

Harvard Medical School
Exchange Clerkship Program
Case - E. S. C.

Location: Beth Israel Deaconess Medical Center
Department: Plastic and Reconstructive Surgery
Student: Austin Chen (KMU M6)
Duration: September 28, 2015 – October 25, 2015

26-year-old Female, E. S. C., Seeking Reconstruction for Nasal Defects

Chief Complaint:

A 26-year-old female came to the Beth Israel Deaconess Medical Center for chief complaint of nasal defects in the left lateral wall, left alar, columella, and tip following a bicycle accident 8 years ago.

History of Present Illness:

Patient, 26-year-old female, presents with nasal defects in the left alar, columella, and tip. These defects are the result of a bicycle accident 8 years ago, in which she experienced lacerations in the aforementioned regions with cartilage involvement: left alar (2cm x 2cm), columella (2cm x 1 cm), tip (1cm x 1cm). Initial intervention consisted of wound debridement and primary closure. The wounds healed, but there was scarring and structural deficit due to loss of skin, tissue, and cartilage. For poor aesthetic outcome, she has now decided to seek cosmetic reconstruction. The main initiative is that although she is not personally troubled by these defects, she does wish to get married in the future and fears that they may be looked upon poorly by others. Initial survey also revealed upward curvature in the dorsum (original structure), and we inquired whether she wished to undergo additional reconstruction in this area for better aesthetics. She declined the recommendation due to preference for her original nasal structure and emphasized that she solely wished for reconstruction of the aforementioned deficits. It was suggested to her and agreed upon that staged superior based nasolabial pedicle flap with auricular cartilage grafting would be optimal.

Past Medical History:

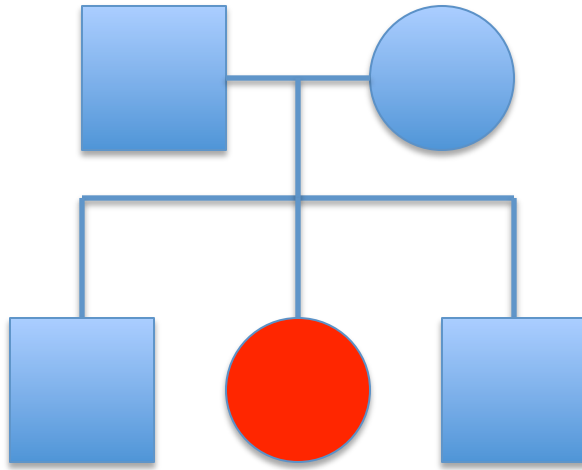
At the present time, the patient has had no noted past medical history apart from seeking treatment 8 years ago for injuries sustained in a bicycle accident. These injuries were lacerations with cartilage involvement, located in the left alar (2cm x 2cm), columella (2cm x 1 cm), tip (1cm x 1cm). Management at the time consisted of wound debridement and primary closure.

Family History:

The patient denies any family history of:

- Cardiovascular disease
- Cerebrovascular accident
- Autoimmune disorders
- Mental disorders

- Hypertension
- Diabetes
- Cancer



Social History:

- Casual alcohol use (drinking with friends, special occasions)
- Denial of smoking
- Denial of illicit drugs

Occupation: Secretarial work

Travel History:

Patient has traveled to Paris for 1 week 5 months ago. Apart from the trip, she has stated that she will travel to other parts of New England on occasion.

Allergy:

Patient denies allergies to:

- Medication
- Food
- Latex
- Dust
- Pollen

R.O.S (Review of Systems):

Constitutional systems: unexplained weight loss (-), night sweats (-), fatigue/malaise/lethargy (-), sleeping pattern (-), appetite (-), fever (-), itch/rash (-),

recent trauma (-), lumps/bumps/masses (-), unexplained falls (-)

Eyes: visual changes (-), headache (-), eye pain (-), double vision (-), scotomas (-), floaters (-)

ENT: runny nose (-), epistaxis (-), sinus pain (-), stuffy ears (-), ear pain (-), tinnitus (-), gingival bleeding (-), toothache (-), sore throat (-), odynophagia (-)

Cardiovascular: chest pain (-), shortness of breath (-), exercise intolerance (-), paroxysmal nocturnal dyspnea (-), orthopnea (-), edema (-), palpitations (-), faintness (-), loss of consciousness (-), claudication (-)

Respiratory: cough (-), sputum (-), wheeze (-), haemoptysis (-), shortness of breath (-), exercise intolerance (-)

Gastrointestinal: abdominal pain (-), unintentional weight loss (-), difficulty swallowing (solids vs liquids) (-), indigestion (-), bloating (-), cramping (-), anorexia (-), food avoidance (-), nausea/vomiting (-), diarrhea/constipation (-), obstipation (-), haematemesis (-), hematochezia (-), melaena (-), tenesmus (-)

Genitourinary: Urinary: incontinence (-), dysuria (-), haematuria (-), nocturia (-), polyuria (-), hesitancy (-), terminal dribbling (-), decreased force of stream (-)
Genital: Vaginal: discharge (-), pain (-); Menses: normal frequency, volume, duration, LMP: October 03, 2015

Musculoskeletal: pain (-), stiffness (-), joint swelling (-), decreased ROM (-), crepitus (-), arthritis (-)

Integumentary: pruritus (-), rashes (-), stria (-), lesions (-), nodules (-), lumps (-), discharge (-), pain (-), soreness (-)

Neurological: changes in special senses (-), faints (-), headache (-), paraesthesiae (-), limb weakness (-), poor balance (-)

Psychiatric: depression (-), anxiety (-), sleep patterns (normal), difficulty concentration (-), paranoia (-), lack of energy (-), episodes of mania (-)

Endocrine: Hyperthyroid: prefer cold weather (-), mood swings (-), sweaty (-), diarrhea (-), weight loss despite increased appetite (-), tremor (-), palpitations (-), Hypothyroid: prefer hot weather (-), slow (-), tired (-), depressed (-), dry skin (-), constipation (-), heaving periods (-); Diabetes: polydipsia (-), polyuria (-), polyphagia (-), dizziness (-), hunger (-); Adrenal: difficult to treat hypertension (-),

chronic low blood pressure (-), orthostatic symptoms (-); Reproductive: vaginal bleeding irregularities (-), use of birth control pills (-)

Hematologic: anemia (-), purpura (-), petechial (-), use of anticoagulant and antiplatelet drugs (-), history of blood transfusion (-)

Immunologic: difficulty breathing or choking as a result of exposure to anything (-), allergic response to materials, foods, animals (-), unusual sneezing (-), runny nose (-), itchy/teary eyes (-)

P.E. (Physical examination):

Consciousness: clear, alert

HEENT: no noted external trauma except in nasal region

Head: erythema (-), skin lesions (-), nodules (-)

Eyes: EOM intact, sclera: not icteric, conjunctiva: not pale

Ears: drainage (-), no noted deficit in hearing acuity

Nose: scarring and structural loss in the left alar (2cm x 2cm), columella (2cm x 1 cm), and tip (1cm x 1cm) regions; dripping (-), congestion (-)

Throat: erythema (-), exudate (-)

Chest: symmetric expansion, no noted external trauma

Heart sound: regular heart beat, murmur (-)

Breathing sounds: accessory muscle use (-), bilateral clear, Percussion: resonant, Palpitation: crepitus (-),

Abdomen: no noted external trauma, soft and flat

Bowel sound: normoactive, Percussion: not tympanic, Palpation:

liver/spleen/kidneys: impalpable

Tenderness (-), muscle guarding (-), rebounding pain (-), CV knocking pain (-)

Extremities: no noted external trauma, pitting edema (-)

Lab data:

No lab data was available based on the hospital records.

Image study:

No image study was available based on the hospital records.

Assessment:

From the patient presentation and complete history taking, we note that her chief complaint is the result of poor aesthetic outcome post management of lacerations

with cartilage involvement. Although the wounds healed, scarring was present, as well as structural deficits resulting from skin, tissue, and cartilage loss. After discussing reconstructive options with the patient, we plan to perform staged superior based nasolabial pedicle flap with auricular cartilage graft. We also noted that she had an upward curved dorsum (original structure), but reconstruction was denied by the patient.

D.D. (Differential Diagnosis):

No specific differential diagnosis to make: Diagnosis is poor aesthetic outcome post management of lacerations with cartilage involvement (scarring and structural deficit due to loss of skin, tissue, and cartilage). Upward curved dorsum (original nasal structure) was also noted.

Hospital Course:

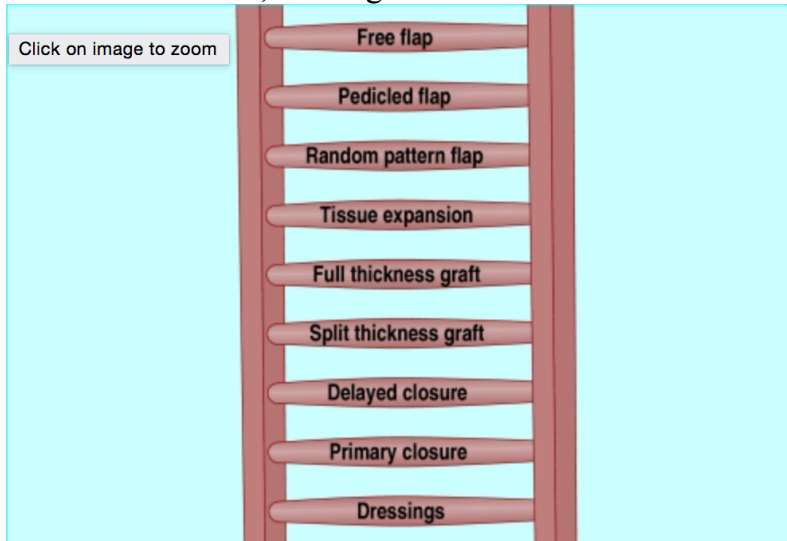
The staged superior based nasolabial pedicle flap with auricular cartilage graft was performed as an outpatient surgery. Upon completing the preoperative evaluations, we brought her to the operation room. The patient was placed under total intravenous anesthesia for the procedure. We utilized Doppler to locate the angular artery and marked the location. The flap was then designed with a central axis of roughly 45 degrees to the dorsum, taking care to measure a satisfactory length and width for coverage of the nasal deficits while keeping note of the marked perforator. The incision sites on the nasal deficits were also marked. We made the flap incisions and nasal deficit incisions, elevating the flap between the subcutaneous fat and muscle fascia in an inferior-to-superior direction. The dissection was continued until the flap could be transposed freely over the nasal defects. We then closed the donor site wound and inset the flap over the nasal deficits, leaving the length of flap over the lateral wall free. Dressing of the operation sites consisted of Xeroform, gauze, and Tegaderm. Blood loss was estimated 20ml, and no complications were noted during the procedure. The pedicle will be divided in the next operation, tentatively planned for 3 weeks later. In addition, we will perform auricular cartilage grafts for the purpose of structural support and aesthetics.

Discussion:

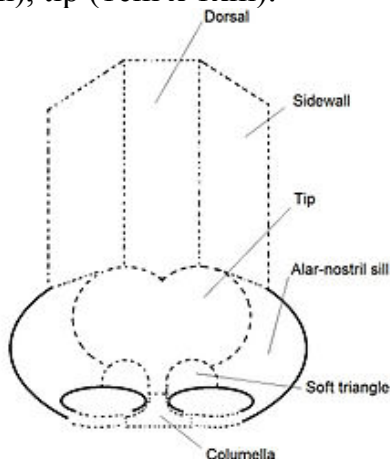
The main reason I decided on writing this case is due to the fact that it is an example of a common plastic and reconstructive case that exhibits the thinking process behind making a final procedural decision. Furthermore, this case also showcases the uniqueness of the plastic and reconstructive surgery field, in that each operation is fine tuned for the patient at hand and that there is no absolute correct option.

The discussion of this case involves an understanding of the basics of plastic and reconstructive surgery, namely the reconstructive ladder and the differences between reconstructive options. Knowledge of wound evaluation is also crucial to the foundation of reconstruction.

First and foremost, looking at the reconstructive ladder:



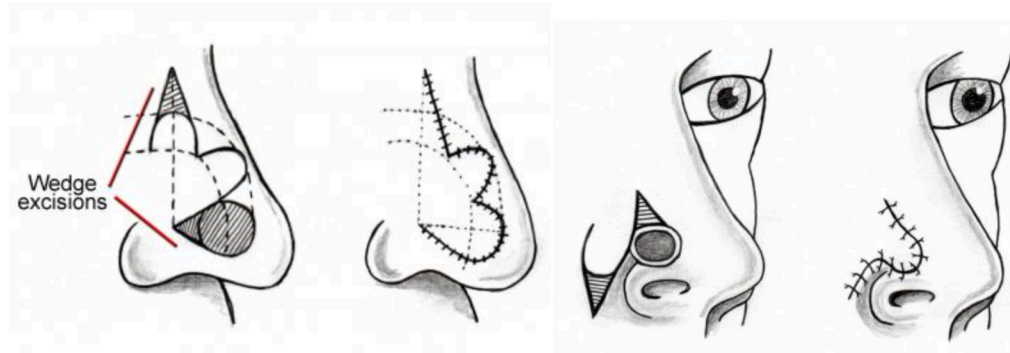
It is imperative to evaluate the wound bed, or in this case, the nasal deficits, to determine the optimal reconstructive option. Looking at the patient from when she first sought out treatment 8 years ago, it was apparent that reconstruction would have to be done on a bed with minimal or no blood supply, due to loss of skin, tissue, and cartilage. After debridement to establish a clean bed for healing, there was adequate skin to undermine and advance for primary closure. Going along the reconstructive ladder, it is understandable why primary closure was done. The main problem with this approach is that it does not address the structural abnormalities resulting from skin, tissue, and cartilage loss. As such, the patient has now come to our service for assistance. Looking at her nasal structure, it was apparent that the deficits were in the left alar (2cm x 2cm), columella (2cm x 1 cm), tip (1cm x 1cm):



To perform reconstruction, skin and tissue would need to be placed over the nasal deficits. Cartilage would be necessary to establish a better structural support for good aesthetic outcome. For the nose, skin from the face would be optimal, primarily due to the location, coloration, and texture. Skin/tissue grafting would not be an option due to the nasal deficit sites lacking adequate blood supply. As such, we began exploring flap-based options. In the literature, bilobed, nasolabial, forehead, and septal mucosal flaps are the most commonly used techniques:

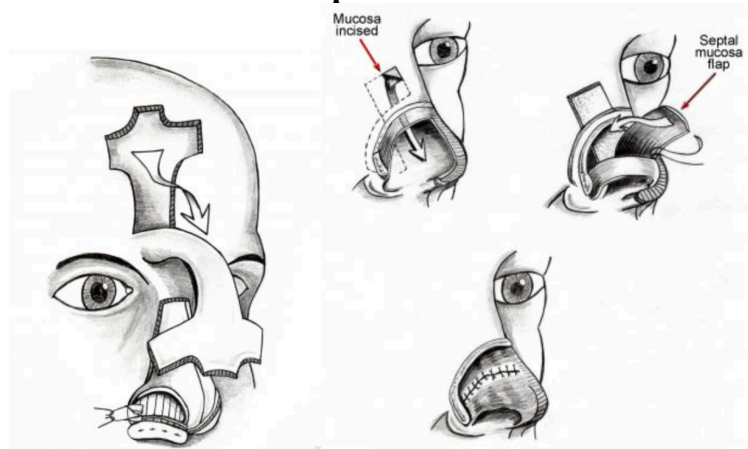
Bilobed

Nasolabial



Forehead

Septal mucosal



The key factors in deciding which procedure would be optimal are centered around achieving an adequate skin and tissue length and volume, minimizing incision sites and blood loss, and location/size of possible scarring. As such, the forehead flap was ruled out due to requiring incisions on a revealing area. For the septal mucosal flap, we did not need mucosal lining. On the other hand, for the bilobed flap, we did not believe that it would provide sufficient skin and tissue. Regarding the nasolabial flap, it suited our all of our purposes to minimize additional scarring and incisions while also providing adequate skin and tissue. In addition, with the pedicled flap based on the angular artery, we could ensure intact blood supply throughout the neovascularization period. After a period of roughly 3 weeks, enough time for adequate vascular ingrowth, we would divide the pedicle and remodel the nose for the best aesthetic outcome. In addition, at this time, we

would perform auricular cartilage graft to establish proper structural support. The reason for using auricular instead of rib cartilage is primarily due to the former being more malleable as it is softer and thinner. If, for instance, the nasal bridge was to be reconstructed, the rib would be favored since it thicker and straighter. For this case, one way we could have improved the outcome would be to utilize 3D printing, which studies are pointing to as the next step in preoperative planning. Apart from what is written in literature, nasal reconstruction (plastic and reconstructive surgery) is also heavily influenced by each surgeon's technique and preference. The aesthetic outcome varies greatly based on skill and each and every decision made during the operation. A surgeon chooses to use one technique over another based on his or her opinion, with some experienced surgeons even choosing to completely reconstruct the nose even if it is not necessary, solely to create the best aesthetic outcome. In a sense, reconstruction is about obtaining the necessary components, in this case skin, tissue, cartilage, and blood supply, and shaping them for the needs at hand.

References

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