

Cleft Pathway v3.0: Table of Contents

Stop and Review

Inclusion Criteria

- Cleft Lip
- Cleft Palate
- Cleft Alveolus
- Primary lip, palate or alveolar bone graft surgery

Exclusion Criteria

- Revision surgery

Cleft Care

Cleft Lip Pre-Operative

Cleft Lip Intra-Operative

Cleft Lip Post-Operative

Cleft Palate Pre-Operative

Cleft Palate Intra-Operative

Cleft Palate Post-Operative

Alveolar Cleft Pre-Operative

Alveolar Cleft Intra-Operative

Alveolar Cleft Post-Operative

Appendix

Version Changes

Approval & Citation

Evidence Ratings

Bibliography

Cleft Lip Pathway v3.0: Pre-Operative



Stop and Review

Candidates for Pre-surgical molding and considerations

- [Nasoalveolar Molding \(NAM\)](#)
- [Lip taping +/- Nasal Elevator \(NE\)](#)

Patient education:

- [Pre-surgical molding options PE3501](#)

- Inclusion Criteria**
- Patients with unrepaired cleft lip (with or without cleft palate) referred to Craniofacial Center
- Exclusion Criteria**
- Patients with previous cleft lip repair
 - Patients with cleft palate only

First Contact:
Family Service Coordinator call and estimation of patient needs. Pre-clinic [photo](#) assessment when possible.

Prenatal or Pre-Adoption?

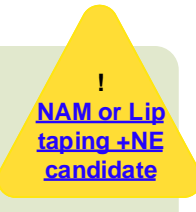
Yes

- Prenatal/Pre Adoption Visit**
- Pediatrician
 - Social Work
 - Nurse
 - +/- Plastic Surgeon

First Patient Visit(s)

- **Pediatrician:** health status, other abnormalities, breathing, feeding, growth assessments
- **Social Work**
- **Nurse:** Feeding, lip taping, follow up weight checks (phone check in)

- **Image Technologist:** 2+3D photos
- **Plastic Surgeon:** surgical plan, decisions on presurgical molding



Presurgical Molding?

No

Yes

All other Infants

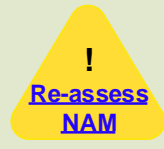
Presurgical NAM or Lip taping +/-NE

Return Visits

- **Nurse:** Follow up visits depend on feeding, growth, taping needs
 - RN visits to assist in feeding if needed
 - RN visit at 6-8 weeks of age if cleft palate
 - Weight checks, home scale if needed
- **Dietitian:** if not gaining weight
- **OT/PT:** if feeding difficulties
- **Tracking Progress:** Monthly [photos](#) sent [electronically](#) by caregiver to clinic
- **Plastic Surgeon:** assess surgical readiness
- **Social work:** if needed
- **Pediatrician:** if medical evaluation, subspecialty coordination needed
- **Audiologist:** if referred newborn hearing screen or if risk factors (example: family history of hearing loss)



- **Orthodontist**
 - Impression for NAM
 - NAM appliance delivered
 - Weekly visits
- **Nurse:** feeding visits x 1st 2 NAM visits w/ appliance
- **Plastic Surgeon:** assess surgical readiness at activation of nasal stent (in person visit)



Surgical plan is activated when [ready for surgery](#)

- Pre-Operative Scheduling by CRA Coordinator:**
- OR and Admission
 - Follow-up visits

- Pre-Operative Visit:**
- **Plastic Surgeon:** surgical consent
 - **Social Work**
 - **Nurse:** Pre-Op Education
 - **PASS clinic**
 - **Pediatrician:** if medical clearance is required
 - **Image Technologist:** Pre-operative images (2+3D photos)

Cleft Lip Pathway v3.0: Intra-Operative

Stop and Review

Inclusion Criteria

- Patients with unrepaired cleft lip (with or without cleft palate) referred to Craniofacial Center

Exclusion Criteria

- Patients with previous cleft lip repair
- Patients with cleft palate only

OR Plan:

Anesthesia OR Plan:

- Oral intubation with cuffed straight tube secured to midline of chin
- Pre-operative cefazolin (or alternate antibiotic if allergic) with re-dosing Q3 hours
- Can consider dexmedetomidine as an adjunct
- Opioids only if needed
- 1 dose of IV Ketorolac at end of case

Surgeon OR Plan:

- Infraorbital nerve block at beginning of case
- Throat pack
- Nasal stents as needed
- Augmentation of infraorbital nerve block at end of case
- Vaseline/antibiotic ointment applied to lip
- Eyes taped shut for protection

Recovery Room (PACU)

- **PACU Nurse:** Call surgical center when patient is ready for parent
- **Parent:** Early reunification and feeding in PACU
- **Anesthesiologist:** No scheduled opioid medication orders

Cleft Lip Pathway v3.0: Post-Operative

Stop and Review

Inclusion Criteria

- Patients with unrepaired cleft lip (with or without cleft palate) referred to Craniofacial Center

Exclusion Criteria

- Patients with previous cleft lip repair
- Patients with cleft palate only

Inpatient Nursing:

Review Guideline of Care: Cleft Lip Repair and Revision for important inpatient nursing considerations, including but not limited to:

- Frequent lip cleaning to keep incision free of blood or debris
 - Moist Q-tips
 - Vaseline
- Nasal stent flushes
- Opioid sparing strategies to manage pain
- Encourage feeding early and often

Discharge Readiness Assessed by Inpatient Nursing/Surgical Team:

- Taking feeds by mouth and able to support hydration/nutrition at home
- Pain well controlled with oral pain medication - minimal or no opioid medication
- Parents comfortable with lip cleaning and stent care
- Post operative surgical follow up in place
- Patient Education Handout: [Cleft Lip and Nose Repair PE152](#)

Post op Clinic 1 Week Follow up:

- **Plastic Surgeon/ APP:** Assess, +/- suture removal, +/- stent removal
- **Image Technologist:** Post operative images (2D +3D images)

Cleft Lip Only: Clinic Follow Up at 18 months of age

- **Plastic Surgeon:** Reassess cleft lip healing (~ 1 year post-op after lip repair)
- **Pediatrician:** Reassess Growth, Development, Hearing, Speech, Dental Health
- **Image Technologist:** Post operative images (2D +3D images)
- **Social Work:** if needed

Cleft Lip + Palate (CLP)

- Team visit at 8-9 months of age ([see Cleft Palate Pathway: Pre-Operative](#))
- 1st primary dental visit: 12 months of age
- Consider Dental consultation at SCH if: high risk and unable to access primary dental care (ie ventilator dependent with no available community dentist)

Cleft Palate Pathway v3.0: Pre-Operative

Stop and Review

Inclusion Criteria

- All initial cleft palate repair

Exclusion Criteria

- Previous palate repair

Isolated Cleft Palate

Infancy: Initial Assessments and Follow up

- **Pediatrician:** health status, other abnormalities, breathing, feeding, growth assessments
- **Social Work**
- **Nurse:** Feeding assessment, RN visit at 6-8 weeks of age if cleft palate, weight checks, home scale if needed
- **Dietitian:** if not gaining weight
- **OT/PT:** if feeding difficulties
- **Audiologist:** if referred newborn hearing screen or if risk factors (example: family history of hearing loss)

Cleft Lip Pathway

8-9 month Assessment

Cleft Lip + Palate (CLP)

- **Pediatrics** recheck; airway and feeding/ other medical issues/development
- **Speech**
- **Audiology**
- **Craniofacial RN**
- **Nutrition (+/-)**
- **Social Work**
- **Otolaryngology** (for ear tubes)
- **Plastic Surgeon** (for cleft palate repair)

Cleft Palate Only (CPO)

- **Pediatrics** recheck; airway and feeding/other medical issues/development
- **Speech**
- **Audiology**
- **Craniofacial RN**
- **Nutrition (+/-)**
- **Social Work**
- **Otolaryngology** (for cleft palate repair and ear tubes)

Ongoing Management Evaluation

Ready for surgery?

Surgical plan is activated

No
Reassess

Yes

Yes

Ear tube plan certified

Plan for OR (CLP)

- PLS surgical schedulers
- Craniofacial RN

Plan for OR (CPO)

- OTO Surgical schedulers
- Craniofacial RN

Pre Op Visit

- Craniofacial RN
- Social Work (if needed)
- PASS (if needed)

Pre Op Visit

- Craniofacial RN
- Social Work (if needed)
- PASS

Off Pathway

Surgery NOT Indicated at this time

(ie: submucous cleft palate; medically contraindicated; severe developmental delay)

Cleft Palate Pathway v3.0: Intra-Operative

Stop and Review

Inclusion Criteria

- All initial cleft palate repair
- Cleft palate or Cleft lip and palate

Exclusion Criteria

- Previous palate repair

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If patient has an upper respiratory infection (URI), consider rescheduling the case

Anesthesiologist

- Endotracheal Tube: safe plan to prevent ETT dislodgement and obstruction, per team preference
 - cleft lip and palate: Straight tube with cuff
 - cleft palate only: RAE tube (with cuff, if available)
- Antibiotics: Unasyn pre-operative dose
- Steroids: Dexamethasone intra-operative dose
- Ensure adequate ANALGESIA with the use of morphine or hydromorphone. Can consider dexmedetomidine as an adjunct
- Extubation while patient is awake
- IV acetaminophen
- [Anesthesia Plan](#)

Intra Operative Care

- Lateral relaxing incision: hemostatic agent applied
- Tongue stitch: taped loosely to cheek
- Mittens: applied
- Post-op local anesthesia: Infiltration with 0.25% bupivacaine with EPINEPHrine
- No throat pack
- Strategies to prevent ETT kinking (needle cap, type of ETT)
- Suction blood from stomach and consider leaving suction tube in posterior pharynx for anesthesia during extubation
- Consider placement of nasal trumpet intra-op if significant post-extubation airway obstruction is anticipated (example Robin sequence, Stickler syndrome, severe pre-op OSA)

Surgeon



PACU

- 2 hour minimum stay to optimize analgesia and monitor airway
- Position: Side lying or prone; in a position of comfort
- Parent Reunification: Timing at the discretion of the PACU team
- Tongue stitch: Removal prior to discharge from PACU
- If concerns for airway obstruction: interventions can escalate in this sequence: body repositioning, traction on tongue stitch, supplemental oxygen, racemic epinephrine, placement of nasal trumpet, re-intubation
- Feeding: No feeding within 1 hour of arrival to PACU. If patient is safe to feed, feeding should start in PACU whenever possible.
- Titrate opioid analgesics to manage discomfort while avoiding oversedation in the controlled settings of OR/PACU

Cleft Palate Pathway v3.0: Post-Operative

Stop and Review

Inclusion Criteria

- All initial cleft palate repair
- Cleft palate or Cleft lip and palate

Exclusion Criteria

- Previous palate repair

ICU (IF NEEDED)

- Pre-planned (ex: clinical suspicion, history of difficult intubation, OSA, Robin sequence and Stickler syndrome, cardiac disease)
- Concerns/Re-intubation/kept intubated

Acute Care Unit

- Review Guideline of Care: Cleft Palate Repair for all important inpatient nursing considerations, including but not limited to:
 - Safe cups for patient use
 - Use of hand mittens to protect surgical site
- Nutrition: [soft, no-chew](#)
- Opioid sparing strategies to manage pain:
 - Alternating IV acetaminophen and ketorolac, morphine breakthrough for severe pain
 - Transition to PO acetaminophen & ibuprofen with oxycodone breakthrough for severe pain

Discharge Criteria

- Adequate PO intake (normal or improving intake)
- Pain managed with oral pain medication
- Adequate urine output without IV fluids
- Breathing comfortably

Discharge Instructions

- Patient Education handout: [Cleft Palate Repair: Care After Surgery PE153](#)
- Diet:
 - Patient Education handout: [Soft No-Chew Diet](#)
 - Offer water after meals for cleaning
- Use protective hand mittens for at least 2 weeks post-op
- Alternate acetaminophen & ibuprofen with oxycodone for breakthrough pain
- Contact Craniofacial Clinic in case of poor feeding
- Clinic follow-up appointment at 1 month post-op

One Month Post Op Follow Up

- **Surgeon:** check palate healing
- **Otolaryngology:** ear tube check
- **Audiology** (if tubes were placed)
- **MA / RN** weight check and weight review

Team Visit at 18 months of age

- Timing: 18 months of age (If repaired at later than 15 months visit can occur 3 months post op)
- **Plastic Surgery** (for cleft lip and cleft lip + palate)
- **Pediatrics**
- **Speech pathology**
- **Otolaryngology** (for cleft lip + palate and isolated cleft + palate)
- **+/- Audiology** (timing guided 1 month post-op assessment)
- **Social Work**
- **Image Technologist:** 2D + 3D photos
- See next page for details on [pre-ABG counseling \(CLP and CL\)](#)

Alveolar Cleft Pathway v3.0: Pre-Operative



Inclusion Criteria

- Cleft lip and alveolus or Cleft lip, alveolus and palate
- Unilateral and Bilateral clefts
- Primary or revision Alveolar Bone Graft

Exclusion Criteria

- None

Annual Team visits 18 months to 5 years of age

Cleft Lip + Palate (CLP)

- **Pediatrics** annually
- **Nursing**
- **Audiology** annually
- **Speech** every 6-12 months, timing per SLP
- **Social work** at age 5 years
- **Otolaryngology** annually until age 5 years or ear tubes extruded/removed
- **Plastic surgery** at age 5 years or sooner if needed
- Counseling for all patients from surgeon/team on ABG and 5 year old follow up

Cleft Palate Only

- **Pediatrics** annually
- **Nursing**
- **Audiology** annually
- **Speech** every 6-12 months, timing per SLP
- **Social work** at age 5 years
- **Otolaryngology** annually until age 5 years or ear tubes extruded/removed

Isolated Cleft Lip+/- Alveolus

- **Pediatrics** every 1-2 years
- **Nursing**
- **Social work** at age 5 years
- **Otolaryngology** if hearing or airway concerns
- **Audiology** if hearing concerns
- Counseling for all patients from surgeon and team on possibility of ABG. If additional info is desired for those with possible alveolar cleft, consider dental Xray at 3 years of age (detail: maxillary peri-apical Xray at the area of the cleft); alternative: dental floss test

Team visit at 5 years for Cleft Lip or Cleft Lip + Palate

- **Plastic surgery** or **OMFS**: make recommendation about 6 year old follow up based on suspicion for ABG, CT order if needed
- **Pediatrics**
- **Social work**
- **Nursing**
- **Otolaryngology** if needed
- **Audiology** if needed
- **Speech** if needed
- **Image Technologist**: 2D + 3D photos

Team visit at 6 or >6 years of age if ABG is being considered:

- If ABG unlikely: Dental Xray
- If ABG likely or certain: CT ordered prior to clinic by Surgeon or Plastic surgery APP
- **Orthodontist** +/- Impressions in Dental Clinic
- **Surgeon**: Plastic surgery or OMFS
- **Nursing**
- Other team members guided by 5 year old visit or pediatrics

Orthodontist Guides:

- Timing of ABG
- Typical time is before canine or lateral incisor eruption
- +/- pre-surgical orthodontics
- +/- pre-surgical extractions: No more than 6-8 weeks between extractions and ABG
- Coordination with primary dentist for extractions (>50% are at primary dentist, some at SCH or CPD)

To Alveolar Cleft, Pg 2

Alveolar Cleft Pathway v3.0: Pre-Operative

Stop and Review

Inclusion Criteria

- Cleft lip and alveolus or Cleft lip, alveolus and palate
- Unilateral and Bilateral clefts
- Primary or revision Alveolar Bone Graft

Exclusion Criteria

- None

5 Year Team Visit

[\(see previous page for details\)](#)

Or

If presenting late (>5 years)

RN to contact MD to try to triage appropriate imaging for team visit including orthodontist

Certain need for ABG

Cleft lip and palate; Cleft lip and alveolus

Uncertain need for ABG

Isolated cleft lip +/- alveolar notch

Orthodontist at 6 years of age

CT scan (CT CRA Maxillofacial)

Orthodontist at 6 years of age

X-rays (panoramic, periapical, dental occlusal)

ABG needed in < 1 year

ABG needed in > 1 year

Uncertain need for ABG

No need for ABG

Next Team visit per protocol

Yearly visit until ready

- X-rays (panoramic, periapical, dental occlusal)
- Orthodontist
- Surgeon

Dental/Orthodontic preparation

- Extractions as needed
- Expansion as needed
- Impressions for splint as needed
- Restorations as needed

Ready for ABG

Orthodontist ABG Plan

- ABG timing, extractions, expansion, minimum delay, maximum delay
- Orthodontist communicates ABG plan to patient and family in a letter

Coordination for OR

- Dental coordinators
- Surgical schedulers

Re-graft or late graft needed

- Patients needing repeat ABG
- Older patients transferring care from elsewhere
- Older patients who have missed their craniofacial team follow up

ABG Pre-Op visit ~1 week Pre-Op (Surgery 6-8 weeks after dental extractions)

- Surgeon
- +/- Orthodontist splint delivery
- Child life consult + preparation for surgery
- Pediatrics if health concerns
- Nursing education
- PASS
- Social Work support

Procedure preparation

- Dental cleaning by community provider 2-4 weeks before surgery
- 2% Chlorohexidine mouth rinse 2 times a day x 3 days
- Mupirocin nasal ointment both nostrils 2 times a day x 3 days

Alveolar Cleft Pathway v3.0: Intra-Operative

Stop and Review

Inclusion Criteria

- Cleft lip and alveolus or Cleft lip, alveolus and palate
- Unilateral and Bilateral clefts
- Primary or revision Alveolar Bone Graft

Exclusion Criteria

- None

Intra Operative Care

Anesthesiologist

- Antibiotics: Pre-operative Unasyn or Clindamycin (IV)
- TAP (Transversus Abdominis Plane) block
- Consider Dexmedetomidine as an adjunct
- Post-op Ketorolac (after incision closure) and Acetaminophen (IV)
- Extubation while patient is awake
- [Anesthesia Plan](#)

Surgeon

- Throat pack
- Local anesthetic for mouth and hip
- Gel-soaked 0.25% Marcaine in donor space of iliac crest
- Clindamycin irrigation for mouth
- Coat teeth with chlorohexidine or fluoride varnish

PACU

Admission to Inpatient Care

- Post-operative admission is at surgeon discretion.
- This is more common for bilateral alveolar bone grafts or if premaxillary osteotomy is performed.

ABG Post-operative Care

See [ABG post-operative](#) for discharge education and post-op care

Discharge to Outpatient Care

- Majority will be discharged from PACU to outpatient care

RN phone call (48-72 hours post-op)

- How is pain control?
- How is diet tolerated?
- Are mouth rinses taking place as instructed? Are you gently irrigating sutures?
- Can you see the sutures to make sure they are clean?
- Any questions about hip site or diet instructions?
- Any questions or concerns?

Alveolar Cleft Pathway v3.0: Post-Operative

Stop and Review

Inclusion Criteria

- Cleft lip and alveolus or Cleft lip, alveolus and palate
- Unilateral and Bilateral clefts
- Primary or revision Alveolar Bone Graft

Exclusion Criteria

- None

Post-Operative Care & Patient and Family Education

For more information, refer to Guideline of Care: Alveolar Bone Graft (for SCH only)
Provide Education Handout: [Alveolar Bone Graft: Care After Surgery PE862](#)

Antibiotics

- Mupirocin nasal ointment both nostrils BID x 2 weeks

Oral Care

- 2% Chlorohexidine swish and spit twice a day for 2 weeks after surgery. Do not eat for two hours after mouthwash. Switch to normal OTC mouthwash at 2 weeks post-op until follow up in clinic
- If present, remove splint for cleaning with a tooth brush 2 times a day when doing Chlorohexidine rinse
- After all meals swish and spit with warm salt water for two weeks after surgery.
- Gently irrigate sutures with CHG or warm salt water to dislodge any debris as needed
- Toothbrushing with soft non-electric brush twice a day starting post-op day 2
- If it is uncomfortable or painful brushing on the front facing surface of the upper teeth (ie. the surface facing the lip), patients can take a break from brushing there as long as they can rinse the area clean. Patients should resume brushing that surface when comfortable.
- Only brush sutures if there is a stuck piece of food or debris

Swelling Management

- Head elevated
- Icepacks rotating on and off to achieve comfort

Pain Management

- Alternate acetaminophen and ibuprofen (every 3 hours while awake with option to continue through the night). Continue for 3 days then decrease use as tolerated. Continue use as needed, often up to 1 week post op.
- Oxycodone every 4 hours is often needed for the first 24 hours, then every 4 hours as needed for breakthrough pain on post-op day 1-3.

Diet

- [Soft Non-Chew Diet PE327](#) for 3 to 6 weeks (as directed by your surgical team)

Activity

- Reduced activities (no gym class, recess, or sports activities) for 4 weeks
- No contact activities until 6 weeks after surgery
- Showering is OK, but no soaking in bathtub or swimming for 2 weeks

**Clinic Follow-up
3-4 weeks post-op**

- Surgeon

**Follow-up 6
months post-op**

- PA radiograph in Dental
- Orthodontist
- Surgeon
- Other team members as needed

**Further treatment of
alveolus needed**

**Further orthodontic and
cleft related treatment
needed**

Next team Visit

- Timing per pediatrics
- Surgeon 10 years of age

Pre-Clinic Photo Assessment

Taking pictures of your child for the Craniofacial Team:

Please try to do these things to improve the quality of the pictures.

- Move hair away from the ears and clip it back or wet it, if necessary.
- Move clothing so it does not block the face or neck
- Pick a solid background – like a door or a wall – if possible
- Try to keep the camera level with the floor, not tilting up or down. The camera should be even with your child's eye level on all but the top or bottom views.
- Make sure that your child's face and head take up most of the picture.
- Make sure your child's head is in the center of the picture.



1. Picture of the face



2. Picture of the left side. Please make sure the ear can be seen.



3. Picture of the right side. Please make sure the ear can be seen.



4. Close up view of the mouth and nose.



5. Center shot on base of chin. Align the chin and nose. So you can see some of forehead, eyes, and shape of nose.

[Return to Cleft Lip Pre-Operative](#)

[To Table of Contents](#)

Surgical Readiness Cleft Lip

Cleft Lip Surgical Readiness

These are important considerations for surgical readiness for cleft lip repair

1. What type of cleft does the child have (**check all that apply**)
 - Unilateral
 - Bilateral
 - Cleft lip
 - Cleft alveolus
 - Cleft palate
 - Submucous cleft palate
 - Other: _____
2. Does the child have a syndrome or other medical conditions?
 - No
 - Yes – Specify/Plan (ie: PICU post-op anticipated):

3. I reviewed possible respiratory issues (including sleep apnea) and there is no additional follow up required.
 - Yes
 - No – Plan: _____
4. Appropriate weight gain?
 - Yes
 - No – Reason/Plan: _____
5. Is child undergoing orthodontic molding?
 - No
 - Yes - any issues?: _____
6. Other reasons to delay surgery (ie: social factors, insurance, consent concerns?)
 - No
 - Yes – Plan: _____
7. Ready for surgery?
 - No
 - Yes

[Return to Cleft Lip Pre-Operative](#)

[To Table of Contents](#)

Surgical Readiness Cleft Palate

Cleft Palate Surgical Readiness

These are important considerations for surgical readiness for cleft palate repair

1. What type of cleft was the patient born with (**check all that apply**)
 - Cleft Lip
 - Cleft Alveolus
 - Cleft Secondary Hard Palate
 - Cleft Secondary Soft Palate
 - Submucous Cleft palate
2. Does the child have a syndrome or other medical conditions?
 - No
 - Yes – Specify/Plan (ie: PICU post-op anticipated):

3. I reviewed possible respiratory issues (including sleep apnea) and there is no additional follow up required.
 - Yes
 - No – Plan: _____
4. Appropriate weight gain?
 - Yes
 - No – Reason/Plan: _____
5. Other reasons to delay surgery (ie: social factors, insurance, consent concerns?)
 - No
 - Yes – Plan: _____
6. Ready for surgery?
 - No
 - Yes

[Return to Cleft Palate Pre-Operative](#)

[To Table of Contents](#)

Timing for obtaining 2+3D photos

Clinic Photo Timing

Two and three dimensional photographs are captured in clinic by the image technologist at the following time points:

- 1st Craniofacial clinic visit
- Pre-op clinic visit before lip surgery
- Post-op clinic visit after lip surgery
- 18 months of age
- 5 years of age
- 10 years of age
- 15 years of age
- 20 years of age or completion of SCH cleft care

[Return to Cleft Lip Pre-Operative](#)

[To Table of Contents](#)

Additional Information: Pre-surgical Molding

Candidates for Nasoalveolar Molding (NAM)

- Infant with unilateral or bilateral complete cleft lip and palate

Candidates for Lip taping with Nasal Elevator

- Infant with unilateral complete cleft lip and palate (bilateral considered case by case)
- Infant with unilateral complete cleft lip and alveolus (bilateral considered case by case)
- Infant is a candidate for NAM, but unable: outpatient and inpatient
- Infant with any type of cleft with significant nasal deformity

Education Needs

- Choking risk
- Timing of use
- Skin checks

Reassess Pre-Surgical Molding (NAM and Lip Taping with Nasal Elevator) if:

- Poor feeding
- Poor weight gain
- Nasogastric tube
- Respiratory issues or obstructive sleep

[Return to Cleft Lip Pre-Operative](#)

[To Table of Contents](#)

Anesthesia OR Plan: Cleft Lip Repair

Cleft Lip Anesthesia Guidelines

- Primary repair around 6 months (can be older if adopted from overseas)
- The aim is for a quick wake up with reduced pain, minimal agitation, and early feeding
- Intubation can be difficult if patient has associated cleft palate +/- syndrome
- Straight Cuffed ETT placed in center of mouth and directed towards feet. Taped in midline onto chin. Avoid distorting the lip. Watch for kinking and depth of ETT. Straight connector and rolled towel under circuit to support it.
- Infraorbital block/infiltration – by attending surgeon at beginning with local anesthetic
 - If case >2 hours then re-dose infraorbital block at the end of case with local anesthetic. Not to exceed max dose calculated at beginning of case.
- Intraoperative opioids – only if needed, but generally not required
- Cephazolin or equivalent for allergy as intraoperative antibiotic
- Ketolorac at end of case – please ask surgeon if OK
- Ondansetron (in older infants) if indicated
- Extubate awake
- Propofol at end of case for sevoflurane agitation
- Early feeding and caregiver holding of the child. Aiming for efficient discharge to floor.
- Swaddling in OR/PACU, instead of arm restraints
- No scheduled opioids in PACU and early transition to oral meds
- Oral ibuprofen if \geq 6 months of age
- Oral or IV acetaminophen in PACU if not contraindicated which will then be scheduled regularly on floor
- Leave eye protection placement to surgeon
- Can consider dexmedetomidine as an adjunct

[Return to Cleft Lip Intra- Op](#)

[To Table of Contents](#)

Anesthesia OR Plan: Cleft Palate Repair

Cleft Palate Anesthesia Guidelines

- Primary repair around 12 months
- Intubation can be difficult (esp. if associated syndrome)
- ETT (taped to midline) choice per team preference:
 - Cleft lip and palate (PLASTICS): straight ETT with cuff, taped down center of chin
 - Cleft palate only (ENT): oral RAE tube with cuff
- Watch for kinking and depth of ETT
- Tegaderm for eye protection
- Unasyn for antibiotic (or equivalent alternative if allergic)
- Dexamethasone
- Intraoperative opioids +/- dexmedetomidine
- Extubate awake
- Tongue stitch (placed by surgeon prior to surgery end) can be used to relieve airway obstruction post-extubation in OR or PACU
- Consider intra-op placement of nasal trumpet if significant post-extubation airway obstruction anticipated (associated syndrome, severe OSA, etc). Prefer to avoid oral airway placement in setting of newly repaired palate.
- 2 hour minimum stay in PACU to optimize analgesia/titrate opioids and monitor airway
- Ketorolac given in PACU if child is extubated, awake, and without intraoral hemorrhage – please check with surgeon if ok to be given prior

[Return to Cleft Palate Intra- Op](#)

[To Table of Contents](#)

Anesthesia OR Plan: ABG

ABG Anesthesia Guidelines

- Oral RAE ETT with cuff taped to midline
- Tegaderm for eye protection
- TAP block (usually left side but check with surgeon)
- Unasyn (or equivalent alternative to cover oral flora if allergic)
- Can consider dexmedetomidine as an adjunct

[Return to ABG Intra- Op](#)

[To Table of Contents](#)

Summary of Version Changes

- **Version 1.0 (6/18/2014):** Cleft Lip go live.
- **Version 1.0 (3/2/2016):** Cleft Palate go live.
- **Version 1.1 (8/25/2016):** Cleft Palate update. Added Social Work visit to the 9 month visit and the Pre-Op visit for both the CLP and ICP.
- **Version 2.0 (10/21/2021):** Periodic review go live. Combined the Cleft Lip and Cleft Palate pathway and added the Cleft Alveolus phase. All three areas of care will be known as Cleft Pathway.
- **Version 3.0 (11/22/2021):** Added some clarification to the Cleft Lip intra-operative phase and the Anesthesia OR Plan: Cleft Lip and Cleft Palate Repair supporting slides.

Approval & Citation – Cleft Lip/ABG

Approved by the CSW Cleft Lip/ABG Pathway team for October 21, 2021, go-live

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Retrieval Website: <https://www.seattlechildrens.org/pdf/cleft-pathway.pdf>

Please cite as:

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Approval & Citation – Cleft Palate

Approved by the CSW Cleft Palate Pathway team for October 21, 2021, go-live

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Retrieval Website: <https://www.seattlechildrens.org/pdf/cleft-pathway.pdf>

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Evidence Ratings

This pathway was developed through local consensus based on published evidence and expert opinion as part of Clinical Standard Work at Seattle Children's. Pathway teams include representatives from Medical, Subspecialty, and/or Surgical Services, Nursing, Pharmacy, Clinical Effectiveness, and other services as appropriate.

When possible, we used the GRADE method of rating evidence quality. Evidence is first assessed as to whether it is from randomized trial or cohort studies. The rating is then adjusted in the following manner (from: Guyatt G et al. J Clin Epidemiol. 2011;4:383-94, Hultcrantz M et al. J Clin Epidemiol. 2017;87:4-13.):

Quality ratings are *downgraded* if studies:

- Have serious limitations
- Have inconsistent results
- If evidence does not directly address clinical questions
- If estimates are imprecise OR
- If it is felt that there is substantial publication bias

Quality ratings are *upgraded* if it is felt that:

- The effect size is large
- If studies are designed in a way that confounding would likely underreport the magnitude of the effect OR
- If a dose-response gradient is evident

Certainty of Evidence

★★★★ High: The authors have a lot of confidence that the true effect is similar to the estimated effect

★★★○ Moderate: The authors believe that the true effect is probably close to the estimated effect

★★○○ Low: The true effect might be markedly different from the estimated effect

★○○○ Very low: The true effect is probably markedly different from the estimated effect

Guideline: Recommendation is from a published guideline that used methodology deemed acceptable by the team

Expert Opinion: Based on available evidence that does not meet GRADE criteria (for example, case-control studies)

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Literature Search Methods

The literature search was conducted in November of 2019. The search targeted synthesized literature on cleft lip, cleft palate, or nasoalveolar moldings. Results were limited to 2013-current, English language, and human studies. The search was executed in Ovid Medline, Embase, Cochrane Database of Systematic Review (CDSR), and Turning Research into Practice database (TRIP).

Screening and data extraction were completed using DistillerSR (Evidence Partners, Ottawa, Canada). Two reviewers independently screened abstracts and included guidelines and systematic reviews that addressed optimal diagnosis, treatment, postop care, or speech, hearing, aesthetic, medical, or dental outcome for cleft lip and/or cleft palate. One reviewer screened full text and extracted data and a second reviewer quality checked the results. Differences were resolved by consensus.

Literature Search Results

The searches of the 4 databases (see Electronic searches) retrieved 714 records.

Once duplicates had been removed, we had a total of 501 records. We excluded 367 records based on titles and abstracts. We obtained the full text of the remaining 134 records and excluded 93.

We included 43 studies. The flow diagram summarizes the study selection process.

Identification

Records identified through database searching (n=714)

Additional records identified through other sources (n=1)

Screening

Records after duplicates removed (n=501)

Records screened (n=501)

Records excluded (n=367)

Eligibility

Records assessed for eligibility (n=134)

Full-text articles excluded (n=93)
Did not answer clinical question (n=33)
Did not meet quality threshold (n=43)
Outdated relative to other included study (n=15)
Duplicate (n=2)

Included

Studies included in pathway (n=43)

Flow diagram adapted from Moher D et al. BMJ 2009;339:bmj.b2535

[To Bibliography, Pg 2](#)

[To Table of Contents](#)

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[To Bibliography, Pg 2](#)

[To Table of Contents](#)

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