (closure of vessels feeding angioma and surgical extirpation)	Single cases
Exploration of Spinal Canal	
Infections	18 (12.7%)
Tuberculous spondylitis with paraplegias (anterolateral vertebral body resection and fusion)	15
Spinal histoplasmosis (exploratory laminectomy), *Staphylococcal* spondylitis (exploratory laminectomy), segmental arachnoiditis (exploratory laminectomy)	Single cases
Congenital malformation	15 (10.5%)
Myelomeningocele and spinal dysraphism (operative closure)	15
Tumors	11 (7.7%)
Extradural tumors (surgical decompression)	5
Intradural-extramedullary (surgical excision)	5
Cancer metastases	4
Neuromas	3
Total 142 (100%).	

Continues

Table 1. Continued

Type of Procedure	Number of Cases
Meningioma, convexity	2
Burkitt neoplasm, intramedullary: ependymoma (dural decompression)	Single cases
Injuries	9 (6.3%)
Cervical spine fracture/dislocation (reduction by skull traction with Crutchfield tongs: if failed the anterolateral approach for the realignment and fusion)	7
Lumbar fracture/dislocation with CSF block and positive myelography (decompressive laminectomy), penetrating gunshot wound (surgical exploration and debridement)	Single cases
Herniated lumbar intervertebral disk with paralysis of the feet (piecemeal removal of the protruding disk)	1 (0.7%)
Cervical spondylosis (surgical decompression)	1 (0.7%)
Procedures on Peripheral Nerves and Sympathetic Chain	
Injury of median nerve with causalgia (neuropathy and cervical sympathectomy	1 (0.7%)
Carpal tunnel syndrome (External neurolysis)	1 (0.7%)

Total 142 (100%).

additional training and privileges to perform neurosurgical cases. Also, the task force receives regular assistance from 4 Congolese neurosurgeons residing abroad, referred to as neurosurgeons from the diaspora (Table 2). Despite improvement in the number of Congolese neurosurgeons practicing in the DRC, scarcity persists with only 9 neurosurgeons for 93 million inhabitants. Thus there is a need for the current Congolese neurosurgeons to sustain Dr. Djunga's vision of providing local mentorship and training.

Dr. Djunga planned to accomplish his vision by advocating for the construction of an independent neurosurgical teaching hospital supported and sustained through local government funds to promote education of neurosurgeons locally and inspire international collaboration. In spite of his untimely passing, Dr. Djunga will be remembered for introducing neurosurgery in the DRC and ensuring a sustainable effect from his focused leadership and collaboration.

The life and legacy of Dr. Djunga detail the humble origins of a monumental effort to bring neurosurgical practice to the DRC and underpin the importance of subspecialty surgical training and care in Africa. The World Health Organization (WHO) with the World Federation of Neurological Surgery has since created a Working Group in Neurosurgery that, in 2001, found a ratio of 1 neurosurgeon for every 1,352,000 people compared with a worldwide ratio of 1 neurosurgeon per 230,000 people.[2] More recent estimates from the World Federation of Neurological Surgery in 2016 indicate improvement (1 neurosurgeon per 530,469 people in Africa), albeit with further room for growth.[3] Future efforts to build on the work of Dr. Djunga develop sustainable local training curricula and provide neurosurgical care to the DRC that will continue to evolve through the 21st century.

Table 2. Current Neurosurgical Workforce in Democratic Republic of Congo

Local Neurosurgeons (n = 9)	Neurosurgeons from Diaspora* (n = 4)	Local General Surgeons† (n = 5)
Dr. Antoine Beltchika Kalubye	Dr. Kazadi Kalangu (ZW)	Dr. Pierre Mfumu
Dr. Jeff Ntalaja	Dr. Jean-Pierre Kalala (BE)	Dr. Evariste Likinda Bofonda
Dr. Tresor Ngamasata	Dr. Orphée Makiese (FRA)	Dr. Simon Kotoluka
Dr. Glennie Ntsambi	Dr. Alphonse Lubansu (BE)	Dr. Teddy Ketani Mayindou
Dr. Safari Mudekereza Paterne		Dr. Cherubin Tshiunza Mpoyi
Dr. Charles Katchungunu		
Dr. Denis Ndeni Makenzi		
Dr. Dieu-Merci Kabulo		
Dr. Sarah Mutomb		

*Congolese neurosurgeons who work and live in the country they reside. BE: Belgium, FRA: France; ZW: Zimbabwe.
†Local Congolese general surgeons with additional training and neurosurgical privileges.

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