Original Article

Outcome of Tumor Resection by Endoscopic Binarial Trans-Sphenoidal Approach in Pituitary Adenoma Patients

Pituitary Adenoma by Endoscopic Binarial Trans-Sphenoidal Approach

Muhammad Abubakar Yasin[1], Muhammad Aqeel Natt[1], Muhammad Shakir[1] and Saba Akram[2]

ABSTRACT

Objective: To determine the frequency of complete tumor resection by endoscopic binarial trans-sphenoidal approach in pituitary adenoma patients presenting to a tertiary care hospital.

Study design: Descriptive case series

Place and Duration of Study: This study was conducted at the Department of Neurosurgery Punjab Institute of Neurosciences Lahore from July 2017 to December 2017.

Materials and Methods: Sixty patients with pituitary adenoma and either gender, age 25 to 60 years and diagnosis of pituitary adenoma by magnetic resonance imaging during last one year were included. Patients having previous surgery or intervention for any pituitary problems determined by history, diabetic patients determined by history and random blood sugar and any history of connective tissue disorders e.g. rheumatoid arthritis and SLE were excluded. Patients were followed for 6 week to determine the outcome i.e. no residual tumor left as determined by magnetic resonance imaging. Nasal trumpet maybe placed overnight. All patients were treated according to department protocols under general anesthesia and patients were followed for 6 week to determine the outcome i.e. no residual tumor left as determined by magnetic resonance imaging. Adenoma size was treated as effect modifier and data was stratified subsequently.

Results: The mean age was 50.02±8.2 years. Forty three (71.7%) patients were male and 17 (28.3%) females. Fifty six patients (93.3%) showed complete resection on MRI using endoscopic binarial trans-sphenoidal approach. There was no effect of age and gender of patient on outcome in sampled population. Tumor size significantly affected the outcome i.e. complete resection.

Conclusion: Endoscopic binarial trans-sphenoidal approach for resection of pituitary adenoma is excellent at current sample size. As in our study, 93.3% patients showed complete resection. There was no effect of age and gender of patient on outcome in sampled population.

Key Words: Endoscopic binarial trans-sphenoidal approach, Resection, Efficacy, Pituitary adenoma

Citation of article: Yasin MA, Natt MA, Shakir M, Akram S. Outcome of Tumor Resection by Endoscopic Binarial Trans-Sphenoidal Approach in Pituitary Adenoma Patients. Med Forum 2020;31(3):69-71.

INTRODUCTION

The transsphenoidal approach to pituitary adenoma resection was first performed by German Schloffer over 100 years ago.[1] Various modifications, such as the transnasal endoscopic approach to the Turkish saddle, have revolutionized tumor resection.[2] The endoscopic approach to the pituitary gland revised Sella's visualization. The panoramic view provided by the endoscope has no analogs compared to the traditional conical view of the microscope.[3,4] The integrity of tumor resection is an important part of surgical treatment of the pituitary gland with a macroadenoma, since it allows decompression of the optimal nerve structure.[5] other methods of tumor resection include the endonasal transphenoidal microscopic approach, the sub-labial transphenoidal microscopic approach.

In endoscopic bilateral trans-sphenoidal adenomyectomy, a 4 mm or 2.7 mm endoscope is used and, through bilateral sphenoid ostia, the basement floor is open and the strings are exposed to expose adenoma. The tumor is removed in pieces and after removing the tumor, the basement floor is repaired using fascia, fat, bone, cartilage or prostheses.[5] Different results were reported in different studies as a complete matching of tumors after endoscopic binary trans-spondylic affection of pituitary adenoma. It can even be used to remove the tumor on the left side. In one study, the overall tumor removal was 78% (95% CI67–89%)[6] whereas in another Canadian study, for

1. Department of Neurosurgery, Punjab Institute of Neurosciences, Lahore.
2. Department of Radiology, Avicenna Medical and Dental College Lahore.

Correspondence: Dr. Muhammad Aqeel Natt, Senior Registrar, Neurosurgery Unit-III, Punjab Institute of Neurosciences, Lahore.
Contact No: 0321-7769840
Email: aqeelnatt@gmail.com

Received: August, 2019
Accepted: December, 2019
Printed: March, 2020

tumors with supracellular or paracellular extension, and without any science involvement and without intracellular. The degree of removal was 96%. In a study[7] functional pituitary adenomas affection for the lungs using a pure endoscopic transferring technique, complete affection was achieved in 75.6% of all patients.[1,8-10]

MATERIALS AND METHODS

This descriptive case series study was conducted on 60 patients with pituitary adenoma. The cases were collected from Outpatient Department of Neurosurgery Punjab Institute of Neurosciences Lahore from July 2017 to December 2017. The patients of either gender, age 25 to 60 years and diagnosis of pituitary adenoma by magnetic resonance imaging during last one year were included. Patients having previous surgery or intervention for any pituitary problems determined by history, diabetic patients determined by history and random blood sugar and any history of connective tissue disorders e.g. rheumatoid arthritis and SLE were excluded. A uniform protocol of surgery i.e. endoscopic binarial trans-sphenoidal approach was adopted for pituitary adenectomy. All patients were treated according to department protocols under general anesthesia and patients were followed for 6 week to determine the outcome i.e. no residual tumor left as determined by magnetic resonance imaging. The tumor was extracted piecemeal. After tumor removal, sellar floor was repaired using fascia, fat, bone, cartilage or prosthesis. Sphenoid sinus was packed with Surgical or fat. Nasal trumpet maybe placed overnight. All patients were treated according to department protocols under general anesthesia and patients were followed for 6 week to determine the outcome i.e. no residual tumor left as determined by magnetic resonance imaging.

RESULTS

In our study population 60 patients with mean age of 50.0±8.3 ranged from 25 to 60 years. In our study only 2 (3.3%) patients were 25-30 years in age whereas 25 (41.7%) patients were between 31 to 50 years and rest of 33 (55%) patients were 50 to 60 years. (Table 1)

Forty three (71.7%) patients were male whereas 17 (28.3%) were female. Among 34 patients (56.7%) tumor size was below 1cm, in 11 (18.3%) patients size was 1 to 4 cm however in 15 (25%) patients size was more than 4 cm. (Table 2).

Fifty six (93.3%) patients out of 60 had shown complete resection on MRI. (Table 3)

Table No.1: Distribution of patients by age (n=60)

Age (Years)	No.	%
25-30	2	3.3
31-50	25	41.7
51-60	33	55.0

Table No.2: Distribution of patients by Tumor size (n=60)

Tumor size	No.	%
< 1cm	34	56.7
1-4 cm	11	18.3
> 4 cm	15	25.0

Table No.3: Distribution of patients by complete resection (n=60)

Complete resection	No.	%
No	4	6.7
Yes	56	93.3

DISCUSSION

The completeness of tumor resection is an important part of the surgical treatment of pituitary macro adenomas because it allows decompression of the optimal neural structure.[5] other techniques for tumor resection include microscopic endonasal trans-sphenoidal Approach, Microscopic sub labial trans-sphenoidal approach. We are currently using endoscopic binarial trans-sphenoidal approach in our hospital. Endoscopy is increasingly used in pituitary adenoma surgery with promising results and lesser complications. Rates of success are different in different populations. In endoscopic binarial trans-sphenoidal adenomectomy, a 4mm or 2.7 mm endoscope is used and through bilateral sphenoid ostia, sellar floor is opened and dura is incised to expose the adenoma.

In our study, 56 patients (93.3%) out of 60 had shown complete resection on MRI. This implies that endoscopic binarial trans-sphenoidal approach for resection of pituitary adenoma is successful in our setting. Our study results are comparable with another previous study, which concluded that gross tumor removal was 78% (95% CI 67–89%)[6] while in another Canadian study the degree of gross total removal for tumors with suprasellar or parasellar extension and without cavernous sinus involvement was 96% and for intrasellar lesions was 98%.[7] In another study of functional pituitary adenomas resection by a purely endoscopic trans sphenoidal technique, complete resection was achieved in 75.6% of all patients.[1,8-10]

CONCLUSION

Endoscopic binarial trans-sphenoidal approach for resection of pituitary adenoma is excellent at current sample size. As in our study, 93.3% patients showed complete resection. There was no effect of age and gender of patient on outcome in sampled population.

Author's Contribution:

Concept & Design of Study:	Muhammad Abubakar Yasin
Drafting:	Muhammad Aqeel Natt
Data Analysis:	Muhammad Shakir, Saba

	Akram
Revisiting Critically:	Muhammad Abubakar Yasin, Muhammad Aqeel Natt
Final Approval of version:	Muhammad Abubakar Yasin

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Hofstetter CP, Shin BJ, Mubita L, Huang C, Anand VK, Boockvar JA, et al. Endoscopic endonasal transsphenoidal surgery for functional pituitary adenomas. Neurosurg Focus 2011;30(4):E10.
2. Leng LZ, Brown S, Anand VK, Schwartz TH. 'Gasket-Seal' watertight closure In: minimal-access endoscopic cranial base surgery. Neurosurg 2008; 62(5):342–343.
3. Schaberga MR, Ananda VK, Schwartzb TH, Cobb W. Microscopic versus endoscopic transnasal pituitary surgery. Otolaryngol Head Neck Surg 2010, 18: 8–14.
4. Fatemi N, Dusick JR, De Paiva Neto MA, Kelly DF. The endonasal microscopic approach for pituitary adenomas and other parasellar tumors: A 10-year experience. Neurosurg 2008; 63 (4): 244–256.
5. Theodosopoulos PV, Leach J, Kerr RG, Zimmer LA, Denny AM, Guthikonda B, et al. Maximizing the extent of tumor resection during transsphenoidal surgery for pituitary macroadenomas: Can endoscopy replace intraoperative magnetic resonance imaging? J Neurosurg 2010;112:736–743.
6. Tabaee A, Anand VK, Barron Y, Hiltzik DV, Brown SM, Kacker A, et al. Endoscopic pituitary surgery: A systematic review and meta-analysis. J Neurosurg 2009;111:545-54.
7. Dehdashti AR, Ganna A, Karabatsou K, Gentili F. Pure endoscopic endonasal approach for pituitary adenomas: Early surgical results in 200 patients and comparison with previous microsurgical series. Neurosurg 2008; 62:1006–15.
8. Gsponer J, De Tribolet N, Déruaz JP, et al. Diagnosis, treatment, and outcome of pituitary tumors and other abnormal intrasellar masses. Retrospective analysis of 353 patients. Medicine (Baltimore) 1999; 78:236-9.
9. Saeger W, Lüdecke DK, Buchfelder M. Pathohistological classification of pituitary tumors: 10 years of experience with the german pituitary tumor registry. Eur J Endocrinol 2007; 156:203-8.
10. Herman V, Fagin J, Gonsky R. Clonal origin of pituitary adenomas. J Clin Endocrinol Metab 1990; 71:1427-31.

Corrigendum

The institutions of authors of article titled '**Examine the Incidence of Liver Cancer in Patients Presented with Hepatitis B Virus and Hepatitis C Virus Infection'** published in Med Forum Vol. 31 No.2, February, 2020 at pages 58-61 may be read as under:

Syed Waseem Ahmad Mujtaba[1],
Department of Medicine, Amna Inayat Medical College, Sheikhupura.

Awais Anwar[2]
Department of Physiology, Shahida Islam Medical & Dental College, Lodhran.

Abdul Matin Qaisar[3]
Department of Physiology, Niazi Medical & Dental College, Sargodha.

Editor