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Romanian neurosurgery

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ABSTRACT

Professor Constantin Arseni (1912–1994) was a Romanian neurosurgeon whose pioneering contributions established the foundation for modern neurosurgery in Romania. Widely acknowledged as the founder of Romanian neurosurgery, his legacy reflects not only exceptional clinical expertise but also visionary leadership in the development of neurosurgical training programs, the establishment of scientific societies, and substantial contributions to international neurosurgical literature. Notably, in 1982, he founded the Romanian Society of Neurosurgery (RSN), a milestone that further cemented his influence in the field. His work and enduring legacy have profoundly shaped generations of neurosurgeons, both within Romania and internationally. Over the course of his illustrious career, Arseni authored an extensive body of scientific literature, spearheaded the establishment of one of Europe's most advanced neurosurgical departments, and played a pivotal role in advancing neurosurgical techniques and technologies.

EARLY LIFE AND EDUCATION

Constantin Arseni was born on February 3, 1912, in the small town of Dolhasca, situated in Suceava County, Romania [1]. Coming from a modest family background, Arseni exhibited an early passion for science and medicine, which guided his decision to pursue a medical education. He gained admission to the Faculty of Medicine in Cluj, one

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of Romania's most esteemed medical schools, graduating in 1935 with high honors. During his academic journey, Arseni's interest in neurology and surgery began to crystallize, shaped by the remarkable medical advancements of the early 20th century. Influenced by groundbreaking developments in neuroscience and surgery both domestically and internationally, Arseni's academic curiosity and achievements propelled him toward specialized training in neurosurgery, a field still in its nascent stages at the time.

Upon earning his medical degree, Arseni concentrated his efforts on research in the nervous system and neurosurgery. His doctoral thesis, titled "Juxta-Protuberance Neurotomy in the Treatment of Intermittent Neuralgia of the Trigemini," defended on June 30, 1936, represented one of the earliest significant Romanian studies on trigeminal neuralgia, a neurological disorder characterized by chronic facial pain (Photo 1) [2]. Captivated by the complexity of this condition, Arseni's research focused on novel surgical methods to interrupt nerve pathways associated with the disorder, laying the groundwork for advanced neurosurgical techniques that would later become standard practice. Recognized within the Romanian medical community, his thesis marked the inception of a distinguished and impactful career in neurosurgery.

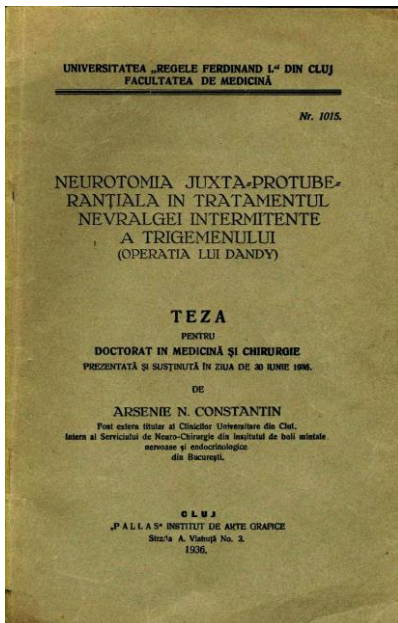


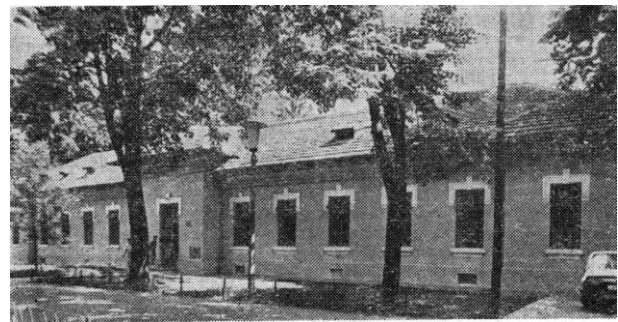
Photo 1. "Juxta-Protuberance Neurotomy in the Treatment of Intermittent Neuralgia of the Trigemini," on June 30, 1936.

COLLABORATION WITH PROFESSOR DUMITRU BAGDASAR

In the late 1930s, Constantin Arseni began

working under the mentorship of Professor Dumitru Bagdasar, a distinguished Romanian neurosurgeon and one of the pioneers of modern neurosurgery in the country. Dumitru Bagdasar, a highly influential

figure, had trained under Harvey Cushing, the American neurosurgeon universally recognized as the father of neurosurgery [1,3]. Cushing's profound influence on Dumitru Bagdasar, and subsequently on Arseni, was instrumental in shaping their approaches to the field. Recognizing Arseni's potential, Bagdasar invited him to join his team at the Central Hospital for Mental, Nervous, and Endocrinological Diseases in Bucharest. This collaboration led to the establishment of the first neurosurgical center in Bucharest under Bagdasar's leadership—a pivotal moment in Arseni's career (Photo 2).



Fațada clădirii în care a luat ființă în 1935 serviciul de neurochirurgie din București.

Photo 2. First Independent Neurosurgical Department in Bucharest – Central Hospital of Nervous Diseases, in 1935

During their partnership, Constantin Arseni and Dumitru Bagdasar collaborated on numerous groundbreaking projects addressing complex neurological disorders, including brain tumors, spinal injuries, and nerve lesions [1,3]. Together, they refined surgical techniques and pioneered new methods for managing these challenging conditions. Among their most significant contributions was the development of a novel surgical technique for treating craniostenosis, a congenital defect in which the bones of a baby's skull fuse prematurely. Alongside their colleague, Dr. State Drăgănescu, they introduced this groundbreaking approach, significantly improving patient outcomes and advancing the management of this condition [4].

One of their landmark achievements was the co-authorship of the first neurosurgical treatise in Romania and Southeastern Europe, published in French in 1948. This work represented a major step forward in the development of neurosurgery in Romania, solidifying their reputations as leaders in the field and advancing the discipline both nationally and regionally (Photo 3).

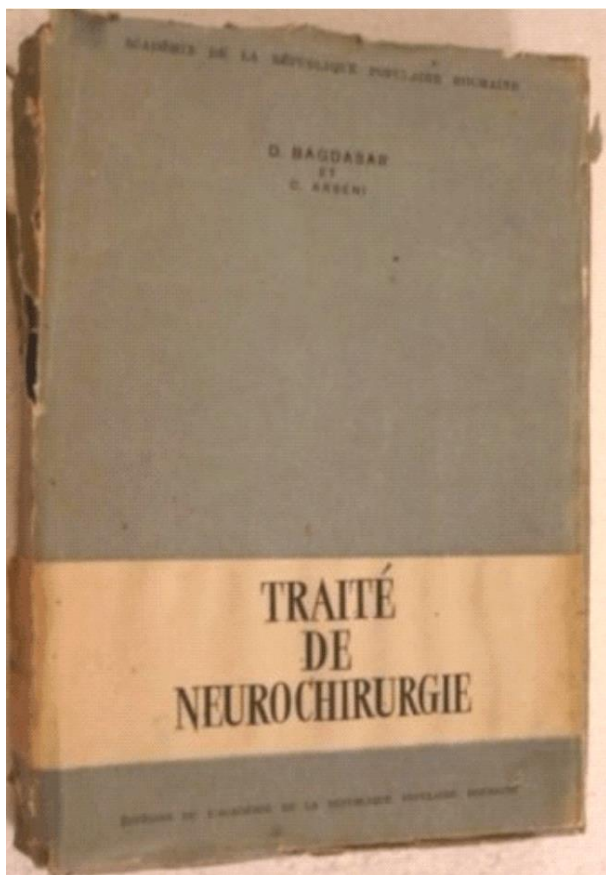


Photo 3. First "Traite De Neurochirurgie" (1948)

THE CREATION OF THE NEUROSURGICAL CLINIC IN BUCHAREST

In 1946, following the death of Professor Bagdasar, Constantin Arseni took over the leadership of the Neurosurgical Service at the Central Hospital. At just 34 years old, he became the Head of Neurosurgery, a position that would allow him to shape the future of the field in Romania. Under his leadership, the neurosurgical service grew significantly. By 1964, the clinic had expanded to 220 beds, with specialized sections for brain tumors, spinal surgery, pediatric neurosurgery, craniocerebral and vertebral trauma, and vascular neurosurgery. Arseni's vision for the clinic was to create a comprehensive center for neurosurgery that could handle all types of neurological and neurosurgical cases, from the most common to the most complex (Photo 4).

One of Constantin Arseni's most significant contributions to Romanian neurosurgery was the introduction of advanced medical technologies. In 1982, he was instrumental in acquiring Romania's first CT scan device, which revolutionized diagnostic capabilities in the country. The CT scanner allowed

for more accurate imaging of the brain and spinal cord, making it easier to diagnose and plan surgical interventions for conditions like tumors, trauma, and vascular malformations [7]. This technological leap significantly improved patient outcomes and placed Romania at the forefront of neurosurgical technology in Eastern Europe (Photo 5) [5].



Photo 4. Neurosurgical Clinic-1964

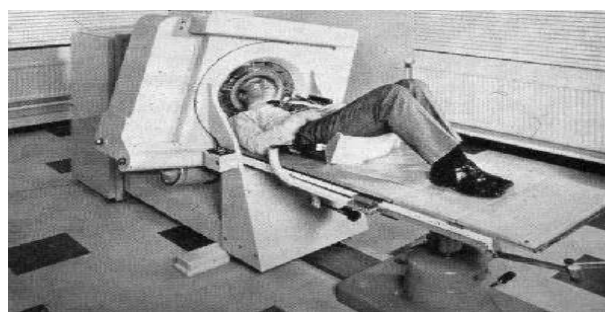


Photo 5. The first CT scan device in Romania-1982

EXPANSION OF THE NEUROSURGICAL CLINIC

Throughout the 1960s and 1970s, Constantin Arseni continued to expand the clinic, both in terms of physical capacity and the range of services offered. By 1975, the clinic had grown to 550 beds, making it one of the largest neurosurgical centers in Europe (Photo 6) [1].



Photo 6. The Neurosurgical Clinic-1975

The clinic was divided into seven departments, each specializing in a different aspect of neurosurgical care. This included a pediatric neurosurgery department, which was one of Arseni's personal passions. He believed that children with neurological conditions required specialized care, and he worked to develop new surgical techniques for treating congenital malformations, hydrocephalus, and brain tumors in pediatric patients.

Pediatric neurosurgery was one of the areas where Arseni made his most significant contributions. Together with Dr. Lenke Horvarth and his long-time collaborator Professor Alexandru Vlad Ciurea, Constantin Arseni helped to establish pediatric neurosurgery as a distinct subspecialty within Romania (Photo 7). His work in this field included the development of new surgical techniques for treating cranial deformities, congenital brain malformations, and tumors in children. Arseni was particularly interested in improving the outcomes for children with hydrocephalus, a condition in which excess fluid builds up in the brain [6,7,8,9].



Photo 7. The golden team of pediatric neurosurgery (Professor Constantin Arseni, Dr. Lenke Horvarth and Professor Alexandru Vlad Ciurea)

This prodigious activity of Prof. Constantin Arseni elevated the neurosurgery clinic, especially in its new building, to European and international recognition. Prof. Constantin Arseni developed all branches of neurosurgery, focusing particularly on intracranial tumors, for which he had a clinical, operative, and research inclination. Moreover, all cases of brain tumors operated on in the clinic were evaluated both clinically and anatomopathologically by Constantin Arseni and the head of the anatomopathology laboratory, Dr. Carp [10]. During this period of neurosurgical development, Prof. Constantin Arseni sent his collaborators abroad for experience exchanges (to France, Germany, Italy, and the USA). Thus, the future Prof. Dr. Leon Dănăilă was granted

a nine-month assignment in New York at Bienville Hospital, which significantly contributed to his preparation in tumor and vascular microsurgery.

Unfortunately, the events of 1989 were entirely unfavorable for Prof. Constantin Arseni, as he was officially reproached for his collaboration with the state leadership. It should be noted that he was not a party member, and this collaboration was solely scientific in nature. Considering the slightly dark period following the regime change in 1989–1990, the personality of Prof. Constantin Arseni fell into obscurity, especially as his health gradually deteriorated, with several minor strokes and diabetic retinopathy, which halted his participation in neurosurgical interventions.

He passed away in 1994 due to a stroke, leaving behind an unforgettable legacy [1].

SCIENTIFIC CONTRIBUTIONS

Professor Constantin Arseni's scientific contributions were vast and influential. Over the course of his career, he authored or co-authored 54 monographs, treatises, and books, as well as numerous scientific papers published in Romanian and international medical journals [1]. His writings covered a wide range of topics within neurosurgery, from brain tumors to spinal cord injuries, and from vascular diseases of the brain to neuroendocrinology.

Among his most important publications are the following works:

1. Vertebral Sciatica (1948) – This was one of the first comprehensive studies on the treatment of sciatic pain caused by vertebral issues [11].
2. Vascular Diseases of the Brain and Spinal Cord (1965) – A major contribution to the understanding of vascular pathology in the central nervous system [12].
3. Pain (1967) – A groundbreaking study on the mechanisms and treatment of chronic pain in neurosurgical patients [13].
4. Neuro-Ophthalmologic Diagnosis (1967) – This book explored the neurological causes of vision problems and their treatment [14].
5. Spinal Neurological Pathology (1968) – A comprehensive study of spinal cord diseases and injuries [15].
6. Raised Intracranial Pressure (1972) – This work focused on the diagnosis and management of elevated intracranial pressure, a common problem in neurosurgery [16].

7. Craniocerebral Traumatology (1972) – A major work on the treatment of head injuries [17].
8. Intracranial Space-Occupying Processes (1973) – This two-volume work was a detailed study of brain tumors and other mass lesions in the brain [18,19].
9. Spinal Cord and Peripheral Nerve Injuries (1974) – A study of the treatment of traumatic injuries to the spinal cord and peripheral nerves [20].
10. Neurosurgical Semiology (1977) – This book focused on the clinical examination and diagnosis of neurosurgical conditions [21].
11. Pathologic Anatomy of Tumors of the Nervous System (1978) – A major work on the pathological aspects of brain and spinal tumors [10].
12. Cervical Vertebromedullary Pathology (1982) – This book explored the diagnosis and treatment of conditions affecting the cervical spine and spinal cord [22].
13. Neuroendocrinology (1988) – A comprehensive study of the relationship between the nervous system and the endocrine system, particularly in the context of tumors affecting the hypothalamus and pituitary gland [23].
14. Neurologic Semiology (1988) – This work focused on the clinical signs and symptoms of neurological diseases [24].

Notably, Professor Constantin Arseni's contribution to the development of the "Treatise of Neurology" between 1979 and 1982 stands out as a cornerstone of his academic achievements (Photo 8).

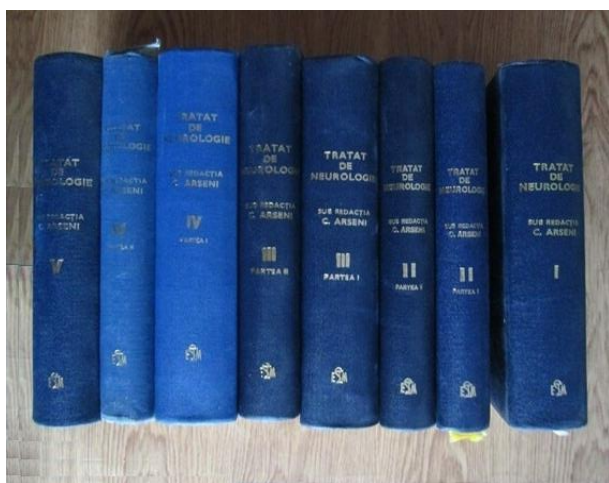


Photo 8. The "Treatise of Neurology" in 5 volumes, during the 1979-1982 period.

Through his exceptionally prolific scientific activity and membership on the editorial boards of numerous international journals, including ACTA NeuroChirurgica, Romanian neurosurgery gained significant international recognition. Prof. Arseni's relentless dedication as a scientific researcher has left an enduring impact on the field [25].

The scientific library curated by Professor Constantin Arseni exemplifies his devotion and multidisciplinary approach across all domains of the neurosciences (Photo 9).



Photo 9. Library created by Professor Constantin Arseni

Of particular importance was his focus on the pathology of brain tumors, evident in his extensive publications and the brain tumor classification he developed in collaboration with Dr. Carp in 1978 [10]. This classification, translated and internationally recognized, remains a benchmark in the field (Photo 10).



Photo 10. Arseni, C., & Carp, N. "Pathologic Anatomy of Tumors of the Nervous System". Romanian Academy Publishing House, 1978, Bucharest.

Furthermore, the "Museum of Encephalons", showcasing extremely complex pathological cases, stands as a

testament to his scientific dedication to addressing intricate lesions of the nervous system (Photo 11).



Photo 11. Anatomopathological Museum created by Professor Constantin Arseni.

ESTABLISHMENT OF THE ROMANIAN SOCIETY OF NEUROSURGERY

In 1982, Arseni founded the Romanian Society of Neurosurgery, an organization that aimed to promote neurosurgical education, research, and clinical practice in Romania. The society was instrumental in connecting Romanian neurosurgeons with their international counterparts, fostering collaboration and knowledge exchange [26]. Arseni's leadership in the society helped to elevate the status of Romanian neurosurgery on the global stage. The first congress of the Romanian Society of Neurosurgery was held in Oradea Felix, and it attracted neurosurgeons from across Romania and Europe. Under Arseni's guidance, the society became a key platform for sharing new research, discussing advances in surgical techniques, and training the next generation of neurosurgeons [27].

TEACHING AND TRAINING FUTURE GENERATIONS

One of Constantin Arseni's greatest legacies was his role in training future generations of neurosurgeons. He believed strongly in the importance of education and mentorship, and he dedicated much of his career to teaching. As a professor of neurosurgery at "Carol Davila" University of Medicine and Pharmacy in Bucharest, Constantin Arseni trained hundreds of neurosurgeons who would go on to practice throughout Romania and beyond. His teaching was characterized by a rigorous approach to both theory and practice, and he emphasized the need for neurosurgeons to be well-versed in the latest research as well as highly skilled in the operating room.

Arseni played a key role in developing the neurosurgical training curriculum in Romania. His

approach to training was systematic and thorough, and he established a curriculum that included multiple years of training in different subspecialties within neurosurgery. This curriculum included one year of training in neuro-traumatology, one year in brain tumors, one year in vascular neurosurgery, and six months in pediatric and functional neurosurgery. By creating a structured and comprehensive training program, Arseni ensured that Romanian neurosurgeons were among the best-trained in the world [1,27].

The entire neurosurgical community in Romania pays tribute to Professor Constantin Arseni, who established numerous departments and neurosurgical centers across the country, including in Ploiești, Brașov, Craiova, Sibiu, Galați, and Constanța.

The leaders of these departments, all senior physicians, received their training under Professor Constantin Arseni's mentorship, honing their expertise in his clinic before advancing to leading roles in various academic and medical centers throughout Romania.

INTERNATIONAL RECOGNITION AND LEGACY

Professor Arseni's contributions to neurosurgery were recognized not only in Romania but also internationally. His work earned him numerous awards and honors, including the Gheorghe Marinescu Award from the Romanian Academy for his contributions to neurosurgical research. In 1991, he was inducted as *A Full Member of The Romanian Academy*, a testament to his lifelong dedication to advancing medical science. Arseni's work also opened the door for Romanian neurosurgeons to participate in international collaborations, and his influence extended well beyond the borders of Romania.

Arseni's influence on neurosurgery extended beyond his home country, and he became an internationally respected figure in the medical community. His work in introducing new surgical techniques and technologies, such as the CT scan in Romania, helped to bring Romanian neurosurgery in line with international standards and earned him a reputation as a forward-thinking and innovative surgeon.

LEADERSHIP AND INTERNATIONAL INFLUENCE

Professor Constantin Arseni's influence extended far

beyond the walls of the neurosurgical clinic in Bucharest. Throughout his career, Arseni played an active role in the broader neurosurgical community, both in Romania and internationally. As a prominent figure in Romanian medicine, he helped to shape the direction of the country's medical education system, ensuring that future generations of neurosurgeons were well-trained and equipped with the latest knowledge and skills [28]

In addition to his contributions to medical education, Arseni was instrumental in establishing connections between Romanian neurosurgeons and their counterparts in other countries. His efforts to bridge the gap between Romanian neurosurgery and international practices helped to raise the standard of care in Romania and to integrate the country into the global neurosurgical community [29].

CONCLUSION

A Visionary Who Shaped the Future of Romanian Neurosurgery

Professor Constantin Arseni was not only a skilled neurosurgeon but also a visionary who helped to shape the future of Romanian medicine. His contributions to clinical practice, medical education, and scientific research have left an indelible mark on the field of neurosurgery, both in Romania and globally. As the founder of modern Romanian neurosurgery, Arseni played a central role in bringing advanced neurosurgical care to the country and ensuring that Romania was on the cutting edge of medical technology and research. His leadership, vision, and dedication to his patients and students have made him a lasting figure in the history of neurosurgery.

Constantin Arseni's work has not only improved the lives of countless patients, but it has also inspired generations of neurosurgeons to strive for excellence in their own practice. His legacy lives on in the institutions he helped build, the research he conducted, and the many neurosurgeons he trained. As we look back on his remarkable career, it is clear that Constantin Arseni's contributions to neurosurgery will continue to shape the field for years to come.

Due to his exceptional contributions across scientific, organizational, and administrative domains, Romanian neurosurgery honors his legacy appropriately by naming the current neurosurgical

hospital after its founder: Emergency Hospital Bagdasar-Arseni.

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