

Editorial: Otoneurology? Neuro-Otology? Vestibular science? Vestibology? Audiovestibular Medicine?

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Problems with equilibrium and hearing are extraordinarily common in clinical medicine. When these symptoms occur acutely, patients are often first evaluated by emergency room physicians. When these symptoms present in a sub-acute or chronic fashion, patients are often primarily evaluated by internists and family practice physicians. Thus, the vast majority of patients with such symptoms are evaluated by these front-line providers.

After the more straightforward and easily treatable causes of these symptoms have been excluded, patients are often referred to a general otolaryngologist or general neurologist, who frequently have sufficient expertise to identify the cause and provide appropriate treatment.

Patients who pass through those levels of screening and remain undiagnosed and untreated may eventually find their way to a subspecialist. The relevant subspecialists include oto-neurologists and neuro-otologists. Who is responsible for the diagnosis and, above all, the rehabilitation of vestibular pathologies in Europe and the rest of the world? In Italy, a physician specializing in otorhinolaryngology or in audiology and phoniatrics. Vestibular physicians, Audiovestibular Medicine Physicians (mainly in UK) or working within Neurotology/Neuro-otology, are medical specialists who diagnose and manage dizziness, vertigo, unbalance, tinnitus, and hearing loss., working in multidisciplinary teams within neurologists, ENT specialists, and physical therapists to treat the balance system's complex disorders.

Otoneurology and Neurotology¹ are largely interchangeable terms for a subspecialty within ENT (Ear, Nose, and Throat) that focuses on the neurological aspects of the ear, dealing with complex hearing, balance (vestibular), and related facial nerve disorders, often involving conditions like Menière's disease, acoustic neuromas, and cochlear implants, bridging otology (ear) and neurology (nervous system). While some differentiate neurotology as the surgical part and otoneurology as the broader diagnostic/medical field, they typically refer to the same expertise, covering the inner ear, nerves, and brainstem connections for hearing and balance. According to another definition¹, Neurotology is a subspecialty of otolaryngology (ENT) and is closely related to otology. It deals with neurological disorders that affect the ear and other structures of the head, Neurotologists are physicians who have specialized in otolaryngology and then further specialized in neurological conditions of the ear related structures, and lateral Skull Base Surgery. Programs that train these subspecialists are few and unfortunately are diminishing.

Otoneurology is a fairly new subject, if we consider the first descriptions by Prosper Menière (1861) relating dizziness to the ear. Understanding the vestibular system and disorders began centuries ago and continues to evolve to this day. Some notable influences include Ernst Ewald, and Robert Barany. In the late 1800s, Ernest Ewald, a physiologist from Germany, established the labyrinthine origin of nystagmus and described eye movement correlated with vestibular involvement.

¹ Furman, Joseph M.; Lempert, Thomas, eds. (2016). Neuro-otology. Handbook of Clinical Neurology. Vol. 137. Michael J. Aminoff, François Boller, and Dick F. Swaab (series eds.). Amsterdam: Elsevier. ISBN 978-0-444-63447-4. OCLC 958650847

Robert Barany, an Austro-Hungarian otologist who won the Nobel Prize in 1914, developed testing theories and methods of testing the labyrinth. Continuation of identification of new vestibular disorders has occurred as recent as 1998 with the description of superior canal dehiscence by Lloyd Minor. In this regard, it is worth mentioning the role of Italian Vestibology which has given a fundamental contribution in particular to the diagnosis of paroxysmal positional vertigo, in stabilometric diagnosis and in vestibular rehabilitation. More recently, the development of diagnosing based on scientific studies, directed physical examination and the existence of complementary exams has expanded the medical practices in this field considerably and made the knowledge and need for constant learning more robust. The field of neurotology became a subspecialty thanks to the foresight, research, and unselfish dedication to teaching of many physicians. During the 3 last decades, scientific discovery has advanced our knowledge of the physiology and the pathophysiology of the vestibular system. Recent advancements, including new tools for assessing vestibular function (Vestibular Evoked Myogenic Potentials, video Head Impulse test), virtual reality and augmented reality for vestibular rehabilitation, innovative imaging, genetic testing, and artificial intelligence, will enhance the precision of diagnosing vestibular disorders. The transformative impact of these methodologies on patient care, emphasizing the importance of accurate early diagnosis, has an immediate reflection in improving quality of life. These innovative techniques provide deeper insights into the complexities of inner ear and neural function, opening the way for personalized treatment strategies. On the other hand, interpreting complex data generated by these advanced techniques requires specialized expertise, which may not be universally available. It is a precise duty of scientific societies such as SIAF (Società Italiana di Audiologia e Foniatría) and VIS (Vestibular Italian Society) that deal with vestibular physiopathology to offer otorhinolaryngologists and audiologists valid teaching tools that can allow them to correctly diag-

nose and treat all pathologies that involve the balance system in its broadest sense.

There are numerous scientific journals that deal with vestibular disorders; the main ones are:

- Journal of Vestibular Research: Equilibrium and Orientation, JVR (Official Journal of the Barany Society, Sage Press, previously IOS Press)
- Research in Vestibular Science RVS (official journal Korean Balance Society, e-journal, open access)
- Auditory and Vestibular Research (supported by Iranian Association of Audiology and Iranian Society of Otolaryngology, Head and Neck Surgery, open access).
- Frontiers in Audiology and Otology, section Vestibular Disorders
- Journal of Clinical Medicine, Section Clinical Diagnosis and Management of Vestibular Disorders (MDPI)
- Audiology Research (MDPI)
- Vestibular Disorders JAMA
- Hearing Balance and Communication (official journal of IAPA International Association Physicians in Audiovestibular Medicine, Wolters Kluwer)
- Otolology & Neurotology (American Neurotology Society, Lippincott)
- Annals of Otolology and Neurotology AONO (Thieme)
- Frontiers in neurology, Section Neuro-otology
- Audiology and Neurotology (Karger)
- Journal of Otorhinolaryngology, Hearing and Balance Medicine, Section Otoneurology, MDPI

Since the study and treatment of vestibular disorders in Italy has a tradition of more than a century, we have decided to collect in this monographic issue of the Italian Journal of Audiology & Phoniatrics, the historical and research contributions of many Italian schools.²

² Note: the monographic issue Past & Future of Vestibular Science in Italy is published in three volumes: the Past of Vestibular Science in Italy (IJAP 2/2025) and the Future of Vestibular Science in Italy (IJAP 1/2026 and IJAP 2/2026).