

Diabetes insipidus after pituitary surgery

Direct testing with Copeptin proAVP

Pituitary surgery
(transsphenoidal or cranial)

Low Copeptin proAVP
(≤12h post-surgery level vs. baseline)

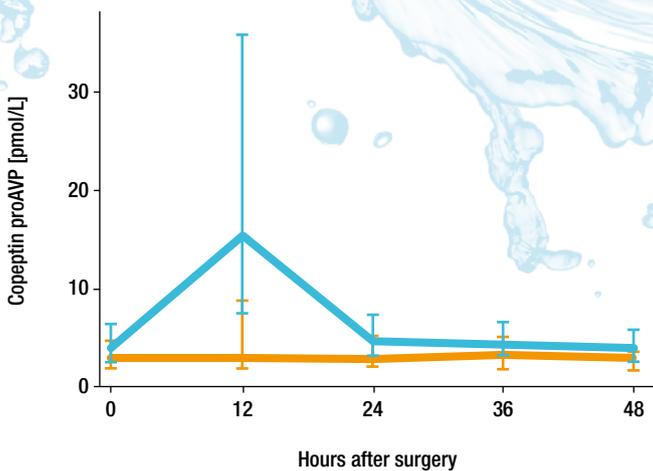
Diabetes insipidus

Low 12h post-operative Copeptin proAVP levels despite surgery-induced stress indicate later Diabetes insipidus. A lack of an increase of Copeptin proAVP within twelve hours after surgery indicates a **deficient function of the posterior lobe of the pituitary** and is therefore a reliable marker for the development of post-operative Diabetes insipidus.¹

High Copeptin proAVP
(≤12h post-surgery level vs. baseline)

Uneventful course

A high 12h-post-operative Copeptin proAVP level is strongly predictive of an uneventful post-operative course in terms of Diabetes insipidus.¹ In patients with an **intact posterior pituitary lobe function**, Copeptin proAVP levels increase due to surgery-induced stress within the first 12 hours after surgery.



	Copeptin proAVP values	
	Pre-operative (pM, median [IQR])	Post-operative (pM, median [IQR])
Uneventful course (n=155)	3.92 [2.5-6.5]	10.8 [5.2-30.4]
Diabetes insipidus (n=50)	2.9 [1.9-4.7]	2.9 [1.9-7.9]
	<i>p</i> =0.04	<i>p</i> <0.001

Figure 1 Copeptin proAVP measurements at different time points in patients before (0 hours) and after pituitary surgery.¹

Copeptin proAVP – a promising novel tool in the early goal directed management of patients after pituitary surgery

Surgery is a stressful event known to stimulate hypothalamic stress hormone release.^{2,3} Maximal stress is generally experienced after extubation and it has been shown that Copeptin proAVP levels multiplied after surgical treatment (Figure 2).⁴

Manipulation of the pituitary gland during neurosurgery may alter its secretory function. **16-34% of patients undergoing pituitary surgery developed a post-operative Diabetes insipidus (DI).**⁵ DI is therefore the most common cause of prolonged hospital stay.⁶

Although the disease is self-limiting and benign in the majority of cases, Diabetes insipidus occasionally develops into severe hypernatremia and hyperosmolality if the deficit of fluids is not immediately replaced.

Therefore, a timely and accurate diagnosis followed by an appropriate patient management is crucial.^{7,8}

Copeptin proAVP, also called Copeptin, forms the C-terminal part of pre-vasopressin. Upon stimulation, vasopressin and Copeptin proAVP are released from their storage granules in the pituitary and rapidly enter the bloodstream in equimolar amounts.^{9,10} **Thus, Copeptin proAVP can be considered a true surrogate marker of vasopressin.**

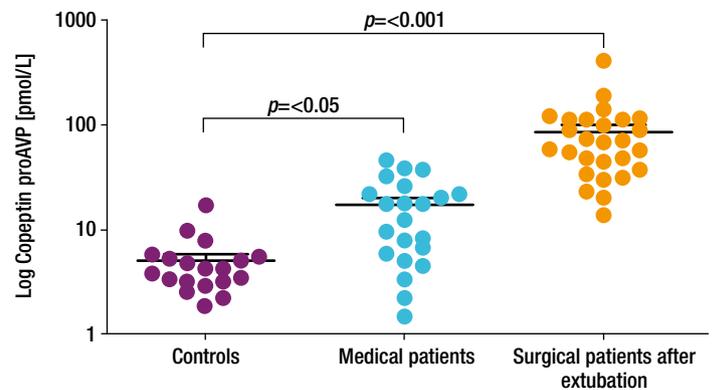


Figure 2 Copeptin proAVP (Copeptin) levels in controls, medical patients and surgical patients after extubation, mirroring three different levels of physical stress⁴

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Copeptin proAVP



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