Surgical management of patients with cleft palate

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Cleft palate (CP) is a fissure or opening in the roof of the mouth. It results from the nonfusion of the two palate shelves that form before birth. This deformity creates significant impairment because the palate is not only a static structure that separates the oral and nasal cavities, it's also responsible for controlling the airflow for normal speech. The leak allowed by the CP permits air to escape into the nasal cavity resulting in a hypernasal voice resonance and nasal emissions. Additionally, the palatal muscles aerate the middle ear, which helps defend against potential infections and protects hearing.[1]

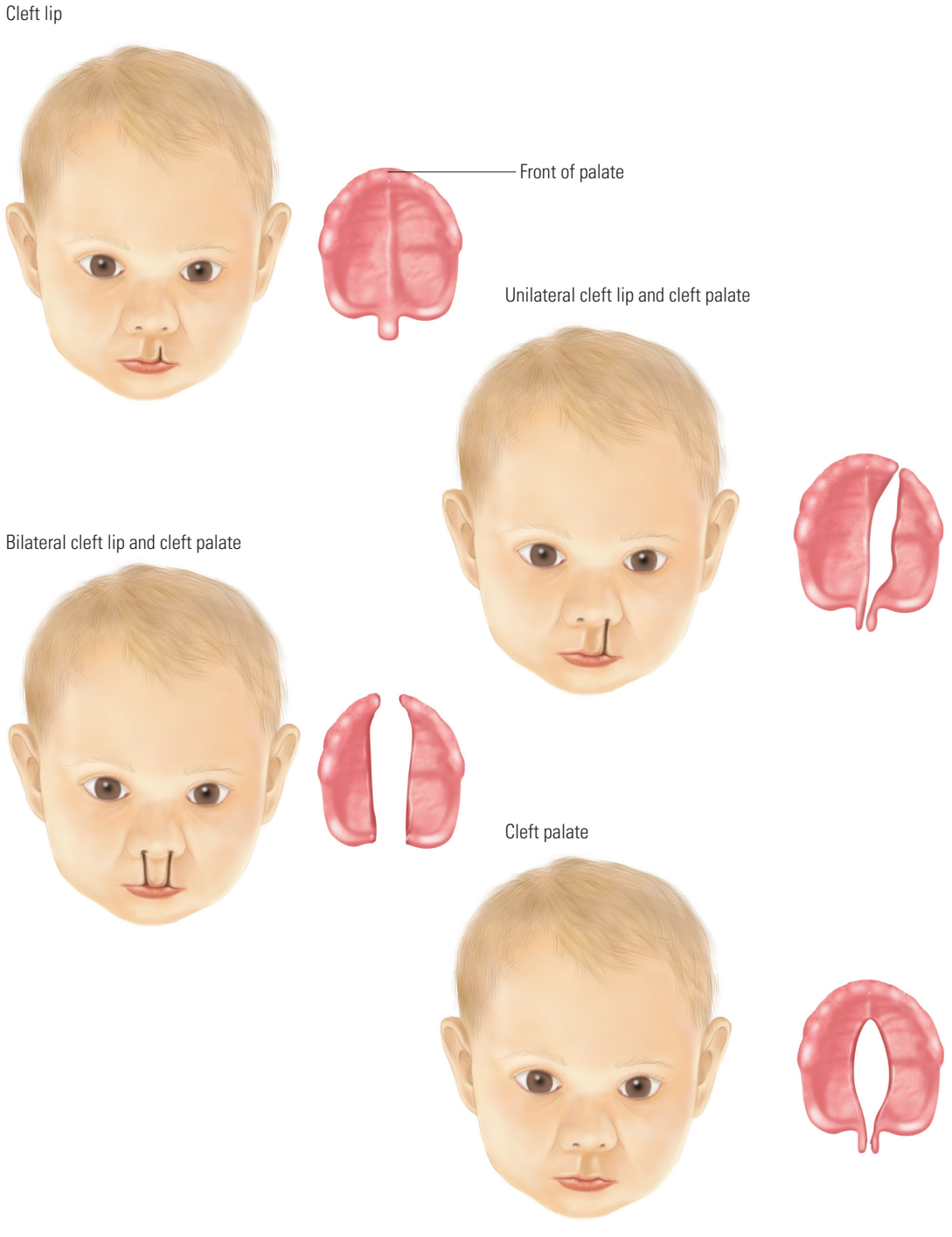
CP is part of a set of deformities known as oral clefts, typically classified as cleft lip with or without cleft palate (CL/P) and isolated CP (see *Variations in cleft deformity*). In the United States, oral clefts have become the most highly prevalent birth defect, affecting approximately 6,800 infants annually.[2]

Epidemiologic studies have shown an incidence of CP in 1 out of every 2,000 live births overall, with some degree of variation depending on ethnicity.[3-5] Also, CL/P is known to have a general prevalence of 1 in every 500 to 1,000 newborns, with the highest prevalence in Native Americans (1.9 per 1,000 births), and the lowest prevalence in African Americans (0.62 per 1,000 births).[6,7] Variations in prevalence of oral clefts have been observed between genders and socioeconomic strata. Males tend to predominate in the case of CL/P (2:1 ratio), whereas the majority of isolated CP cases affect females (3:2 ratio).[8-12] Individuals born in more rural areas with lower socioeconomic conditions seem to have a higher risk for CL/P in comparison to those with higher socioeconomic status in urban areas.[9,10,13]

Embryology

Clefts are formed after the interruption of important processes in the development of the face, lip, and palate. Facial development

Variations in cleft deformity



Source: Anatomical Chart Company. *Atlas of Pathophysiology*. 3rd ed. Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2010:409.

usually occurs between the fourth week, when structures of the face can already be recognized, and the end of the eighth week, when a clear human face is apparent. Part of the nose, philtrum of the lips, and hard palate anterior to the incisive foramen derive from the primary palate. The secondary palate forms the portion of the hard palate located immediately behind the incisive foramen and the soft palate. During the eighth week of gestation, the normal palate forms from the approximation and fusion of the median and lateral palatine process.

There are many degrees of severity of CL/P, from unilateral incomplete or uvula bifida to complete unilateral or complete bilateral. The contact and fusion of the facial processes may cease at any point; the earlier the interruption, the greater the defect.

Causes

The etiology of oral cleft is complex due to the involvement of both genetic and environmental factors. The genetic contribution approximately 25% in CL/P and 50% in CP, whereas the remainder is attributable to environmental factors or gene-environment interactions.[9,10,16] Oral clefts can be subdivided into syndromic and nonsyndromic. Syndromic cases happen because of specific chromosomal abnormalities that present with additional deformities.[1,5,10] Isolated oral clefts are usually nonsyndromic. This subdivision is important because nonsyndromic cases rarely occur again in the same family (2% to 6%), whereas many syndromic cases have a strong association with specific genetic mutations and a higher inheritance risk.

Multiple factors are thought to be involved in oral clefting, such as medications during pregnancy, maternal alcohol consumption and smoking, dietary and vitamin deficiencies, diabetes, environmental toxins, altitude, birth order, socioeconomic status, and parental age.[17-21] After extensive studies, no conclusive trend has been found except for in maternal alcohol consumption, smoking, folic acid deficiency, and consumption of medications such as anticonvulsants, steroids, and retinoids during pregnancy.[3,17,23,25]

Studies have linked folic acid supplementation to a reduction in clefting, but recent publications challenge the evidence. Despite the inconsistencies, multivitamins with folic acid are still recommended for periconceptional use because of their demonstrated ability to reduce heart and neural tube defects and possibly oral clefts.[3,26,27]

Diagnosis

Methods proposed for prenatal diagnosis of oral clefts include ultrasonography and magnetic resonance imaging (MRI). The latter is utilized in specific cases such as in high-risk patients when an orocleft is uncertain in ultrasonography or in the diagnosis of secondary palate defects. Oral cleft diagnosis becomes easier to detect after the 20th week of gestation with ultrasound. For CL/P, the rate of identification is between 30% and 90%, depending on the exam protocol and expertise of the evaluator.[26,27] Fetoscopy isn't recommended due to its invasive nature.[27,28] The recognition rate is only 6% for CP with three dimensional modalities because the evaluation of secondary palate with these tools is only done when risk factors require it.[27,29] Ultrasound is the preferred method of choice in the diagnosis of oral clefting due to its sensitivity and noninvasive nature.

Treatment

A palatoplasty is the procedure utilized to close the palate, restore the velopharyngeal sphincter, and help speech function and other processes. Ideally, a team of cleft surgeons, ear nose and throat specialists (ENTs), speech pathologists, pediatric dentists, orthodontists, psychologists, social workers, geneticists, and pediatricians should evaluate and collaborate in the overall treatment and follow-up of the patient[30,31] (see *Cleft lip and palate in an infant*).

Preoperative assessment

The repair process for CP is started between the ages of 9 to 18 months.[32] Identity of the patient is determined in collaboration with family members and an ID bracelet is positioned with the name and date of birth. A complete assessment validates chart information (including temperature, respirations, oxygen saturation, heart rate, BP, age, weight, known allergies, medications, nutritional status, activity level, respiratory status, circulation, color, and consciousness), lab workup (hemoglobin, hematocrit), blood product availability, preoperative checklist, and N.P.O. status for solids and liquids.

An important aspect of preoperative care of the cleft patient and family is education. Hints for patient education include:

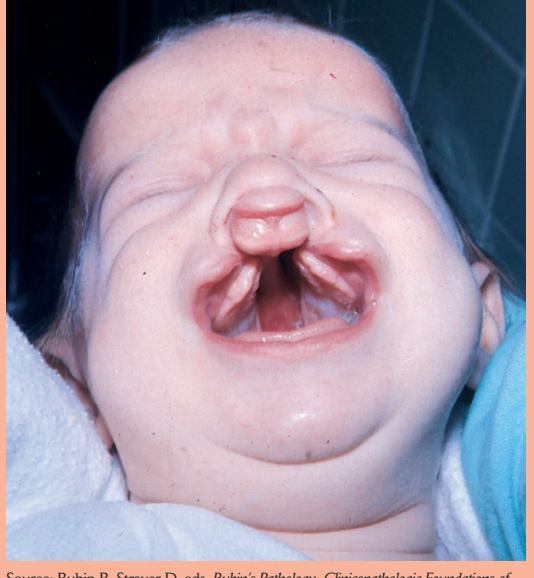
- Use terms that can be easily understood by a child, depending on age.
- Never stand over your patient looking down; sit in a chair next to the bed.

- Include the parent/guardian, but always stay focused on the child while talking.
- Have the child choose a "flavor of inhalation mask" by providing optional choices of scented lip balm.
- Bring a book of photos from your OR with pictures of the lights, anesthesia machines, OR table, and staff.

The OR nurse should be knowledgeable of policies concerning the presence of a parent/guardian in the OR during induction. In pediatric hospitals, there may be induction rooms set aside specifically for this reason. Policies should be explained to the family during the preoperative process.

It's crucial to verify availability of the entire team before transporting the patient to the OR. Craniofacial team members in this setting include a plastic surgeon or oral-maxillofacial surgeon, anesthesiologist or certified nurse anesthetist, first assistant (physician assistant, surgical resident, or registered nurse first assistant), scrub person, and circulating nurse. OR nurses should be aware of the induction and transport practices of their facility. While sedation of the pediatric patient is still debated, it's common for anesthesiologists to give oral premedication to reduce perioperative anxiety, ease induction, and increase parental satisfaction.[33,34]

Cleft lip and palate in an infant



Source: Rubin R, Strayer D, eds. *Rubin's Pathology: Clinicopathologic Foundations of Medicine.* 5th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2008:219.

Many hospitals give the patient options for transport into the OR such as:

- allowing parents to carry young children into the OR suite
- using a wagon for toddlers or school-aged children
- giving older children the option of walking or riding on the stretcher.

The patient will be accompanied to the OR by the anesthesia provider, circulating nurse, and possibly the parents for induction of anesthesia. The circulating nurse will remain with the patient at all times and shortly after induction. Depending on the patient's age, an I.V. line will be started in the preoperative area or after induction of anesthesia. The circulating nurse may assist the anesthesia provider and secure I.V. access with tape, a transparent dressing, and an arm board. Heart rate, respiratory rate, and oxygen saturation will be constantly monitored.

It's strongly recommended that a preoperative briefing take place so the entire team is aware of the plan for care before the procedure begins. This clarifies roles and expectations, avoids duplication, highlights opportunities for reinforcement and teaching, and enhances readiness in case of emergencies. Family history of any complications from surgery or anesthesia should be determined, as well as the potential for malignant hyperthermia. Knowledge of pediatric life support, the location of emergency equipment, and adequate personnel will help nurses act efficiently.

Intraoperative set-up

While setting up the OR, it's important for the perioperative nurse to adjust the temperature to warm the room and place warm blankets on the OR table. The nurse will work with the anesthesia team to provide the best possible environment for the patient.

Positioning devices for a CP procedure are usually minimal. A gel or foam headrest and a shoulder roll should be available. In most cases, the surgeon directs the placement of the shoulder roll. The patient's arms are secured by either tucking at the sides or on arm boards at less than 90 degrees and secured with wraps. The cautery pad is selected before the case according to patient size and is placed on the buttocks or back of the patient. A safety strap is placed over the patient's thighs or pelvis. A pillow is placed under the knees, depending on the size of the patient. A gel pad or lamb's wool cuff can be used to protect

the heels. If indicated, the OR table can be turned or repositioned at this time. Once the patient is secured and the OR table positioned, a forced-air warming device should be placed over the patient to control body temperature.

The perioperative nurse and scrub person will gather the supplies, sutures, and instruments per surgeon preference. The glove size of the surgeon and scrub person and the surgeon's preferred medication for local anesthesia or block will also be determined. Additional supplies include a mayo cover, back table cover, half sheet or head drape, towels, gowns, gloves, X-ray detectable sponges, cautery pencil, blades (surgeon preference), suction tubing and suction tip, syringes and needles for local or block administration, saline for irrigation, basin for saline, sutures, and oxidized cellulose absorbable material for hemostasis and packing. A tongue stitch is usually available for postoperative traction of the tongue. It will be taped to the patient's cheek. The surgical instrumentation will depend on the institution where the procedure takes place, but will include a soft tissue set and bone instruments. An important piece of instrumentation is the mouth gag, which allows the surgeon to have better exposure of the surgical area and diminishes kinking of the endotracheal tube.[35,36]

Time out

Before handing the mouth gag to the surgeon, the time-out should be announced. Acknowledgment is required by the entire surgical team, the patient's full name is confirmed, the consent is read as signed, the patient's allergies are confirmed, availability of necessary supplies, solutions, and medications on the back table is corroborated, and verification that preoperative antibiotics have been administered as ordered. The time-out is recorded in the chart in all applicable areas.

Throat pack

A throat pack is made available before the procedure. If a commercial throat pack is not available, one can be made using sterile 4x4 or 4x8 X-ray detectable sponges unfolded, then folded lengthwise to about 2 inches. Thread a 2-0 silk suture through the end of the sponge. Cut off the needle and tie a secure knot in the suture, leaving an obvious tail on the end of the sponge. If the surgeon uses a throat pack, the time of insertion is recorded. The circulating nurse and scrub person ensure the throat pack is tagged with a black suture, especially if the pack isn't a commercial version with an X-ray detectable string. This is a fail-safe way to make certain that a throat pack isn't left in at the end of the case. Many facilities have stickers to remind the surgeon and OR staff that a pack was utilized. The circulating nurse will also visualize and chart the time of the removal of the throat pack.

Some surgeons will do a periorbital anesthetic block before the prep and place the mouth gag in the patient's mouth. The skin prep will then be done over the retractor and the entire patient's face.

Intraoperative patient care

There are several surgical techniques used to repair the CP. Technique selection depends on the surgeon's experience and the characteristics of the cleft. The patient is positioned on an adjustable headrest, and a roll beneath the shoulders is used to position the patient's head in extension. Some surgeons operate with the patient's head almost resting in their lap, which allows good visualization of the complete palate.

A mouth gag is then placed to expose the palate optimally and depress the tongue; there's a groove in the tongue blade of the retractor to fix the endotracheal tube in the midline. The palate is injected with 1% lidocaine and epinephrine and prophylactic antibiotics are administered. Incisions are made with a scalpel or needle-point electrocautery. The cleft edges are pared, leaving an appropriate amount of nasal mucosa for closure, the lateral relaxing incisions, flap margin incisions, or Z-plasty incisions, depending on choice of repair. A freer can be used to raise the mucoperiosteal flaps. Scissors are used to release the abnormal insertion of palate muscles in the posterior edge of the bony palate.

Closure of the repair begins with the nasal mucosa with interrupted 4-0 polyglactin 910 sutures; most of the time, a vomer flap is used to facilitate the tension-free closure of this nasal layer. The soft palate musculature, particularly the levator sling, is then sutured end-to-end at the midline with interrupted 4-0 polyglactin sutures. The oral mucosa is closed last, starting posteriorly at the uvula and progressing anteriorly using interrupted horizontal mattress 4-0 polyglactin sutures. In young patients, the ENT surgeon may perform bilateral myringotomy and tube insertion at the same time of the palate repair, with

the purpose of preventing middle ear and hearing problems.

The bed should be repositioned as directed by the anesthesia provider once the case is finished. Reconfirmation of the removal of the throat pack should occur. The cautery pad should be removed and the skin integrity of the area checked. The positioning devices may be removed and a pillow placed under the patient's head at the direction of the anesthesia provider. Safety straps shouldn't be removed and there should be adequate staffing, should additional restraining be necessary at the bedside. Transfer of the patient to the stretcher should be directed by the anesthesia provider.

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Intraoperative complications

Anesthesia complications may include a difficult airway with multiple intubation attempts, laryngeal spasms, wheezing, aspiration, unplanned extubation, or mechanical failure. A pediatric emergency intubation cart, with multiple sizes of endotracheal tubes, stylets, a glide scope, and laryngeal scopes, should be readily available in the event of these complications. All OR staff should know the location of the pediatric emergency cart.

Bleeding is another potential complication that may occur. It's important for the circulating nurse to work with the anesthesia provider to monitor blood loss by evaluating the bloody sponges, as well as identifying the need for blood administration or lab tests (such as hemoglobin and hematocrit, complete blood count, or arterial blood gases). It's preferable to control bleeding in the OR before the patient is transferred to the postanesthesia care unit (PACU) or ICU.

After the procedure, airway obstruction may occur from a blood clot, foreign body (tooth or instrument), or by inadvertently leaving a throat pack in place. An allergic reaction to medications, the prep solution, or latex is also a concern. In this age population, malignant hyperthermia is also a threat; therefore, the procedure for management of a malignant hyperthermia crisis should be reviewed regularly with the staff. It's important that all staff members receive on-going educational updates on how to respond to an emergency event. Additionally, the anesthesia providers and nurses should have pediatric advanced life support training. The roles of each member should be rehearsed in advance of surgery, so that the most effective treatment can be carried out.

Postoperative care

Depending on the hospital setting, the postoperative patient will spend the first night either in the PACU or ICU, and then a step-down unit for observation. The patient may still be intubated or may receive oxygen by face mask. A transport monitor will be used to assess cardiac function and oxygen saturation. It's the responsibility of the OR nurse to assist the anesthesia provider during transport and with airway management as needed. Use of the tongue stitch to pull the tongue forward in the event of choking or vomiting will help to clear the airway. This is helpful to avoid using an oral airway that may damage the surgical wound.

The hand-off report from the OR nurse to the PACU or ICU nurse will include the procedure performed, known allergies, the amount of local or regional block medications and pain medications used, and the patient's condition throughout the procedure. Critical events to be noted are any packing used postoperatively, acknowledgement of the removal of the throat pack, blood loss, and fluid management. The anesthesia provider will report the patient's condition related to type, length, and tolerance of anesthesia, as well as medication given intraoperatively. In this process it's helpful to utilize models such as the SBAR (**S**ituation, **B**ackground, **A**ssessment, and **R**ecommendations) or any similar tool that provides a framework for effective communication.[33]

Nursing assessment for potential complications in the immediate postoperative phase is vital. These include postoperative croup, laryngeal spasm, aspiration, foreign body, hemorrhage, and palate dehiscence.

A modified Aldrete score (sometimes known as postanesthesia recovery score) is used to assess the patient in the immediate postanesthesia recovery phase. This scale is used by the PACU nurse to evaluate important aspects in the patient's recovery, such as the activity level, respiration, circulation, consciousness, and oxygen saturation. These parameters are rated on a scale of 0 to 2 at the time of admission and reassessed at 15 minutes and before discharging a patient from the PACU.[34]

The patient's temperature will be taken to evaluate for hypothermia or hyperthermia. A diaper will be changed or placed on the patient, if age appropriate, to monitor urine output. Hydration will be determined by total I.V. intake, along with assessment of mucous membranes and eyes.

The lip wound may appear red and crusty, and there may be an upper palate hemostatic agent pack, which is sutured to decrease bleeding during this time. The patient may be congested following the surgery, and a decongestant or corticosteroid may be prescribed. Antibiotics will be administered to decrease the possibility of infection.

The assessment of pain should be done according to the patient's age and/or communication skills. The Face, Legs, Activity, Cry, and Consolability scale is utilized in nonverbal patients such as infants and cognitively impaired individuals. It assesses pain based on facial expression and movement of arms and legs. The Wong-Baker FACES Pain Rating Scale has reportedly shown an acceptable level of validity in younger children, whereas the numeric pain rating scale for clinical pain measurement (0 to 10) is useful in children age 6 and older.[35] Methods to control pain, physical and pharmacologic, should be documented as well as the pain reassessment and effectiveness of the pain management interventions.

The child may be irritable and restless. To prevent the child from pulling on stitches and protect the I.V., padded restraints (or no-no's) from the hand to the upper arm may be used, but this practice is being questioned.[36,41] The irritable or restless child should be assessed for pain using the selected scale, the need for pain medications determined, and the child's response to the medication evaulated.

Postoperative feedings may be done by syringe if ordered by the surgeon. Breast or bottle feeding and use of a pacifier are also based on surgeon preference. Water may be used following the feedings to wash the suture site. Feedings will progress in the next several days from liquids to soft solids as ordered and tolerated. Straws can't be used because they may damage the surgical wound.

After the initial recovery period, the child can walk or play calmly. The child shouldn't run, climb, or play with the mouth for 1 to 2 weeks after surgery.

Teaching and follow-up

Postoperative teaching for parents and family should include discussing the patient's medications and the appearance of the wound (it's normal for it to be a bit blood-crusted, with some drainage). Advise the family to schedule a follow-up appointment with the surgeon postoperatively. Resources for the family should be given in writing as psychologic and social support is an important part of the healing process.

OR nurses play an essential role in the preparation, intraoperative care, and management of the CL/P surgical patient. Their knowledge of patient management and functions of the multidisciplinary team enhances the surgical experience and helps ensure a successful outcome. **OR**

REFERENCES

1. van Aalst JA, Kolappa KK, Sadove M. Nonsyndromic cleft palate. *Plast Reconstr Surg.* 2008;121(suppl 1):1-14.

2. Canfiel MA RT, Yuskiv N, et al. Improved national prevalence estimates for 18 selected major birth defects-United States, 1999-2001. *JAMA.* 2006;295(6):618-620.

3. Vanderas A. Incidence of cleft lip, cleft palate, and cleft lip and palate among races: a review. *Cleft Palate J.* 1987;24(3):216-225.

4. Strong E, Buckmiller, LM. Management of the cleft palate. *Facial Plast Surg Clin North Am.* 2001;9(1):15-25, vii. Review.

5. Gorlin R, Cohen, MJ, Levin, L. *Syndromes of the Head and Neck.* 3rd ed. New York: Oxford University Press; 1990.

6. Peter A. Mossey JL. Epidemiology of oral clefts: an international perspective. In: Wysznyski DF, ed. *Cleft Lip and Palate: From Origin to Treatment.* New York: Oxford University Press; 2002:127-158.

7. Croen LA, Shaw GM, Wasserman CR, Tolarova MM. Racial and ethnic variations in the prevalence of orofacial clefts in California, 1983-1992. *Am J Med Genet.* 1998;79(1):42-47.

8. Tolarova M. Orofacial clefts in Czechoslovakia. Incidence, genetics and prevention of cleft lip and palate over a 19-year period. *Scand J Plast Reconstr Surg Hand Surg.* 1987;21(1):19-25.

9. Saal HM. Classification and description of nonsyndromic clefts. In: Wysznyski DF, ed. *Cleft Lip and Palate: From Origin to Treatment.* New York: Oxford University Press; 2002:47-52.

10. Mooney MP. Classification of orofacial clefting. In: Joseph E, Losee REK, eds. *Comprehensive Cleft Care.* McGraw-Hill; 2008:21-32.

11. Farina A, Wyszynski DF, Pezzetti F, et al. Classification of oral clefts by affection site and laterality: a genotype-phenotype correlation study. *Orthod Craniofac Res.* 2002;5(3):185-191.

12. Cohen MJ. Etiology and pathogenesis of orofacial clefting. *Oral Maxillofacial Clin North Am.* 2000;12:379-397.

13. Cembrano J, Vera JS, Joaquino, JB et al. Familial risk of recurrence of cleft lip and palate. *Philippine J Surg Surg Spec.* 1995;50:37-40.

14. Sadler TW. *Langman's Medical Embryology*. 9th ed. Baltimore: Lippincott Williams & Wilkins; 2004.

15. Moore KL, Persaud TVN. *The Developing Human*. W.B. Sauders Company ed. Philadelphia: W.B. Sauders Company; 1998.

16. Cohen MJ. Syndromes with orofacial clefting. In: Wysznyski DF, ed. *Cleft Lip and Palate: From Origin to Treatment*. New York: Oxford University Press; 2002:53-65.

17. Spilson SV, Kim HJ, Chung KC. Association between maternal diabetes mellitus and newborn oral cleft. *Ann Plast Surg*. 2001;47(5):477-481.

18. Castilla EE, Lopez-Camelo JS, Campaña H. Altitude as a risk factor for congenital anomalies. *Am J Med Genet*. 1999;86(1):9-14.

19. Vieira AR, Orioli IM. Birth order and oral clefts: a meta analysis. *Teratology*. 2002;66(5):209-216.

20. Yang J, Carmichael SL, Canfield M, Song J, Shaw GM; National Birth Defects Prevention Study. Socioeconomic status in relation to selected birth defects in a large multicentered U.S. case-control study. *Am. J. Epidemiol.* 2008;167(2):145-154.

21. Vieira AR, Orioli IM, Murray JC. Maternal age and oral clefts: a reappraisal. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2002;94(5):530-535.

22. Czeizel AE, Toth M, Rockenbauer M. Population-based case control study of folic acid supplementation during pregnancy. *Teratology*. 1996;53(6):345-351.

23. Tolarova M. Periconceptional supplementation with vitamins and folic acid to prevent recurrence of cleft lip. *Lancet*. 1982;2(8291):217.

24. Loffredo LC, Souza JM, Freitas JA, Mossey PA. Oral clefts and vitamin supplementation. *Cleft Palate Craniofac J*. 2001;38(1):76-83.

25. Briggs RM. Vitamin supplementation as a possible factor in the incidence of cleft lip/palate deformities in humans. *Clin Plast Surg*. 1976;3(4):647-652.

26. Levi S, Schaap JP, Havay PD, Coulon R, Defoort P. End-result of routine ultrasound screening for congenital anomalies: the Belgian Multicentric Study 1984-92. *Ultrasound Obstet Gynecol*. 1995; 5(6):366-371.

27. Daniel Rotten J-ML. Prenatal Diagnosis of Facial Clefts. In: Losee JE, ed. *Comprehensive Cleft Care*. New York, NY: McGraw-Hill; 2008:43-82.

28. Dommergues M, Lemerrer M, Couly G, Delezoide AL, Dumez Y. Prenatal diagnosis of cleft lip at 11 menstrual weeks using embryoscopy in the Van der Woude syndrome. *Prenat Diagn*. 1995;15(4):378-381.

29. Rotten D, Levaillant JM, Martinez H, Ducou le Pointe H, Vicaut E. The fetal mandible: a 2D and 3D sonographic approach to the diagnosis of retrognathia and micrognathia. *Ultrasound Obstet Gynecol*. 2002;19(2):122-130.

30. Strauss RP. Developing a cleft palate or craniofacial team. In: Wysznyski DF, ed. *Cleft Lip and Pala: From Origin to Treatment*. New York: Oxford University Press; 2002:293-302.

31. Cohen MA. Fundamentals of Team Care. In: Losee JE, ed. *Comprehensive Cleft Care*. New York. NY: McGraw Hill; 2008:1225-1228.

32. LaRossa D. The state of the art in cleft palate surgery. *Cleft Palate Craniofac J*. 2000;37(3):225-228.

33. Pope BB, Rodzen L, Spross G. Raising the SBAR: how better communication improves patient outcomes. *Nursing*. 2008;38(3):41-43.

34. Barone CP, Pablo CS, Barone GW. Postanesthetic care in the critical care unit. *Crit Care Nurse*. 2004;24(1):38-45.

35. Jordi M, Elena C, Anna H. Evidence for the use of a numerical rating scale to assess the intensity of pediatric pain. *EurJ Pain*. 2009;13(10):1089-1095.

36. Vishwanath J, Thirloshan K, Brian CS. Do babies require arm splints after cleft palate repair? *Br J Plast Surg*. 1993;46(8):681-685.

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Surgical management of patients with cleft palate

GENERAL PURPOSE: To provide the registered professional nurse with a review of the perioperative management of patients with CP.
LEARNING OBJECTIVES: After reading this article and taking this test, the nurse will be able to: 1. Discuss the causes, diagnosis, and treatment of CP. 2. Describe preoperative and intraoperative care of patients with CP. 3. Identify postoperative interventions for patients with CP.

1. Which newborn is at highest risk for CL/P?
a. an African American male
b. a Native American male
c. a white female
d. a Hispanic female

2. The normal palate develops during which week of gestation?
a. fourth
b. fifth
c. eighth
d. tenth

3. Which supplement for pregnant women is important for prevention of CL/P and CP?
a. calcium
b. zinc
c. vitamin D
d. folic acid

4. The method of choice for prenatal diagnosing of oral clefts is
a. ultrasonography.
b. computed tomography.
c. MRI.
d. fetoscopy.

5. CP repair is started between the ages of
a. 3 to 5 months.
b. 6 to 8 months.
c. 9 to 18 months.
d. 19 to 24 months.

6. Helpful hints in preoperative patient education include all *except*
a. using terms easily understood by the child.
b. looking down at the child.
c. having the child choose an inhalation mask flavor.
d. focusing on the child while talking.

7. Before transporting the patient to the OR, it's crucial for the OR nurse to
a. sedate the child.
b. start an I.V. line.
c. take facial photographs.
d. verify availability of the entire team.

8. While setting up the OR, it's important for the nurse to
a. warm the room.
b. cool the room.
c. place a sterile toy on the table.
d. hang a sterile mobile over the table.

9. A fail-safe way to ensure that a noncommercial throat pack is not left in at the end of the case is to
a. count sponges.
b. use colored sponges.
c. tag it with a black suture.
d. use reminder stickers.

10. CP repairs are commonly closed with
a. 2-0 silk suture.
b. 2-0 polyglycolic acid suture.
c. 4-0 silk suture.
d. 4-0 polyglactin suture.

11. Which equipment is *not* removed from the patient at the conclusion of the case?
a. throat pack
b. safety straps
c. cautery pad
d. positioning devices

12. In the event of choking or vomiting postoperatively, the nurse should avoid
a. turning the child.
b. asking the child questions.
c. using an oral airway.
d. raising the head of the bed.

13. A helpful hand-off report tool recommended by the authors is the
a. SBAR model.
b. PR checklist.
c. ORC tool.
d. PACU flowchart.

14. Which score is used to assess the child in the immediate postoperative recovery phase?
a. modified CL/P score
b. modified TRAUMA score
c. modified Aldrete score
d. modified CPR-Peds score

15. Which may be ordered to treat postoperative congestion?
a. corticosteroid
b. antibiotics
c. saline nose drops
d. nothing should be used

16. The best way to rate pain in infants and in cognitively impaired children is by using
a. the visual analog scale.
b. the Face, Legs, Activity, Cry and Consolability scale.
c. the 0 to 10 numeric pain scale.
d. any verbal response.

17. To prevent damage to the surgical wound during feedings, avoid
a. straws.
b. bottle feedings.
c. breastfeedings.
d. pacifiers.

18. How long after surgery is the child allowed to run, climb, or play with the mouth?
a. immediately
b. 2 days
c. 4 days
d. 7 to 14 days

19. Advise parents that a normal wound appears
a. dark red with no drainage.
b. pale pink with some drainage.
c. blood-crusted with some drainage.
d. blood-tinged with no drainage.

ENROLLMENT FORM ***OR Nurse 2010,*** **May, Surgical management of patients with cleft palate**

A. Registration Information:

Last name _____ First name _____ MI ___

Address _____

City _____ State _____ ZIP _____

Telephone _____ Fax _____ E-mail _____

Registration Deadline: June 30, 2012
Contact hours: 2.3 Pharmacology hours: 0.0 Fee: $21.95

❑ LPN ❑ RN ❑ CNS ❑ NP ❑ CRNA ❑ CNM ❑ other _____

Job title _____ Specialty _____

Type of facility _____ Are you certified? ❑ Yes ❑ No

Certified by _____

State of license (1) _____ License # _____

State of license (2) _____ License # _____

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❑ Please check here if you do not wish us to release your name, address, email address to a third party vendor.

B. Test Answers: Darken one circle for your answer to each question.

	a	b	c	d		a	b	c	d		a	b	c	d		a	b	c	d
1.	❍	❍	❍	❍	5.	❍	❍	❍	❍	9.	❍	❍	❍	❍	13.	❍	❍	❍	❍	17.	❍	❍	❍	❍
2.	❍	❍	❍	❍	6.	❍	❍	❍	❍	10.	❍	❍	❍	❍	14.	❍	❍	❍	❍	18.	❍	❍	❍	❍
3.	❍	❍	❍	❍	7.	❍	❍	❍	❍	11.	❍	❍	❍	❍	15.	❍	❍	❍	❍	19.	❍	❍	❍	❍
4.	❍	❍	❍	❍	8.	❍	❍	❍	❍	12.	❍	❍	❍	❍	16.	❍	❍	❍	❍					

C. Course Evaluation*

1. Did this CE activity's learning objectives relate to its general purpose? ❑ Yes ❑ No
2. Was the journal home study format an effective way to present the material? ❑ Yes ❑ No
3. Was the content relevant to your nursing practice? ❑ Yes ❑ No
4. How long in minutes did it take you to read the article ____, study the material ____ and take the test ____?
5. Suggestion for future topics _____

D. Two Easy Ways to Pay:

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*In accordance with the Iowa Board of Nursing administrative rules governing grievances, a copy of your evaluation of the CE offering may be submitted directly to the Iowa Board of Nursing.

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