



## Risks and Benefits of Endoscopic Transsphenoidal Surgery for Nonfunctioning Pituitary Adenomas in Patients of the Ninth Decade

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■ **BACKGROUND:** The population older than 80 years of age (very elderly) is increasing, and the management of these patients with pituitary surgery is controversial.

■ **OBJECTIVE:** To determine the prevalence of pituitary tumors in elderly patients and to determine the safety of endoscopic transsphenoidal pituitary surgery for nonfunctioning pituitary adenomas in patients aged older than 80 years.

■ **METHODS:** This retrospective study included elderly (65–75 years old) and very elderly consecutive patients operated between 2007 and 2015 for nonfunctioning pituitary adenomas. Tumor characteristics, comorbidities, pre- and postoperative visual and endocrinologic status, and postoperative complications were compared.

■ **RESULTS:** Of the total 623 operated patients, 307 had nonfunctioning pituitary adenomas. Twenty-three percent ( $n = 143$ ) of all patients were aged older than 65 years, whereas 2.56% ( $n = 16$ ) were aged older than 80 years. Gonadotroph and nonimmunoreactive tumors occurred in 81% of patients aged older than 65 years. The study groups were Group A, comprising 15 patients aged older than 80 years, and Group B, comprising 49 patients aged 65–75 years. No presurgical statistical differences were noted between the 2 groups.

Complete tumor resection was achieved in 53.3% of Group A and 73.5% of Group B. Postsurgical visual status improved significantly in Group A than in Group B

( $P = 0.0012$ ). No deaths occurred, and no group differences were noted in the postoperative complications.

■ **CONCLUSIONS:** Age exceeding 80 years is not by itself a predictor of worse clinical outcome of endoscopic transsphenoidal pituitary surgery for nonfunctioning adenomas. Emphasis should be placed on visual pathway decompression for the quality of life in very old people.

### INTRODUCTION

Patients older than the age of 65 years are considered elderly, whereas those older than the age of 80 years are considered very elderly.<sup>1</sup> The increase in the quality of life and the access to advanced health care services in developed countries has led to a significant increase in life expectancy and in the number of persons living past 80 years of age.<sup>2–4</sup>

For this reason and also as the result of improved investigation techniques,<sup>5</sup> the overall incidence of brain tumors as well as the prevalence of pituitary tumors, formerly referred as adenomas,<sup>6</sup> lately has seen an increase among elderly patients,<sup>7,8</sup> but the prevalence of these latter tumors is not known. However, the high incidence (13%) of pituitary tumors in necropsies of the very elderly has been shown for more than 35 years,<sup>9</sup> and the number of patients older than 80 years presenting with pituitary tumors recently has been found to be increased significantly in clinical practice.<sup>3</sup>

The management of patients with pituitary tumors at such an extreme age is an ongoing controversial issue. Indeed, an exponential increase in the rate of postsurgical mortality in this age

#### Key words

- Elderly
- Nonfunctioning pituitary adenoma
- Skull base surgery
- Transsphenoidal endoscopic surgery

#### Abbreviations and Acronyms

- ASA:** American Society of Anesthesiologists  
**CSF:** Cerebrospinal fluid  
**MRI:** Magnetic resonance imaging

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group has been in favor of a more conservative approach, represented by nonsurgical management.<sup>4,10</sup>

The aims of this study were the following: 1) to determine the prevalence of pituitary tumors in elderly patients older than 65 years of age and 2) to determine the safety of the transsphenoidal endoscopic approach for nonfunctioning pituitary tumors in very elderly patients, aged older than 80 years. To these ends, we conducted a retrospective and comparative study of 2 groups of patients operated on for gonadotrophic or nonimmunoreactive/null cell pituitary tumors who were older than 80 years of age and between 65 and 75 years of age.

## MATERIAL AND METHODS

### Patients

This retrospective study was performed by comparing 2 concomitant and consecutive series of elderly patients operated between 2007 and 2015 for nonfunctioning pituitary adenomas in the Skull Base and Pituitary Surgical Department of the Groupement Hospitalier Est, Lyon, France. Because a clear delineation between elderly and very elderly individuals is practically impossible, we considered a 5-year gap to accurately delineate the elderly patients from the very elderly patients.

The patients were selected from the register PITUICARE-Lyon (French data protection agency CNIL 16-021, and [www.clinicaltrials.gov](http://www.clinicaltrials.gov) NCT02854228). All patients underwent pituitary

surgery via a transsphenoidal endoscopic approach, performed by an experienced surgeon (E.J.), after a minimally invasive and tailored technique described previously described.<sup>11,12</sup>

### Inclusion Criteria

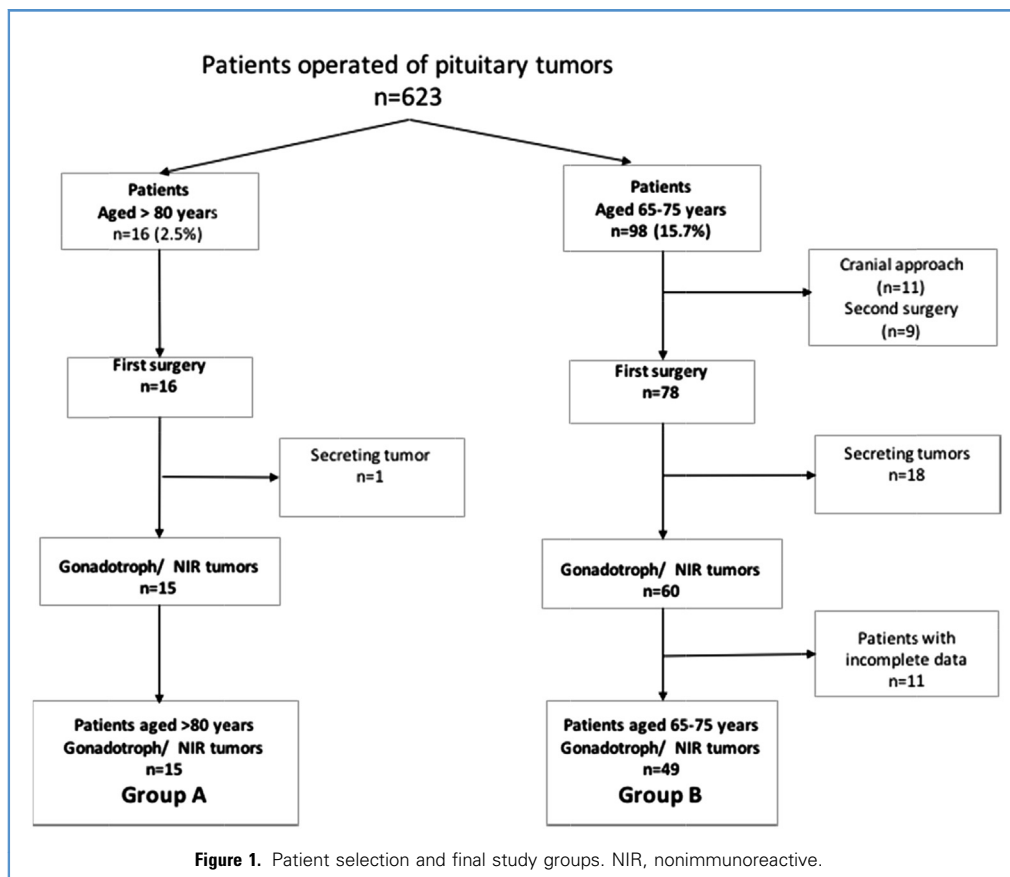
Inclusion criteria were as follows:

- patients who underwent surgery by the same expert neurosurgeon to reduce the impact of different endoscopic skill levels;
- patients who underwent surgery via a transsphenoidal endoscopic approach;
- patients who were having a first surgery only, to reduce the impact risks related with second surgery; and
- patients who had nonfunctioning adenomas only, to reduce the impact of the hypersecretory status.

Figure 1 summarizes the inclusion criteria and final groups used in this study.

### Comorbidities

Comorbidities ranged widely in both groups and were scored in accordance with the American Society of Anesthesiologists (ASA) score.



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