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ORIGINAL ARTICLE

Endoscopic endonasal transsphenoidal resection of pituitary adenomas: preliminary evaluation of consecutive cases☆,☆☆

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Pituitary neoplasms;
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Abstract
Introduction: Endoscopic endonasal transsphenoidal surgery has gained increasing acceptance by otolaryngologists and neurosurgeons. In many centers throughout the world, this technique is now routinely used for the same indications as conventional microsurgical technique for pituitary tumors.
Objective: To present a surgical experience of consecutive endoscopic endonasal trans-sphenoidal resections of pituitary adenomas.
Methods: In this study, consecutive patients with pituitary adenomas submitted to endoscopic endonasal pituitary surgery were evaluated regarding the rate of residual tumor, functional remission, symptoms relief, complications, and tumor size.
Results: Forty-seven consecutive patients were evaluated; 17 had functioning adenomas, seven had GH producing tumors, five had Cushing's disease, and five had prolactinomas. Of the functioning adenomas, 12 were macroadenomas and five were microadenomas; 30 cases were non-functioning macroadenomas. Of the patients with functioning adenomas, 87% improved. 85% of the patients with visual deficits related to optic nerve compression progressed over time. Most of the patients with complaints of headaches improved (76%). Surgical complications occurred in 10% of patients, which included with two carotid lesions, two cerebrospinal fluid leaks, and one death of a patient with a previous history of complications.
Conclusion: Endoscopic endonasal pituitary surgery is a feasible technique, yielding good surgical and functional outcomes, and low morbidity.

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PALAVRAS-CHAVE
Neoplasias hipofisárias;
Cirurgia endoscópica por orifício natural;
Hipófise;
Cirurgia videoassistida;
Base do crânio

Ressecção endoscópica transesfenoidal de adenomas de hipófise: avaliação preliminar de pacientes consecutivos

Resumo
Introdução: A cirurgia endoscópica endonasal ganhou aceitação crescente por otorrinolaringologistas e neurocirurgiões. Em muitos centros, esta técnica é agora rotineiramente utilizada para as mesmas indicações que a técnica microcirúrgica convencional.
Objetivo: Descrever resultados cirúrgicos relativos à remissão hormonal, ressecção do tumor e complicações de série consecutiva de pacientes com adenoma da hipófise submetidos à ressecção endoscópica.
Método: Estudo de série de pacientes consecutivos com adenomas da hipófise, submetidos à cirurgia endoscópica endonasal, avaliados quanto à taxa de tumor residual, remissão funcional, sintomas, complicações e o tamanho do tumor.
Resultados: De 47 pacientes consecutivos, 17 eram portadores de adenomas funcionantes, sete produtores de GH, cinco com doença de Cushing e cinco prolactinomas. Dos adenomas funcionantes, 12 foram macroadenomas, cinco microadenomas, e 30 macroadenomas não funcionantes. Dos adenomas funcionantes, 87% melhoraram. Em relação ao déficit visual, 85% melhoraram ao longo do tempo. A maioria dos pacientes que apresentou queixas de cefaléia melhorou (76%). Complicações cirúrgicas ocorreram em 10% dos pacientes, com duas lesões da carótida, duas fístulas liquóricas e uma fatalidade em um paciente com um histórico complicado.
Conclusão: A cirurgia hipofisária endoscópica endonasal é uma técnica viável, rendendo bons resultados cirúrgicos e funcionais e baixa morbidade.

Introduction

The sublabial transsphenoidal approach to the sella turcica, as described by Cushing,[1] has been the primary route for pituitary tumor resection. With the introduction of operative microscopy and radiofluoroscopy, the transsphenoidal approach has gained increased popularity. Subsequent modifications to minimize mucosal trauma and patient discomfort were originally described by Hirsch[2] and popularized by Griffith and Veerapen[3] as the direct endonasal approach. This minimally invasive route to the sella turcica allows for simpler and more rapid nasal dissection, with fewer postoperative nasal complications The endoscope was first employed in 1963 by Guiot to visualize the contents of the sella turcica.[4] Pure endoscopic endonasal transsphenoidal surgery was described in detail by Jho and Carrau;[5] subsequently, outcomes related to the original procedure and extended endoscopic approaches have been reported by other authors.[6-12] Based on data, endoscopic endonasal transsphenoidal surgery has gained increasing acceptance by otolaryngologists and neurosurgeons. In many centers throughout the world, this technique is now routinely used for the same indications as the conventional microsurgical technique. This study aimed to analyze the surgical outcomes and complications in a series of 47 consecutive patients who underwent a purely endoscopic endonasal transsphenoidal approach for treatment of pituitary adenomas.

Patients and method

All consecutive patients who underwent endoscopic transsphenoidal procedures for pituitary adenomas in this center between January of 2009 and December of 2012 were included in this study. All clinical and surgical data were collected regarding tumor size, symptoms, residual tumor after surgery, functional remission, symptom relief, and complications. All patients underwent neurological, ophthalmological, and endocrinological examinations before and after resection. This study was approved by the institutional review board under No. 00803412.9.0000.5404.

Patients with non-functioning adenomas were submitted to surgery in cases of pituitary dysfunction or significant mass effect with chiasm compression. Endoscopic resection of prolactinomas was performed in selected cases: chiasmatic compressive lesions, failed hormonal control with medical therapy, important side effects, or refusal of clinical treatment. Other functioning adenomas were treated primarily by endoscopic surgery. In the cases that did not achieve successful hormonal control after surgery, medical therapy was included as standard of care. The same otolaryngologist and neurosurgeon team operated all patients.

Endocrinological investigation included multiple measurements of plasma GH (range: 1 to 9 ng/mL for males; 1 to 16 ng/mL for females); insulin-like growth factor-I (IGF-I, adjusted for age); GH level after oral glucose tolerance test (OGTT with or without suppression); prolactin (< 20 ng/mL), adrenocorticotrophic hormone (ACTH; 9 to 52 pg/mL); basal cortisol (8 AM) (4 to 19 ug/mL); 24-hour urinary free cortisol (10 to 110 ug/2 4h) when Cushing's disease was suspected; thyroid-stimulating hormone (TSH: 2 to 11 uU/mL); free thyroxine (0.8 to 2.8 ng/dL); luteinizing hormone (LH, adjusted for age and gender); and follicle-stimulating hormone (FSH, adjusted for age and gender); testosterone (adjusted for age and gender) and estradiol (adjusted for gender); levels were studied before surgery and three