

# The eminent German pathologist Siegfried Oberndorfer (1876-1944) and his landmark work on carcinoid tumors

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## Abstract

Siegfried Oberndorfer has a distinct place in the Pantheon of pathology as a century ago he described a new neoplastic entity in small bowel and coined first the term "carcinoid". His research stands as a classical landmark in the understanding of carcinoid tumors.

**Keywords** Siegfried Oberndorfer, carcinoid tumors, small intestine

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## Introduction

Carcinoid tumors of the gastrointestinal tract belong to the group of neuroendocrine tumors of epithelial origin. 19<sup>th</sup> century pathologists used to divide the epithelial tumors in small and large cell forms of benign or malignant type but they had a difficulty distinguishing benign and malignant small cell tumors.

The outstanding German pathologist Theodor Langhans (1839-1915) was the first to describe the histology of carcinoid tumors without recognizing however its clinical behavior. In 1867 he found at autopsy in the small intestine of a 50-year-old woman a tumor in a shape of mushroom, low-differentiated, rich in glandular tissue with a thick fibrous stroma [1].

In 1888 Otto Lubarsch (1860-1933) Professor of General Pathology and pathological anatomy in the University of Rostock provided the first detailed pathological description of carcinoid tumors. He reported multiple carcinoid tumors located in the ileal pouch and in the liver at autopsy in two male patients [2]. William Bramwell Ranson (1861-1909) in 1890 described the first case associated with metastatic disease in an ileal pouch carcinoid tumor failing in his turn to adequately investigate these novel entities [3].

However it was Siegfried Oberndorfer (1876-1944) a pathologist at the Pathological Institute of the University of Munich that noted in 1907 that these lesions in small intestine were distinct clinical entities and coined first the term carcinoid (carcinoma-like) to describe their unique

feature of behaving like a benign tumor and resembling a carcinoma morphologically.

## Oberndorfer's life and career

Siegfried Oberndorfer was born on 24<sup>th</sup> June 1876 in Munich, Germany and he was the second son of a successful real estate buyer in the Altstadt [Fig. 1]. He studied Medicine at the University of Munich and finished his studies in 1900. He revealed his passion for Pathology in 1898 when as student followed an internship in the department of Pathology in Kiel under the supervision of Professor Arnold Ludwig Heller



**Figure 1** The outstanding German pathologist Siegfried Oberndorfer

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Conflict of Interest: None

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(1840–1913) [4]. Heller became his mentor and taught him his “holoptic” autopsy technique that permitted the assessment of the organs in the context of their functional relationship to the surrounding organs [5].

His first publication in 1900 concerned the gastrointestinal manifestations of congenital syphilis [6]. In 1902 he became an assistant in the Department of Pathology at the University of Munich and in 1906 he accomplished his thesis focusing in appendicitis and he obtained a position as a lecturer. In 1907 he published his hallmark work on carcinoid tumors that gave him a great reputation [7].

During the World War I he served in the German Army as a military pathologist and for a while he worked as a general practitioner and as ship doctor, being interested in all kinds of diseases from clinical and therapeutical point of view [5].

After spending twenty-two years as Professor of Pathological Anatomy at the Munich-Schwabing Hospital's Pathological Institute he was recognized as a distinguished teacher.

Although Victim of the Nazi anti-Semitism he was forced, after Hitler's manifest against non - Aryan descent, to immigrate to Turkey in 1933. He was appointed Professor of the Department of Pathology of the University of Instabul and with his colleague Professor Philipp Schwartz (1894–1978) also exiled in Turkey as he was of Jewish origin too, planned and chaired the Institute of Pathological Anatomy in Istanbul. In 1938 he founded the Turkish Institute for Cancer Research contributing enormously to the development of all fields of Pathology [8,9].

Oberndorfer described also the pathology of the male genital tract in his book *Prostata Hoden* (1931) [10], contributed in the study of the pathogenesis of appendicitis [11] and tuberculosis [12], published a textbook on cancer in German, a handbook of General Pathology (1937) in the Turkish language [13] and towards the end of his life he wrote his autobiography that remains unpublished. He died in Instabul in 1944 at the age of 68 due to a thymoma.

## On carcinoid tumors

Oberndorfer's meticulous autopsy technique, analytical and disciplined mind, global knowledge of medicine and insistence in the clinical history of patient helped him to go beyond his contemporaries in pathology research and to give an interpretation on carcinoid tumors.

In 1901 while working in Geneva as assistant to Professor Friedrich Wilhelm Zahn (1845–1904) he described two cases of carcinoids and in 1904 as assistant to Professor Otto Bollinger (1843–1909) he added four other cases. His unique observations regarded the multiple –small intestinal tumors were presented in 1907 in Dresden at the annual meeting of German Pathological Society. During his lecture he presented six cases with submucosal lesions in the small intestine and summarized the characteristic features of the lesions noticing that are small size and often multiple, well defined having no tendency to infiltrate the surroundings,

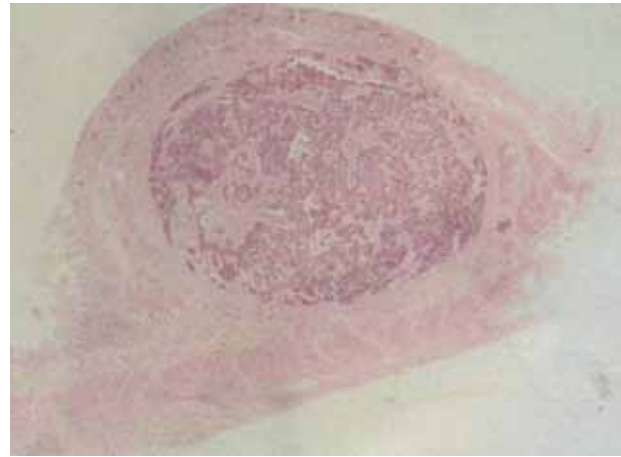


Figure 2 Original section showing ileal carcinoids

slow-growing, histologically resembling poorly differentiated adenocarcinomas and give not metastasizing. He pointed out that carcinoid tumor cells are polymorphic with granular cytoplasm, prominent nuclei and nucleoli and have a high vascular stroma concluding that the described tumors of the ileum form a special group of neoplasms and he coined the term *karzinoide* meaning “carcinoma-like” to designate this new neoplastic entity [Fig. 2] [14]. His discovery was heavily debated as a great number of pathologists considered these tumors adenomyomas or a tumor change of a heterotopic pancreas anlage. His work entitled *Carcinoid Tumors of the Small Intestine* was published in December 1907 in *Frankfurt's Pathology Revue* and by the time gained approval by the scientific community.

However, his initial assertion that carcinoids were benign tumors proved to be incorrect as he observed carcinoids with lymph node and liver metastases and in 1929 he admitted that some carcinoids exhibit malignant features and metastasize [5,15].

## Conclusion

There has been over 100 years since Siegfried Oberndorfer published his work on carcinoids and stays timeless updated as it created the basis of our modern understanding of neuroendocrine tumors.

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