

IntechOpen

Optic Nerve

Edited by Felicia M. Ferreri



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Preface

The study of the optic nerve, its structure, functioning, and disorders is a key topic for both researchers and clinicians.

Many pathologies in fact can affect the optic nerve: some of them are congenital (think of myelinated nerve fibers, morning glory syndrome, choristoma, and rare anomalies to name a few), while others can be classified as tumors both in primary form (i.e., if neoplasia surrounds the optic nerve sheath) and secondary form (relevant examples are medulloepithelioma, optic nerve meningioma, and others). Optic nerve examination is arguably the most important component of the evaluation of a glaucoma patient. The appearance of the optic nerve is therefore crucial to diagnose glaucoma and detect its progression.

Due to the variety and complexity of disorders affecting the optic nerve, both researchers and physicians need a comprehensive reference that starts from detailing the anatomy of the optic nerve, illustrates how the most modern diagnostic procedures (think of imaging techniques) can be effectively employed for clinical purposes, and, last but not the least, shows how to manage complex clinical cases that may occur in the daily life of an ophthalmologist.

This book aims to elevate itself as an authoritative reference that can help broad and heterogeneous audiences, ranging from resident students to clinicians, neuroscientists, researchers, and, ultimately, surgeons.

The book is divided into two main sections: it starts by reviewing in detail the anatomy of the optic nerve with special emphasis on the optic nerve head and chiasm. Organization of the optic nerve into regions is explored in detail with a thorough discussion of axoplasmic flow, glial barriers, and the lamina cribrosa.

This book then concentrates on embryology, physiology, and pathology of the optic nerve and introduces clinical features and imaging findings that help clinicians in detecting disorders and making a diagnosis.

The book will explore in detail the relationship between neuroendocrine structures and functional/structural modifications occurring in the optic nerve: a first example is drawn by diabetic retinopathy and we will pay a special attention to changes to the optic nerve it generates such as diabetic papillopathy and neovascularization of the optic disc.

We will also discuss diagnostic tests (e.g., optical coherence tomography and visual evoked potential) that allow us to detect structural and functional changes to the optic nerve.

We will finally shift to analysis of optic nerve head drusen, a class of congenital anomalies that may produce a progressive optic neuropathy but are hard to detect and manage even for the more experienced clinicians.

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