**Appendix 1:** Search strategy

Titles, abstracts and full-texts were reviewed in that order.   
Only full text articles were eligible.

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| --- | --- | --- | --- | --- | --- | --- |
| **Database** | **Filters** | **Search # 1** | **Items** | **Search # 2** | **Items** | **Search #3: #1 AND #2** |
| Pubmed: | None | Remifentanil | 3.481 | Sedation | 29.865 | 535 |
| EMBASE: | Full text  Human | Remifentanil | 5.299 | Sedation | 33.423 | 1.146 |
| Web of Knowledge: | Full text articles | Remifentanil | 3.712 | Sedation | 25.386 | 600 |
| Total |  |  | 12.492 |  | 88.674 | **2.281** |

**Additional wording in Pubmed**

Additional MeSH terms in Pubmed were (“Colonoscopy” OR “endoscopy” OR “gastroscopy” OR “endoscopic” OR “Fiberoptic intubation” OR “Enteroscopy” OR “EUS” OR “ERCP” OR “EBUS” OR “bronchoscopy” OR “hysteroscopy” OR “cystoscopy” OR “hysteroscopic” OR “esophagoscopy” OR “esophagogastroduodenoscopy” OR “endoscopic ultrasound” OR “endoscopic ultrasonography” OR “endoscopic retrograde cholangiopancreatography” OR “endoscopic bronchial ultrasound”) AND (“analgesia OR analgosedation OR sedative”). This search did not identify additional items.

**Appendix 2:** Summary of included studies by administration

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| --- | --- | --- | --- | --- | --- |
| **Reference** | **Procedure** | **Method** | **Number of Participants (n),**  **ASA I/II/III** | **Administration modus and doses** |  |
| ***Remifentanil vs. Propofol*** | | | | | |
| Lee et al. [17] | Fiberoptic intubation | Remifentanil (R) TCI vs. Propofol (P) TCI.  Double-blind | n=57 | R-TCI: 2.4 ± 0.8ng.ml-1  P-TCI: 2.0 ± 0.5mcg.ml-1 |  |
| Bouvet et al. [19] | Endoscopy | Remifentanil (R) infusion + PCI vs Propofol infusion (P) + PCI. Single Blind | n=77,  21/56/0 | R-infusion 0.083mcg.kg.min. PCI: 25mcg.5min-1  P-infusion: 0.033mg.kg.min. PCI: 0.5mg.kg.10min-1 |  |
| Krenn et al. [20] | Carotid endarterectomy | Remifentanil (R) infusion vs. Propofol (P) infusion. Both with Cervical plexus block.  Single blind | n=60,  0/0/60 | R-infusion fixed: 0.05mcg.kg.min-1  P-infusion fixed:  0.016mg.kg.min-1 |  |
| Holas et al. [22] | Eye surgery | Remifentanil (R) infusion vs. Propofol (P) infusion vs. Remi+Prop (RP) infusion. All with retrobulbar block | n=45,  -/-/0\* | R-infusion mean: 0.053 mcg.kg.min-1  P-infusion mean: 1.48 mg.kg.min-1  RP-infusion mean: 0.028 mcg.kg.min-1 and 0.71 mg.kg.min-1 |  |
| Lena et al. [26] | Radiofrequencytreatment of atrial flutter | Remifentanil (R) infusion with PCI vs Propofol (P) TCI. Double blind | n=40,  -/-/-\* | R-infusion mean 0.07 ± 0.04mcg.kg.min-1  R-PCI bolus 0.3mcg.kg-1. No of bolus´:2.85 ± 1.35  P-infusion mean: 162.9 ± 75.8 mcg.kg.min-1 |  |
| Zhang et al. [29] | Fiberoptic intubation | Remifentanil TCI (R) vs. Propofol TCI (P). Limited topical anesthesia. Double blind | n=36,  11/25/0 | R- TCI 3.74ng.ml -1  P- TCI 2.60mcg.ml-1 |  |
| Lallo et al. [30] | Fiberoptic intubation | Remifentanil (R) TCI vs. Propofol (P) TCI | n=60,  0/38/22 | R-TCI: 2.4 ± 0.8ng.ml-1  P-TCI: 3.9 ± 1.4mcg.ml-1 |  |
| Ferraro et al. [31] | Blepharoplasty and otoplasty | Remifentanil (R) infusion vs Propofol (P) infusion vs. Midazolam (M) infusion | n=90,  -/-/0\* | R-infusion mean 0,08mcg.kg.min-1  P-infusion mean: 0.02mg.kg.min-1  M-infusion mean: 0.003mg.kg.min-1 |  |
| Girard et al. [34] | Intracraniel space-occypying leasion | Remifentanil infusion (R) vs Propofol infusion. Scalp block. | n=40,  Mean ASA 2.0 | R-infusion mean 0.07mcg.kg.min-1  P-bolus 0.5mg.kg and P-infusion 0.07mg.kg.min-1 |  |
| ***Remifentanil vs. Midazolam + opioid*** | | | | | |
| Avramov et al. [3] | Breast Biopsy | Remifentanil infusion (R) vs. Remi+midazolam(RM) 2 mg vs Remi+Mida 4 mg vs Remi+Mida 8 mg. All with infiltration anesthesia. Double blind | n=81,  37/44/0 | R-infusion mean 0.11mcg.kg.min-1  RM2mg-inf mean: 0.089mcg.kg.min-1  RM4mg-inf mean: 0.078mcg.kg.min-1  RM8mg-inf mean: 0.070mcg.kg.min-1 |  |
| Bonfreschi et al. [16] | AAA endovascular repair | Remifentanil (R) infusion vs fentanyl and midazolam (MF). Single blind | n=50,  Mean ASA 3.0 | R-infusion: 003mcg.kg.min-1 adjusted if VAS> 4  MF bolus: 0.05-0.1mg.kg-1 and 1-3mcg.kg-1 maximum every 5 min. |  |
| Fanti et al. [18] | Colonoscopy | Remifentanil (R1) bolus + PCI vs Remifentanil (R2) bolus + PCI vs  Meperidine (M) Bolus + PCI placebo | n=90 | R1-bolus mean: 81.5 mcg (SD 40.83), PCI bolus 0.5mcg.kg-1, 2.min. Lockout  R2-bolus mean: 111.77mcg (SD 52.50), PCI bolus 0.8mcg.kg-1, 2. min. Lockout  M-bolus mean: 128.03mg (SD 85.4) |  |
| Lier et al. [23] | Oocyte retrieval | Remifentanil (R) infusion + PCI vs  Midazolam+Pethedine (MP)Bolus | n=78 | R-infusion mean 0.05mcg.kg.min-1  R-PCI bolus 0.5mcg.kg-1, 3. min. Lockout  MP 7.5mg and 2mg.kg i.m. |  |
| Puchner et al. [24] | Fiberoptic intubation | Remifentanil (R) infusion vs. Fentanyl (F) and Midazolam (M) bolus | n=74,  -/-/0\* | R-infusion mean 0.47mcg.kg.min-1 §  F-Bolus 1.5mg.kg-1  M-total mean:3.8mg (range 1–10mg) |  |
| Manolaraki et al. [25] | Colonoscopy | Remifentanil (R) infusion vs. Midazolam and Pethidine (MP) bolus | n=116,  46/48/22 | R-infusion mean 0,13 mcg.kg.min-1  M: 4.1mg ± 1mg  P: 83.1 ± 20.3mg |  |
| Ferraro et al. [31] | Blepharoplasty and otoplasty | Remifentanil (R) infusion vs Propofol (P) infusion vs. Midazolam (M) infusion | n=90,  -/-/0\* | R-infusion mean 0,08mcg.kg.min-1  P-infusion mean: 0.02mg.kg.min-1  M-infusion mean: 0.003 mg.kg.min-1 |  |
| ***Remifentanil vs. Opioid*** | | | | | |
| Orbach-zinger et al. [12] | Second trimester abortion | Remifentanil PCI (R) \*\*\* vs Tramadol-metoclopramid (TM) PCI. Double blind | n=30,  -/-/0\* | R-PCI 0.4mcg.kg.ml-1  T+M loading 1.0mg.kg-1 + 10 mg.  T-PCI 0.3kg.ml.5.min-1 |  |
| Cortinez et al. [27] | Shock-wave lithotripsy | Remifentanil (R) TCI vs. Fentanil (F) TCI | n=44,  -/-/0\* | TCI mean: 2.8ng.ml-1  R-infusion mean: 0.16 ± 0.07mcg.kg.min-1  F-infusion mean: 0.15 ± 0.05mcg.kg.min-1  TCI-mean: 2.9ng.ml-1 |  |
| Akgül et al. [35] | Cataract surgery | Remifentanil (R) PCI vs. Fentanil (F) PCI vs. Saline. Double blind | n=120,  -/-/-\* | R: 20mcg.bolus, 3. min lockout. Additional push 1.2 times  F: 10mcg.bolus 5 min lockout. Additional push 1.07 times |  |
| ***Remifentanil vs. Propofol + Remifentanil*** | | | | | |
| Joo et al. [13] | Shock-wave lithotripsy | Remifentanil (R) PCI vs. Remi-propofol (RP) PCI. Double Blind | n=120,  Mean ASA 1.0 | R-PCI: 10mcg.bolus, No. requested: 33.5(15.5–46.5)  RP-PCI 10mcg+5mg.bolus, No requested: 24 (15–32.8) |  |
| Holas et al. [22] | Eye surgery | Remifentanil (R) infusion vs. Propofol (P) infusion vs. Remi+Prop (RP) infusion. All with retrobulbar bolck | n=45,  -/-/0\* | R-infusion mean: 0,053mcg.kg.min-1  P-infusion mean: 1.48mg.kg.min-1  RP-infusion mean: 0.028mcg.kg.min-1 and 0.71 mg.kg.min-1 |  |
| ***Remifentanil vs. TIVA: Propofol+Remifentanil*** | | | | | |
| Majholm et al. [15] | Operative hysteroscopy | Remifentanil (R) infusion with paracervical block vs. Total i.v. anaesthesia (TIVA) | n=91,  66/25/0 | R- infusion mean 0,167 mcg.kg.min-1 |  |
| ***Remifentanil vs. Dexmedetomidine*** | | | | | |
| Hu et al. [14] | Fiberoptic intubation | Remifentanil TCI (R)\*\*  Vs. Dexmedetomidine infusion (DXM). Double blind | n=40, 22/15/3 | R-TCI mean 3.9ng.ml-1  DXM loading dose 1.5mcg.kg-1, infusion 0.7mcg.kg.h-1 |  |