The journey of the evolution of rhinology

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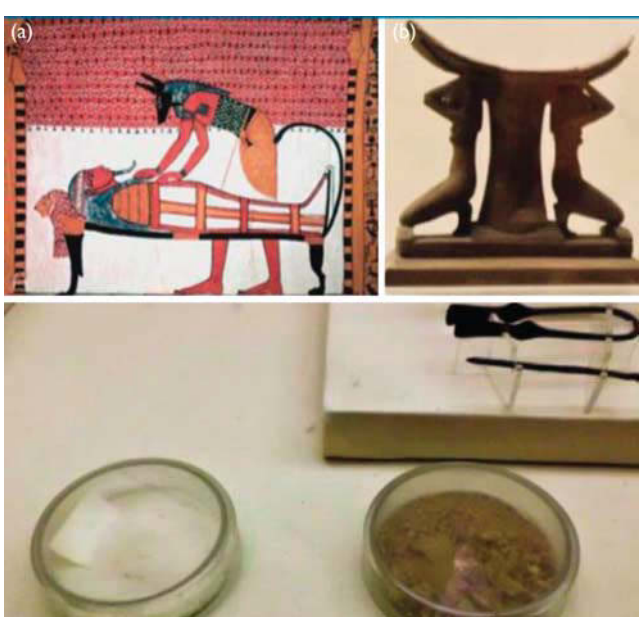
Otorhinolaryngology has a very rich history, with important collaborators and personalities in the history of medicine. Otorhinolaryngology was separated from surgery and internal diseases during the second half of the 19th century. Rhinology is one of the youngest fields of medicine. Our goal is to condense and illuminate the most challenging of the vast amount of information on the journey of evolution of rhinology.

The knowledge on the presence of paranasal sinuses and attempts to treat their diseases date back to early mankind.

Egyptian physicians were the precursors of nasal surgeries. They used instruments to remove the brain through the nose as part of the mummification process.

The first known medical practitioner was an Egyptian rhinologist called Ni-Ankh Sekhmet, who was the court physician to King Sahura; he was familiar with treatments for nasal polyps and included medicaments containing alcohol, and it is possible that he may have used some of the surgical instruments to remove polyps.



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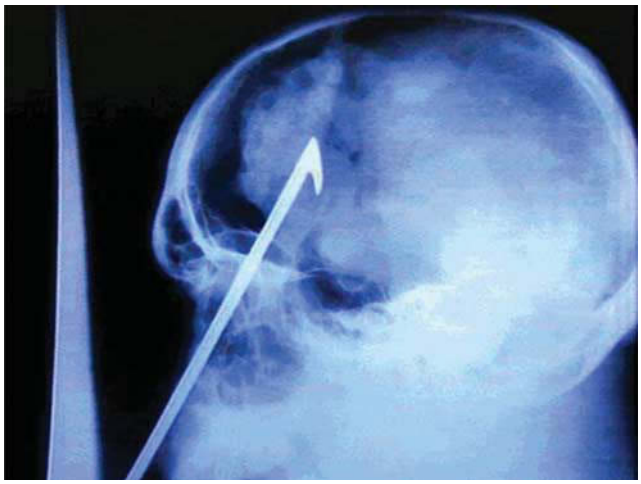
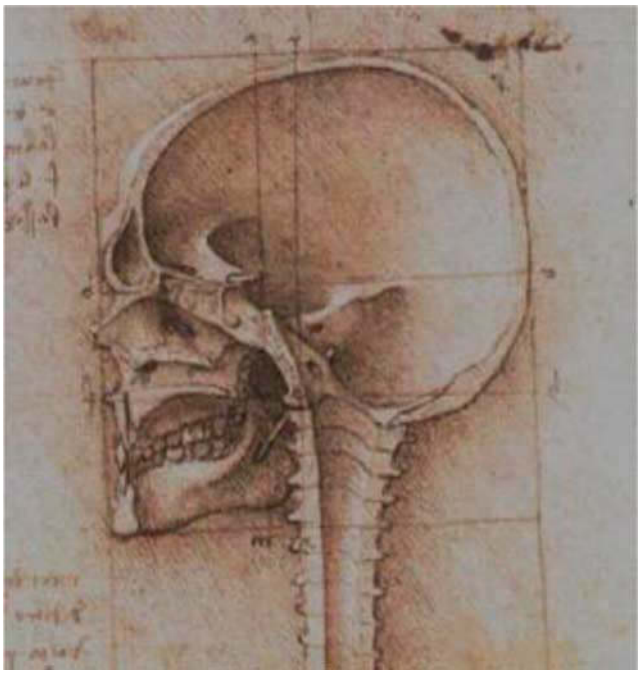
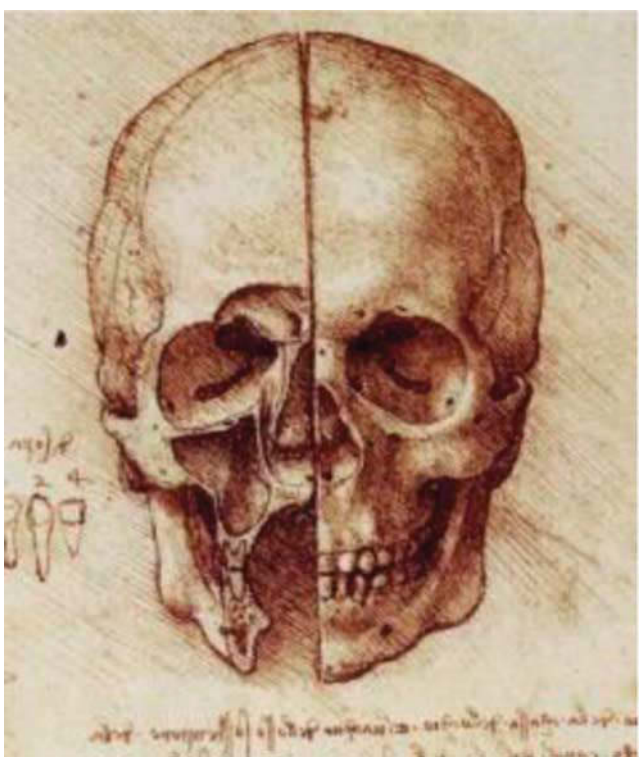


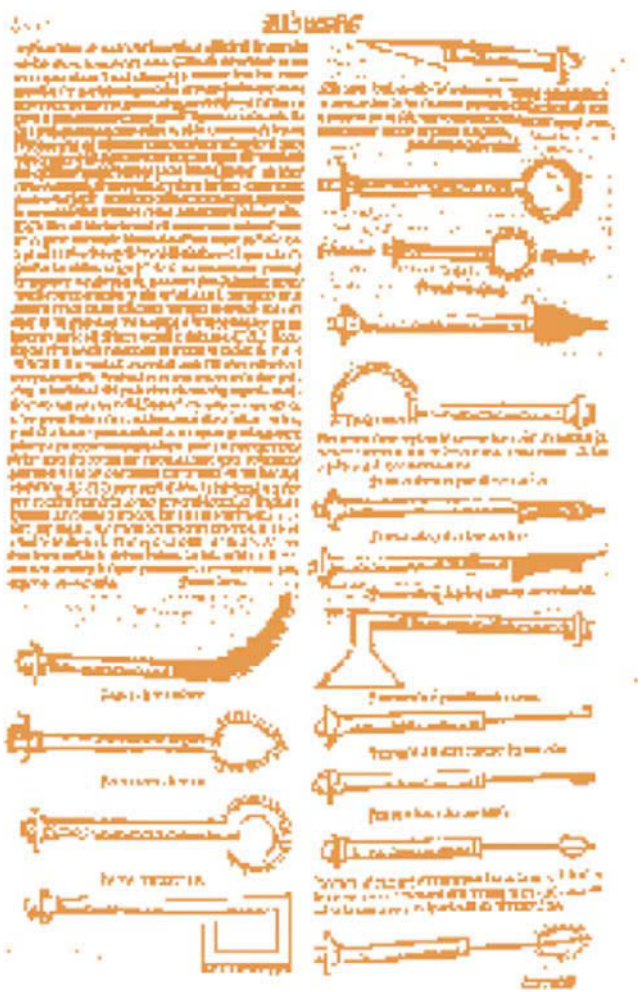
The first report in the world medical literature of a nasal exam dates back to the sixth century before Christ in the Hindu document Sushruta Samhita, in which is described a tubular nasal speculum, made of Bamboo tree, used to remove nasal polyps. Sushruta was the first surgeon to describe rhinoplasty and other plastic surgical operations.

During the fifth century BC, Hippocrate's texts reflected the interest in nasal injuries, which were common accidents at the time, both in soldiers in battles and athletes in competitions in ancient Greece. He described therapeutic methods for nasal lesions by the use of bandages and braces made of olive tree branches all the way to nasal bone and cartilage reconstructions.

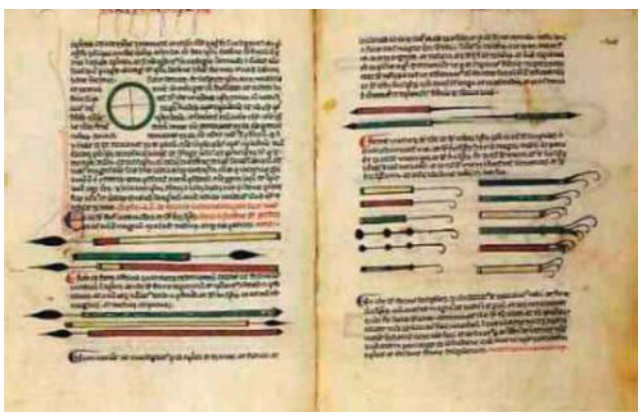
Leonardo da Vinci drew a sketch of the nasal conchae and the paranasal sinuses in 1489; however, these drawings were only discovered in 1901 in Milan.







In the era of Arabian Medicine, Avicenna (980–1037 AD) described nasal polyps as 'piles in the nose' or haemorrhoids' in the nose. Abulcasis (Al-Zahrawi) (1013–1106 AD), the greatest of the Arab surgeons, used cautery and pulled the nasal polyp forward with a hook, cut through the pedicle with scissors and then washed the nasal cavity with vinegar.



The operations were always painful and potentially dangerous because of the lack of visual control.

In England, in 1536, Nathaniel Highmore described the maxillary sinus, and for a long time such a structure was known as Highmore's antrum.

Conrad Victor Schneider (1614–1680) described nasal secretion and not as originating from the cranial cavity.

Quelmaltz in 1750 published origin of the deviations of the nasal septum to be due to the pressure upon the nose in difficult labor.

The decades around the turn of the century have ample reported studies on sectional and surgical anatomy, creating the specialty of rhinology and leading to our modern concepts of diagnosis and therapy of nasal and paranasal sinus diseases.

The first description of rhinoscopy was published in 1861 in Warsaw. Antoni Jurasz (1887) was the first in Europe to perform natural frontal sinus catheterization.

Teodor Heryng was the first to describe the method of local anaesthesia using cocaine in 1888. Later, he presented a method of diaphanoscopy (transillumination of the nose and sinuses with electric light) to diagnose purulent maxillary sinusitis.

In Vienna, Jan Mikulicz was renowned for his achievements in surgery and for developing new principles for the treatment of nasal and paranasal diseases as he described the method of maxillary sinus puncture. Physicians in England and France reported some cases of halitosis caused by maxillary sinus suppuration. The

patients were treated by pulling out the teeth, thus opening the maxillary sinus through the alveolus.

In the USA, in 1893, Caldwell published his method that consisted of opening the sinus through the canine fossa, removing the mucosal membrane and opening the lateral wall of the inferior meatus. In Paris, in 1897, Luc reported his own method, which was practically identical to that of his American counterpart.

Names like Grünwald, Onodi, Hajek and many others are closely linked with this creative period. The decades witnessed the birth of rhinology as a specialty, making up the basis of our current concepts of diagnosis and treatment of the diseases of nasal cavity and paranasal sinus.

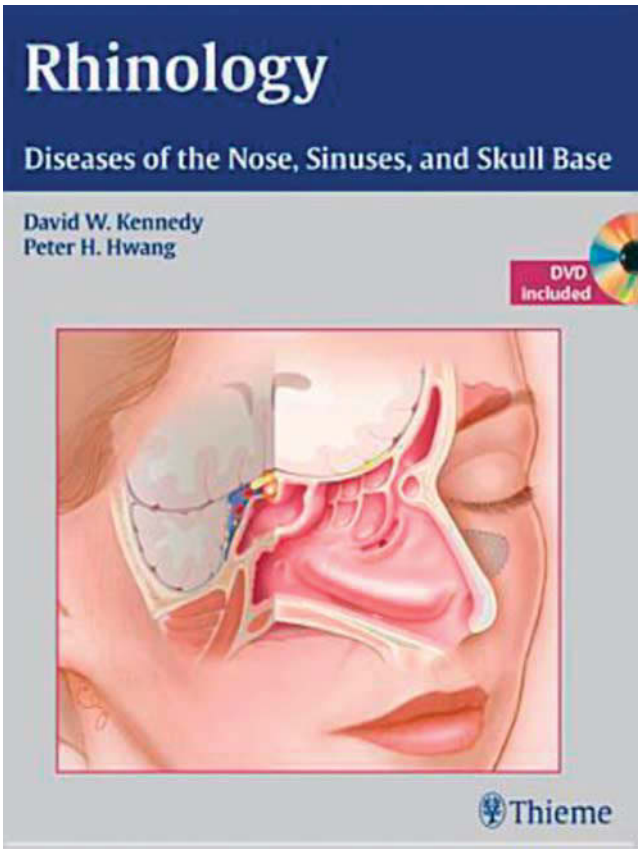
Rhinology also enjoyed a major thrust forward, especially in the areas of diagnosis and surgery, when endoscopy was created, which was credited to Philipp Bozzini (Germany) at the beginning of the 19th century.

The century started with a stalling in the area of rhinology; this was due to antibiotics, which greatly reduced the need for surgery of the paranasal sinuses.

In 1926, John Baird, the inventor of television, patented the idea of transmitting images through flexible glass fibres; these ideas influenced Harold Hopkins, who invented scopes in 1948. During the middle of the century, the use of microscopes was started for nasal surgeries, which brought about major progress to the surgical technique.

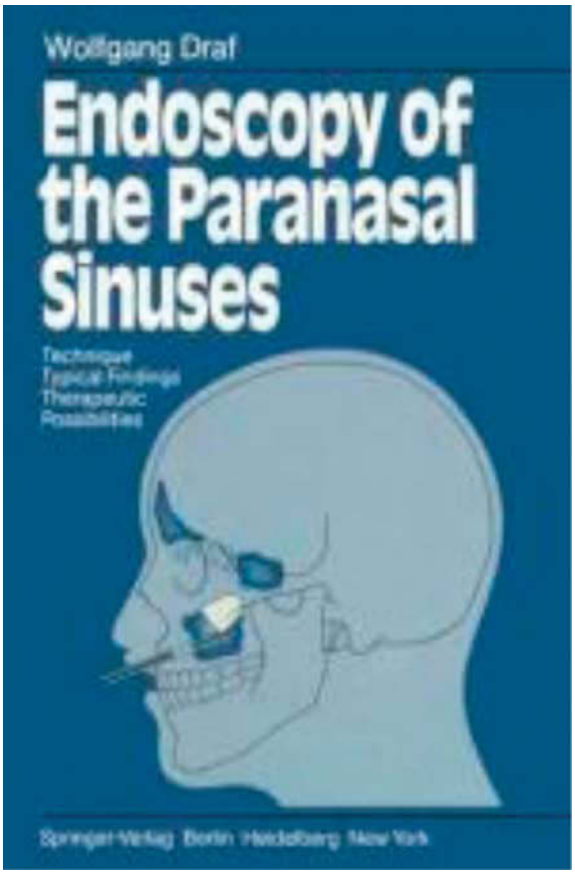
Radiology, especially the development of conventional and computed tomography during the last two decades, helped to 'rediscover' the fascinating details and complex connections of the paranasal sinus system.

The development of the operating microscope and endoscope helped to open new means for functional approaches and less radical microsurgery. The most notable advancement in the last 25 years has been the development of less invasive surgical procedures, specifically endoscopic surgery. David Kennedy is credited with pioneering endoscopic sinus surgery in the USA and for coining the phrase 'functional endoscopic sinus surgery' or 'FESS' to highlight the goal of the procedure of opening the nasal passages to improve drainage while maintaining normal nasal function.



Professor Walter Messerklinger and his successor H. Stammberger from Austria are credited for adding to the knowledge on the anatomy, physiology and pathology of paranasal sinuses through their work on the aeration of the anterior ethmoidal cells, which was the key to understanding drainage and aeration of the paranasal sinuses and the anatomy of the lateral wall of the nose and its mucociliary clearance.

The use of new technologies has led to a considerable advancement in endoscopic techniques, especially with the development of the optic fibre endoscopes in 1954.



Wolfgang Draf is well known in the field of ENT surgeries; he was a major participant in the popularization of the use of modern endoscopy for nasosinusal surgeries.

Another factor that brought about great interest in rhinology was the unveiling of rhinoplasties, a work carried out by the American Academy of Reconstructive and Facial Plastic Surgery. This exposed otorhinolaryngologists to a field that earlier belonged only to plastic surgeons.

Skull-base surgeries and neurosurgeries with endonasal access, which are different approaches for the treatment of tumours and diseases located in this region, were also developed.

Last but not the least:

Laryngology and otology developed greatly and reduced the interest in rhinology, which was restricted to the correction of nasal septum deviations, fractures, removal of nasal polyps and maxillary sinus flushing through the canine fossa. Nevertheless, some physicians remained interested in this area and developed surgical techniques, which had the advantage of incorporating technology in endoscopy, radiology and microsurgery and the use of information technology.

Acknowledgements

Conflicts of interest

There are no conflicts of interest.