

# 1960

## 1959-1961

The modern era (beginning in the 1960s), coincident with parallel dramatic advances in radiology, microsurgical instrumentation, and anesthesiology. These advances resulted in a better understanding of the pathophysiological aspects in neurosurgery.

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Cyclically fluctuating intracranial pressure (ICP) with periodic breathing was first described by Nils Lundberg in 1960 <sup>1)</sup>.

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The first endoscope is credited to Philipp Bozzini, a German physician, who demonstrated the "Lichtleiter", a candlelit tube, in 1806 to the Academy of Medicine in Vienna <sup>2)</sup>. This was vastly improved in 1877 by Max Nitze, a German urologist, with the addition of lenses for magnification and an internal light source noting "to light up a room one must carry the lamp inside <sup>3)</sup>. " His first endoscope used a water-cooled platinum wire for illumination but Edison's invention of the incandescent bulb in 1879 allowed the development of a cystoscope that no longer required water cooling. Using his invention, Nitze was the first person to perform endoscopic surgery with wire loops and to take endoscopic pictures. The next technological breakthrough occurred almost a century later when Harold Hopkins in 1960 vastly improved optical efficiency by inserting glass rods and neutral gas between the lenses. Around the same time, Basil Hirschowitz, an American gastroenterologist, developed a flexible endoscope using fiberoptics. The modern rigid endoscope was invented by Karl Storz in 1965 when he combined the optical rod system of Hopkins and used fiberoptics to carry illumination down to the tip of the endoscope <sup>4)</sup>.

<sup>1)</sup>

Lundberg N. Continuous recording and control of ventricular fluid pressure in neurosurgical practice. Acta psychiatrica Scandinavica. 1960;36(149):1-193.

<sup>2)</sup>

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<sup>3)</sup>

Mouton WG, Bessell JR, Maddern GJ. Looking back to the advent of modern endoscopy: 150th birthday of Maximilian Nitze. World J Surg. 1998 Dec;22(12):1256-1258.

<sup>4)</sup>

Linder TE, Simmen D, Stool SE. Revolutionary inventions in the 20th century. The history of endoscopy. Arch Otolaryngol Head Neck Surg. 1997 Nov;123(11):1161-1163.

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