Alternatives to Opioid Analgesia for Common Otolaryngologic Procedures

1. Departmental Mission

To significantly decrease the amount of post-operative opioid analgesia used in the management of patients following general otolaryngologic surgery by using alternative pain management strategies, including NSAIDS and the use of local anesthetics.

2. How much pain do our procedures cause?

Table 4. Duration of Analgesia Use and Severity of Pain After Common Otolaryngology Surgical Procedures.

Procedure	Expected duration of pain, days	Expected severity of pain[a]
Adult		
Tonsillectomy[66,164,166-169,217,218]	10-14	Moderate-severe
Mandibular fracture repair[66,184,192]	3-5	Mild-moderate
Midface fracture repair[192]	2-4	Mild-moderate
Septoplasty[66,153,172,182]	2-5	Mild-moderate
Rhinoplasty[66,152,153,182,200]	2-5	Mild-moderate
Endoscopic sinus surgery[66,147,150,152-154,172-174,219]	3-5	Mild-moderate
Turbinate surgery[173]	1-3	Mild-moderate
Otologic surgery[66,152,176,177,210]	2-4	Mild-moderate
Thyroid surgery[66,151,152,165,170,171,187,220,221]	1-3	Mild-moderate
Parathyroidectomy[151,152,164,171,187,220,221]	1-3	Mild
Parotidectomy[66,165]	3-5	Mild-moderate
Cervical lymph node biopsy[66]	1-3	Mild
Microdirect laryngoscopy[152,178]	1-3	Mild
Adolescent (age, 12-18 years)		
Adolescent tonsillectomy[183,222,223]	5-10	Moderate-severe
Pediatric (age, 0-12 years)		
Adenotonsillectomy[126,222,224-226]	5-10	Mild-moderate
Adenoidectomy[224]	1-2	Mild
Myringotomy and tube placement[180,181]	0	Mild

Key points

- Patients requesting opioid analgesics beyond these expected durations of pain should raise concern for OUD (opioid use disorder).
- The duration of our pain management strategies, especially the use of opioids should align with these data.

2. Relative Effectiveness of common analgesic regimens

Table 14. Common Medications Used for Postoperative Pain.[a]

Drug	Dose, mg	NNT to achieve >50% pain relief[b]	95% CI
Acetaminophen	600/650	4.6	3.9-5.5
Acetaminophen	975/1000	3.6	3.2-4.1
Ibuprofen	400	2.5	2.4-2.6
Celecoxib	400	2.6	2.3-3.0
Naproxen	500/550	2.7	2.3-3.3
Ibuprofen + acetaminophen	200 + 500	1.6	1.5-1.8
Ibuprofen + oxycodone	400 + 5	2.3	2.0-2.8
Acetaminophen + oxycodone	1000 + 10	1.8	1.6-2.2

Key points

- The combination of ibuprofen and acetaminophen is significantly more effective than any other common regimen used, including those that use regular doses of oxycodone.
- There is no conclusive evidence to show an increase in bleeding risk with NSAID use following common ENT procedures including septoplasty, FESSS, otologic surgery, thyroidectomy, parotidectomy, or tonsillectomy (excl. cases of infection).

3. How much opioid is reasonable?

Table 16. Distribution in Opioid Consumption After Common Otolaryngology Operations.[a]

		Oxycodone 5-mg tablets		
	No. of patients	Consumed, mean (median)	Consumed, ~85th percentile	Recommended dose range[b]
Adult				
Tonsillectomy[164,166-169]	340	31.2 (22.8)	59.1	0-60
Mandibular fracture[230]	60	15.2	30.9	0-30
Septoplasty ± turbinate reduction[153,172,173]	223	9.7	21.7	0-20
Rhinoplasty ± septoplasty[152,153,182]	98	8.5	17.5	0-20
Endoscopic sinus surgery + septoplasty[172-174]	206	7.7	15.3	0-20
Endoscopic sinus surgery[147,152,172-174]	147	4.9 (0)	12.0	0-15
Turbinate reduction[173]	18	8.9	12.0	0-10
Otology surgery[152,176,177,c]	140	6.1 (6.7)	12.7	0-10
Parotidectomy[165]	37	5.7	12.8	0-10
Thyroidectomy[147,152,165,170,171]	677	2.8 (0)	6.6	0-5
Parathyroidectomy[152,164,171]	149	0.2	3.4	0-3
Microdirect laryngoscopy[152,178]	60	0.5	0.9	0
Adolescent (age 12-18 years)				
Adolescent tonsillectomy[179]	66	11.3	23.8[d]	0-25
Adolescent septoplasty[179]	22	6.3	12.3	0-10
Adolescent endoscopic sinus surgery[179]	19	3.3	9.7[d]	0-10

Key point

- If opioids are used as the primary analgesic, the number of 5 mg oxycodone tablets should not exceed the recommended dose range highlighted in the red box.

4. How do opiates compare?

Calculating morphine milligram equivalents (MME)

OPIOID (doses in mg/day except where noted)	CONVERSION FACTOR
Codeine	0.15
Fentanyl transdermal (in mcg/hr)	2.4
Hydrocodone	1
Hydromorphone	4
Methadone	
1-20 mg/day	4
21-40 mg/day	8
41-60 mg/day	10
≥ 61-80 mg/day	12
Morphine	1
Oxycodone	1.5
Oxymorphone	3

These dose conversions are estimated and cannot account for all individual differences in genetics and pharmacokinetics.

Key point

- Do not use the calculated dose in MMEs to determine dosage for converting one opioid to another—the new opioid should be lower to avoid unintentional overdose caused by incomplete cross-tolerance and individual differences in opioid pharmacokinetics.

5. Consider infiltration of local anaesthetic at procedure end

	Onset of action after	*Duration of action*
Articaine	5 min	1–3 hours
Bupivacaine	8 min	3–7 hours
Lidocaine	5 min	½–2 hours
Mepivacaine	3 min	2–2½ hours
Prilocaine	2 min	½–1 hour

Key point

- Infiltration of 0.5% Marcaine (bupivacaine) without epinephrine at the end of the procedure may provide 3-7 hrs of effective analgesia in the immediate post-operative period.

Sample Post-Op discharge prescription

For thyroidectomy

Acetaminophen (extra strength Tylenol)	**500 mg po q6h (total dose should not exceed 3 gm/day) for 3 days**
Ibuprofen (Advil)	**400 mg po q6h (taken with food) for 3 days**
Hydromorphone (Dilaudid)	**1 mg po q4h PRN for breakthrough pain – supply 6 tabs. Dispense 3 tabs every 3 days (expires 7 days after issue)**

Key points

- When used along with Marcaine infiltration, this is a very effective regimen in **opioid naïve** patients.
- The prescription can be altered for any of the other procedures, considering the duration of pain (point 1) and the recommended dose range of opiate (point 3) for that respective procedure.
- In patients with **hepatic insufficiency**, the acetaminophen dose should not exceed 2 gm/day.
- In patients with **chronic renal insufficiency**, the acetaminophen dose should not exceed 3 gm/day.
- Avoid NSAIDs in patients with a **chronic renal insufficiency** or **2 or more of the following**:
  - PUD
  - Age > 60
  - On steroids
  - On ASA/anticoagulation preoperatively

Useful links

1. AAO-HNS Clinical Practice Guideline: Opioid Prescribing for Analgesia After Common Otolaryngology Operations
https://www.entnet.org/quality-practice/quality-products/clinical-practice-guidelines/opioid-prescribing-ent-operations/

2. Morphine mg equivalent calculator
https://www.mdcalc.com/morphine-milligram-equivalents-mme-calculator