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Research Article

COMPLICATIONS OF PITUITARY TUMOR RESECTIONS EXPERIENCE IN A HOSPITAL IN NORTHERN MEXICO

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A B S T R A C T

Background: The choice of treatment of the pituitary tumor is the surgical resection. The most common approach is transsphenoidal, with this approach more than 90% of the pituitary tumors can be resected. The complications can be presents until 20%. The most common complications are: Cerebrospinal fluid leak (CSFL), meningeal rupture, meningitis, bleeding, carotid lesion, blindness, insipid diabetes and permanent panhypopituitarism. The aim was review the relationship between the complications and recurrence with the size of the tumor, in the resection by the trans sphenoidal approach.

Results: 32 Patients was included, eighteen were female (56.2%), age average was 45.3 years (sd 14.5), Thirty patients was diagnosed like adenomas (eleven was considered like macroadenomas), one was prolactinoma. The average of the tumor size was 1.14cm. Tree complications were founded, all complications were postoperative nasal bleeding. There were 3 tumor recurrences. There is no statistical relation between the complications and sex, size tumor, age, and surgical approach (p = 0.01), There is no statistical relation between recurrence and sex, size tumor an age.

Conclusions: Presence of complications and recurrences are not related to age, tumor size and sex. The retrospective data analysis and a reduced sample were limiting factors of this study.

INTRODUCTION

Pituitary adenomas are among the most common tumors, they can be found incidentally in up to 20% of autopsies (1,2), in most cases these tumors occur asymptomatically, especially in the case of non-functioning adenomas and It can be a finding during an imaging study for headache or head trauma, the symptoms can be very variable and will depend on tumor size and tumor configuration, in some occasions it can manifest endocrinological symptoms or by compression of surrounding structures as in the case of bitemporal hemianopia secondary to optic chiasm compression (3). Other types of non-adenoma tumors include craniopharyngioma, meningioma, Rathke's bursa cyst, functional hyperplasia of the gland, and aneurysms of the sellar región (3).

Except for prolactinoma, surgical resection is the primary treatment for pituitary tumors and the most common approach is trans-sphenoid. In this way, approximately 90% of tumors are resected.

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This technique was developed at the beginning of the 20th century by Halstead who initially proposed the oronasal approach to the pituitary, later it was popularized by Cushing. Hirsh proposed the transseptal approach to the pituitary, Hardy introduced the microscope for better stereoscopic visualization of the surgical field, allowing better visualization and more safety for its performance, later the endoscope was used in the approach (3, 4). No difference was found between microscope or endoscopic approaches in terms of the degree of resection, postoperative remission of secretory tumors, or incidence of complications (3, 5).

Most patients have shrinkage of the tumor, and the residual tumor may present 10 to 36% of the time. The complication rate in this procedure is approximately 7% and among the most frequent complications is cerebrospinal fluid fistula in approximately 4.7%, meningitis in 2%, deterioration of visual function in 2%, hemorrhage, damage to the carotid disease, transient diabetes insipidus, and permanent panhypopituitarism (3, 6,7,8,9,10).

We report our experiences with 32 patients who underwent endonasal resection of a pituitary adenoma or other sellar

tumors with a transseptal approach to assess postoperative rhinological complaints

METHODS

A retrospective study design, based on a single surgeon´s group practice on a third-level hospital. Eligible patients were identified from a retrospective surgical database, we review a system using: "transsphenoidal, Hipofisis tumor, and hipófisis adenoma". We founded 46 files, 14 were excluded because they weren´t treated by surgery. The demographic data: age, sex, tumor size, approach, recurrence, complications, and histopathological results were registered.

Surgical technique: We performed trans septal approach surgery. Following general anesthesia, patients were placed in the supine, semi-slouch position, with the head resting freely on the bed and angled approximately 30 degrees toward the left shoulder.

Vasoconstrictor in cotton strips was placed in the nasal cavity and vasoconstrictor was placed in the nasal septum and a right hemitrasfiction, with anterior and posterior right tunnels was made, the vomer was partially resected and at an angle of approximately 30 degrees from the palatine bone, the drainage ostium of the sphenoid sinus was recognized, keeping the midline, the sphenoidal sinus was opened, resecting only the anterior mucosa at the opening site of the sphenoid sinus, after the tumor was resected Gelfoam and abdominal fat was placed in the sphenoid cavity. Subsequently, the cavity was covered with the septal mucosa and anterior nasal packing was left for an average of 5 days.

Descriptive statistics were used for patient parameters (mean, range, standard deviation). A bivariate descriptive analysis, Shapiro-Wilk test analysis for normality was used. Quantitative variables were analyzed using Student "t" and Percentages, x2 was used.

RESULTS

32 Patients were included, eighteen were female (56.2%), age average was 45.3 years ± 14.5, Terthy patients were diagnosed with adenomas (eleven was considered like macroadenomas), one was prolactinoma.

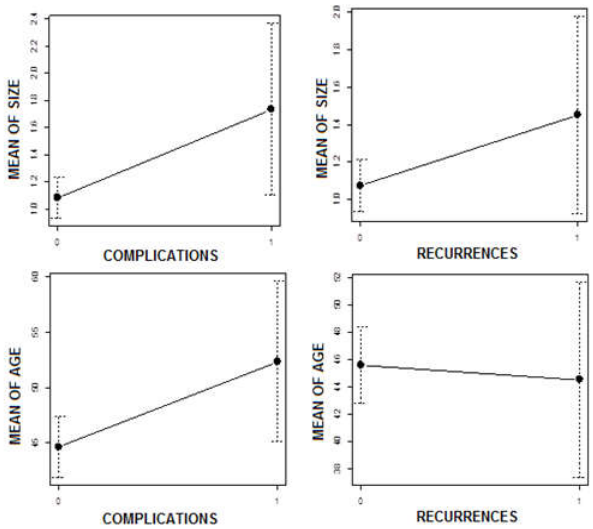

Figure 1 A. Relationship between mean of Tumor size with Recurrence (Right) and Complications (Left). 0= Without complications; 1= With complications. B.- Relationship between mean of Age with Recurrence (Right) and Complications (Left). 0= Without recurrences; 1= With recurrences

Two surgical approaches were by transfrontal and 29 by trans sphenoidal approach, which all was performed by microsurgery, none by endoscopic approach, one tumor was by mixed (transsphenoidal and frontal) approach.

The tumor size average was 1.14cm ± 0.82. Tree complications were founded, all complications were postoperative nasal bleeding. There were 3 tumor recurrences. There is no statistical relationship between the complications and sex, size of the tumor, age, and surgical approach ($p = 0.01$), There is no statistical relationship between recurrence and sex, size of the tumor, age, and surgical approach.

DISCUSSION

Currently, the transsphenoidal approach is the most used access route for the resection of pituitary tumors, either through a microscope, endoscope, or in a mixed way (1). In our study, all trans-sphenoidal approaches were performed by transseptal approach, using a microscope due to the experience of the group in this type of approach.

In patients who presented nasal bleeding in the postoperative period, no relationship was found with the presence of a residual tumor and they were controlled by repositioning the anterior nasal packing, which has been related to a decrease in nasal flow in the first two weeks (4). The presence of bleeding has been related to the presence of residual tumor in the pituitary gland, inadequate hemostasis, and injury to the cavernous sinus (1,3, 6). In this review, all cases were placed with anterior nasal packing, which may be useful to avoid nasal bleeding but increases the discomfort of the patients (4). Damage to the carotid artery is infrequent and occurs in less than 0.2% of surgeries (4, 11). In our study, no patient was found with damage to the internal carotid artery during surgery.

In our study, none of the patients presented postoperative cephalorachideal fluid fistula, sinus occlusion, and replacement of the naso-septal flap could help complete mucosal closure and avoid the presence of the cerebrospinal fluid fistula. Patients of an early age, tumor size, female sex, and high BMI may be risk factors for presenting postoperative cerebrospinal fluid fistula by endoscopic resection (9,12).

Synechia in the nasal cavity has also been reported as a frequent postoperative complication in the trans-septal approach and can be found in 12% of cases (1, 4). In this study, no patient presented synechia or septal perforation. Septal abscesses are not as common but can be a complication with this approach. Changes have been found in the volume of the nasal cavity after the endonasal approach, but no changes have been found in the symptoms or olfactory function (13).
This study has the limitations of a retrospective study and the limited number of patients. However, we found few complications using the trans-septal approach for the resection of pituitary tumors.

CONCLUSIONS

The approaches for the resection of pituitary tumors can be trans-nasal or trans-septal, currently, the endoscope is being used with greater frequency and skill for the approach and resection of this type of tumor. A trans-septal approach is a safe approach with a good percentage of complete tumor resection.

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