Choanal Atresia Repair – An evolution towards a stentless technique over 17 years

June Huang, Cara Morris, Anthony Lambert, Michael Chin, Alan T Cheng

Learning Points:
1. Nasoseptal flaps with its own blood supply can be used to successfully reconstruct a patent functional nasopharynx
2. Surgical success rates are better when patient is more than 4 weeks old

Congenital malformation of posterior choana results from failure of rupture of nasobuccal membrane, occurring in 1:5000- 9000 births. Is often associated with CHARGE syndrome, Craniofacial Syndromes.

Presentation – Bilateral and Unilateral atresia presents at different ages, and imaging confirms complex malformation with pterygoid apophysis, vomer widening, and malformed floor of nose. Imaging is critical to defining and demonstrating extent of lesion and anatomy (Fig 1).

Results
-2000-2017, 56 patients – 23 Bilateral – had 2.9 mean procedures (1-9) compared to 33 Unilateral - 1.3 mean procedures (1-4)
-Co morbidities= 33, None = 23 (Fig 2)
-Stented 6 (10.7%) vs Non stented 50 (89.3%)
-In revision cases, 3 required mitomycin C with 100% success

Bilateral CA – Initial 13/23 (57%) success - 10/23 needed revision (43%) (Fig2)
Unilateral CA – Initial 26/33 (79%) success - 7/33 needed revision (21%) (Fig 2)
Greater than 2 + revisions - 10 cases (7 Bilateral; 3 Unilateral)
Overall initial 39/56 (70%) success
7/56 required revision surgery >12 months later all unilateral revisions, needing balloon or mitomycin
Used bi-directional mucosal flap technique in 11 cases
- 3 Bilateral ; Only 1 required formal revision (Bilateral CA)

Aims of functional nasal surgery =
1) Re-creating an adequate airway, 2) Allow effective secretion flow to pharynx, 3) Achieve forceful expiration of secretions from nose, 4) Avoid injury to olfaction, skull base and maintain cosmesis.

Principles based on endoscopic nasal surgery (Fig 3)
i) Raise mucosal flaps, ii) Preserve mucosa iii) Widen cavity - Drill vomer and pterygoid process iv) Avoid a round cavity - aim for asymmetrical opening in 3 dimensions v) Avoid exposed bone - which allows more rapid healing and less granulation vi) trim excess mucosa

Equipment required - 0 degree scope, (4mm and 3mm) 3.5 mm 15 degree Drill with coarse diamond burr

Pointers : Raise initial flap on patent side of unilateral CA patient, Cut down low onto floor of nose to preserve maximal mucosal flap, Widen the cavity by clearing pterygoid plate and clivus

Postoperative orders: No stent required, douching of nose with saline every 4 hours except when asleep, daily nasal steroids.

References

Ongoing interest in creating augmented and functional nasal airway in management of OSA

University of Sydney – Discipline of Child and Adolescent Health Cheng, Alan T
Clinical Associate Professor, Department of Surgery Discipline of Paediatric Otolaryngology
Locked Bag 4001, Westmead NSW 2145
Australia

Email : alan.cheng@health.nsw.gov.au
Phone : +61298453253