



Anesthetic Challenges of Le Fort I Osteotomy

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ABSTRACT⁵

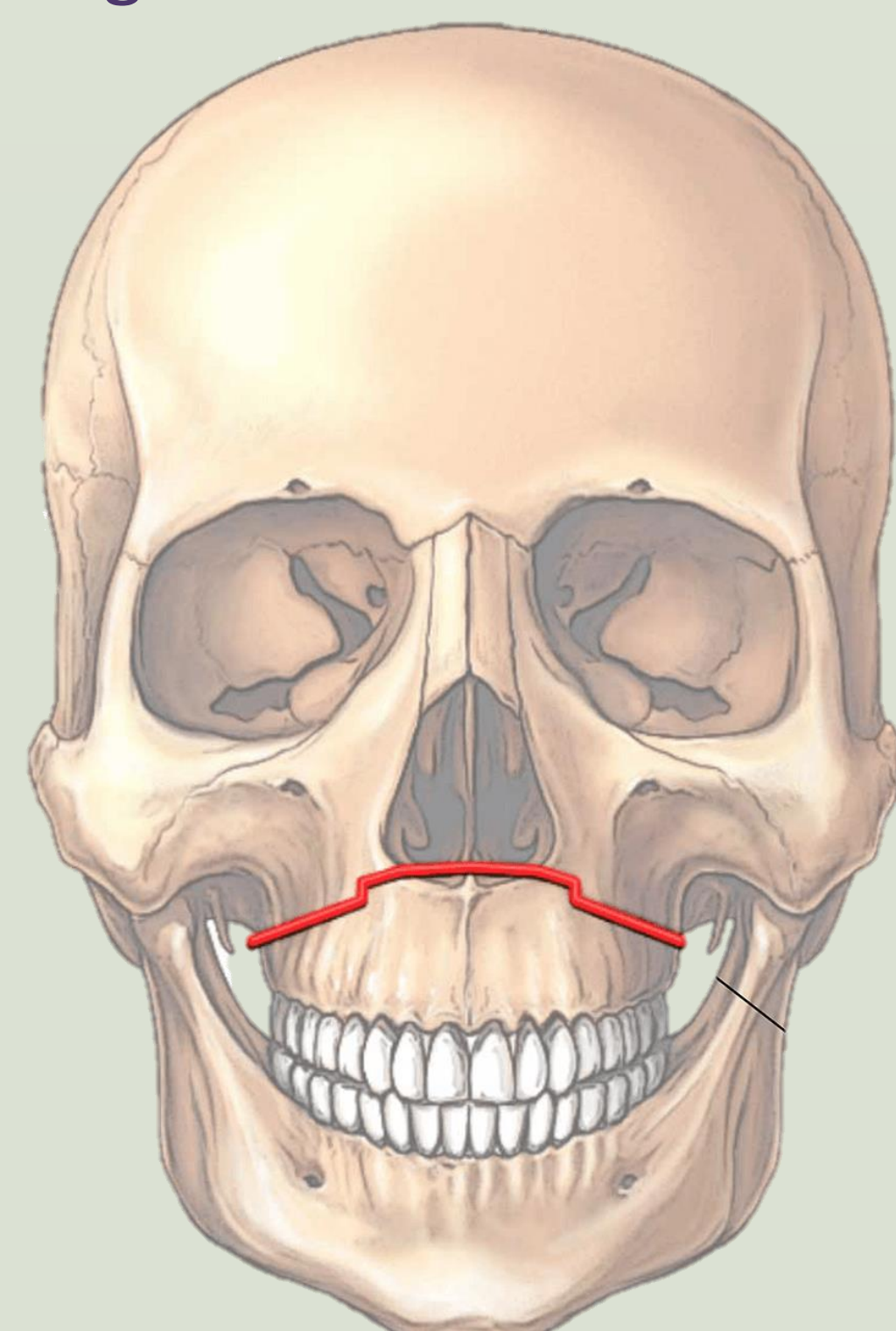
A 35-year-old female (5' 9", 72kg, BMI 23.3) with a history of asthma, GERD, and anxiety/depression presents for elective Le Fort I osteotomy for cosmetic/aesthetic reasons. Previous surgery includes breast augmentation where she reports awareness under anesthesia and postoperative nausea and vomiting. She is allergic to latex, Penicillin, Sulfonamides, Augmentin, and IV dye. The anesthetic plan was to perform nasal intubation with a nasal RAE ETT and direct laryngoscopy with TIVA to reduce the risk of PONV (Visser et al, 2001). This case presented multiple anesthetic challenges, including potentially difficult airway management, a history of awareness and PONV, and meeting surgical hemodynamic goals.

LEARNING OBJECTIVES

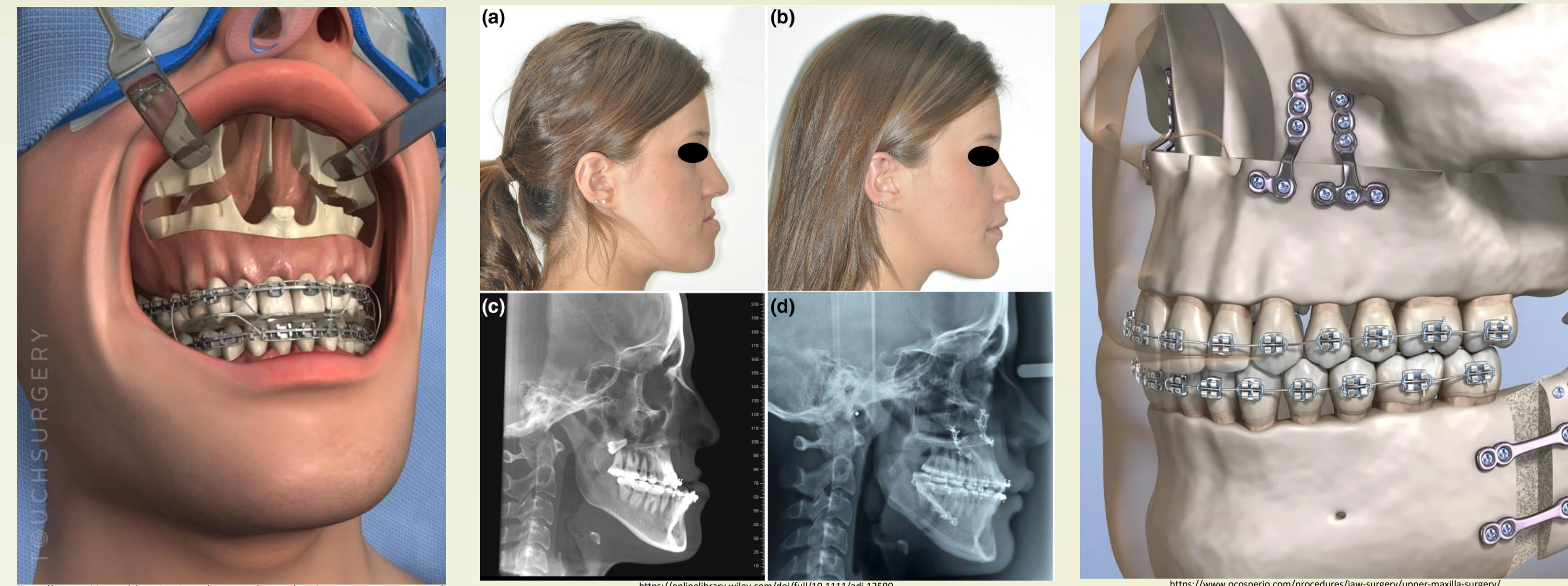
- Discuss airway management in Le Fort I osteotomy
- Discuss the use of TIVA for PONV in patients with an additional history of awareness under anesthesia
- Describe anesthetic management and challenges

BACKGROUND¹

- Le Fort I osteotomy is a procedure to achieve midface fullness, correct facial deformities, and is often combined with orthodontic workup to provide the best results. (Buchanan and Hyman, 2013)
- The procedure starts by dissecting the mucosa under the upper lip to the maxilla and using a reciprocating saw to perform the osteotomy. The maxilla is then mobilized, repositioned, and fixed with titanium plates.
- The jaw was wired closed at the end of the case to promote appropriate healing.



Healthdirect Australia. (n.d.). Maxillary Le Fort I osteotomy. healthdirect. Retrieved February 4, 2023, from <https://www.healthdirect.gov.au/surgery/maxillary-le-fort-i-osteotomy>



CASE DISCUSSION AND MANAGEMENT²

Intubation: The plan was to nasally intubate using a 7.0 nasal RAE ETT and direct laryngoscopy. She received Versed 2 mg pre-op and was asked to spray Afrin in both nares before induction. After the patient was in the room, connected to monitors, and preoxygenated to >0.85 FeO_2 , we proceeded with induction. She was given Fentanyl 100 mcg, Lidocaine 50 mg, Propofol 200 mg, and Rocuronium 50 mg after confirming easy BMV. She advised that her right nare was more patent but also had an unremovable nose ring. We decided to proceed with the right nare despite the nose ring and used an LTA down the nare prior to sequentially dilating with 24Fr, 26Fr, and 28Fr nasal airways. The 7.0 nasal RAE was placed successfully on the first attempt with a MAC 3 blade and McGill forceps.

Anesthetic Management: We placed a BIS monitor and started our Propofol infusion at 125 mcg/kg/min. We decided to use BIS to guide the TIVA since she had a history of awareness and PONV. The surgeon injected 7 mL of Lidocaine 2% prior to incision. We simultaneously administered Ketamine 30 mg and increased the Propofol infusion to 150 mcg/kg/min. Our FGF was set at 1.5 L/min air and 0.5 L/min O_2 to decrease the risk of airway fire. After starting the osteotomy, her blood pressure and heart rate increased to 146/92 mmHg and 105 bpm, respectively. The BIS was reading 39 which was an acceptable level, but the pressure remained elevated, and the surgeon requested MAPs of 65. It has been demonstrated that hypotensive anesthesia reduces blood loss and improves the quality of the surgical field in Le Fort I osteotomies (Dolman et al, 2002). We administered Esmolol 20 mg, Labetalol 5 mg, Fentanyl 100 mcg, and Ketamine 20 mg. Her heart rate improved but her blood pressure remained elevated. Eventually, we turned on Sevoflurane at 0.7 MAC and turned the Propofol infusion to 125 mcg/kg/min which settled her into a consistent plane of anesthesia meeting the surgeon's hemodynamic requirements. For PONV prophylaxis, we used a scopolamine patch, Decadron 5mg at the beginning and end of the case (PSR), Zofran 4mg and the Propofol infusion. It was imperative to prevent PONV as her jaw would be wired closed and we could not easily reintubate/protect the airway if necessary.

Extubation: We wanted the patient to be fully awake prior to extubation to make sure she can protect her airway with her jaw wired closed. We discontinued the propofol infusion, turned off our volatile anesthetic, and administered Fentanyl 50 mcg and Labetalol 5 mg. Prior to extubation, we used a soft suction catheter down the left nare which removed a significant amount of bloody mucus and decreased the risk of laryngospasm. We removed the nasal RAE ETT once she was responding to commands and brought her to PACU with a nasal cannula on 2 L/min O_2 .

PERSONAL INSIGHTS^{1,3,4}

- Despite Le Fort I osteotomy being a relatively low-risk procedure (6.4% chance of complication in a study with 1000 patients from 1983 to 2002), losing control of the airway for intubation and especially extubation poses serious risks to the patient (Buchanan and Hyman, 2013).
- The combination of this patient's history of PONV, awareness under anesthesia, and having her jaw wired shut at the end of this case presented interesting challenges of sustaining an adequate depth of anesthesia, providing the surgeon with the requested hemodynamics necessary for the surgery, and trying to prevent any post-operative complications related to anesthesia. In retrospect, we could have tried adding a Precedex infusion in addition to the Propofol which would help deepen the anesthetic while simultaneously helping reach hemodynamic goals without using volatile agents (Goel et al, 2020).
- We determined that this patient's history of asthma was minimal and well-controlled enough to use Labetalol to decrease blood pressure despite asthma as a contraindication secondary to β_2 blockade (Miller et al, 2022). Although, as discussed above, we may have been able to achieve adequate MAPs with another IV anesthetic adjunct.
- Determining that this patient had the ability to protect her airway and using soft suction down the other nare prior to extubation in addition to our PONV prophylaxis allowed us to safely extubate while her jaw was wired closed with minimal risk.



REFERENCES

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