Table 1: Studies in the literature that report adequate data regarding postoperative cognitive dysfunction (POCD)/postoperative delirium (POD) presented in chronologically ascending order.

Study	Study type	Type of surgery	Results-Significant variables for outcomes
Monk, 2008[20]	Prospective	Major noncardiac	POCD was higher at 3 months in elderly patients ($p < 0.001$); Lower educational level, previous cerebral vascular accident POCD at discharge were independent risk factors for POCD at 3 months; POCD at hospital discharge and 3 months were found to increase the mortality risk at 3 months and 12 months respectively
Hudetz, 2009[63]	Randomised	Cardiac	Ketamine attenuates POCD at 1 week ($p < 0.001$)
Mack, 2009[64]	Randomised	Vascular	Low dose intraoperative magnesium therapy protects against POCD/POD ($P < 0.01$)
Mathew, 2009[16]	Randomised	Cardiac	Lidocaine infusions during and after cardiac surgery do not reduce the rate of POCD ($p = 0.97$); Higher doses were independent predictors of POCD ($p = 0.004$)
Mitchell, 2009[66]	Randomised	Cardiac	Lidocaine was not prove to be neuroprotective
Slater, 2009[27]	Prospective	Cardiac	Intra-operative cerebral oxygen desaturation is associated with increased risk of POCD/POD ($p = 0.024$)
Steinmetz, 2010[71]	Prospective	Noncardiac	No significant difference was detected
Evered, 2011[37]	Prospective	Cardiac Orthopaedic	The incidence of POCD in elderly patients at 7 days ($p < 0.01$); higher after CABG than THJR; independent at 3 months ($p = 0.24$); CV risk factors were not predictive of POCD
Siepe, 2011[53]	Randomised	Cardiac	Normal perfusion pressures during normothermic CPB (80-90 mmHg) is associated with less early POCD/POD ($p = 0.017$)
Ballard, 2012[68]	Randomised	Abdominal Orthopaedic	Intraoperative monitoring of anaesthetic depth and cerebral oxygenation may reduce the POCD ($p < 0.05$)
Kline, 2012[21]	Retrospective	Non-cardiac	Elderly undergoing surgery experience an increased rate of atrophy in hippocampal and gray matter (5-9 months)
Saczynski,2012[39]	Prospective	Cardiac	POD is associated with more prolonged cognitive decline within 12 months after cardiac surgery
Chan, 2013[69]	Randomized double blind	Major noncardiac	BIS-guided anesthesia decreased the risk of POCD at 3 months (10.2% vs. 14.7%, $p = 0.025$)
Krüger, 2013[55]	GERAADA registry	Acute Aortic Dissection type A	Steroid administration may be associated with improved neurological outcomes
Lamy, 2013[43]	Prospective	Cardiac	At 1 year after CABG there was no significant difference between off-pump and on-pump CABG to the neurocognitive function
Mathew, 2013[65]	Randomised	Cardiac	Magnesium administered during and after cardiac surgery does not reduce POCD ($p = 0.93$)
Mu, 2013[40]	Prospective	Cardiac	High serum cortisol level in 1st postoperative morning associated with increased risk of cognitive dysfunction 7 days after CABG ($p = 0.003$)
Radtke, 2013[70]	Prospective	Noncardiac	Intraoperative neuromonitoring is associated with a lower incidence of POD ($p = 0.036$)
Sauër, 2013[5]	Randomised	Cardiac	At 7.5 years follow-up off-pump CABG had a similar or even better cognitive performance compared PCI ($p < 0.01$)
Colton, 2014[56]	Retrospective	-	Propofol does not have long-term effects on intracranial hypertension
Ellard, 2014[33]	Retrospective	Vascular	POD after vascular anesthesia is similar with regional or general anesthesia ($p = 0.56$)
Fang, 2014[28]	Prospective	Microvascular decompression	Higher doses of dexamethasone increases the incidence of early POCD
Kok, 2014[50]	Pilot study	Cardiac	No significant difference in cerebral oxygenation; CPB identified as independent risk factor for development of late cognitive dysfunction ($p = 0.027$)
Krenk, 2014[36]	Prospective	Orthopaedic	The incidence of early, but not late, POCD after total hip and knee replacement seems to be lower after a fast-track approach
Mahajan, 2014[61]	Randomised	Neurosurgery	Neuroprotection with propofol at the time of clipping during aneurysm surgery was not adequate
Ottens, 2014[29]	Randomised	Cardiac	Treatment group did not differ in the incidence of POCD 1 ($p = 0.09$) or 12 ($p = 0.24$) months postoperatively
Papadopoulos, 2014[67]	Randomised	Orthopaedic	Postoperative ondansetron administration seems to protect; might improve cognitive function in pts undergoing hip fracture surgery under GA
Saporito, 2014[57]	Prospective	ICU +/- major	Early POD is very common after major surgery, even without known risk factors ($p < 0.02$)
Shi, 2014[59]	Animal study	-	Propofol exerts neuroprotection against ischemic brain damage
Wang, 2014[62]	Randomised	-	Propofol-Dexmetomidine combination exerts a stronger neuroprotection against ischemia repercussion
Zhang, 2014[60]	Animal study	-	Propofol has a neuroprotective effect on hippocampal injury induced by hypoxia
Zhu, 2014[30]	Prospective	Orthopaedic	Perioperative blood transfusion >3 RBCs = independent risk factor for POCD in aged patients following total hip replacement surgery ($p < 0.05$)
Hudetz, 2015[47]	Randomised	Cardiac	RIPC prevented deterioration of short-term POCD ($p < 0.05$) but there were no results in POD ($p = 0.54$)
Tachibana2015[22]	Pilot study	Major surgery	Elderly patients undergoing desflurane anesthesia have significant better quality of emergence ($p < 0.05$)
Cereghetti, 2017[31]	Retrospective	Cardiac	Known risk factors for POD are also predictive of prolonged duration of POD
Chen, 2017[32]	Randomized	Orthopaedic	GA is associated with higher cognitive decline compared to combined general anaesthesia ($p = 0.005$)
Del Felice, 2016[54]	Prospective	Cardiac	A decline in hematocrits level <12 % represents a threshold for cognitive decline
Dokkedal, 2016[24]	Prospective	All types	A statistically significant decrease (-0.27; 95% CI, -0.48 to 0.06) in cognitive function was present in twins with at least one major surgery
Micha, 2016[12]	Randomised	Major noncardiac	Sevoflurane has a negative influence on postoperative cognition
Rappold, 2016[23]	Prospective	Noncardiac	Postoperative cognitive decline 1 month after surgery was associated with higher plasma concentrations of the biomarker GFAP
Tzimas, 2016[25]	Prospective	Orthopaedic	Repeated exposure of elderly patients to GA might lead to prolonged cognitive impairment
Abrahamov, 2017[48]	Prospective	Cardiac	The location and intensity BBB disruption is correlated with POCD
Glumac, 2017[49]	Randomised	Cardiac	Preoperative dexamethasone reduced the inflammatory response and the risk of early POCD
Kok, 2017[42]	Prospective	Cardiac	Postoperative cognitive dysfunction could be solely attributable to CPB
Knipp, 2017[52]	Prospective	Cardiac	Silent brain infracts did not impact early or late cognitive performance
Todd, 2017[17]	Prospective	Orthopaedic	Older people with sleep disruption are at higher risk of POD
Tzimas, 2018[13]	Randomised	Orthopaedic	The choice of anesthesia does not influence the emergence of POCD in elderly patients undergoing hip fracture surgery
Zhang, 2018[19]	Sub-analysis Randomised	Cancer surgery	Vitamin D deficiency increases the risk of early POCD

POCD: postoperative cognitive dysfunction, CABG: coronary artery bypass grafting, THJR: total hip joint replacement, CV: cardiovascular, POD: postoperative delirium, PCI: percutaneous coronary intervention, CPB: cardiopulmonary bypass, RBCs: red blood cells, GFAP: glial fibrillary acid protein.