Breaking Barriers in Septoplasty: A Case Review of Force Directed Balloon- Assisted Endoscopic Septoplasty

David Joseph Dillard[1]*, Carlos Koudouovoh[1], Kenneth Walton, Roger Su MD[2], James Fortson MD[2]

INTRODUCTION/BACKGROUND

Nasal septal deviation represents a significant anatomical deformity that impairs normal breathing, affecting patients' quality of life during both rest and physical activity. This condition creates airflow obstruction that can compromise sleep quality and exercise tolerance, necessitating surgical intervention in many cases.

Septoplasty remains the primary surgical approach for correcting nasal septal deviations. Traditional septoplasty techniques often involve extensive flap dissections, which can lead to complications and prolonged anesthesia times. This study evaluates the efficacy and safety of balloon-assisted endoscopic septoplasty using the ClearPath nasal balloon (CNB), a minimally invasive alternative to traditional techniques.

METHODS/MATERIALS

- **Study Design:** Retrospective review
- **Patient Population:**
  - 197 consecutive endoscopic septoplasty cases
  - Time period: June 2020 - August 2024
  - Single facility was used for all surgeries
  - All procedures performed using ClearPath nasal balloon (CNB)
- **Analysis:** 38 patients had both preoperative and post-operative CT scans
  - Measurements taken at key anatomical landmarks: **Pyriform aperture** and **Nasolacrimal ducts**
  - Measured distance from septum to nasal sidewall
  - RadiAnt DICOM radiological software CTs evaluated for postoperative complications. Paired t-tests were used for statistical analysis

RESULTS

Figure II: Improvement in Patient-Reported Nasal Quality of Life Following CNB Septoplasty

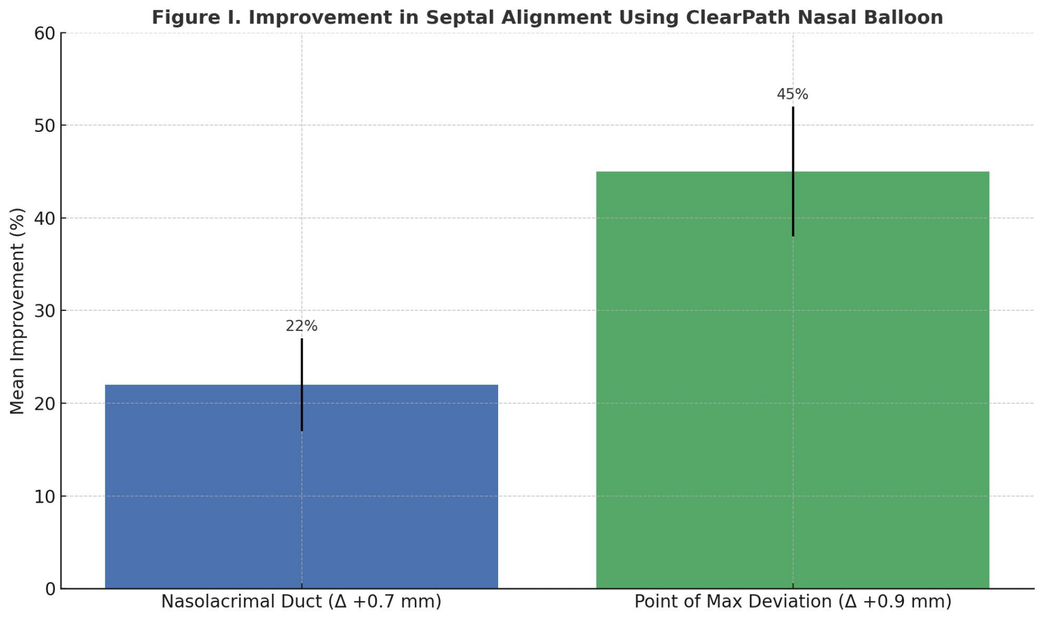


Fig. III. Measured Alignment Gains for Nasolacrimal Duct, Point of Maximal Deviation, and Quality of Life Measurements

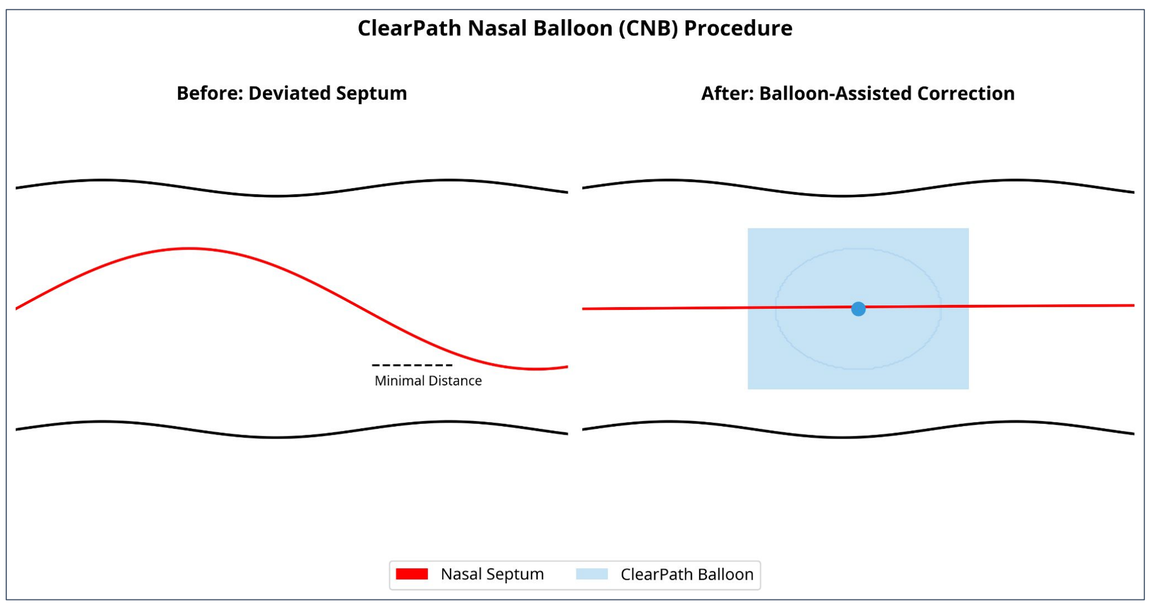


Figure III: Radiologic Measurement Protocol Using DICOM Imaging at Key Septal Landmarks

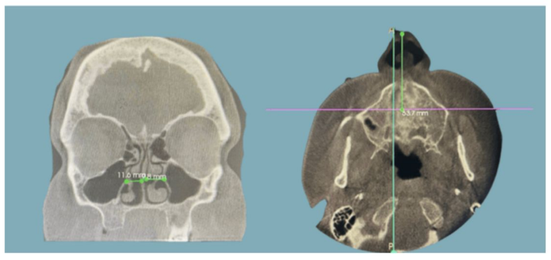


Figure IV: Overview of ClearPath Nasal Balloon, an Endoscopic Septoplasty Surgical Device

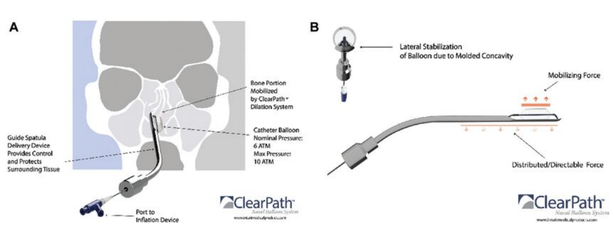
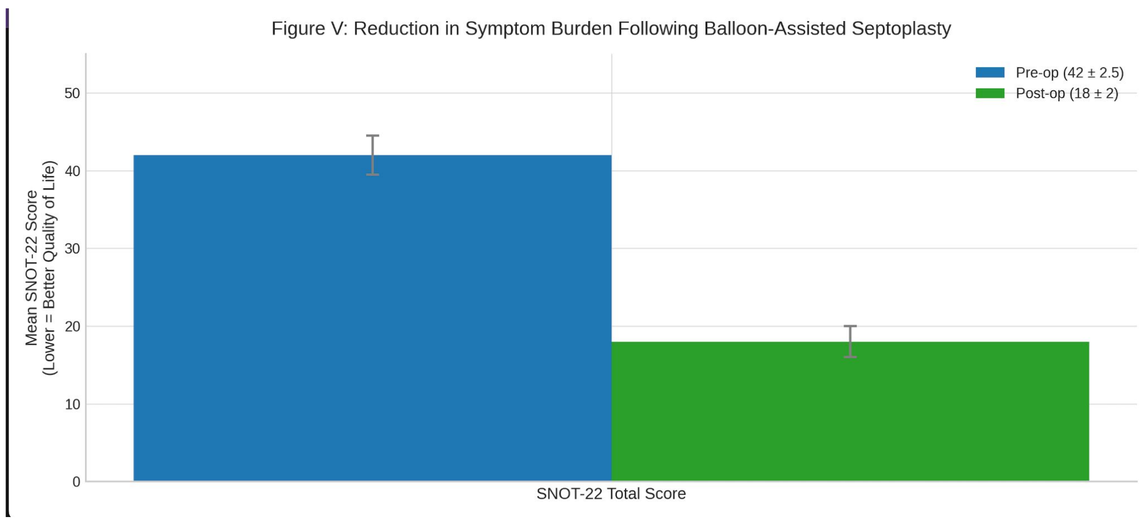


Figure V: Reduction in Symptom Burden Following Balloon-Assisted Septoplasty



REFERENCES & ACKNOWLEDGEMENTS

1. Endoscopic septoplasty: indications, technique, and results. (1999). Accessed: 07.25.2024: https://pubmed.ncbi.nlm.nih.gov/10229592/.
2. Prognostic factors for outcome after septoplasty in 888 patients from the Swedish National Septoplasty Register. (2019). Accessed: 06.19.2024:https://pubmed.ncbi.nlm.nih.gov/31037387/.
3. Effectiveness of septoplasty compared to medical management in adults with obstruction associated with a deviated nasal septum: the NAIROS RCT. (2024). Accessed: 07.01.2024: https://pubmed.ncbi.nlm.nih.gov/38477237/.
4. Correction of the deviated septum: from ancient Egypt to the endoscopic era. (2014). Accessed: 05.18.2024: https://pubmed.ncbi.nlm.nih.gov/25137431/.
5. Quality of Life of Patients With Nasal Obstruction Who Underwent Septoplasty: Assessed With the Glasgow Benefit Inventory. (2023). Accessed: 01.04.2025: https://pubmed.ncbi.nlm.nih.gov/37868415/.
6. Adverse Events Associated with Balloon Sinuplasty: A MAUDE Database Analysis. (2019). Accessed: 01.04.2025: https://pubmed.ncbi.nlm.nih.gov/37868415/.
7. Use of balloon-assisted nasal access to augment endoscopic endonasal transsphenoidal approach: illustrative case. (2022). Accessed 01.10.2025: https://pubmed.ncbi.nlm.nih.gov/36083775/
8. Effectiveness of endoscopic septoplasty in different types of nasal septal deformities: our experience with NOSE evaluation. (2018). Accessed: 01.10.2025. https://pubmed.ncbi.nlm.nih.gov/30197423/
9. The comparison of endoscopic septoplasty and conventional septoplasty: A PRISMA analysis. (2022). Accessed: 01.12.2025 https://pubmed.ncbi.nlm.nih.gov/37169626/

CONCLUSIONS/FUTURE DIRECTIONS

Conclusions:

The ClearPath nasal balloon (CNB) demonstrates promise as a viable tool for minimally invasive septoplasty, showing significant improvements in septal alignment without observed complications.

Key Takeaways:

- Statistically significant improvement in septal alignment
- 22% improvement at nasolacrimal duct
- 27% improvement at point of maximal deviation
- No major complications observed
  - No perforations
  - No synechia

Future Directions:

- Further investigation with larger sample sizes
- Long-term follow-up studies
- Comparison with traditional septoplasty techniques
- Identification of optimal patient selection criteria
- The CNB may emerge as a preferred alternative in select patient populations, offering the benefits of minimally invasive surgery while maintaining effective outcomes.