

경접형골동으로 수술한 뇌하수체 선종의 치료성적*

전우열 · 김오룡 · 김성호 · 배장호 · 최병연 · 조수호

= Abstract =

The Surgical Result of Pituitary Adenoma by Transsphenoidal Approach

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Objective : Transsphenoidal approach(TSA) has been used as useful operative method for pituitary tumor but is still controversial in case of cavernous sinus invasion or severe suprasellar extension. This study was performed to evaluate the surgical result, recurrence, effect of adjuvant treatment, especially in cases of suprasellar extension or cavernous sinus invasion.

Material and Methods : We studied 56 cases of surgically treated pituitary adenoma that we were able to follow up, treated by TSA from 1993 to 1998. There were 24 cases of suprasellar extension and 11 cases of cavernous sinus invasion. The medical records and radiological findings were reviewed. Surgical results including hormonal function and recurrence rates were analyzed according to extent of tumor invasion. Mean follow - up period was 19.1 months.

Results : Tumors with suprasellar extension were removed totally in 54%, whereas total tumor removal was possible only in 38% with cavernous sinus invasion. Overall of recurrence rate was 14% and recurrence rate was 25% in suprasellar extension and 9% in cavernous sinus invasion. In cases of both suprasellar extension and cavernous sinus invasion, tumors that were treated by TSA and radiation showed recurrence rate of 7%, whereas those treated by surgery alone showed 28% of recurrence.

Conclusion : Transsphenoidal approach is safe and useful operative method for pituitary adenoma and adjuvant therapy including radiation therapy is effective means to decrease the recurrence in cases of suprasellar extension or cavernous sinus invasion.

KEY WORDS : Transsphenoidal approach · Pituitary adenoma · Suprasellar extension · Cavernous sinus invasion.

서 론

Schloffer¹³⁾가 superolateral nasopharyngeal approach, Hardy Wigser³⁾가 X-

대상 및 방법

1999

1993

1998

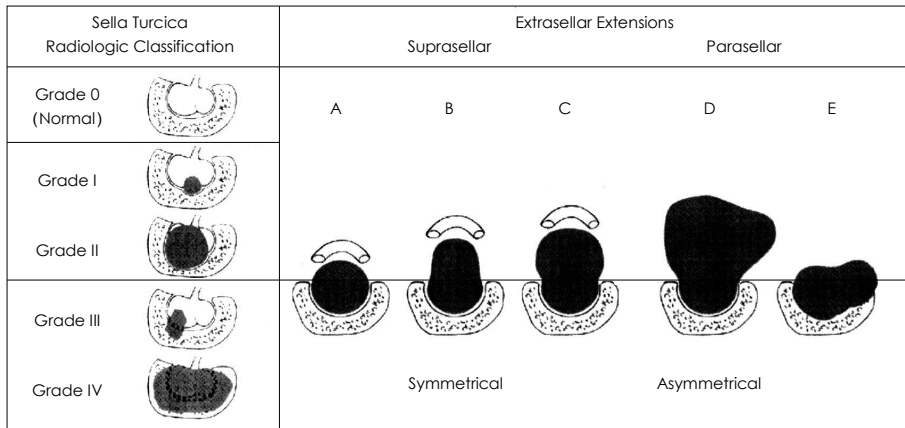


Fig. 1. Radiological classification of pituitary tumors (by Hardy classification).

가 56 (46 ,
10) , ,
19.1 . sub-

labial incision

valsalva

Hardy (Fig. 1)

3

CT, MRI

MRI

6 , 12

MRI

MRI

가

가

성 적

1. 성별, 연령 분포 및 선종의 종류

56 가 23 , 가 33 ,
20 50 38
24 (43%) 가 ,
(Prolactin)
가 2 : 15 가 7
(GH) (AC-
TH) 가 (Table 1).

45 , 가 1 : 10
가 45 .

2. 선종의 크기 및 침범정도

56 46 , 10 .
23 , 1

Table 1. Tumor type and sex distribution of pituitary adenoma

Type	Sex		Total (%)
	Male	Female	
Nonfunctional	13	11	24(43%)
Functional	10	22	32(57%)
Prolactin	2	15	17(30%)
GH	7	5	12(22%)
ACTH	1	2	3(5%)
Total	23	33	56

GH : Growth hormone, ACTH : Adrenocorticotrophic hormone

Table 2. Classification of pituitary adenomas by size and hormonal type and result of removal of adenomas

	Macro-adenoma	Micro-adenoma	Total	Total resection
Nonfunctional	23	1	24	10(42%)
Functional	23	9	32	26(81%)
Prolactin	13	4	17	14(82%)
GH	7	5	12	11(92%)
ACTH	3	0	3	1(33%)
Total	46	10	56	36(64%)

GH : Growth hormone, ACTH : Adrenocorticotrophic hormone

가 33mm

(Table 2). 24 (43%)

(Stage B, C, D) , 11 (20%)

(Stage E) (Table 3).

3. 임상증상

(mass effect)

90%, 87%, 95%,

(Table 4).

Table 3. Classification of adenoma by grade, stage and size (by Hardy classification)

Grade	Case(%)	Stage	Case(%)	Size(cm)	Case(%)
I	10(16)	0	11(18)	<1.0	10(18)
II	27(50)	A	10(20)	1.0 - 1.9	10(18)
III	11(20)	B	6(1)	2.0 - 2.9	14(25)
IV	8(14)	C	13(22)	>2.9	22(39)
		D	5(19)		
		E	11(20)		

Table 4. Symptoms of the pituitary adenoma

	Symptoms	Case	Improvement of symptoms
Mass effect	Headache	47	45
	Visual symptom	20	18
	Decreased libido	7	6
	Amenorrhea	5	4
	D. I	1	1
Hormone effect	A-G syndrome	15	13
	D.M	2	2
	Acromegaly	9	8
	Joint pain	3	3
	Osteoporosis	1	1

A-G syndrome : Amenorrhea-galactorrhea syndrome
 D. I : Diabetes insipidus D.M : Diabetes mellitus

9 (16%)

6

4. 호르몬 변화

3 가
 , 1 가가
 9 10ng/ml , 2 20ng/ml 가
 , 4 가
 2 가
 가
 가
 가
 11 가
 가
 1 가

5. 수술결과

24 (23 , 1)
 가 10 (9 , 1)
 1) (Table 2), 가
 6 , 1
 , 5 . 5

Table 5. Surgical resection of suprasellar extended adenomas (Stage B, C, D)

Type	Resection	No. of patients	Resection	
			Total	Subtotal
Nonfunctional(n=24)		15	7	8
Functional		9	6	3
Prolactin(n=17)		5	3	2
GH(n=12)		3	3	0
ACTH(n=3)		1	0	1
Total(n=56)		24	13(54%)	11(46%)

GH : Growth hormone, ACTH : Adrenocorticotrophic hormone

1
 3
 , 1
 (Hardy B, C,
 D) 15 (62%) , 7
 (Table 5). 7
 8
 4
 4 1
 17 (13 , 4)
 가 14 (10 ,
 4) (Table 2). 17
 가 3 , 2 1
 1
 가 5 3
 (Table 5) 3
 2
 1 1
 12 (7 , 5)
 가 11 (6 ,
 5) (Table 2), 1
 3 (Table 5), 3
 1
 3 가
 (Table 2).
 , 1
 2
 가 1 , 2
 56 36 (26 , 10

Table 6. Recurrence of pituitary adenoma after total resection

Type	Recurrence Macroadenoma		Microadenoma		Recurrence
	Recurrence	Total	Recurrence	Total	
Non-functional (n=10)	0	9	0	1	0 (0%)
Functional	5	17	1	9	6 (23%)
Prolactin(n=14)	4	10	1	4	5 (38%)
GH(n=11)	1	6	0	5	1 (9%)
ACTH(n=1)	0	1	0	0	0 (0%)
Total(n=36)	5 (19%)	26	1 (10%)	10	6 (17%)

GH : Growth hormone, ACTH : Adrenocorticotrophic hormone

Table 7. Relationship between prolactin level and recurrence

pre-op (ng)	post-op (ng)			Recurrence
	<10	10 - 25	>25	
>200(n=9)	2	0	7	4
100 - 200(n=8)	3	2	3	2
Recurrence	0	0	6	6

A-G syndrome : Amenorrhea-galactorrhea syndrome
D.I : Diabetes insipidus D.M : Diabetes mellitus

), 24 13 (54%), 11 3 (27%) (Table 2, 5). 36 6 (17%) 14 5 (38%) (Table 6). ml 4 , 100ng/ml 200ng/ml 2 30, 40 25ng/ml (Table 7). 6 11 7 1 , 4 1 . 13 7)8). Ciric 2) 77% 46 가 24 (52%) , 24 15 (58%) , 3 1 24 13(54%) MRI 5 (1 , 3 , 1) 가 가 가 11 , salt wasting syndrome 6 , 2 , 1 , 2

고 찰

가 . Schloffer¹³⁾ superolateral nasoethmoidal route , Hirsch⁴⁾ inferolateral endonasal approach가 , Hardy Wiger³⁾ Telesed radiofluoroscopic control 가 , 6), endonasal approach endoscopic approach가 5). 가 5 가 7 가 가 8) 가 7)8). Ciric 2) 77% 46 가 24 (52%) , 24 15 (58%) , 24 13(54%) Ciric 2) 60% 57% 가 7).

가 , 57%
 가 10) , 13 (54%)
 가 33mm
 (Table 3, 6). 56 8 1 ,
 6 ,
 6)10) . Black Zervas¹⁾ 1 .
 5 3% 8% 11 7
 6% , 4 2
 14% 35%(7 13
) 4
 (parodel, dopamine receptor agonist) 11 8 7
 200ng/ml
 40%, 400ng/ml 60% 3 1
 200ng/ml
 25ng/ml 15%
 10% . Wil-
 son¹²⁾ 200ng/ml ,
 8%, 400ng/ml 18%, 400ng/ml
 64% , 12.7%

6) .
 • : 2001 8 4
 • : 2001 7 28
 • :
 705 - 717 317 - 8

11) ,
 10) . Ciric : 053) 620 - 3790, : 053) 620 - 3770
 E - mail : neuro@med.yu.ac.kr

2) 28% 6% 17%
 , 9%
 9) , ,
 11 , salt wasting syndrome 6 ,
 2 , 1 , 2 .
 salt wasting syndrome 1
 2
 1 ,
 1 1

결 론
 56 (46 , 10)
 가 36 (26 , 10) 64%

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