



# A Hip Way To Reconstruct Noses: Outcomes With Iliac Crest Cap Cartilage Grafts In Intermediate Cleft Rhinoplasty

Liana Cheung MBBS<sup>1</sup>, Jessica D. Blum BA MSc<sup>1</sup>, Dillan F. Villavisanis BA<sup>1</sup>, Daniel Y. Cho MD PhD<sup>1</sup>,  
Jordan W. Swanson MD MSc<sup>1</sup>, Scott P. Bartlett MD<sup>1</sup>, Jesse A. Taylor MD<sup>1</sup>, David W. Low MD<sup>1</sup>  
1. Division of Plastic and Reconstructive Surgery, Children’s Hospital of Philadelphia, PA



## OBJECTIVES

This case-control study evaluated trends and outcomes of iliac crest cap cartilage (ICCC) grafts in the intermediate mixed-dentition cohort undergoing cleft rhinoplasty over the past 15 years.

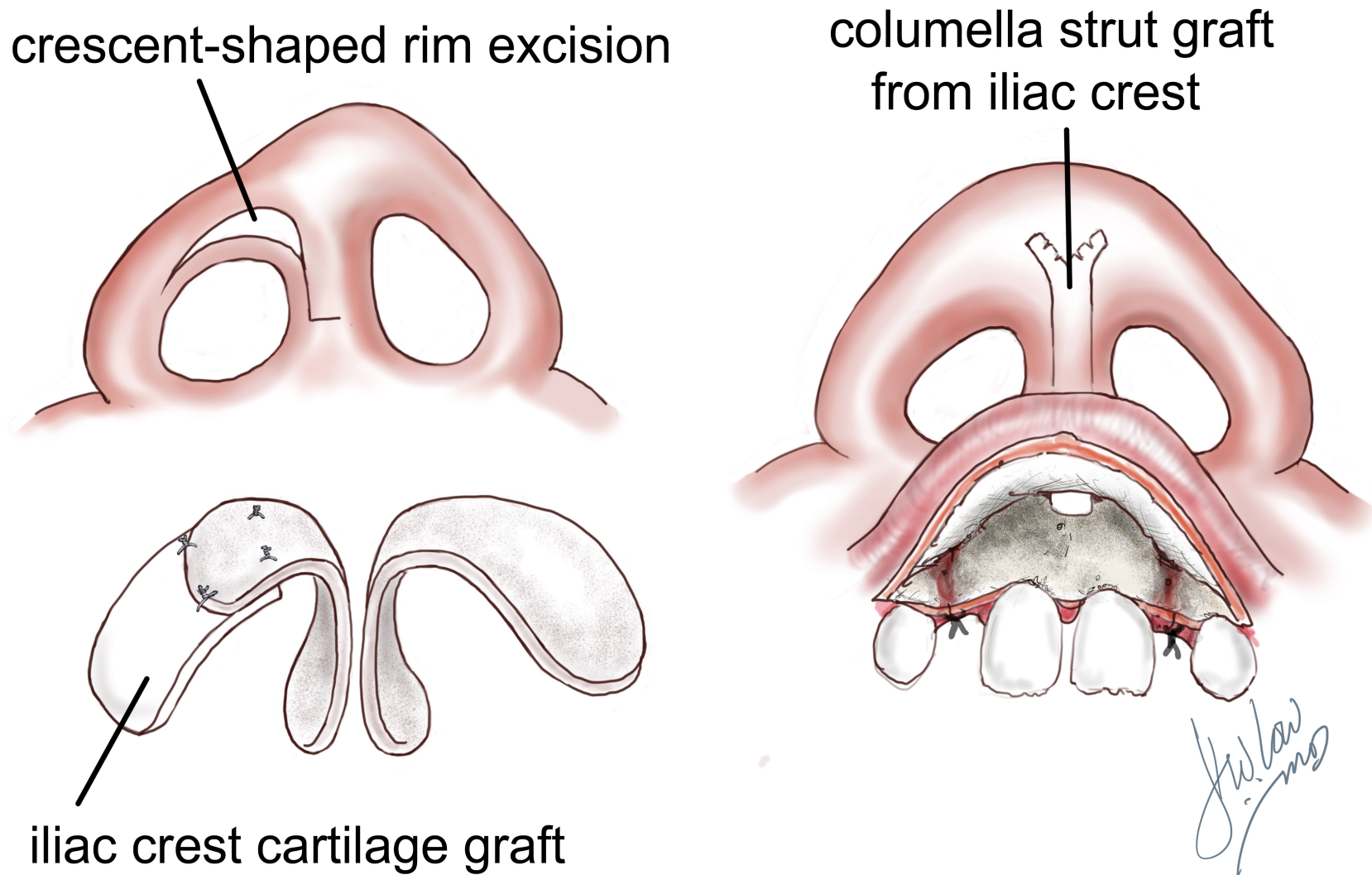
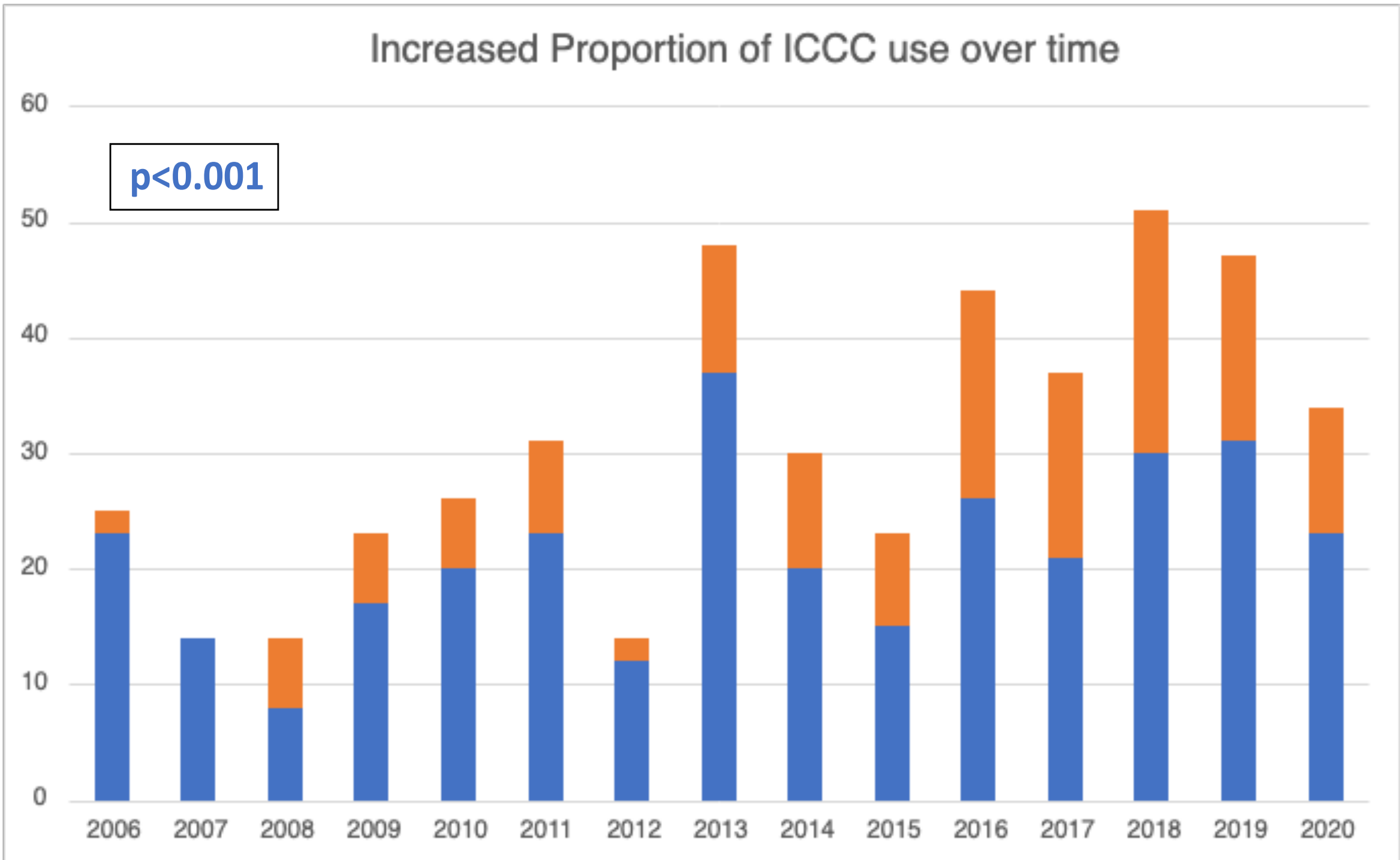
## METHODS

- Mixed Dentition Rhinoplasties completed by CHOP Plastic Surgery
- Non-syndromic Cleft diagnosis
- Retrospective Review of trends from Jan 2006 to Dec 2020
- Photomorphometric Analyses conducted on subgroup cohorts

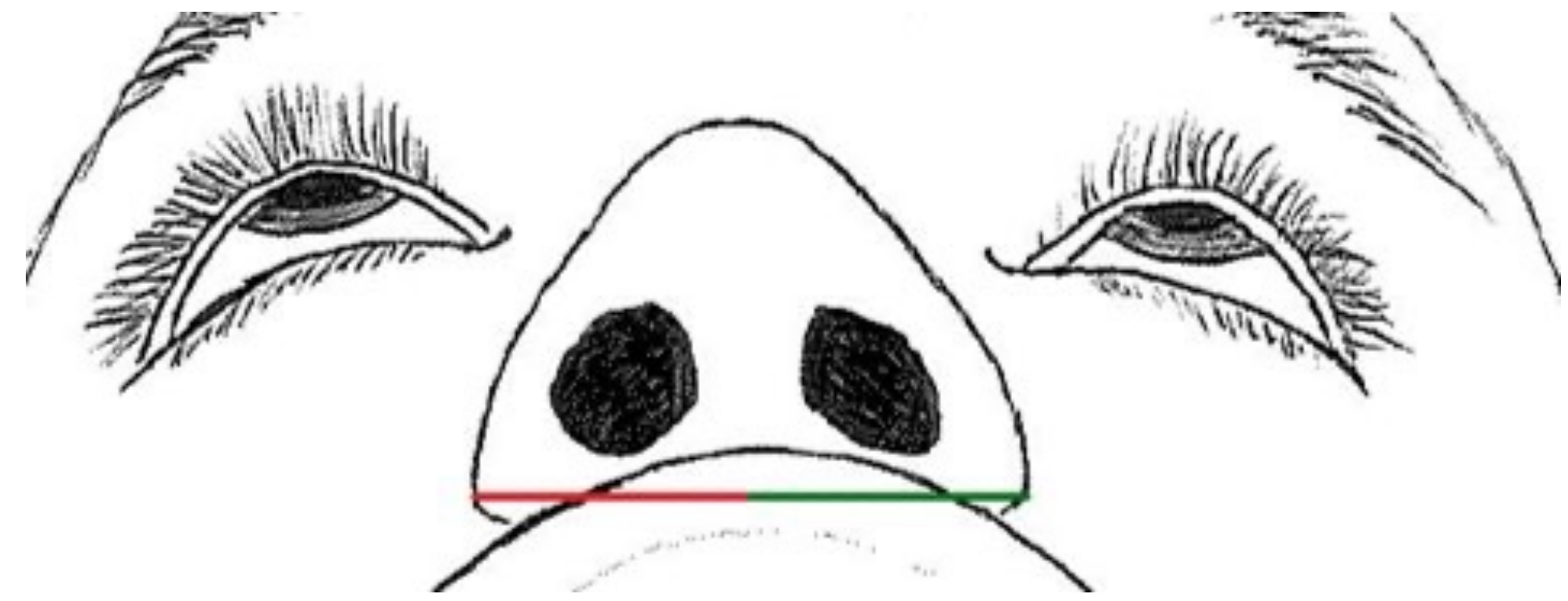
## RESULTS

- 959 Cleft Rhinoplasties  
296 Cleft Rhinoplasties at Mixed Dentition Age
- 232 cartilage grafts
  - 139 Iliac Crest Cap Cartilage (ICCC)  
concomitantly with alveolar bone grafting

|                                 | No Cartilage | Any Cartilage | p-value | Non-ICC Cartilage | ICC Cartilage | p-value | No Cartilage | ICC Cartilage | p-value |
|---------------------------------|--------------|---------------|---------|-------------------|---------------|---------|--------------|---------------|---------|
| n                               | 64           | 232           |         | 93                | 139           |         | 64           | 139           |         |
| % Female                        | 0.44         | 0.41          | 0.687   | 0.33              | 0.45          | 0.136   | 0.44         | 0.45          | 0.909   |
| Cleft Laterality<br>% Bilateral | 0.17         | 0.23          | 0.330   | 0.32              | 0.28          | 0.493   | 0.17         | 0.28          | 0.095   |
| Mean Age at Surgery (SD)        | 8.5 (2.0)    | 8.3 (1.6)     | 0.982   | 8.7 (1.9)         | 8.1 (1.4)     | 0.006   | 8.5 (2.0)    | 8.1 (1.4)     | 0.399   |
| Mean Current Age (SD)           | 18.9 (4.7)   | 14.9 (4.0)    | <0.0001 | 16.4 (4.1)        | 14.0 (3.8)    | <0.001  | 18.9 (4.7)   | 14.0 (3.8)    | <0.0001 |
| Skeletal Maturity               | 61           | 62            |         | 34                | 28            |         | 61           | 28            |         |
| % Further Rhinoplasty           | 0.26         | 0.24          | 0.795   | 0.38              | 0.07          | 0.004   | 0.26         | 0.07          | 0.037   |



|              | Absolute Difference in Nasal Width Ratio | Right nostril height to width ratio | Left nostril height to width ratio | Pronasale height to Alar width ratio | Goode's ratio | Nasolabial angle |
|--------------|------------------------------------------|-------------------------------------|------------------------------------|--------------------------------------|---------------|------------------|
| ICCC postop  | 0.077                                    | 0.852                               | 0.821                              | 0.491                                | 0.543         | 106.114          |
| ICCC preop   | 0.224                                    | 0.722                               | 0.671                              | 0.429                                | 0.524         | 104.155          |
| NICCC postop | 0.074                                    | 0.991                               | 0.925                              | 0.572                                | 0.600         | 109.014          |
| NICCC preop  | 0.089                                    | 0.814                               | 0.703                              | 0.484                                | 0.540         | 110.667          |
| NC postop    | 0.125                                    | 0.904                               | 0.889                              | 0.539                                | 0.578         | 105.489          |
| NC preop     | 0.134                                    | 0.788                               | 0.757                              | 0.470                                | 0.541         | 111.632          |



## CONCLUSIONS

- ICC Cartilage cohort had surgery earlier than Non-ICC Cartilage cohort (p<0.006)
  - Skeletally mature sub-group demonstrated superior ICCC retention over time (p=0.004)
  - No iliac crest contour irregularities with functional sequelae
  - Significant increase in institutional use of ICCC over time
- 
- Aesthetic outcomes are comparable or improved with ICCC without additional morbidity
  - ICCC provides an abundant source of cartilage for cleft rhinoplasty in the period of mixed dentition concomitant to alveolar bone grafting