of this study is to determine the true incidence and long-term outcome of CIN in the optimised CKD population.

**Methods:** Consecutive patients with stage III-V CKD, undergoing peripheral (group 1) or cardiac (group 2) angiography at a single centre regional Australian hospital between 2005–2015 were included. Patients concurrently dialysing were excluded. All patients underwent pre-procedural medical optimisation by a renal physician (intravenous hydration with normal saline, blood pressure control, withholding ACE Inhibitors, Metformin and Frusemide). Low-osmolality non-ionic contrast diluted to 1/3 strength (group 1) or 1/2 strength (group 2) was used. CIN was defined as creatinine rise of >25% from baseline within 72 hours. Primary outcome was incidence of CIN. Secondary outcomes were mortality at 6 months, progression to dialysis and long-term progression of CKD.

**Results:** 537 patients with CKD stage III-V underwent angiography. 222 patients concurrently dialysing were excluded. Median ages (group 1 n = 75, Group 2 n = 76, P = 0.25) were similar; diabetes was more prevalent in group 1 (70.5%) (group 2 = 48.4%) (P = 0.001) and ischaemic heart disease more prevalent in group 2 (60.0%), (Group 1 = 44.3%) (P = 0.02). Median volume of contrast used was significantly lower for group 1 (n = 35 mls, range 2.5–350 mls) compared to group 2 (n = 75 mls, range 20–357) (P < 0.001). Combined incidence of CIN was 3.7%. Incidence of CIN did not differ between groups (group 1 = 4.1%, group 2 = 3.2%, P = 0.74). No patients with CIN died within 6 months. Follow up ranged from 2–73 months. No patient with CIN progressed to higher CKD stage or dialysis.

**Conclusion:** CIN in CKD population is multifactorial and was not related to volume of contrast used. Pre-procedural optimisation of CKD patients and low osmolarity contrast agents may reduce incidence of CIN to a level comparable with the general population. CIN in CKD patients does not lead to death or long-term disease progression.

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**Ex-vivo Renal Artery Reconstruction with Kidney Autotransplantation for Renal Artery Branch Aneurysms: Late Results of 67 Procedures**


*University of St Etienne Medical School, France*

**Introduction:** The objective of this study was to evaluate the long-term outcome of renal revascularization by ex-vivo renal artery reconstruction and autotransplantation for Renal Artery Branch Aneurysms (RABA) in view of preventing aneurysm rupture.

**Methods:** From 1991 to 2014, 67 ex-vivo renal artery reconstructions with kidney autotransplantation were performed in 58 adults (mean age, 41 years) and in 9 children to repair 87 RABAs. The main underlying disease was fibromuscular dysplasia. The mean diameter of the RABA was 23.4 mm (12–45 millimetres). Fifty-seven patients were hypertensive and were given a mean of 1.7 antihypertensive drugs per day, 61 patients had normal renal function and no patient was on haemodialysis, 7 patients (10%) were operated after failure of an endovascular procedure.

The mean number of renal artery branches repaired per patient was 3.5 and multiple aneurysms were treated in 15 patients (22.3%). The hypogastric artery was used in 41 patients, the saphenous vein in 18 patients, the superficial femoral artery in 5 patients and a combination of different materials in 3 patients. Outcomes consisted in primary patency rates, antihypertensive medication requirements, renal function and mortality. Late graft patency, renal size, and cortical thickness were analyzed by yearly renal duplex ultrasound examinations.

**Results:** One in hospital death (1.5%) occurred in a patient having undergone complex emergent aortic and renal reconstruction. Other peri-operative complications included 4 bypass occlusions and one reoperation for bleeding. During a mean follow up of 9 years, 4 patients (6%) were lost to follow up. No other bypass occlusion occurred, while two bypasses required a percutaneous angioplasty. Primary patency and primary assisted patency were respectively 90% and 92.5% at 9 years. Survival was 94% at 9 years.

Among the 57 hypertensive patients, 20 (35%) were cured and 14 (25%) were improved at 9 years with a significant reduction of antihypertensive medications (p < .05). Late renal function was preserved as measured by no change in all but 2 patients in estimated glomerular filtration rate compared with pre-intervention values. In addition, there was no difference in treated kidney size on follow up compared with pre-operative measurements.

**Conclusion:** Ex-vivo renal artery reconstruction for complex renal artery branch aneurysms suppress the risk of rupture, confers a benefit in blood pressure and preserves renal function.

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**Predicting Post-operative Delirium after Vascular Surgical Procedures.**

L. Visser

*University Medical Center Groningen, Netherlands*

**Introduction:** Post-operative delirium is a common complication after surgery. Various studies focusing on POD demonstrated that vascular patients are at increased risk for development of POD compared with other surgical patients. The objective of this study was to determine the incidence of specific pre-operative and intra-operative factors for post-operative delirium in electively treated vascular surgery patients.

**Methods:** Between March 2010 and November 2013, all vascular surgery patients were included in a prospective database. Various pre-operative, intra-operative and post-operative risk factors were collected during hospitalization. The primary outcome variable was the incidence of POD. Secondary outcome variables were any surgical complication, hospital length of stay, and mortality.

**Results:** In total, 566 patients were prospectively evaluated; 463 were 60 years or older at the time of surgery and formed our study cohort. The median age was 72 years (interquartile range (IQR) = 66–77) and 76.9% were male. Twenty-two patients (4.8%) developed POD. Factors that differed significantly by univariate analysis included current smoking (P = 0.001), increased comorbidity (P = 0.003), diabetes mellitus (P = 0.001), cognitive impairment (P < 0.001), open aortic surgery or amputation surgery (P < 0.001) elevated C-reactive protein level (P < 0.001) and blood loss (P < 0.001). Multivariate logistic regression analysis revealed pre-operative cognitive impairment (Odds Ratio (OR) = 16.4), open aortic surgery or amputation surgery (OR = 14.0), current smoking (OR = 10.5), hypertension (OR = 7.6) and age ≥80 years (OR = 7.3) to be independent predictors of the occurrence of POD. Based on these outcomes, a model was established which predicts the risk of POD with a sensitivity of 86% and a specificity of 92%. The area under the curve of the corresponding receiver operator characteristics was .93. Delirium was associated with longer hospital length of stay (P < .001), more frequent and increased intensive care unit (ICU) stays (P = .008 and P = .003), more surgical complications (P < .001), more post-discharge institutionalization (P < .001) and higher one-year mortality rates (P = .026).

**Conclusion:** In vascular surgery patients, pre-operative cognitive impairment and open aortic or amputation surgery were highly significant risk factors for the occurrence of POD. In addition, POD was significantly associated with a higher mortality and more institutionalization. Patients with these risk factors should be considered for high-standard delirium care to improve these outcomes.

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**Cost and Health Care Resource Utilization in Fenestrated and Branched Endovascular Aortic Repair of Complex Aortic Aneurysms**

J. Eriksson, A. Wanghainen, K. Mani

*Department of Surgical Sciences, Section of Vascular Surgery, Uppsala University, Uppsala, Sweden*

**Introduction:** The rapid development in treatment of complex aortic aneurysms with branched and fenestrated stent grafts (b/FEVAR) has resulted in a major shift of healthcare cost and resource utilization. However, no published data on current practice is available.

This study examines the resources used for b/FEVAR in juxta/para-renal (JPRAA) and thoraco-abdominal aortic aneurysms (TAAA).