A systematic review of the feasibility and safety of day case nasal and/or palatopharyngeal surgery in patients with obstructive sleep apnoea

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Abstract

Introduction Recent guidelines suggest obstructive sleep apnoea (OSA) is not an absolute contraindication for same day discharge following surgery. The aim of this systematic review was to examine the feasibility and safety of day case nasal and/or palatopharyngeal surgery in patients with OSA. Methods We performed a systematic search of PubMed, EMBASE and the Cochrane library. Quality assessment of included studies was done. The protocol of this systematic review was registered with PROSPERO (CRD42021273451). Results A total of 1836 patients from ten observational studies were included. There were 268 (15.4%) nasal surgeries, 738 palatopharyngeal surgeries (42.4%) and 735 (42.2%) combined nasal and palatopharyngeal surgery. The majority of patients had moderate to severe OSA. A total of 860 patients (49.8%) were successfully discharged as day cases. There were no standard criteria for daycase surgery. Post-anaesthetic respiratory events were reported in 86/1750 (4.9%) patients. Oxygen desaturation was the most common respiratory event (83.7%, n = 72). There was no mortality reported. Conclusion Current data suggests day surgery is feasible in carefully selected patients with OSA undergoing nasal and/or palatopharyngeal surgery. Further well-designed prospective studies with an emphasis on the systematic assessment of complications are required to establish safety and daycase criteria.

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Results

A total of 1836 patients from ten observational studies were included. There were 268 (15.4%) nasal surgeries, 738 palatopharyngeal surgeries (42.4%) and 735 (42.2%) combined nasal and palatopharyngeal surgery. The majority of patients had moderate to severe OSA. A total of 860 patients (49.8%) were successfully discharged as day cases. There were no standard criteria for daycase surgery. Post-anaesthetic respiratory events were

reported in 86/1750 (4.9%) patients. Oxygen desaturation was the most common respiratory event (83.7%, n = 72). There was no mortality reported.

Conclusion

Current data suggests day surgery is feasible in carefully selected patients with OSA undergoing nasal and/or palatopharyngeal surgery. Further well-designed prospective studies with an emphasis on the systematic assessment of complications are required to establish safety and daycase criteria.

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Keywords: daycase; ambulatory; nasal surgery; palatopharyngeal surgery; obstructive sleep apnoea; safety; feasibility

Key points

1. There is a lack of standardised day case criteria for patients with OSA undergoing nasal and/or palatopharyngeal surgery.
2. Approximately 50% of 1727 patients with OSA in 10 published series were discharged as a day case following nasal and/or palatopharyngeal surgery. It was not clear which cases were planned as a daycase and which cases were allowed home the same day based on favourable post-operative clinical parameters.
3. Respiratory events occurred in around 5%, and the majority of these patients were simple desaturations managed by oxygen supplementation in the inpatient groups. Other complications included laryngospasms, tongue swelling and floor of mouth haematoma causing airway obstruction.
4. Concurrent tongue base surgery was associated with more serious respiratory events such as tongue swelling and floor of mouth haematoma causing airway obstruction.
5. There is a need for well-designed prospective studies exploring pre-defined discharge criteria and the systematic assessment of post-operative complications especially in the daycase group to provide more evidence on the safety in this population.

Introduction

There is a push towards day surgery as the default option for elective surgery in the UK. It is increasingly recognized that day surgery is cost-effective, reduces hospital-acquired infections and thromboembolic events, and increases patient satisfaction (1). The range and complexity of procedures that can be performed as day surgery have also expanded, facilitated by dedicated day case units, experienced teams, and protocols.

Surgical patients with obstructive sleep apnoea (OSA) have a higher risk of perioperative complications such as hypoxaemia, cardiac arrhythmias and myocardial infarction (2). These patients also often have multiple comorbidities associated with OSA such as hypertension, diabetes or heart failure. Anaesthetic agents and sedatives given during surgery may further exacerbate upper airway collapsibility in these patients and worsen sleep apnoea. Strong opioid analgesics given during and after surgery for pain relief may cause respiratory depression in these patients that are already vulnerable. Thus, patients with OSA are often monitored in intensive care units post-operatively.

In patients with OSA, nasal surgery can improve symptoms, reduce the severity of OSA and also improve compliance with CPAP (continuous positive airway pressure) devices. Palatopharyngeal surgery optimizes upper airway anatomy and again may provide symptomatic relief in these patients as well as reduce the severity of OSA. In the UK, nasal surgery and palatopharyngeal surgery are generally performed as day cases in patients without OSA. In patients with OSA, they are more likely to be inpatients and may even require post-operative monitoring in a high dependency or intensive care setting. This is due to concerns regarding serious respiratory or cardiac complications post-operatively, and mortality has been reported (3).

There is also concern that nasal packing in patients with OSA makes the use of CPAP post-operatively more difficult and thus increases risk of hypoxaemia and respiratory complications. Inpatient bed shortages often lead to these operations being cancelled. Recent day surgery guidelines suggest OSA is not an absolute contraindication for same day discharge (1). However, no recommendation was provided for airway surgery specifically due to the lack of evidence and inherently higher risks with these patients (4).

Our aim was to conduct a systematic review to evaluate current evidence base on the feasibility and safety of day case nasal and/or palatopharyngeal surgery in patients with OSA or suspected OSA.

Methods

A systematic search of PubMed, EMBASE and Cochrane library was done with no restriction on publication date (January 2021). The following search strategy was used: ((nasal surgery OR sinus surgery OR FESS OR endoscopic sinus surgery OR functional endoscopic sinus surgery OR septoplasty OR septal surgery OR turbinoplasty OR turbinectomy OR turbinate reduction OR SMD OR submucosal diathermy OR polypectomy OR uvulopalatoplasty OR uvuloplasty OR uvulopalatopharyngoplasty OR supraglottoplasty) AND (apnoea OR apnea OR hypopnoea OR hypopnea) AND (day case OR day-case OR daycase OR ambulatory OR outpatient OR discharge)).

Title and abstract from the initial search were screened independently by two authors (ETT, OE) according to eligibility criteria (Table 1), and full-text articles were retrieved accordingly and assessed further. See Table 1 for definitions of individual terms used for the study. Any discrepancies on study eligibility were discussed among two authors (ETT, OE) and a consensus reached. References from included full-text articles were screened to identify further eligible studies.

A standardized data collection proforma was used and this was piloted on two studies) and revised accordingly. Subsequent data collection was performed by one author (ETT) and the verification of data accuracy was performed by another author (WSL). The following data items were collected: Study characteristics, population demographics including severity of OSA, type of surgery performed, anaesthetic and/or surgical techniques if reported, length of follow-up, reported outcomes and complications. Our main outcomes were the proportion of daycase discharges in these studies and any respiratory events/complications that were reported in the follow-up period in each study.

The risk of bias in the included studies was assessed using Murad's tool (5).

Due to the heterogeneity of the included studies, we did not perform a meta-analysis.

This review protocol was registered with PROSPERO database (CRD42021273451). No ethical approval was needed due to the nature of the study. PRISMA reporting guideline was used in preparation of the manuscript.

Results

Figure 1 shows the PRISMA flow diagram for studies selection. A total of nine retrospective observational studies and one prospective observational study were included. There were nine studies from North America and one study from Southeast Asia. Results of the methodological quality as assessed with Murad's tool are shown in Table 2.

The studies included a total of 1836 patients, with 1369 (74.6%) males and 467 (25.4%) females. One study (6) did not provide information on the method of diagnosis of OSA. All the other studies used polysomnography to confirm a diagnosis of OSA. Table 3 shows the individual study characteristics and main outcomes.

Most patients in the included studies fell under the category of moderate to severe OSA as indicated by the reported mean or average Apnoea-Hypopnoea Index (AHI) or Respiratory Disturbance Index (RDI). Two studies did not assess the severity of OSA among their participants (6, 7).

The majority of studies that reported participants' average Body Mass Index (BMI) were either in the overweight or obese category apart from Pang et al (8) which reported a mean BMI of 24.6. However, it is

worth noting that this study was conducted in Singapore and the World Health Organisation (WHO) has recognised that a BMI [?] 23kg/m^{2}among the Asian population indicates an increased health risk similar to that of BMI [?] 25kg/m^2 in other populations (9). Two studies did not have information on BMI (6, 10).

We evaluated the procedures reported; One study did not specify the exact number of each surgery performed and was excluded from this calculation (7). Of the 1741 surgeries performed, there were 268 (15.4%) nasal surgeries, 738 (42.4%) palatopharyngeal surgeries and 735 (42.2%) combined nasal and palatopharyngeal surgeries (including concurrent tongue surgery). Nasal surgeries were either a septoplasty or procedures to turbinates such as submucous diathermy/turbinoplasty or both a septoplasty and turbinate surgery. All palatopharyngeal surgeries included at least uvulopalatopharyngoplasty with various additional procedures such as expansion sphincteroplasty, anterior palatoplasty or tongue surgery however most studies did not provide the numbers of the additional procedures.

Day case discharges and criteria

A total of 860/1727 (49.8%) patients were discharged on the same day following nasal and/or palatopharyngeal surgery. One study was excluded from this analysis as the number of patients who were discharged on the same day was not clear (11). A total of 33 patients (1.9%) stayed overnight due to social reasons such as lack of transportation or at the patient's request (8, 12, 13).

There was a lack of details across the studies on the number of planned day cases and the number of patients who were discharged on the same day due to good postoperative clinical parameters. Four studies did not report clear criteria for day cases (6, 11, 13, 14). Three studies reviewed patients post-operatively in recovery or the post-anaesthetic care unit (PACU) for desaturations prior to making a discharge decision (12, 15, 16). All the patients with mild or moderate OSA (defined as AHI [?] 30) were day cases in one study (10) although it was unclear if this was predetermined. The remaining two studies based the discharge decision on the type of surgery and surgeons' preferences (7, 8). Patients who had concurrent tongue surgery were usually admitted overnight for observation.

Four studies had a lack of data on intensive care or high dependency admissions among the inpatient group (6, 10, 13, 14). Two studies reported no ITU admissions (n = 83) among inpatients (12, 13, 15) of which one monitored all inpatients with continuous pulse oximetry overnight (15). All the inpatients of two studies (n = 323) were admitted to the high dependency unit or a similar ward set-up with a higher nurse to patient ratio and continuous pulse oximetry monitoring as a routine precaution (8, 16). Seventy five out of 216 (34.7%) inpatients of the remaining two studies were admitted to intensive care unit although the criteria for this was unclear and the level of intervention each patient received was unclear (whether it is for monitoring or if patients were kept intubated and ventilated) (7, 11).

Post-anaesthetic respiratory events

A total of 86/1750 (4.9%) patients had post-anaesthetic respiratory events, of which 81 (94.2%) occurred among the inpatient group. It was unclear in one study how many patients were admitted due to having a respiratory event post-operatively (15) and this study was excluded from the above analysis. The most reported respiratory event was oxygen desaturations which occurred in 72 patients (83.7%), and of these, 26 (36.1%) were recorded specifically in recovery or in the post-anaesthetic care unit (PACU). The majority of these were managed with simple oxygen supplementation and no further complications were observed. The 5 patients in the day case group had oxygen desaturations in PACU and were given oxygen supplementation and then discharged the same day. The severity of desaturation and duration of oxygen supplementation was unclear. Other reported respiratory events included laryngospasms (n=3) (7, 14), tongue swelling (only in patients who had concurrent tongue surgery, n = 9) (8), upper airway obstruction due to floor of mouth haematoma (had concurrent tongue surgery, n=1) (8) and significant airway compromise requiring naloxone, oxygen and airway suctioning (n = 1) (11). For the patient with airway compromise, this occurred in the immediate postoperative period and the authors attributed it to incomplete anaesthesia reversal.

Other post-operative events and mortality

Post-operative bleeding especially amongst those who had a concurrent tonsillectomy has been reported in all the studies except one (13). It was the most reported non-respiratory event (53/1750, 3.0%) and tended to occur following discharge regardless of being performed as a day case or inpatient group. Post-operative pain and/or dehydration were also common post-operative events reported (6, 10, 14). Other complications reported were sinus bradycardia (16), hypertension (8, 11) with some patients requiring IV labelatol, and urinary retention (11, 12).

None of the studies had any mortality documented within the follow-up period. The length of follow-up varied from seven days to 30 days. Two studies did not specify a length of follow-up (11, 12).

Use of nasal packing post nasal surgery and use of CPAP perioperatively

Only one study reported the routine use of Doyle bivalve splints post nasal surgery (15) while the remaining studies did not provide information on nasal packing following nasal surgery.

There was a lack of data on the use of CPAP perioperatively. One study reported that all patients were started on CPAP two weeks after surgery (10). They did not report if all patients were previously on CPAP prior to surgery. In addition, there was no report on follow-up regarding the use of CPAP. Another study reported 23 patients on CPAP perioperatively but similarly, no additional information on post-operative compliance with CPAP (11). The remaining studies either did not have routine use of CPAP post-operatively (14) or did not report on use. One patient had a new prescription of CPAP on the first post-operative night due to 'witnessed upper-airway obstruction' having previously refused CPAP but it was not stated what surgery this patient had undergone (16).

Analysis of risk factors between subgroups

Two studies did not identify the severity of OSA as a risk factor for complications (10, 11), however one study did report that patients with an AHI [?] 22 and a BMI [?] 30 were more likely to require oxygen in PACU (14). A few studies have reported severe OSA among patients who had desaturations but due to the small numbers, no statistical analyses were performed (7, 8, 12). Patients who had post-PACU complications also had a higher incidence of co-morbid illness (p=0.03) and multiple comorbidities (p=0.02) (14). One study identified that patients who had concurrent nasal and palatopharyngeal surgery were more likely to be admitted (p=0.02) (12).

Discussion

OSA is a common disorder caused by disruption to breathing during sleep due to recurrent collapse of the pharyngeal airway leading to hypopnoea or apnoea events which has both short term and long term health effects (17). Studies of patients with OSA have demonstrated an increased risk of post-operative complications including respiratory and cardiac events such as myocardial infarction or cardiac arrhythmias and patients are more likely to require intensive care input (2, 18, 19). A sensitivity to narcotics resulting in respiratory depression and desaturations is also a recognised complication among this cohort of patients which usually results in increased post-operative monitoring in at least a high-dependency setting (20).

However, with progress in day surgery, the Association of Anaesthetists and the British Association of Day Surgery have published a consensus document recognising that not all OSA patients need overnight monitoring and selected patients can be safely discharged the same day (1). These guidelines do advise certain considerations such as avoiding postoperative opioid medications, use of regional anaesthesia if possible, optimising comorbid conditions, the post-operative use of a CPAP device if patients were already utilising one and a postoperative review prior to discharging the same day. Some of these considerations are difficult to achieve in upper airway surgeries and the risk of airway complications or respiratory events are higher than in other surgeries.

Our review indicates that despite the majority of the patients falling into the moderate or severe OSA category and having upper airway surgery, almost half of the patients were discharged on the same day with minimal respiratory events either in the immediate post-operative period or during follow-up in the form

of readmissions. Oxygen desaturations were the most commonly reported respiratory event and these were often managed with oxygen supplementation with no further complications observed during the remainder of the inpatient stay. This would suggest that this group of patients can be safely monitored in an area with continuous monitoring and increased nurse to patient ratio, but not necessarily needing intensive care or high dependency input. Major airway complications such as laryngospasms were almost always picked up immediately post-extubation and this would prompt post-operative care in a more appropriate setting. There was no mortality reported among the 1836 patients in this review.

Major respiratory events following nasal and palatopharyngeal surgery for OSA are rare. Concurrent tongue base surgery however, can be associated with more serious respiratory events and in these patients, overnight observation would be prudent.

One large study evaluated a North American database for morbidity and mortality following uvulopalatopharyngoplasty (UPPP) (n = 1096) and multilevel sleep surgery (n = 1578) for OSA (3). The multilevel sleep surgery included patients who had UPPP in addition to other procedures (including tonsillectomy and adenoidectomy, tongue and mouth surgery, epiglottidectomy, glossectomy, limited pharyngectomy, hyoid myotomy and suspension, excision of lingual tonsil, neurostimulators (intracranial) procedures, reconstruction of lower jaw, other unspecified procedure). They reported a total of four (0.15%) deaths within 30 days of surgery: one death in the UPPP only group (0.09%), and three deaths following UPPP with concomitant procedures (0.19%). There were no reported details of the cause and timing of deaths. It is therefore not clear if the risk of death is an issue in performing such cases as a daycase surgery.

The findings from the systematic review was limited by a lack of well-designed prospective studies with predefined discharge criteria and a comprehensive assessment of complications such as continuous pulse oximetry monitoring among all patients. Given patients were not all systematically followed-up on discharge, it is unclear if there were any significant respiratory events out of hospital or if patients presented to other hospitals with complications. There was limited data on the post-operative use of CPAP which is important given issues around nasal packing and CPAP compliance. There was also significant heterogeneity in the methodology of the studies and thus no inferential statistics could be performed. None of the included studies were conducted in the United Kingdom and this may limit the applicability of the results to a UK population.

The included studies have shown that it is feasible to perform upper airway surgeries in carefully selected patients with OSA as day cases. Table 4 is a summary of the characteristics of daycase patients from studies that have specified them. Patients with mild to moderate OSA and no cardiopulmonary comorbidities were performed as day cases if there were no concurrent tongue surgery. However, most had a post-operative review prior to final discharge decision. Those that had episodes of desaturations (<94% on room air) in recovery, had inadequate oral intake or needed strong opioids for pain relief were admitted for further observation.

There is a need for further well-designed prospective studies with clear criteria for daycase patients and those needing an overnight admission. Such studies should capture information on perioperative CPAP use, have a comprehensive assessment of postoperative complications including readmissions to other hospitals.

Conclusion

Our review shows that performing upper airway surgeries in patients with OSA as day cases is possible in a carefully selected group of patients, however there is no agreed criteria and there is a lack of good quality evidence that all post-operative complications have been captured. There is a need for further well-designed prospective studies to strengthen the evidence base in this area.

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Table 1: Inclusion, exclusion criteria and definitions of individual terms

Eligibility criteria	All original interventional or observational studies evaluating day case discharges following nasal and/or p
Exclusion criteria	Studies that did not provide information on discharge Studies reporting nasal and/or palatopharyngeal su
Definitions of individual terms	Day case: Patient discharged on same day following surgery (no overnight stay in hospital) C

Table 2: Risk of bias in each study as assessed according to Murad's tool

Studies	Selection	Ascertainment	Causality	Reporting
Banuchi 2014	[?]	[?] [?]	X	[?]
Baugh 2013	[?]	[?] X	[?]	[?]
Hathaway 2006	[?]	[?] [?]	X	[?]
Kandasamy 2013	[?]	[?] [?]	X	[?]
Kieff 2004	X	[?] [?]	X	[?]
Pang 2012	[?]	[?] [?]	X	[?]
Rotenberg 2015	[?]	[?] [?]	X	[?]
Spiegel 2005	[?]	[?] [?]	X	[?]
Strocker 2008	[?]	[?] [?]	[?]	[?]
Terris 1998	[?]	[?] [?]	X	[?]

Figure 1: PRISMA flow diagram showing study selection process

Table 3: Individual study characteristics and outcomes

Studies	Types of surgery	Severity of OSA	Day case discharge criteria	Day case discharge (%)	Reported respiratory events
Banuchi (2014) [10] USA n = 40	PS: n = 20 NS + PS: n = 20	AHI: Range 2.6-119	Mild or moderate OSA (ie AHI [?] 30)	11/40 (27.5%)	DC: none IP: none
Baugh (2013) [6] USA n = 452	NS: n = 232 *(218 DC, 14 IP)* PS: n = 181 *(155 DC, 26 IP)* NS + PS: n = 39 *(31 DC, 8 IP)*	Not reported	Not specified	404/452 (89.4%)	DC: none IP: none
Hathaway (2006) [12] USA n = 110	PS: n = 80 *(70 DC, 10 IP)* NS + PS: n = 30 *(20 DC, 10 IP)*	RDI: Average 35; Range 2 – 103	No postoperative desaturations Adequate oral intake No significant post-op nausea	90/110 (82%)	DC: none IP: 3 desaturations (recovery)

Studies	Types of surgery	Severity of OSA	Day case discharge criteria	Day case discharge (%)	Reported respiratory events
Kandasamy (2013) [14] Canada n = 345	PS: n = 310 NS + PS: n = 35	AHI: Mean 32.8; Range 2 - 128	Not specified	97/345 (28%)	DC: 5 (5.2%) desaturations (PACU) IP: 39 (15.7%) desaturations (combination of PACU and ward) 1 laryngospasm
Kieff (2004) [15] USA n = 86	NS + PS: n = 86	RDI: Mean 36.4; Range 13 - 89	Saturations >94% on room air in recovery No known COPD, CAD or diabetes Adequate oral intake or analgesia Stable vital signs	23/86 (26.7%)	DC: none IP: Unclear as did not report proportion of patients who were admitted due to desaturations
Pang (2012) [8] Singapore n = 487	NS + PS: n = 175 NS + PS + tongue surgery: n = 312	AHI: Mean 47.3; Range 21.7 – 85.5	No concurrent tongue surgery Patient preference	150/487 (30.8%)	DC: none IP: 6 desaturations (recovery) 9 (1.8%) tongue swelling 1 upper airway obstruction due to floor of mouth haematoma
*# Rotenberg (2015) [16] Canada n = 50	NS: n = 20 PS: n = 36 Tongue surgery: n = 14 Multilevel surgery: n = 11	AHI: Mean 24.4 +/- 12.2	Able and willing to wear CPAP if planned to do so No witnessed apnoea or desaturations <90% on room air or airway obstruction No complex narcotic analgesia requirements	39/50 (78%)	DC: none IP: 11 desaturations (PACU)

Studies	Types of surgery	Severity of OSA	Day case discharge criteria	Day case discharge (%)	Reported respiratory events
Spiegel (2005) [7] USA n = 117	Mixture of PS only, NS + PS and radiofrequency tongue base reduction - numbers not specified	Not reported	Surgeons preference All radiofrequency tongue base reduction was admitted Incidence of early post-op complications	10/117 (8.5%)	DC: none IP: 3 desaturations (1 in recovery, 2 on ward) 2 laryngospasms
Strocker (2008) [13] USA n = 40	PS: n = 38 NS + PS: n = 2	RDI/AHI: Range 5 – 99	Not specified	36/40 (90%)	DC: none IP: none
# Terris (1998) [11] USA n = 109	NS: n = 16 PS: n = 73 NS + PS: n = 36	RDI: Mean 37.7 +/- 11.8	Not specified	16/125 (12.8%)	DC: none IP: 5 (4.6%) desaturations 1 significant airway compromise requiring naloxone, oxygen and airway suctioning

Studies	Types of surgery	Severity of OSA	Day case discharge criteria	Day case discharge (%)	Reported respiratory events
Nasal surgery (NS); Palatopharyngeal surgery (PS); Day case (DC); Inpatient (IP); Apnoea-Hypopnoea Index (AHI); Respiratory Disturbance Index (RDI); Post-anaesthetic Care Unit (PACU); Coronary Artery Disease (CAD); Chronic Obstructive Pulmonary Disease (COPD) * Prospective observational study # Authors reported more number of procedures than total patients in the study	Nasal surgery (NS); Palatopharyngeal surgery (PS); Day case (DC); Inpatient (IP); Apnoea-Hypopnoea Index (AHI); Respiratory Disturbance Index (RDI); Post-anaesthetic Care Unit (PACU); Coronary Artery Disease (CAD); Chronic Obstructive Pulmonary Disease (COPD) * Prospective observational study # Authors reported more number of procedures than total patients in the study	Nasal surgery (NS); Palatopharyngeal surgery (PS); Day case (DC); Inpatient (IP); Apnoea-Hypopnoea Index (AHI); Respiratory Disturbance Index (RDI); Post-anaesthetic Care Unit (PACU); Coronary Artery Disease (CAD); Chronic Obstructive Pulmonary Disease (COPD) * Prospective observational study # Authors reported more number of procedures than total patients in the study	Nasal surgery (NS); Palatopharyngeal surgery (PS); Day case (DC); Inpatient (IP); Apnoea-Hypopnoea Index (AHI); Respiratory Disturbance Index (RDI); Post-anaesthetic Care Unit (PACU); Coronary Artery Disease (CAD); Chronic Obstructive Pulmonary Disease (COPD) * Prospective observational study # Authors reported more number of procedures than total patients in the study	Nasal surgery (NS); Palatopharyngeal surgery (PS); Day case (DC); Inpatient (IP); Apnoea-Hypopnoea Index (AHI); Respiratory Disturbance Index (RDI); Post-anaesthetic Care Unit (PACU); Coronary Artery Disease (CAD); Chronic Obstructive Pulmonary Disease (COPD) * Prospective observational study # Authors reported more number of procedures than total patients in the study	Nasal surgery (NS); Palatopharyngeal surgery (PS); Day case (DC); Inpatient (IP); Apnoea-Hypopnoea Index (AHI); Respiratory Disturbance Index (RDI); Post-anaesthetic Care Unit (PACU); Coronary Artery Disease (CAD); Chronic Obstructive Pulmonary Disease (COPD) * Prospective observational study # Authors reported more number of procedures than total patients in the study

Table 4: Summary of characteristics of daycase patients from included studies

Pre-operative assessment
Mild to moderate OSA* (defined as AHI [?] 30) No cardiopulmonary comorbidities No concurrent tongue surgery Able and Patients with severe OSA without any other risk factors in both pre-operative assessment and post-operative review can be

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Table 3.docx available at https://authorea.com/users/376334/articles/563381-a-systematic-review-of-the-feasibility-and-safety-of-day-case-nasal-and-or-palatopharyngeal-surgery-in-patients-with-obstructive-sleep-apnoea

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Table 4.docx available at https://authorea.com/users/376334/articles/563381-a-systematic-review-of-the-feasibility-and-safety-of-day-case-nasal-and-or-palatopharyngeal-surgery-in-patients-with-obstructive-sleep-apnoea

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Figure 1.docx available at https://authorea.com/users/376334/articles/563381-a-systematic-review-of-the-feasibility-and-safety-of-day-case-nasal-and-or-palatopharyngeal-surgery-in-patients-with-obstructive-sleep-apnoea