

외상성 뇌척수액 비루의 경비강 재건

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Transnasal Repair of Traumatic Cerebrospinal Fluid Rhinorrhea

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Objective : This study is aimed to evaluate the efficacy of transnasal repair of cerebrospinal fluid (CSF) rhinorrhea.

Methods : Thirteen patients with traumatic noniatrogenic CSF fistulas were included in the retrospective analysis. High-resolution thin-section computed tomographic cisternography was helpful in localization of the CSF leakage site. The most frequent leakage site was the sphenoid sinus. The transnasal approach (TNA), comprised of endonasal endoscopic surgery (EES) or transseptosphenoidal surgery (TSS), was mainly used for smaller fistulas. Total or selected ethmoidectomy depended on the localization of the leakage. Wide sphenoidotomy enabled detection and repair of CSF leaks from the sphenoid cavity. Three patients also underwent transcranial approach (TCA) because of the large or multi-fragmented bony defect and the need for further exposure for repair. Five patients developed ascending meningitis in the preoperative period with antibiotic prophylaxis.

Results : Twenty-five leaks were initially repaired using one of three techniques : EES alone in eight patients, EES plus TCA in three, and TSS alone in two. Ten patients who solely underwent the TNA did not experience the complications of the traditional TCA. One recurrent sphenoid fistula was successfully treated by TSS. After a follow-up from 12 to 88 months (mean 32.7), the overall success rate for 25 CSF fistulas was 100%.

Conclusion : The transnasal repair is a safe, successful, and alternative approach for the surgical repair of traumatic CSF rhinorrhea, and also could be combined to TCA.

KEY WORDS : Basal skull fracture · Cerebrospinal fluid leakage · Meningitis · Transsphenoidal approach · Endoscopic endonasal surgery.

서 론

endoscopic surgery)

(transnasal approach)

가

가

4,11,18)

(transcranial approach)^{1,13,14,19,25,28)}

대상 및 방법

1994

2001

7

2,5,6,17)

(trans-

13

septosphenoidal surgery)

(endonasal

가 10 , 가 3
16 49 33
12 88 32.7
(intranasal ethmoidectomy)
(sphenoidotomy)
1/3
(sphenoethmoidal recess) (sphenoid sinus
ostium) 가
가
(free graft) Gelfoam^R Surgicel^R
(overlay te-
chnique)³¹⁾ 4mm
1.0cm
가
2 (underlay technique)²¹⁾.
3~5
3~5
(orbitofrontal craniotomy)⁷⁾ (frontal
sinusotomy)³⁰⁾ , 5

결 과

경비중격 경접형동법

(lateral recess)가
가 9 4
9 4
2
3 , 1
2 6
5 , 4 , 4
7 가
5 2 가
가 25 8 가
5 , 4 , 4
3 , 1
5 3
가
(nasal turbinates)
0 ° 4mm Hopkins
(Karl Storz, Tuttlingen, Germany)
8 3

Table 1. Summary of 13 patients with posttraumatic cerebrospinal fluid rhinorrhea who underwent surgical repair

Case No.	Age/Sex	Site of leakage						Surgical approach	Follow-up(mo)	Outcome
		FS	OR	CP	ER	PS	SS			
1	33/M	-	-	-	-	+	+	TSS	88	Resolution
2	33/M	-	-	-	-	-	+	TSS	76	Resolution
3	45/M	-	-	-	-	-	+	EES	24	Resolution
4	49/M	-	-	-	-	-	+	EES	23	Resolution
5	20/M	+	-	-	-	-	-	EES	22	Resolution
6	37/M	-	-	-	-	-	+	EES	21	Resolution
7	27/M	+	+	-	+	-	+	TCA+EES+TSS	16	Resolution
8	16/F	+	-	-	+	-	-	EES	16	Resolution
9	40/M	-	-	-	-	-	+	EES	16	Resolution
10	27/F	+	+	+	+	-	+	TCA+EES	16	Resolution
11	28/M	+	+	+	+	-	-	TCA+EES	12	Resolution
12	43/M	-	-	+	-	-	-	EES	19	Resolution
13	20/F	-	-	+	-	-	-	EES	28	Resolution

FS : frontal sinus, OR : orbital roof, CP : cribriform plate, ER : ethmoid roof, PS : planum sphenoidale, SS : sphenoid sinus, TSS : trans-septosphenoidal surgery, EES : endonasal endoscopic surgery, TCA : transcranial approach, + : present, - : absent, M : male, F : female

11 2 overlay 11,20,25)
6 3 가
1 2 1~2mm 가
92% 5,6,26,27)
(Table 1).
3
4 가 5,21)
9 1 1
(7.7%) 가
가 2 9 가 5
1 가
고 찰 8,10,12)
가 19~40%
4,24,28)
8,16)
10)
3,19,21,24,28)
5)
19)

가 13,20,30) overlay
(frontal recess) 2 (fron- 가 3,15,16,31)
tonasal duct) 가
(external eth-
moidectomy)⁹⁾ (flap) 23) 가 가
21) overlay 가
82~100%^{21,23,29)} 3)
가 가
3,31) 7 underlay 22,31)
결 론

가 ,
90% 5,31) 가 ,
2,4,5,10,17) 가 ,
가 가
가 가 가
가 : 2002 6 4
: 2002 6 26
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