

INTRODUCTION

Soft Tissue Molding: Non-surgical method to correct deformities in soft tissue and scar tissue during the healing process. Using custom-made removable appliances, orthopedic forces are used to modify soft tissue morphology and diminish or correct deformity

Presurgical orthopedics used since 1950s for CLP. Nasal stents have been used, but were easily extruded and only retained for several weeks. Expansile nasal stents have been described but were also easily extruded and had an intranasal expansile screw requiring removal for readjustment.

Orthonostric approach used at our institution allows for lateral expansion within nostril to correct nasal soft tissue deformities.

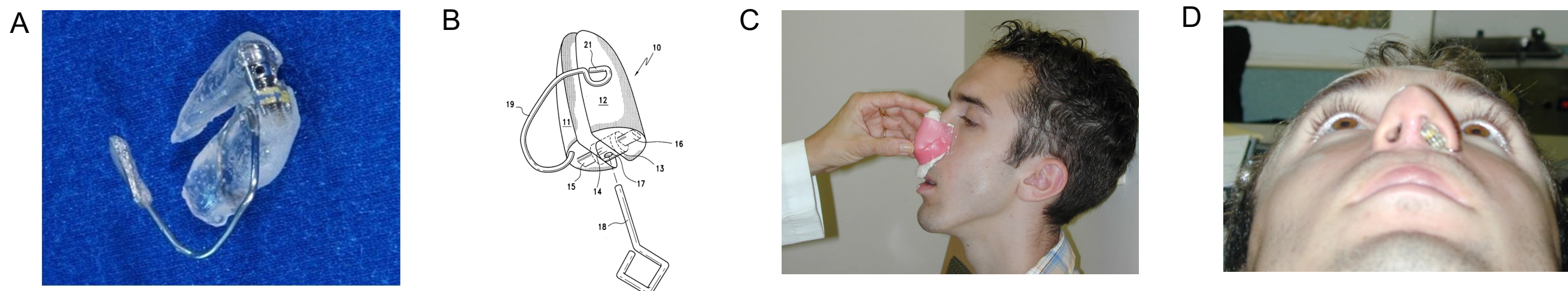


Figure 1. Orthonostric Stent: (A, B)

1. Custom-fabricated for each patient (C, D)
2. It is expansile, and the direction of expansion can be oriented as desired
3. The head of the screw for the drive mechanism can be accessed without removing the stent
4. Stent is maintained comfortably in position by an adjustable wire flange, which wraps around alar crease

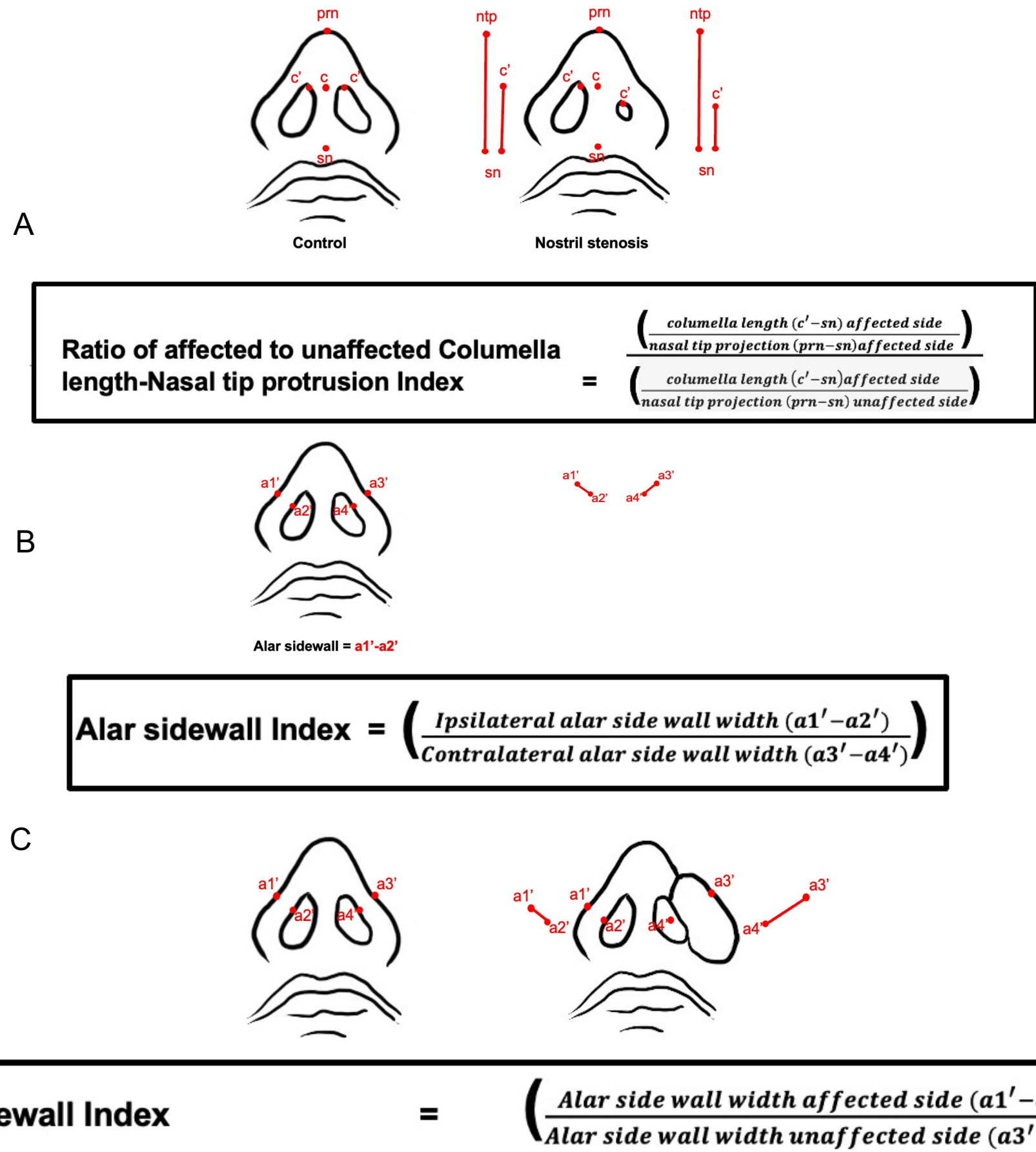
Goal: Evaluate outcomes of orthonostric molding protocol:

1. Nostril stenosis
2. Thinning lateral ala

METHODS

IRB Approved, Retrospective Review, Farkas Anthropometric Measurements

Parameters: Diagnosis, Age, Follow-up time, Duration of molding, Nostril measurements pre- & post-molding, complications



RESULTS

42 patients.

Mean age at molding initiation: 25.0 ± 22.2 years (range: 2.0-76.2 years)

Mean duration of nasal molding: 6.4 months ± 3.6 months (range: 2.0-16.0 months)

Results following orthonostric treatment within normative Farkas values for columella length/nasal tip protrusion

Mean ratio columella length/nasal tip projection affected nostril to unaffected nostril:

0.66 ± 0.17 pre-treatment, 0.98 ± 0.06 post-treatment ($p < 0.0001$)

Mean ratio alar side wall width of the affected nostril to the unaffected nostril:

2.08 ± 0.31 pre-treatment, 1.07 ± 0.06 post-treatment ($p < 0.0001$)

Cause of nasal deformity	% (n = 42)
Unilateral cleft lip repair with nasal correction	54.8
Bilateral cleft lip repair with nasal correction	9.5
Trauma	9.5
Nasal basal cell carcinoma requiring forehead flap	9.5
Substance abuse	4.8
Malignant melanoma requiring forehead flap	4.8
Cranial base encephalocele	2.4
Nasal hemangioma	2.4
Tessier no. 2 cleft	2.4

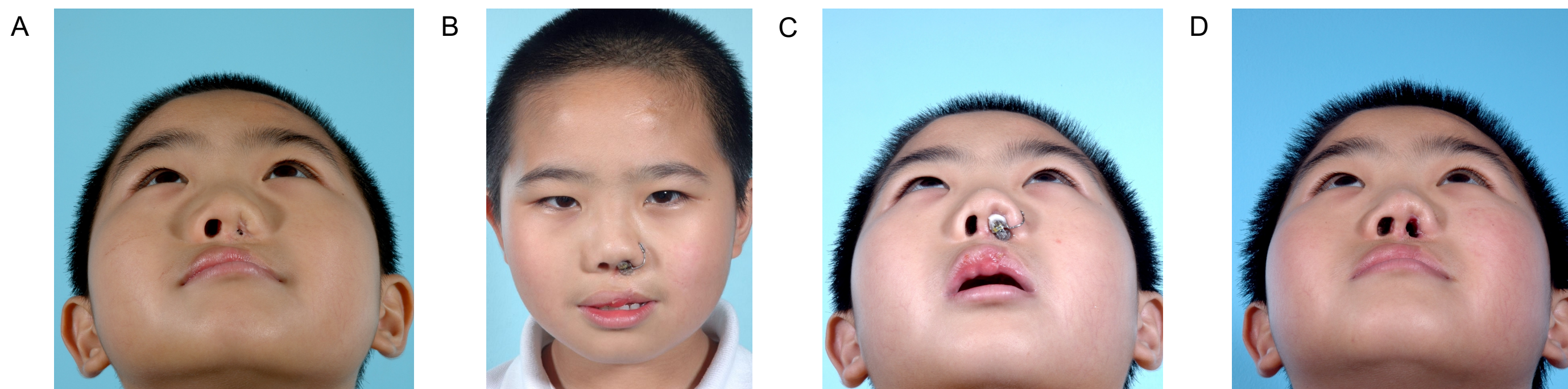


Figure 2: (A-D) Unilateral cleft lip patient who underwent the orthonostric approach to expand his stenotic nostril



Figure 3: (A-G) Malignant melanoma of nasal tip requiring forehead flap reconstruction. (H-M) Orthonostric device thinned alar sidewall and expanded stenotic nostril.

RESULTS

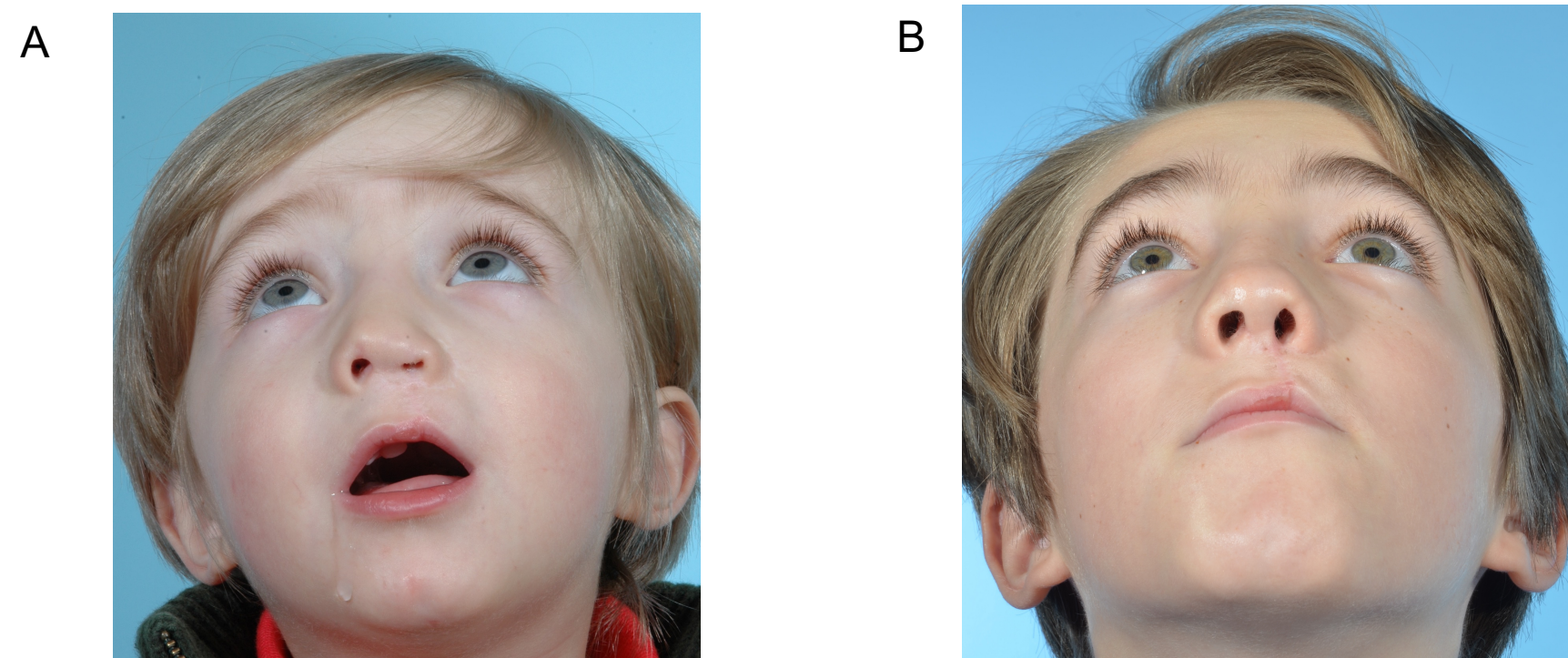


Figure 4: Cleft lip patient before and after molding for nostril stenosis

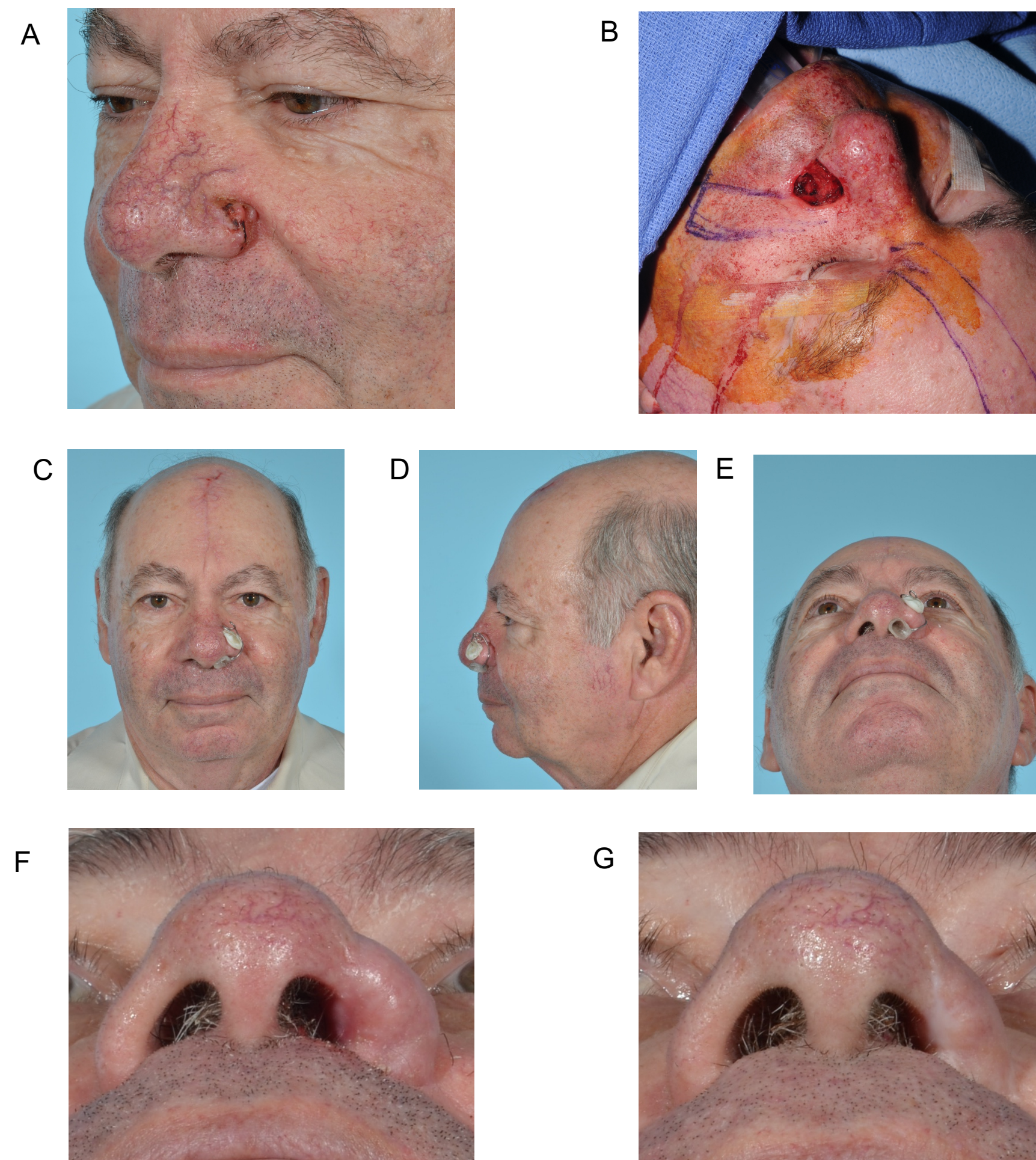


Figure 5: (A-E) Basal cell requiring forehead flap reconstruction. Patient underwent lateral alar molding. (F, G) Before and after lateral alar molding

DISCUSSION

Patients treated with nasal orthopedic appliances had improved morphology of the deficient nostril

Results following orthonostric treatment resemble dimensions and ratios of noses of unaffected patients

CONCLUSIONS

Orthonostric appliances effectively mold nasal soft tissues and **improve nostril and alar sidewall symmetry** by expanding stenotic nostrils or thinning thick ala

Limitations: Farkas Anthropometric measurements limited to 1 axis

Future directions: Evaluate ratio of affected to unaffected nostril area (ImageJ)