Online Resource 2 - Study characteristics

Table S1 (page 2): Country, Sample Size, Type of surgery, Main Outcome, Secondary Outcome, Dexmedetomidine induction dose and timing, Dexmedetomidine infusion dose

Table S2 (page 4):Age, ASA-PS, definition of bradycardia, definition of hypotension, anesthetic drugs at induction, anesthetic drugs for anesthesia maintenance

Table S3 (page 6): Excluded comorbidities

Table S1

Author, year	Country	Dex (n)	Placebo (n)	Main Outcome	Secondary Outcomes	Dex Induction dose (timing)	Dex Infusion dose
Basar, 2008	Turkey	20	20	Haemodynamic, and cardiovascular effects of dexmedetomidine used as a single preanesthetic dose	Thiopental requirement and effects on recovery time	0.5 mcg/kg (10 min)	No
Bhagat, 2016	India	60	60	Haemodynamic response to stress	Dexmedetomidine's dose sparing effect on fentanyl, propofol and isoflurane	0.5 mcg/kg (20 min)	0.5 mcg/kg/h
Bhattacharjec, 2010	India	30	30	Haemodynamic response to surgery	Recovery time	0.01 mcg/kg (5 min)	0.2 mcg/kg/h
Bielka, 2018	Ukraine	30	30	Postoperative mor-phine consumption during first 24 h and cumulative during hospital stay.	Time to first use rescue analgesia, number of patients with severe pain, intraoperative fentanyl consumption, time from end of surgery to extubation, lengths of intensive care unit (ICU) and general ward stay, degree of postoperative pain 3, 6, 12 and 24 h after Surgery, incidence of persistent post-surgical pain (6 months)	0.02 mcg/kg (not specified time)	0.5 mcg/kg/h
Chavan, 2016	India	30	30	Haemodynamic stability during perioperative period	Recovery from anesthesia	1 mcg/kg (10 min)	0.5 mcg/kg/h
Chilkoti GT, 2020	India	40	40	Analgesic efficacy, and haemodynamic stability	The total tramadol consumption in 24 hr, and sedation score between two groups	0.1 mcg/kg/min (10 min)	0.5 mcg/kg/h
Hazra, 2014	India	30	30	Haemodynamic response to surgery	No secondary outcome	1 mcg/kg (15 min)	No
Khanduja, 2014	India	30	30	Dose of anesthetics	Post-operative pain, clinical recovery score	0.25 mcg/kg (30 min)	0.6 mcg/kg/h
Khare, 2017	India	20	20	Haemodynamic response to intubation and surgery	Propofol requirement, recovery profile	1 mcg/kg (not specified)	0.6 mcg/kg/h
Kholi, 2017	India	30	30	Haemodynamic response to surgery	Postoperative sedation and analgesia	1 mcg/kg (10 min)	No

Park, 2015	Korea	15	15	Hemodynamics and anesthetic requirements	Time to extubation	0.025 mcg/kg (5 min)	0.3 mcg/kg/h
Sharma P., 2017	India	50	50	Sevoflurane sparing effect of DEX	Induction dose of propofol, hemodynamic parameters, postoperative recovery characteristics, and cost-effectiveness.	0.5 mcg/kg (10 min)	0.5 mcg/kg/h
Srivastava, 2015	India	27	29	Haemodynamic stability and anesthetic agents sparing effect.	Recovery profile and side effects	1 mcg/kg (15 min)	0.5 mcg/kg/h
Ye. 2021	China	90	30	Hemodynamic stability	Prevention of cough and postoperative pain	0.4, 0.6,0.8 mcg/kg(10 min)	No
Zarif, 2015	Egypt	17	17	Haemodynamic response to surgery	Sedation after surgery, and recovery profile	0.4 mcg/kg/h	0.4 mcg/kg/h

Table S2

Author (year)	Age	ASA	Definition of bradycardia	Definition of hypotension	Anesthetic drugs at induction	Anesthetic drugs for anesthesia maintenance
Basar, 2008	20-60	I-II	No definition	No definition	Thiopental until loss-of-eyelid reflex , Vecuronium 0.1 mg/kg	Desflurane, O2:N2O (50:50) titrated to achieve a BIS value between 40 and 60.
Bhagat, 2016	18-60	I-II	No definition	No definition	Propofol dose sufficient to abolish the verbal response, Fentanyl 1,5 mcg/kg, , Vecuronium 0,1 mg/kg	Isoflurane to keep BIS within value of 40-60. If the HR or MAP increased by 20% above baseline while BIS within target and TOF score zero, an additional 0.5 µg/kg dose of Fentanyl was repeated. Even after that, if HR and MAP remained above 20% from the baseline values, Isoflurane was increased by fraction of 0.2%.
Bhattacharjec, 2010	18-65	I-II	No definition	No definition	Propofol 2 mg/kg, Fentanyl 1mcg/kg, Rocuronium 0,7 mg/kg	O2:N2O , Fentanyl 0,5 mcg/kg , Rocuronium
Bielka, 2018	18-79	I-II	heart rate < 50	systolic blood pressure < 90	Propofol 2 mg/kg, Succinylcholine 1.5 mg/kg.	Sevoflurane , Atracurium with BIS monitor target was 40–60 and the ANI monitor target was 50–70.
Chavan, 2016	20-50	I-II	HR value 20% less than basal	BP value 20% less than basal	Propofol 2-2.5 mg/kg, Midazolam 0.02 mg/kg, Fentanyl 2 mcg/kg, , Succinylcholine1.5 mg/kg	O2:N2O (40:60), sevoflurane to maintain the HR and BP within 20% of the baseline value , Vecuronium 0.08 mg/kg and intermittent top-ups of 0.02 mg/kg when required , Fentanyl 0.5 µg/kg top-ups to keep the MAP within 20% of baseline
Chilkoti GT, 2020	18-50	I-II	HR ≤45 bpm	<20% of baseline SBP)	Propofol 2 mg/kg , Morphine 0.1 mg/kg , Vecuronium 0.1 mg/kg	O2:N2O (33:66), of isoflurane(0.8–1.5%) maintaining a MAC of around 1- 1.2.
Hazra, 2014	18-50	I-II	No def	No def	Thiopental 3-5 mg/kg, Midazolam 0.05 mg/kg , Fentanyl 1 mcg/kg, Vecuronium 0.1mg/kg	N2:O2 (60:40)
Khanduja, 2014	-	-	No def	No def	Thiopental 2 mg/kg supplemented with 25 mg boluses every 15 s until loss of eyelid reflex , Pentazocine Succinylcholine 1.5 mg/kg ,	Isoflurane (MAC 1 control group, MAC 0.5 test group) , rocuronium 0.8 mg/kg , Pentazocine 0.1 mg/kg on when signs of intraoperative pain
Khare, 2017	40-50	I-II	No def	No def	Propofol 20 mg every 5 s till BIS <60 , Fentanyl 2 mcg/kg , Atracurium 0.5 mg/kg	O2:N2O (50:50) , Propofol titrated to maintain BIS 55-60 , atracurium
Kholi, 2017	18-60	I-II	No def	No def	Propofol 2mg/kg , Succinylcholine 1.5mg/kg	N2O:O2 (66:33) , Halothane (0.5%) , Atracurium 0.5 mg/kg (then 0.1 mg/kg)

Park, 2015	30-55	I-II	HR<45 bpm	SBP <80 mmHg,	Propofol TCI (Cet 5.0 mcg/ml) , Remifentanil TCI (Cet 4.0 ng/ml) , Rocuronium 0.8 mg/kg	Propofol TCI(Cet 2.5-4 mcg/ml to maintain a BIS score between 40 and 55), Remifentanil TCI (Cet 2-5 ng/ml to maintain BP and HR ±20 % of the pre-induction value)
Sharma P., 2017	18-60	I-II	HR <20% of baseline value	SBP<20% of baseline value	Propofol 2-2.5 mg/kg till the entropy value reached 40–60, Fentanyl 2 mcg/kg , Vecuronium 0.1mg/kg	O2:N2O (40:60) , Sevoflurane
Srivastava, 2016	20-60	I-II	HR <50/min	MAP <30% baseline	Propofol 10 mg every 5 sec until BIS<60 , Midazolam 0.03 mg/kg , Fentanyl 1 mcg/kg , Vecuronium 0.1 mg/kg	O2:N2O (40:60) , Propofol to achieve a target BIS 40-60 , Fentanyl 0.5 mcg/kg if MAP > 20% from baseline or tachycardia with maintaining BIS 40-60 , Vecuronium 0.015 mg/kg when TOF count exceeded 2
Ye, 2021	18-60	I-II	No def	No def	Propofol 1.5–2 mg/kg,Midazolam 0.03 mg/kg Sufentanil 0.4 μg/kg and Rocuronium 0.6 mg/kg	Sevflurane
Zarif, 2015	50-60	I-III	No def	No def	Propofol 2 mg/kg , Midazolam 1-2 mg , Fentanyl 1 mcg/kg , Cisatracurium 0.15-0.2 mg/kg	Sevoflurane (MAC 2) , Cisatracurium

Table S3

Author (Year)	Comorbidities excluded
Basar 2008	Alcohol abuse, cardiac, pulmonary, renal, hepatic diseases.
Bhagat,2016	Cardiovascular disease, epilepsy, hypertension, chronic obstructive pulmonary disease, taking any antipsychotic medications or allergy to the drugs used.
Bhattacharjee, 2010	Hypertension, morbid obesity, severe hepatic, renal, endocrine and cardiac dysfunction.
Bielka k, 2018	Pregnancy or lactation, severe systemic disease, and use of beta-blockers or calcium-channel blockers.
Chandra A,2016	Patients with cardio-pulmonary, hepatic, renal, ophthalmic or metabolic diseases, previous ophthalmic surgery.
Chilkoti GT,2020	Body Mass Index >30 kg/m , renal or hepatic insufficiency, neurologic, psychiatric disease, preoperative HR <45/min or on antihypertensive medication with any α adrenergic agonists e.g., clonidine.
Hazra R., 2014	Any degree of heart block, pre-existing hypertension, cardiovascular, hepatic or renal disease, allergies to the drugs used, or acute cholecystitis, pregnancy, lactation, preoperative clonidine, methyl-dopa, beta blockers, benzodiazepines, MAO inhibitors.
Khanduja,2014	Anemia, long term medications or any medication within 1 week before surgery, history of any chronic disease, cardiac problem, history of drug abuse, consumption of more than 30g/die of alcohol, use of Beta blockers, abnormal preoperative electrolytes.
Khare A.,2017	Decreased autonomic control such as the elderly, diabetic patients, preoperative hypotension, bradycardia, dysrythmia, chronic hypertension, severe cardiac disease, preoperative beta blockers, calcium blockers, patients with anticipated difficult airway, obese patients with history of sleep apnea, anemic patients, impaired hepatic or renal function, pregnant or lactating women, patients with history of drug abuse, allergy to egg proteins and drugs.
Kholi,2017	Anticipated difficult intubation, ASA grade III or greater, uncontrolled hypertension, morbid obesity, history of alcohol / drug abuse, severe renal, hepatic, endocrine and cardiac dysfunction and pregnancy.
Park,2015	Uncontrolled hypertension, BMI > 30, renal/hepatic dysfunction, allergy to alpha-2-agonists.
Sharma, 2017	Significant cardiorespiratory, hepatic or renal insufficiency, patients on beta blockers, anticonvulsants, or any other centrally acting medications, anticipated difficult airway, pregnancy, lactation, alcohol or substance abuse.
Srivastava,2015	History of hypertension, morbid obesity, allergy to study medications, renal or hepatic insufficiency and cardiopulmonary or respiratory problems.
Ye, 2021	Bradycardia, atrioventricular block and severe cardiac dysfunction, diabetes, hypertension, coronary heart disease, liver and kidney function seriously damaged, chronic pain, upper respiratory tract infection, asthma, smoking
Zarif ,2016	Preoperative neoadjuvant therapy, generally unfit for resection surgery, inoperable lesion requiring relieving or dysfunctioning colostomy, cardiopulmonary diseases, renal or liver impairment, or allergy to any of the used drugs, morbidly obese with body mass index >35 kg/m2