

Neurosurgery:  
April 1998 - Volume 42 - Issue 4 - pp 909-911  
Legacies

## **The Contribution of Davide Giordano (1864-1954) to Pituitary Surgery: The Translabellar-Nasal Approach**

**Artico, Marco MD; Pastore, Francesco S. MD; Fraioli, Bernardo MD; Giuffrè, Renato MD**

[Article Outline](#)



### **Author Information**

Center for Historical Documentation on Italian Neurosurgery, Institute of Neurosurgery, University of Rome "Tor Vergata," Rome, Italy

Received, August 18, 1997. Accepted, September 22, 1997.

Reprint requests: Renato Giuffrè, M.D., Professor and Chief, Institute of Neurosurgery, University of Rome "Tor Vergata," Via O. Raimondo 8, 00173, Rome, Italy.



### **Abstract**

THIS REPORT DESCRIBES the fundamental contribution made by Davide Giordano, proposing the translabellar surgical approach in a period in which transfacial and transbasal operative approaches to the pituitary gland were considered inadvisable because of their risk. His idea was to gain access through bilateral paranasal and frontal skin incisions, allowing removal of the ethmoid bone and the anterior wall of the sphenoidal cube. With the anterior and inferior aspects of the sella turcica thus exposed, bone is removed and the gland is exposed by incision of the dura mater. The technique proposed by Giordano is undoubtedly a forerunner of the transsphenoidal route to the pituitary gland. The importance of his contribution was confirmed by Cushing, who reported his first use of the approach of Giordano in 1909 in a patient with a pituitary adenoma. The efforts of Giordano clearly inspired surgeons of his era to perform this operation clinically, giving impetus to the further development of neurosurgery.

At the end of the 19th century, neurosurgeons began to take advantage of emerging diagnostic methods and operative techniques to approach diseased pituitary glands. Acromegaly had been recognized as being related to an enlargement of the gland <sup>(2)</sup> that led to a destructive and fatal condition. Surgery, although risky, was therefore advisable. An outstanding Italian physician, Davide Giordano, concentrated his energies on this problem between 1890 and 1896. In fact, he was the first to propose surgical removal of the pituitary body through a translabellar-nasal approach, based on his observations in postmortem studies. As part of the celebration of the centennial of his studies, this brief account recalls this fundamental contribution by one of the founders of modern Italian surgery to the surgical management of pituitary disease.

[Back to Top](#) | [Article Outline](#)

## OUTLINE OF THE LIFE AND PROFESSIONAL ACCOMPLISHMENTS OF GIORDANO

Davide Giordano ([Fig. 1](#)) was born in Courmayeur (Piedmont, Italy) on March 22, 1864, of parents from the Waldenses (a body of Christians who originated in southern France in the 12th century, adopted Calvinist doctrines, suffered severe persecution until recent times, and now live chiefly in Piedmont) ([1,4,5](#)). He attended medical school in Turin. Giacomo Filippo Novaro (1843-1934), a pioneer in gasserectomy, and Edoardo Perroncito (1847-1922)<sup>(4)</sup> served as his mentors. While still a student, Giordano published experimental observations on the etiological basis of tetanus, confirming the ubiquity of the pathogenic agent. At his graduation in 1887, he presented a discourse on acute pyogenic osteomyelitis, the subject of his dissertation.



Figure 1

[Image Tools](#)

As a young physician, Giordano worked in the Waldenses Hospital of Torre Pellice (Piedmont, Italy) until Novaro invited him to the University of Bologna in 1890, as Assistant to the Chair of Clinical Surgery. Giordano directed the Surgical Pathology Section of the Clinic from 1890 until 1894, when he became chief of the Surgical Division of the Municipal Hospital of Venice; he was rated first among the 13 candidates for the position.

In Venice, Giordano proved to be an outstanding scientist and surgeon. These qualities, as well as his exceptional teaching ability, attracted many students and researchers to his hospital. He remained in Venice for 60 years. As his accomplishments became widely known, he achieved a certain eminence. He belonged to numerous scientific and cultural societies. From 1920 to 1924, he was actually the mayor of the city. The title "Senator of the Italian Kingdom" was conferred upon Giordano in 1924. In the same year, he became a founding member of the International Society of Surgery. The publications by Giordano on renal and urinary surgical conditions and on abdominal (ileosigmoidostomy and transabdominal rectal total resection), thyroid, parathyroid, and suprarenal (adrenal denervation) surgical procedures have earned him a place among the founders of modern surgery. Also notable is his early opposition to ovariectomy for young women, based on his intuition that the ovaries would prove to possess endocrine functions. The scientific activities of Giordano are recorded in more than 190 publications<sup>(4,11,12)</sup>.

[Back to Top](#) | [Article Outline](#)

## CONTRIBUTION OF GIORDANO TO THE TRANSLABELLAR APPROACH TO THE PITUITARY GLAND

The interest of Giordano in pituitary surgery began during his surgical training in Bologna. By 1897, he was practicing the transglabellar-nasal approach on cadavers in Venice. In the first decade of the 19th century, pituitary diseases and surgical techniques had become matters of great interest for many surgeons. After the studies of Marie<sup>(2,3)</sup>, a forerunner of Giordano, were published,

numerous contributions increased the understanding of the topographical anatomy of the pituitary gland and of surgical access to the gland. A number of diseases of the hypophysis and related syndromes began to be identified and defined.

In 1840, Mohr described the relationship between obesity and pituitary tumors <sup>(6)</sup>. In 1886, Marie (1853-1929) of Paris studied patients with acromegaly, attributing the syndrome to pituitary insufficiency <sup>(3,6)</sup>. In 1892, Marinesco proved that pituitary excision was fatal in animals <sup>(6)</sup>. Vassale and Sacchi <sup>(14)</sup>, in 1892, confirmed the biological autonomy of the parathyroid glands from the thyroid gland and performed experimental and autoptic transpalatal hypophysectomies, destroying the pituitary gland with cautery and chromic acid; the surgical bony opening was repaired with dental cement. After the observations of Marie, Tamburini <sup>(13)</sup> in 1894 investigated the relationships between acromegaly and the pituitary gland. It was only later (1901) that Froehlich found the frequent association between pituitary and hypothalamic lesions and obesity, acromegaly, and gigantism <sup>(6)</sup>. In 1908, Nicholas Paulesco of Bucharest was the first to demonstrate that removal of the anterior pituitary lobe is fatal, whereas posterior lobe excision is not <sup>(6)</sup>. Cushing was actually the first, in 1912, to clarify the relationships between pituitary tumors and clinical syndromes, including diabetes <sup>(6,15)</sup>.

Moving beyond the observations of Marie, Vassale, Sacchi, and Tamburini, Giordano confirmed that, when an acromegalic patient shows symptoms of intracranial hypertension that are not relieved by medical therapy, surgical treatment, however risky, is imperative. He provided some critical appraisals of the proposed surgical approaches to the pituitary gland. He thought that a major shortcoming of the median supraorbital (subfrontal) route was the great risk that the "crossings" of the optic nerves would be damaged. He also objected to the transpalatal approach, the contemporary success of Durante with it <sup>(7,8)</sup> notwithstanding. The success Giordano achieved with the translabellar-nasal approach in his studies emboldened him to assert that "in a potentially fatal disease like acromegaly, this operation appears indicated and technically not very hazardous; in fact, the operative procedure is not more difficult than a gasserectomy" <sup>(7)</sup>.

In the approach proposed by Giordano, the patient is supine <sup>(Fig. 2)</sup>, with the head extended for better illumination of the operative field. A bilateral paranasal and frontal incision is made, allowing nasal-glabellar degloving. The ethmoid bone is then removed; the olfactory fibers are cut as they pass through the cribriform plate. With the anterior wall of the sphenoidal fossa exposed, the sphenoidal sinus is opened widely, followed by removal of the anterior and inferior aspects of the sella turcica. After the dura mater is incised, the pituitary gland is stripped. The skin flap is replaced after a gauze drain that extends from the surgical field to the pharynx or through the nostril has been placed <sup>(7)</sup>. Giordano claimed that the neurovascular cavernous structures are not endangered during the procedure and that the surgeon need not be concerned about damaging them. Giordano compared this approach with transcranial approaches to the hypophysis, recommending the latter when "a wider operative field is needed for surgical maneuvers" <sup>(7,8)</sup>.



Figure 2

[Image Tools](#)

The value of the technique described by Giordano was endorsed in 1906 by Schloffer, in a critical review of the various proposed operations for the pituitary gland <sup>(15)</sup>. Following Schloffer, von Eiselsberg (1860-1939) operated, in July 1907, on his first case of a pituitary lesion, through a superior nasal approach that was a slight modification of the route proposed by Giordano <sup>(10,15)</sup>. In February 1908, von Hochenegg (1859-1940) used the route proposed by Giordano and modified the technique only by reflecting the anterior wall of the frontal sinuses and plugging the nasopharynx <sup>(10,15)</sup>.

On March 26, 1909, 12 years after Giordano made his observations known, Cushing used a direct transglabellar approach when he performed his first operation on an acromegalic patient suffering from a pituitary adenoma <sup>(15)</sup>. That patient was still alive and well 21 years after surgery. The importance of the role of the transnasal approach was confirmed by a statement made by Cushing, reporting on his case, i.e., "the important factor seems to me to be a direct extracranial midline approach by the shortest possible route" <sup>(15)</sup>. The fact that Cushing, who, more than any other surgeon, can be called the founder of modern American neurosurgery, used the approach described by Giordano is perhaps conclusive evidence of the usefulness and importance of the investigation by Giordano of surgical approaches to the pituitary gland.

The value of the technique described by Giordano was even endorsed by Leotta. He presented a case of a pituitary tumor in an acromegalic patient, which had been successfully treated via the transglabellar-nasal approach, to the XXIII Congress of the Italian Society of Surgery in 1911 and reported enthusiastic use of the same route by von Hochenegg and von Eiselsberg <sup>(9)</sup>.

[Back to Top](#) | [Article Outline](#)

## REFERENCES

1. Arcieri GP: *Figure della Medicina Italiana Contemporanea*. Milan, Bocca, 1952, pp 155-164.  
[Cited Here...](#)
2. Bailey P: L'acromegalie et son histoire. **Rev Neurol (Paris)** 86:741-745, 1952.  
[Cited Here...](#)
3. Bynum WF, Porter R: *Companion Encyclopedia of the History of Medicine*. New York, Routledge, 1993, vol 1, p 500.  
[Cited Here...](#)
4. Castiglioni A: *Storia della Medicina*. Milan, Mondadori, 1936, pp 762-763.  
[Cited Here...](#)
5. Corsini A: D. Giordano. **Riv St Sci Med Nat** 45:214-217, 1954.  
[Cited Here...](#)
6. Garrison FH: *History of Medicine*. Philadelphia, W.B. Saunders Co., 1914, p 604.  
[Cited Here...](#)
7. Giordano D: Manuale di medicina operativa, in Duplay e Reclus (eds), *Trattato di Chirurgia*. Turin, UTET, 1894, pp 100-103.  
[Cited Here...](#)

8. Giordano D: *Compendio di Chirurgia Operativa Italiana*. Torino, Italy, UTET, 1911, pp 226-228.

[Cited Here...](#)

9. Leotta N: Sulla patologia e patogenesi dell'acromegalia e suo trattamento chirurgico, in Vedova RD (ed): *Atti del XXIII Congresso della Società Italiana di Chirurgia*. Rome, K.G. Bertero, 1911, pp 90-91.

[Cited Here...](#)

10. Major RH: *Storia della Medicina*. Florence, Italy, Sansoni, 1959, pp 884.

[Cited Here...](#)

11. Neveu R: Le professeur Davide Giordano. **Hist Med** 4:7-9, 1954.

[Cited Here...](#)

12. Porter R: *Dizionario Biografico della Storia della Medicina e delle Scienze Naturali (Liber Amicorum)*. Milan, Franco Maria Ricci, 1987, vol 2, p 105.

[Cited Here...](#)

13. Tamburini A: Contributo alla patogenesi dell'acromegalia. **Riv Sper Freniatr Med Leg** 20:559-574, 1894.

[Cited Here...](#)

14. Vassale G, Sacchi E: Sulla distruzione della ghiandola pituitaria. **Riv Sper Freniatr Med Leg** 18:525-561, 1892.

[Cited Here...](#)

15. Walker AE: *A History of Neurological Surgery*. New York, Hafner Publishing Co., 1967, pp 158-162.

[Cited Here...](#)