

**CYCLE: FORGOTTEN ANATOMISTS OF  
SMALL EUROPEAN NATIONS**

**TOPIC: BOCHDALEK 'S DAY**

**ABSTRACT BOOK**

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## **The Life of Vincenz Alexander Bochdalek**

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Vincenz Alexander Bochdalek was born on February 11, 1801 in Skřipov near Opava (Austrian Silesia, now part of Czech Republic) as a son of a gamekeeper. In 1820 he graduated from the grammar school in Opava, then he went to Prague for to study philosophy and medicine.

He early began to work at the Dept. of Anatomy under G. J. Ilg who commended him to V. J. Krombholz for to dissect preparations of finest nerve structures for clinical purposes; in 1829, Krombholz and Bochdalek carried out the first dissection of a rabid dog in Prague. In 1830, Bochdalek was appointed prosector at the Dept. of Anatomy; he prepared precise anatomical models for illustrations to an ophthalmologic publication of J. N. Fischer. In 1833 he defended his thesis (A guide to the practical dissection of the human brain) and graduated from the Faculty of Medicine in Prague. From 1835, he supplied and, in 1836, applied for the vacant Chair of Anatomy but he failed in the concours with J. Hyrtl. Thus, in 1837, he left to work as the first pathological prosector ever in the General Hospital in Prague. In 1840, he was appointed associate professor of pathological anatomy and, after the departure of Hyrtl in 1845, he returned to the Dept. of Anatomy as full professor of general, comparative and surgical anatomy and the head of the Dept. of Anatomy.

In the course of his career he dissected 600-800 cadavers per year what enabled him to discover many hitherto unknown anatomical or pathological structures in the human body. In 1850 he was sent out to a study trip to Sweden and Norway and brought back 1294 samples for the anatomical collection in Prague. His lectures could not fascinate the listeners; in the dissection hall, however, he was admired and beloved by his students. Three times (1861/2, 1862/3, and 1863/4), he was elected the Dean of the Faculty of Medicine. His private life was scarred by the death of five children including Viktor (1835-1868), a talented prosector.

Bochdalek retired in 1871 to live in Litoměřice (Bohemia, now part of Czech Republic) at his married daughter. Yet he was still called to Prague for to superintend embalming of the corpses of the count of Mensdorff-Pouilly (1871) and Ferdinand V (1875). He died in Litoměřice on February 3, 1883 and was buried there.

Bochdalek's career seemingly suffered of Hyrtl's appointing to the head of the anatomy department of Prague University. After all it enabled Bochdalek to establish the first pathology department in Prague.

## **Bochdalek's medical studies**

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Vincenc Bochdalek (1801-1883) started his medical studies relatively late (1825) at the age of 24 at the Faculty of Medicine of Charles-Ferdinand University in Prague.

He spent there all 5 years of his regular studies as we read in the documents from the Charles University Archive. It took him other 3 years to finish his dissertation "*Anleitung zur practischen Zergliederung des menschlichen Gehirnes*". He graduated in 1833. His teachers were Ilg, Rottenberger, Krombholz, Presl, Mikan, Jokliczke, Jungmann, Pleischl and Bischof. To his most important school mates belonged Václav Staněk, who was often incorrectly counted to Bochdalek's student. Probably the common interest in the Czech anatomical terminology developed during their studies.

We know that Bochdalek attended Rokitansky's pathological course in Vienna. To date we don't know the term correctly.

## Bochdalek's eponyms

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Vincenz Alexander Bochdalek, a renowned Czech anatomist and pathologist, is worldwide known thanks to a persistence of his name in the medical terminology as an eponym concerning several anatomical parts of the body and pathological situations.

The lexicons, anatomical and pathological textbooks as well as abstract of all indexed journals in Medline, published in years 1950-2007, were sought for the eponym of Bochdalek. Many eponyms have been found, including the base word *canal, cleft, cyst, defect, duct, flower basket, flower spray, foramen, ganglion, gap, gland, hernia, herniation, hiatus, muscle, orifice, plexus, sinus, triangle/trigone, tube, type, valve*, or their equivalents in other languages. Some of them are synonyms but there are four homonyms, too (*canal, ganglion muscle, plexus*).

But as for their frequency, they can be considered as extinct, except three of them: the **flower basket** or **flower spray** (Blumenkörbchen; Бохдалека корзиночка) – a part of the plexus choroideus of the fourth ventricle protruding through the apertura lateralis ventriculi quarti Luschkae and resting on the dorsal surface of the glossopharyngeal nerve; the **triangle/trigone** or **foramen** – trigonum lumbocostale in the posterior part of diaphragm between the pars lumbalis et costalis; and the **hernia/herniation** in the same location (congenital posterolateral diaphragmatic hernia) – a congenital diaphragmatic hernia due to failure of closure of the pleuroperitoneal hilus.

Although not recommend by FICAT to be used, the eponyms connected with the name of Bochdalek are still alive both in the academic and clinical medicine.

## **Hyrtl's Prague period**

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Famous anatomist Josef Hyrtl (1811-1894) an exponent of 2<sup>nd</sup> Vienna Medical School spent 8 years in Prague as a head of the Anatomy Department of Charles-Ferdinand University (1837-1845). The migration between Vienna and Prague Universities was in Vormärz remarkable.

Hyrtl started in Prague in 1837 as a Secretary of anatomy-physiology section of German Med. Congress. He progressively taught anatomy, physiology, anatomical surgery, plastic anatomy. In 1841 he wrote "*Geschichte der Anatomie an der Carl-Ferdinand Universität in Prag*". In 1844 he applied for head of surgery in Prague (won Pitha) and Hyrtl definitely decided for anatomy career. The first edition of famous Hyrtl's anatomical textbook "*Lehrbuch der Anatomie des Menschen mit Rücksicht auf physiologische Begründung und praktische Anwendung*" was written and later published in Prague in 1846. Hyrtl's Prague period belonged to the best years of his career.

The attention will be paid also to the role of Hyrtl's teachers, predecessors, exemplars, colleagues and students (Prochaska, Ilg, Berres, Bochdalek, Gruber, Treitz), his prosectors (Reiss, Lehmann) and healthcare organizers (Nadherny and Türkheim).

Bochdalek's career seemingly suffered of Hyrtl's appointing to the head of the anatomy department of Prague University. After all it enabled Bochdalek to establish the first pathology department in Prague.

## **Salute from the mayor of Skřipov**

*Miroslav Melecký*

Mayor of Skřipov, Czech Republic

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Ladies and Gentlemen,

I am very happy that I can participate in today lecturing afternoon as the Mayor of the community where such outstanding person as Prof. MUDr. Vincenz Alexander Bochdalek was born.

Professor Bochdalek was born on 11 February 1801 in the community of Skřipov near the Opava city in the house number 65. In the birth register of Roman Catholic church in Skřipov, years 1788-1836, record on the page 28 says: legitimate origin, Father Florian Bohdalek – warrener; Mother Mariana Meletzká; Catholic religion; baptized by the Chaplain Johan Homola; Godparents Wasgottvil Levy, teacher in Skřipov, and his wife Barbara; midwife Marina Pisch from Staré Město.

The natal home of Professor Bochdalek, originally gamekeeper's lodge, is inhabited until today and it is still well preserved. You would not find this house directly in Skřipov community but in the middle of the forest about 4 km from the village in direction of Bílovec town.

Let me briefly introduce native community of Professor Bochdalek.

Skřipov community is located at the foothills of the Nížký Jeseník Mountains, 15 km south from the Opava city at 485 m above the sea level. Origin of the community is dated in 1271 and its surrounding is mostly covered with forests. Current population of Skřipov is 1000.

Skřipov is very well accessible by the road from Opava, Ostrava and Bílovec. The community is successfully developing - there is new school, cultural and sport facilities, health care center, post office, library and undergoing construction of new family houses.

Please accept hearty greetings from the Mayor of Skřipov community, where Prof. MUDr. Vincenz Alexander Bochdalek was born.

## Are the anatomical eponyma the marginal problem of anatomical terminology?

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The proper use of the exact terminology is fundamental for correct understanding in all fields of science. The anatomical terminology has been developed in parallel with the progress of anatomical science, first of all at Italian and French universities during 13th century.

Vesalius' "De humani corporis fabrica libri septem" (1543) presents the colossal text book that unified anatomical terminology. It also served as crucial stimulus for the other anatomists' further descriptive efforts. By the discovery of new anatomical structures, the morphologists named them with new terms. These new terms were usually consisting of Latin descriptive part, very frequently it was followed by the author's (or his teacher's) surname. This specific kind of complex term is called eponymum. This routine in creating of new terms became natural in all fields of medicine. In the end, it lead to complicated situation (new organs or their parts were called differently), and unfortunately it was also cause for some misunderstandings.

The anatomical congress of Anatomische Gesellschaft in Basel (1895) solved this situation and established the first official anatomical terminology ("Basiliensia nomina anatomica"). The official anatomical terminology was changed sometimes during next years till the present "Parisiensia nomina anatomica". The work of terminological commission [dashed against the persistent heritage of the past](#) - the use of the traditional anatomical terminology.

The official anatomical terminology is used in anatomical courses for more than hundred years, but the clinical practice [intractably](#) uses the old traditional terminology with a lot of anatomical eponyma. It is typical first of all for the surgery and ophthalmology. This would bring real problems for the students: firstly they study the official terminology in anatomy, then they hear about brand new terms in clinical subjects. They must not be able to find the connection between both names belonging to the same structure description.

The question for anatomy arises whether anatomists will strictly ask for official anatomical terminology or will respect the intensive pressure of clinical practice and will accept the terms used in clinical medicine.

## **CT examination of the “Bochdalek’s skull“ displayed in the Prague anatomical museum.**

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Vincenc Alexander Bochdalek started his professional career in Charles university in Prague, where was later professor of anatomy for several decades. He was known as an excellent dissector and collector of biologic specimens. Woman skull with immobile jaws (syngnathia - saved in Prague anatomical museum from last quarter of XIX century) is one of unusual, infrequent and rare skeletal findings, where has been existed short descriptive report written by him personally.

In this case it is not too much known about etiology and mechanisms resulting in this deformity. Following Bochdalek’s relative detailed but only macroscopical descriptions the CT screening and anthropometric examination of the skull was now made to put more precisely probable diagnosis of this malformation. The animated 3-D drawings and photos (made from the sloping side-face view) make skull structure more instructive. It was found heavy asymmetry between left and right halves of facial skeleton with slight depressions below inferior orbital margin; mostly in right side. Right ramus of mandible, palatine bone and zygomatic bone are closely connected by osseous trabeculae. Both the maxillary sinuses are empty, and their recesses are sharply bordered. Osseous lines in the bones are clear and no signs of their interruption were found. All teeth are completely absent and no clear alveoli can be detected. Further, lower orbital margin in right side was found slightly waved closely above infraorbital canal. About two thirds of hard palate are absent on the right side; but remnants of sutures between palatal processes of maxilla and palate bone can be clearly seen. No remarkable signs after some inflammatory changes in bone tissues were detected.

Following these examinations probably only two pathologic processes can be discussed to be responsible for this anomaly: Either congenital malformation or some facial trauma in very earlier postnatal life (maybe result of hit oriented directly against central facial part).

## **Congenital diaphragmatic hernia: onset of respiratory distress and size of the defect.**

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Purpose: to evaluate the outcome in neonates with congenital diaphragmatic hernia (CDH) either presenting within the first 24 hours of life or diagnosed prenatally. The study was particularly focused on the time of onset of respiratory distress and on use of the Gore-Tex patch for diaphragmatic reconstruction.

Material and methods: Records of 104 neonates with CDH were retrospectively reviewed. The data were analyzed by ANOVA, Kruskal-Wallis test or  $\chi^2$  test as appropriate.

Results: The overall survival rate was 73.1% (76/104). Survival of operated neonates was 91.6% (76/83). Postnatally diagnosed neonates with onset of respiratory distress within the first minute of life survived in 67%, with onset between 2-10 minutes they survived in 89%, while neonates with onset of respiratory distress after 10 minutes survived in 100%. Primary closure of the diaphragmatic defect was performed in 62 patients while the Gore-Tex patch was used in 21 patients. The survival of patients with a large defect treated with a Gore-Tex patch was lower (76.2% versus 96.8% P=0.003). There was only one case of recurrence in our series with the Gore-Tex patch.

Conclusion: Survival depends on time of onset of respiratory distress and size of the defect, both which correlate with the degree of pulmonary hypoplasia. The Gore-Tex patch is a suitable material for the diaphragmatic reconstruction; we suppose that recurrence is caused by incorrect attachment of the patch to the thoracic wall.

**The Anatomical Institute of the Kongelige Frederiks Universitet, Christiania, Norway, and its student Andreas S.D. Synnestvedt**

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*'Patientia omnia vincit'* was the motto of the treatise by Andreas Svane Dick Synnestvedt (1844-1909), which earned him the Skjelderupske Guldmedalje 1868, exactly 140 years ago. Valour and patience were needed to match the task set for the Gold Medal: 'En anatomisk Beskrivelse af de paa Over- og Underextremiteterne forekommende Bursae mucosae, støttet paa egne Iagttagelser og ledsaget af Tegninger efter udførte Præparater'. The adjudication committee found the treatise outstanding, witnessing 'very independent work', accuracy and completeness. It asked the university to fund publication of the treatise, 'by which it would alleviate a want in the anatomical literature'. This want still persisting, it is high time the work now gets published in English, thanks to the Prague initiative.

The *Universitas Fredericencis*, Det kongelige Frederiks Universitet, was founded 1811, in Christiania (present Oslo), capital of Norway, under the Danish-Norwegian king Frederik VI. Michael Skjelderup (1769-1852), a Norwegian professor at the University of Copenhagen, was appointed professor in Christiania, where he started his teaching of anatomy, physiology and forensic medicine in 1814, founding the first institute of the first university in Norway (now united with Sweden). Skjelderup served till 1849, establishing Norwegian medical science. He was succeeded by Joachim Andreas Voss (1815-1897), who served till 1875, expanding the institute in new buildings. Voss had very wide international contacts, including membership in Verein praktischer Aerzte in Prague. The Anatomical Institute became a hub of teaching and research; it was the site of the 'Oslo School of Neuroanatomy' from which modern Norwegian neuroscience developed.

## **Fridtjof Nansen – the first Norwegian neuroscientist**

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Fridtjof Nansen (1861-1930) was born in Christiania and became one of the best known Norwegians of his time.

Most Norwegians know that Nansen crossed Greenland on skis in 1888. They also know that Nansen in 1895 almost made it to the North Pole by skis after drifting with his ship "*Fram*" across the Arctic. He was Norwegian ambassador in London from 1906-1908. In 1922 he received the Nobel's Peace Prize.

Less known is that before he became an Arctic explorer and a diplomat he was Norway's first neurobiologist. From 1882-1887 he studied the microscopic structure of the nervous system of lower animals at Bergen Museum.

The title of Nansen's thesis is "The structure and combination of the histological elements of the central nervous system". The thesis consists of 185 pages and 113 figures which show nervous material and nerve cells of a quality that is superb for the time.

A central question at the time in the neuroscience field was the transfer of signals from one nerve cell to another. What kind of contacts were there between the different cells seen in the light microscope? Golgi claimed that axons from different cells established direct, continuous connection with each other in a reticulum, a concept known as the "Reticular theory", while Nansen claimed that nerve cells were separate units. Nansen was the first to publish the concept that nerve cells are structurally, functionally and developmentally units within the nervous system now called the "Neuron doctrine".