

Implementation of an Ambulatory Cleft Lip Repair Protocol: Surgical Outcomes

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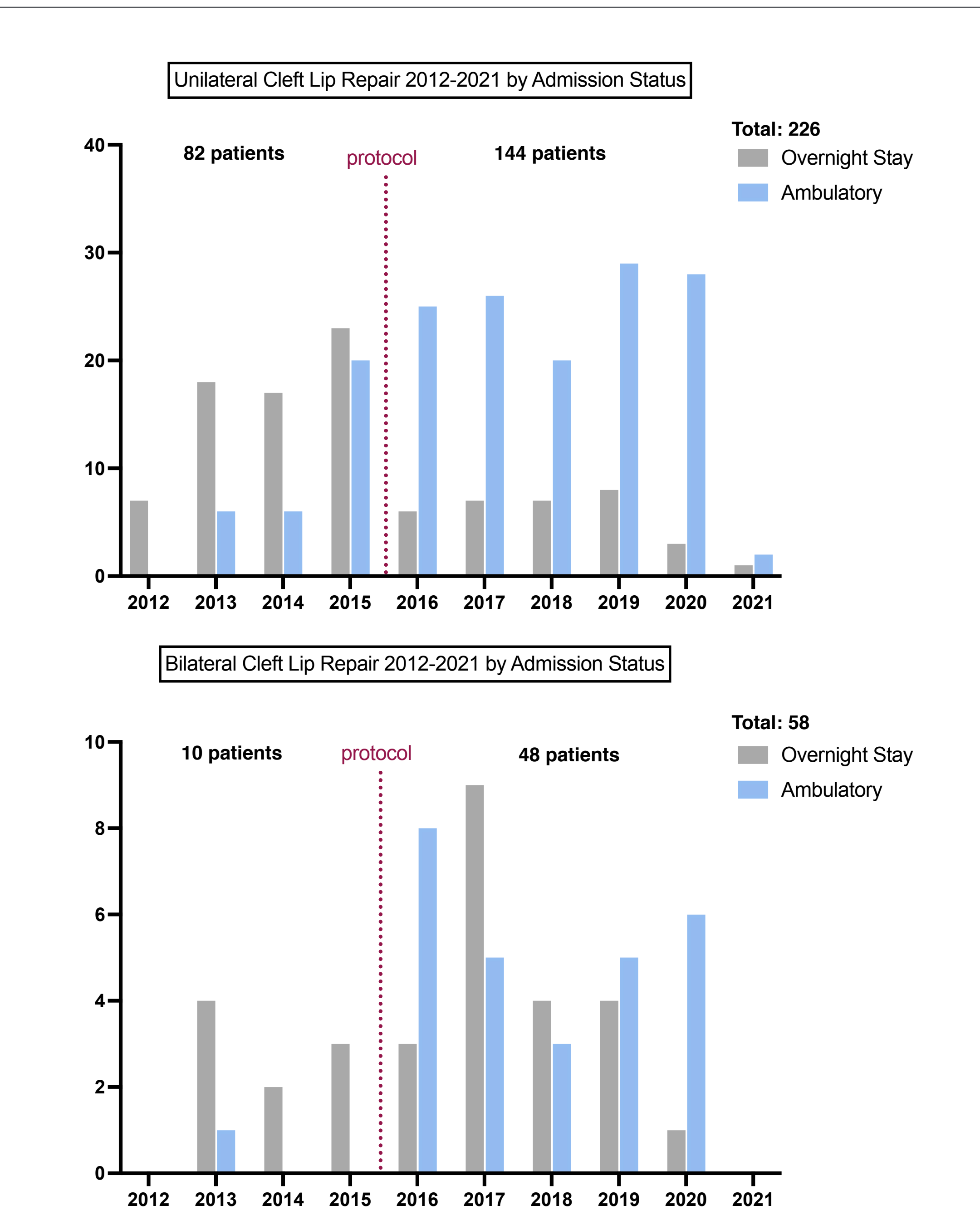
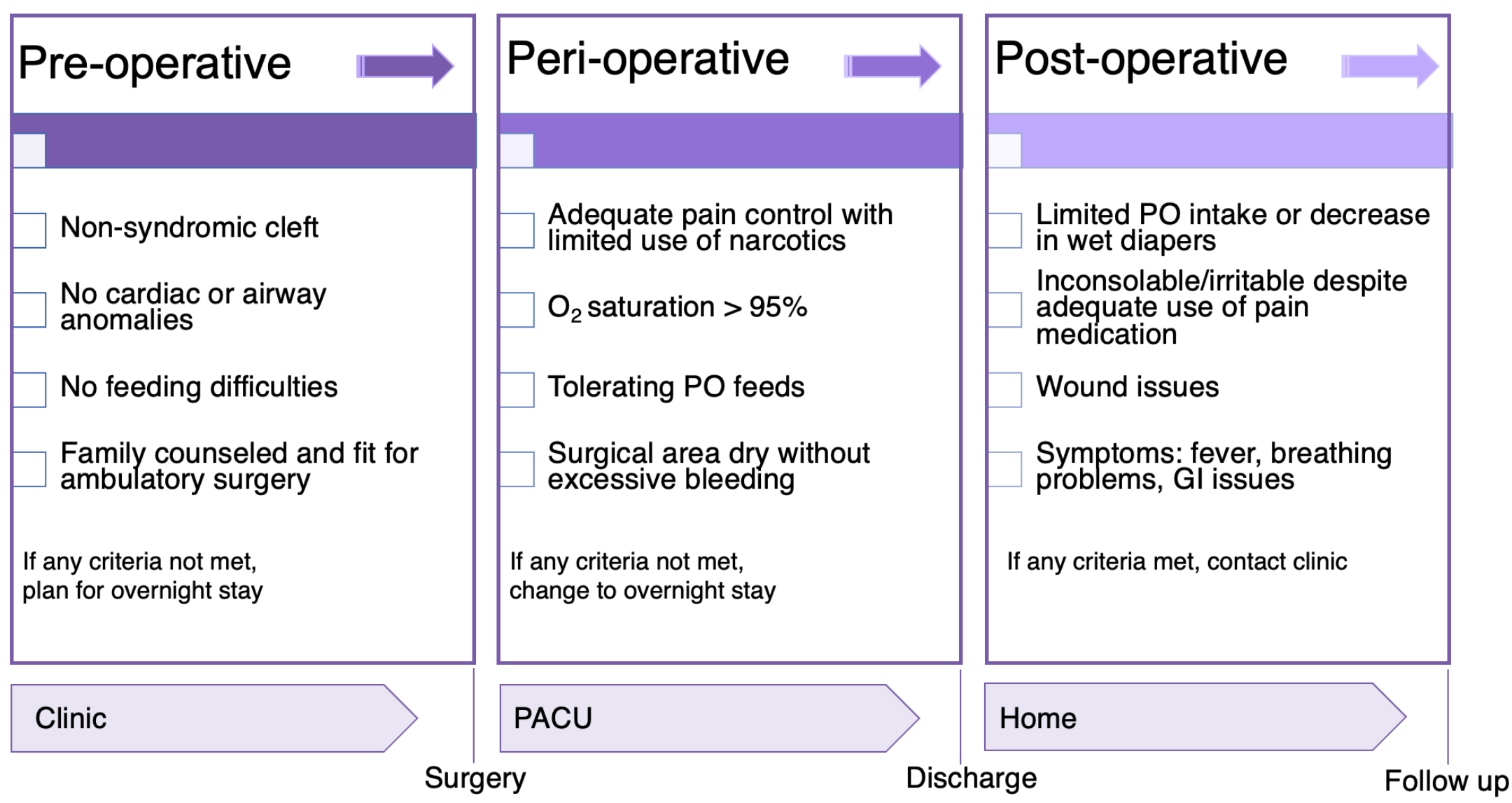
INTRODUCTION

- In patients with isolated unilateral cleft lip, the median health care cost in the first year of life is \$13,013, 85% of which are comprised of surgical expenses.^{1,2}
- Cleft lip repair has traditionally been performed as an inpatient procedure. Studies suggest that ambulatory cleft lip surgery has the potential to reduce hospital-associated costs by more than 10%, which would lead to average savings of \$4,261 per patient and national savings of \$8,765,183 per year.³
- The purpose of this study is to investigate the effect of an ambulatory surgery protocol on surgical outcomes for primary unilateral and bilateral cleft surgery over a nine-year period.

METHOD

- Single-institution, retrospective review
- patients undergoing primary unilateral or bilateral cleft lip repair from 2012-2021
- Implementation of ambulatory protocol in 2016
- Exclusion criteria: revision surgery, follow up < 30 days, records unavailable
- All patients underwent primary cleft lip repair with primary rhinoplasty and gingivoperiosteoplasty if indicated
- Demographics and surgical outcomes data were collected
- Chi-squared test/Fisher's exact test and Mann-Whitney U test

AMBULATORY CLEFT LIP REPAIR PROTOCOL



Box denotes p < 0.05

Pre- vs. Post-Protocol Demographics

	Unilateral Pre-Protocol (n = 82)	Unilateral Post-Protocol (n = 144)	Bilateral Pre-Protocol (n = 10)	Bilateral Post-Protocol (n = 48)
Age (mo)	3 (3-4.2)	3 (3-4)	5.5 (3.8-6)	4 (3-5)
BMI	16 (14.6-18.2)	15.9 (14.5-16.9)	16.3 (12.6-18.3)	15.9 (14.1-18.3)
Congenital abnormality	5 (6.2)	22 (15.5)	1 (10.0)	10 (20.8)
ASA class				
1	34 (45.3)	78 (54.2)	2 (20.0)	20 (41.7)
2	38 (50.7)	59 (41.0)	8 (80.0)	22 (45.8)
3	3 (4.0)	7 (4.9)	0	5 (10.4)
4	0 (0)	0 (0)	0	1 (2.1)
5	0 (0)	0 (0)	0	0
unavailable	7	0	0	0
Distance from hospital (mi)	19.5 (11-40.1)	15.8 (10.2-32.8)	16.5 (6.5-67.5)	19.9 (10.4-30.4)
AM surgery	62 (75.6)	121 (84.0)	8 (80.0)	34 (70.8)

Pre- vs. Post-Protocol Surgical Outcomes

	Unilateral Pre-Protocol (n = 82)	Unilateral Post-Protocol (n = 144)	Bilateral Pre-Protocol (n = 10)	Bilateral Post-Protocol (n = 48)
LOS (hours)	24 (10-27.3)	8 (7-10)	29 (23.7-32.3)	11 (9-27)
Operative time	104.5 (78-153)	102 (82-119.8)	209 (160-349)	184 (148-203)
w/ rhinoplasty	78 (96.3)	141 (97.9)	8 (80.0)	45 (93.8)
w/ GPP	33 (40.2)	90 (62.5)	6 (60.0)	33 (68.8)
30 day readmission	0 (0)	1 (0.7)	0 (0)	3 (6.3)
30 day reoperation	0 (0)	0 (0)	0 (0)	1 (2.1)
Wound complications	3 (3.7)	1 (0.7)	0 (0)	1 (2.1)

Pre- vs. Post-Protocol Postoperative Outcomes

	Unilateral Pre-Protocol (n = 82)	Unilateral Post-Protocol (n = 144)	Bilateral Pre-Protocol (n = 10)	Bilateral Post-Protocol (n = 48)
Contact clinic before 1 st f/u	8 (10.1)	30 (20.8)	2 (20.0)	11 (23.1)
Reason:				
Wound	3 (37.5)	12 (40.0)	1 (10.0)	4 (8.3)
Feeding	3 (37.5)	7 (23.3)	0 (0)	2 (4.2)
Pain	1 (12.5)	5 (16.7)	1 (10.0)	2 (4.2)
Symptoms	0 (0)	5 (16.7)	0 (0)	1 (2.1)
Other	1 (12.5)	1 (3.3)	0 (0)	2 (4.2)
POD of clinic contact (days)	2.5	2	2	2
Healthcare visit before 1 st f/u	1 (1.4)	2 (1.4)	0 (0)	1 (2.1)

Overnight Stay vs Ambulatory Demographics

	Unilateral Overnight Stay (n = 28)	Unilateral Ambulatory (n = 116)	Bilateral Overnight Stay (n = 21)	Bilateral Ambulatory (n = 27)
Age (months)	4 (3-5)	3 (3-3)	4 (3-4)	4 (3-5)
BMI	15.6 (14.3-17.6)	16 (14.6-16.9)	15.1 (13.4-18.5)	16.2 (14.6-18.3)
Congenital abnormality	12 (42.9)	10 (8.8)	8 (38.1)	2 (7.4)
ASA class				
1	6 (21.4)	72 (62.1)	6 (28.6)	14 (51.9)
2	16 (57.1)	43 (37.1)	9 (42.9)	13 (48.1)
3	6 (21.4)	1 (0.9)	5 (23.8)	0 (0)
4	0 (0)	0 (0)	1 (4.8)	0 (0)
5	0 (0)	0 (0)	0 (0)	0 (0)
unavailable	0	0	0	0
Distance from hospital	14.4 (13-28.9)	17.3 (10.2-32.8)	12.6 (10.2-22.9)	20.4 (12.7-33.6)
AM surgery	21 (75)	100 (86.2)	13 (61.9)	21 (77.8)

Overnight Stay vs Ambulatory Surgical Outcomes

	Unilateral Overnight Stay (n = 28)	Unilateral Ambulatory (n = 116)	Bilateral Overnight Stay (n = 21)	Bilateral Ambulatory (n = 27)
LOS (hours)	27 (25-28)	7 (6-9)	28 (25.5-40.5)	9 (8-10)
Operative time	125.5 (104-157.8)	96 (80-115.8)	185 (173-215)	184 (132-195)
w/ rhinoplasty	28 (100)	113 (97.4)	20 (95.2)	25 (92.6)
w/ GPP	15 (53.6)	75 (64.7)	12 (57.1)	21 (77.8)
30 day readmission	1 (3.6)	0 (0)	1 (14.8)	0 (0)
30 day reoperation	0 (0)	0 (0)	0 (0)	0 (0)
Wound complications	1 (3.6)	0 (0)	1 (4.8)	0 (0)

Overnight Stay vs Ambulatory Postoperative Outcomes

	Unilateral Overnight Stay (n = 28)	Unilateral Ambulatory (n = 116)	Bilateral Overnight Stay (n = 21)	Bilateral Ambulatory (n = 27)
Contact clinic before 1 st f/u	9 (32.1)	21 (14.6)	4 (19.1)	7 (25.9)
Reason:				
Wound	3 (33.3)	9 (42.9)	1 (25.0)	3 (42.8)
Feeding	2 (22.2)	5 (23.8)	0 (0)	2 (28.5)
Pain	1 (11.1)	4 (19.0)	1 (25.0)	1 (14.2)
Symptoms	2 (22.2)	3 (14.3)	1 (25.0)	0 (0)
Other	1 (11.1)	0 (0)	1 (25.0)	1 (14.2)
POD of clinic contact (days)	3	2	2	2
Healthcare visit before 1 st f/u	1 (3.6)	1 (0.9)	1 (4.8)	0 (0)

CONCLUSIONS

Discussion

- No significant difference in safety outcomes following protocol for ambulatory surgery
- Protocol-based patient stratification leads to the majority of patients receiving ambulatory surgery
- Length of stay is significantly decreased

Limitations

- Factors influencing eligibility of patients and cleft centers for ambulatory care cannot all be controlled
- Perioperative decision for overnight stay is a fluid combination of surgeon comfort, anesthesiologist input, and presence of comorbidities
- Unable to fully quantify burden of care shifted to family with ambulatory surgery

Future Directions

- Explore patient/family-reported outcomes with ambulatory surgery
- Assess resources necessary to provide sufficient pre-, peri-, and post-operative counseling for ambulatory surgery
- Quantify healthcare savings achieved with an ambulatory surgery protocol

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