



Skull base surgery: The incidence of post-operative cerebro-spinal fluid leak and associated complications of lumbar drains

S.R. Cleland¹, A.Toma², U. Reddy¹, R. Bradford², A.M.V. Luoma¹

¹ Dept. of Neuroanaesthesia. ²Victor Horsley Dept. of Neurosurgery. National Hospital for Neurology and Neurosurgery, UCLH NHS Foundation Trust.



University College London Hospitals NHS Foundation Trust

Background

- Cerebro-spinal fluid (CSF) pressures increase following skull base surgery¹ and CSF leak post-operatively is a recognised complication with an incidence of up to 10.7%².
- Common treatments of CSF leak include conservative management, continuous external lumbar CSF drainage and surgical exploration.
- It is our normal practice to insert a pre-operative lumbar drain to facilitate CSF drainage to reduce the incidence of CSF leak in patients undergoing translabrynthine craniotomy.
- Our aim was to compare the incidence of CSF leak between different surgical approaches and with the use of perioperative external CSF lumbar drainage. We also aimed to quantify the complication rate associated with lumbar drainage.

Methods

- A retrospective case-note review of all patients undergoing skull base surgery from January 2010 to July 2013 was performed.
- Data collected included demographics, surgical data and, use and complications of lumbar drains.
- 103 cases were identified and of these 100 sets of case-notes were obtained and reviewed.

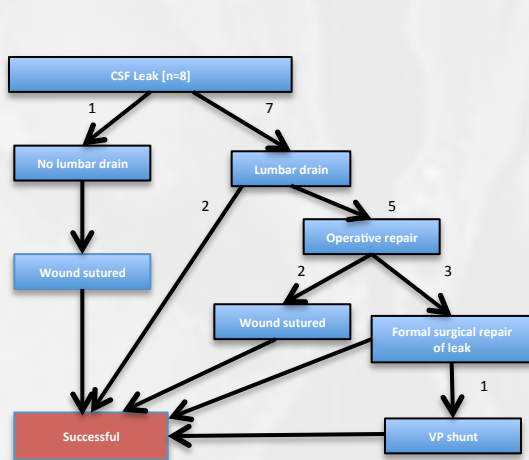
Results

1. Incidence of CSF leak and use of perioperative lumbar CSF drainage.

	Translabrynthine [n=50]	Retrosigmoid [n=50]
Patient demographics:		
• Age [mean±SD] years:	49.9±9.3	49.7±14.8
• Male gender [%]:	50	50
Incidence post-operative CSF leak:		
• Small [<1.5cm]	8% [1/20]	8% [0/1]
• Medium [1.5-2.5cm]	10% [2/20]	9% [1/11]
• Large [>2.5cm]	10% [1/10]	8% [3/38]
Use of perioperative lumbar drain:		
• Incidence of CSF leak with lumbar drain:	4.7%	0%
• Incidence of CSF leak without lumbar drain:	33% *	8%

* p =0.066 Fisher's exact test with two-tailed p-value for difference between groups for use of perioperative lumbar drain.

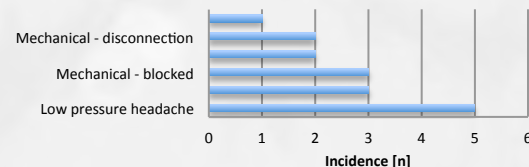
2. Management of CSF leaks in post-operative patients



3. Complications of perioperative lumbar CSF drainage

- 52 lumbar drains were inserted, 8 to treat CSF leaks.
- The mean [SD] duration [days] of CSF drainage was 2.4 [± 0.6] for perioperative and 4 [±1.7] for treatment of CSF leak.
- We found no association between duration of lumbar drainage and post-operative CSF leaks.
- Incidence of complications was low and most commonly minor with no lumbar drain related infections during this time.

Complications of lumbar CSF drainage



Microbiology results from Lumbar Drains

- CSF cultures sent in 9 patients with lumbar drains in-situ.
 - 8 negative
 - 1 positive (enrichment culture only) - micococcus luteus. No antibiotics started.

Conclusions

- Incidence of post-operative CSF leaks [8%] at our institution is comparable with published data, and similar between different surgical approaches.
- Although not statistically significant, use of a perioperative lumbar drainage reduced the incidence of CSF leak in a translabrynthine approach.
- The use of lumbar drains post-operatively to treat CSF leak is often insufficient. The majority of patients required further surgical intervention, similar to data published from other institutions².
- Continuous lumbar CSF drainage in this group of patients appears to be a safe procedure with only minor complications, largely mechanical.

References:

- Laing et al. Skull Base Surgery, 2000,(10), 179-185.
- Brennan et al J Neurosurg. 2001; 94:217-223