

**Postoperative Delayed Paradoxical Depression after Uncomplicated Intracranial Aneurysm Surgery** Tomas Garzon-Muvdi MD MS; Alejandro Ruiz-Valls; Wuyang Yang MD MS; Andrew Luksik; Justin Caplan BA; Rafael J. Tamargo MD



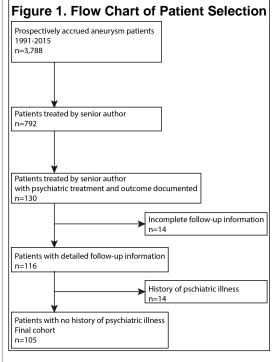
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## Introduction

Postoperative delayed paradoxical depression (PDPD) is a psychiatric condition in patients without a history of mood disorders who, despite undergoing a successful major surgery, become clinically depressed. PDPD has been recognized in other common major surgical interventions such as coronary artery bypass grafting. It is described as "paradoxical" because it follows a successful intervention. Some authors have interpreted PDPD as a "survivor syndrome" or a variant of post-traumatic stress disorder.

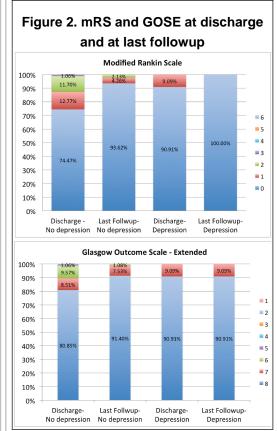
# Methods

The cohort of 105 patients was derived from a prospective observational dataset of 3788 consecutive cases of intracranial aneurysms accrued from 1991-2015. Starting in 2010, patients with PDPD were identified and their psychiatric treatment and outcomes documented. The incidence of PDPD and baseline characteristics were analyzed. Multivariate logistic regression was performed to analyze associations of variables with PDPD. Patients with preoperative depression or bipolar illness were excluded.



#### Results

Of the 105 patients, 10.5% (n=11) had newly-diagnosed major depression after surgical treatment of intracranial aneurysms. By univariate and multivariate analysis, the only significant difference between the two groups was full return t o daily activity (p=0.017;p=0.029, OR=0.06, CI=[0.00, 0.70], respectively), which was a result and not a cause of PDPD. All 11 patients with PDPD recovered fully, 9 а f t е psychotherapy/pharmacotherap y and 2 without intervention.



### Conclusions

PDPD after uncomplicated aneurysm surgery can be surprising to the neurosurgeon and the patient, but should be promptly identified and addressed to accomplish a full recovery. Our 10.5% incidence of PDPD is lower than that reported in cardiac surgery, where the incidence ranges from 14-47% in patients who underwent CABG. PDPD can be interpreted as a mild variant of a post-traumatic stress disorder.

# Learning Objectives

Determine the incidence and potential factors associated with PDPD after surgical treatment of intracranial aneurysms.

#### References

Connerney I, Shapiro PA, McLaughlin JS, Bagiella E, Sloan RP: Relation between depression after coronary artery bypass surgery and 12-month outcome: a prospective study. Lancet 358:1766-1771, 2001.

Griffiths J, Fortune G, Barber V, Young JD: The prevalence of post traumatic stress disorder in survivors of ICU treatment: a systematic review. Intensive Care Med 33:1506-1518, 2007.

Krajewski K, Dombek S, Martens T, Koppen J, Westphal M, Regelsberger J:

Neuropsychological assessments in patients with aneurysmal subarachnoid hemorrhage, perimesencephalic SAH, and incidental aneurysms. Neurosurg Rev 37:55-62, 2014.

Kunugi H, Hori H, Ogawa S: Biochemical markers subtyping major depressive disorder. Psychiatry Clin Neurosci 69:597-608, 2015.

Ravven S, Bader C, Azar A, Rudolph JL: Depressive symptoms after CABG surgery: a meta-analysis. Harv Rev Psychiatry 21:59 -69, 2013.

Steptoe A, Poole L, Ronaldson A, Kidd T, Leigh E, Jahangiri M: Depression 1 Year After CABG Is Predicted by Acute Inflammatory Responses. J Am Coll Cardiol 65:1710-1711, 2015.

Tuffiash E, Tamargo RJ, Hillis AE: Craniotomy for treatment of unruptured aneurysms is not associated with long-term cognitive dysfunction. Stroke 34:2195-2199, 2003.