

Austria

As an alternative to the [transcranial](#) route the [transsphenoidal](#) approach was developed simultaneously in the first decade of the 20th century in the [United States](#) and in [Europe](#), in particular in the [Austrian](#) monarchy. One reason that [Vienna](#) became the cradle for the minimally invasive approach to [pituitary tumors](#) using an [endonasal transsphenoidal approach](#) was among others due to the basic and detailed anatomical studies of the [paranasal sinuses](#) performed in Vienna by the Austrian anatomist and Violin virtuoso [Emil Zuckerkandl](#) (1849–1910). His main work “On normal and pathological anatomy of the paranasal sinus and its pneumatic adnexes” in [1882](#) was the anatomical presupposition for the Viennese ENT surgeons to successfully develop minimally invasive [endonasal approaches](#) to pituitary tumors ¹⁾.

Department of Neurosurgery [Graz Austria](#)

[Innsbruck](#)

[Linz](#)

[Salzburg](#)

[Vienna](#)

¹⁾
Zuckerkandl E. Normale und pathologische Anatomie der Nasenhöhlen und ihrer pneumatisierten Anhänge. Vienna, Austria: Braumüller; 1882.

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