

## No Hemorrhagic Strokes after Cardiac Surgery: A 14 year Retrospective Study

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**Objective** In the general population, 10-30% of strokes are hemorrhagic. We aimed to investigate the incidence of hemorrhagic strokes after cardiac surgery.

**Methods** All patients who developed post operative stroke in the department of cardiothoracic surgery were retrospectively assessed over 14 years for demographic and clinical features.

**Results** Among 5275 patients operated (mean age  $63.5 \pm 12$  years, 70% males), 108 developed stroke or TIA (mean age  $68 \pm 10$  years, 60 % males). All strokes (78) were ischemic. Large vessel stroke (35/78) and right hemispheric (37/78) were the most frequent type observed. Comparison of the post operative strokes with two cohorts of stroke in a general population confirmed the difference in the incidence of intracerebral hemorrhages, absent post cardiac surgery ( $p= 0.02$ ). Most of the strokes (68%) occurred in the immediate post operative period. Strokes occurred more in patients with combined operations (coronary artery bypass graft and valve) ( $p= 0.0004$ ). Patients with strokes suffered more from hypertension, diabetes mellitus, and previous stroke than other operated patients ( $p= 0.01$ ,  $0.003$  and  $0.004$  respectively). Stepwise multivariate analysis of all perioperative cardiac risk factors identified only minimal temperature as predictor of stroke ( $p=0.03$ ). Patients with strokes had a higher mortality and were hospitalized longer ( $p < 0.0001$ ).

**Conclusions** Strokes after cardiac surgery occur mostly after combined procedures. Despite risk factors similar to those of strokes victims in the general population and post operative anticoagulation in all patients with valve surgery, no hemorrhagic strokes occurred after cardiac surgery