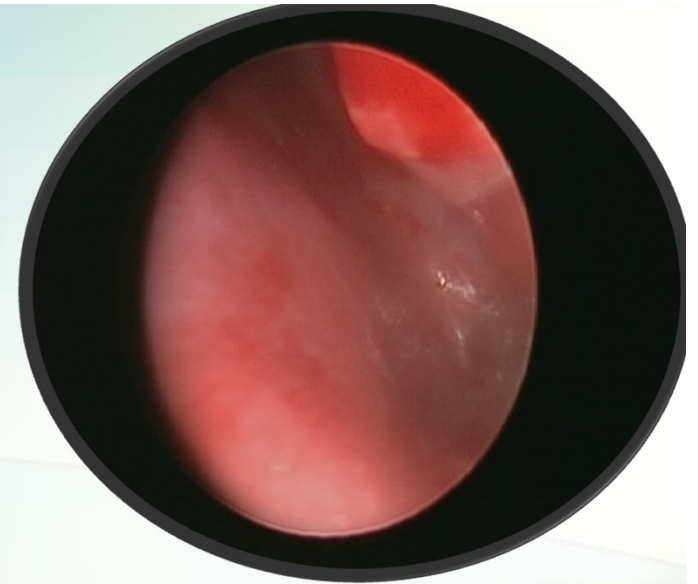


# Our experience with OmniGuide CO<sub>2</sub> laser in Choanal Atresia repair

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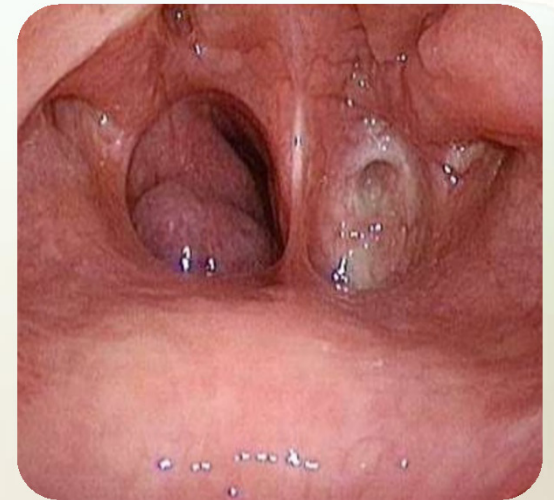
# Outline

- ✓ *Introduction*
- ✓ *Material & Methods*
- ✓ *Results*
- ✓ *Discussion*
- ✓ *Conclusion*



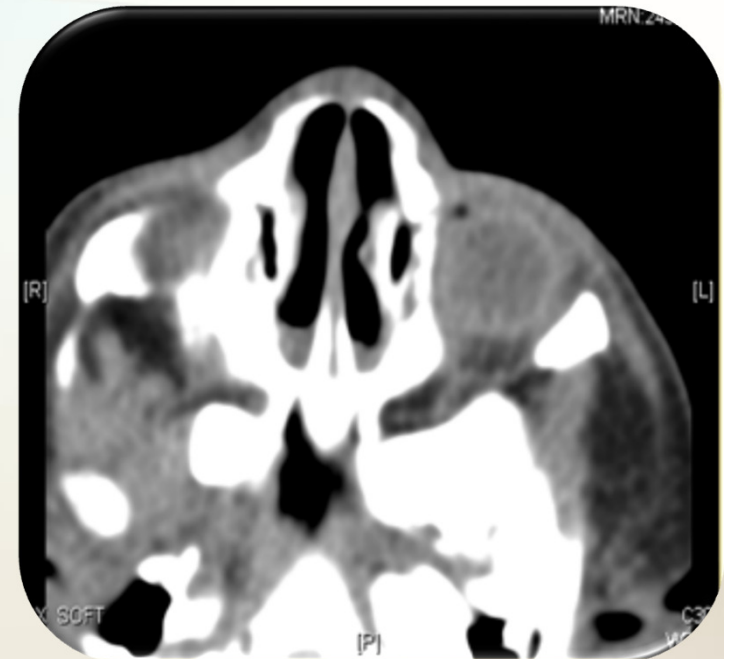
# Introduction

- ④ Choanal Atresia (CA )is the developmental failure of the nasal cavity to communicate with nasopharynx.
- ④ Incidence : 1 in 7000 live birth
- ④ 50% associated with other congenital anomalies
- ④ Female to male ratio : 2:1
- ④ Unilateral to bilateral : 2:1



# Introduction

- ⊙ Manifest by : respiratory distress, cyclic cyanosis relieved by crying, nasal obstruction & rhinorrhea.
- ⊙ Diagnosis : Flexible nasal fiberoptic scope & CT scan



# Introduction

- ⊙ Treatment → surgical
- ⊙ Various techniques ( challenging ) including :  
transplatal , transeptal , endoscopic transnasal  
approach ( microdebrider , KTP , balloon  
dilation )
- ⊙ Revision rate 10.2 to 89 %

# Material and methods

- Retrospectively evaluated 7 patients with CA operated from 2012 to 2014 .
- In our Institute in King Abdulaziz Medical City in Riyadh ,KSA.
- All cases operated on by one surgeon ( Dr Jaber Al Shammari) using **transnasal endoscopic approach** ( using OmniGuide CO2 laser , balloon dilation , microdebrider) .
- Investigate our outcome using *new entity* → OmniGuide co2 laser in CA repair

# Material and methods

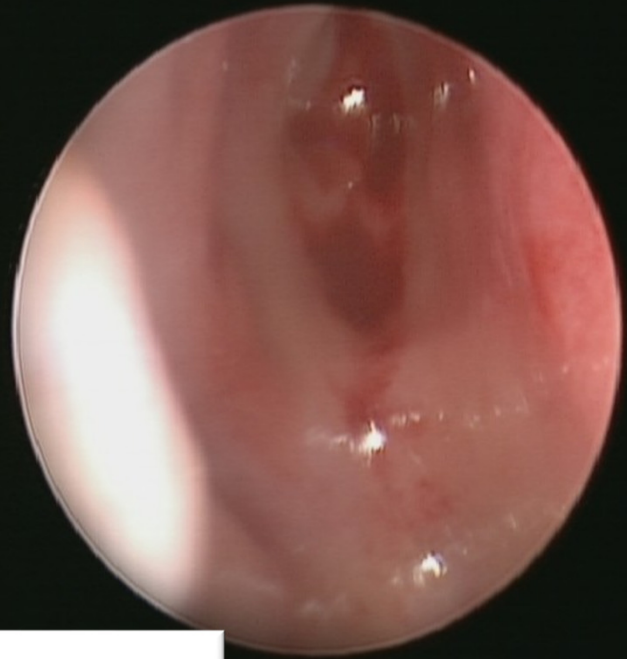
## Setting

- 5-10 watts in ultrapulse mode.

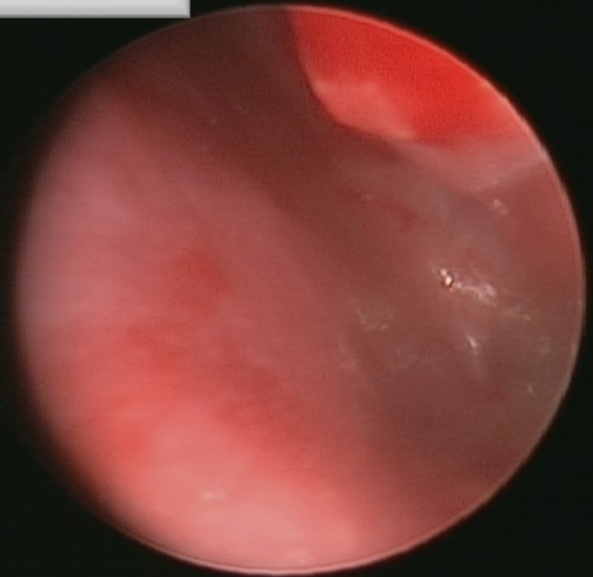
- Packing the post nasal space with wet gauze → gives a distination land mark.



- Precise mucosa excision with vomer bone preservation.
- In neonate the thin bone could evaporated by CO2 laser with → no need to drilling.



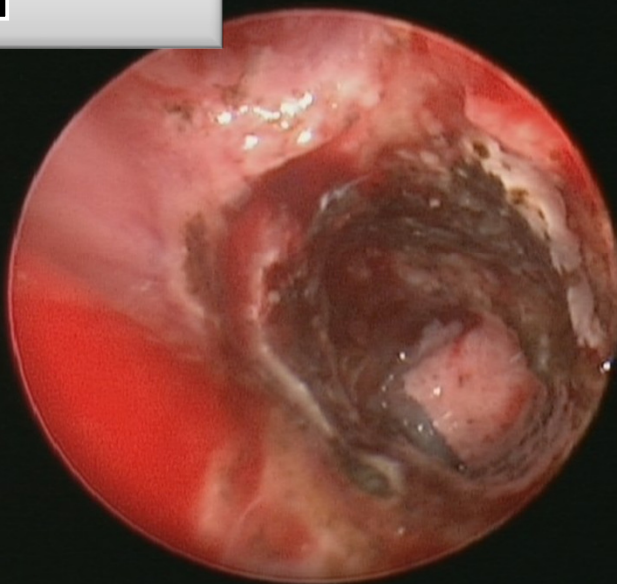
Preoperative





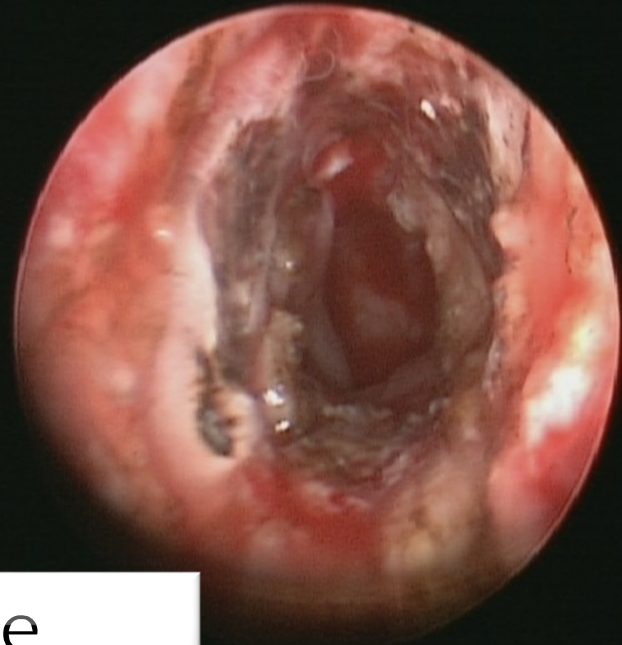
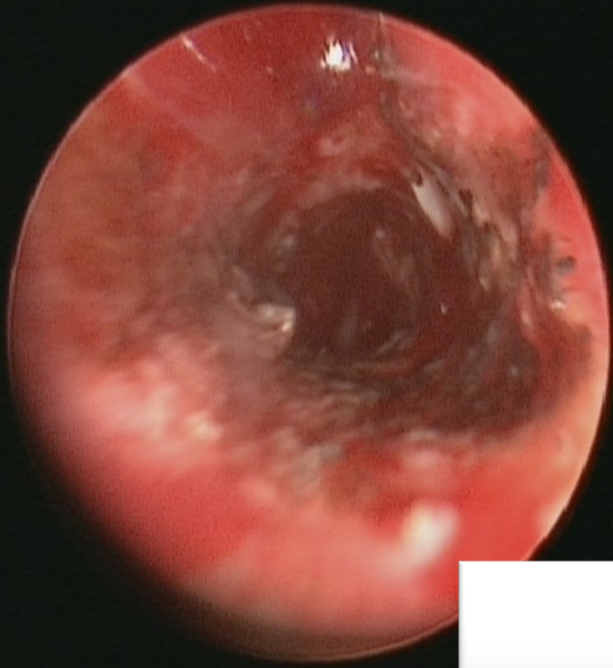


Using OmniGuide  
CO<sub>2</sub> laser

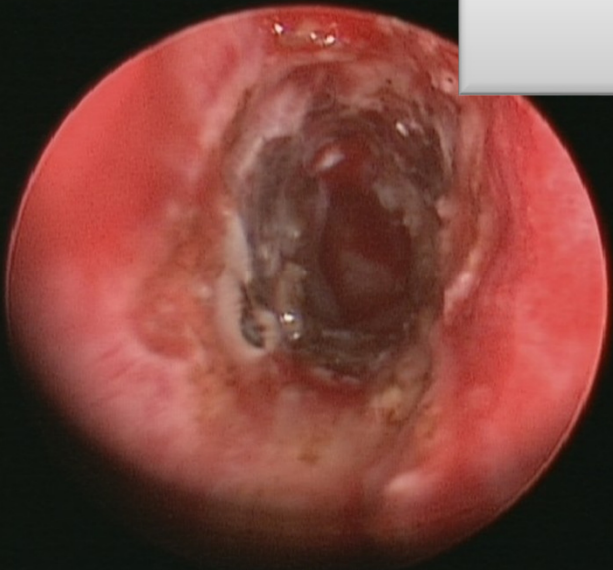


# Material and methods

In older babies with thick bone we expect to have lots of eschar tissue & future granulation tissue formation



Thick bone  
evaporation by  
laser



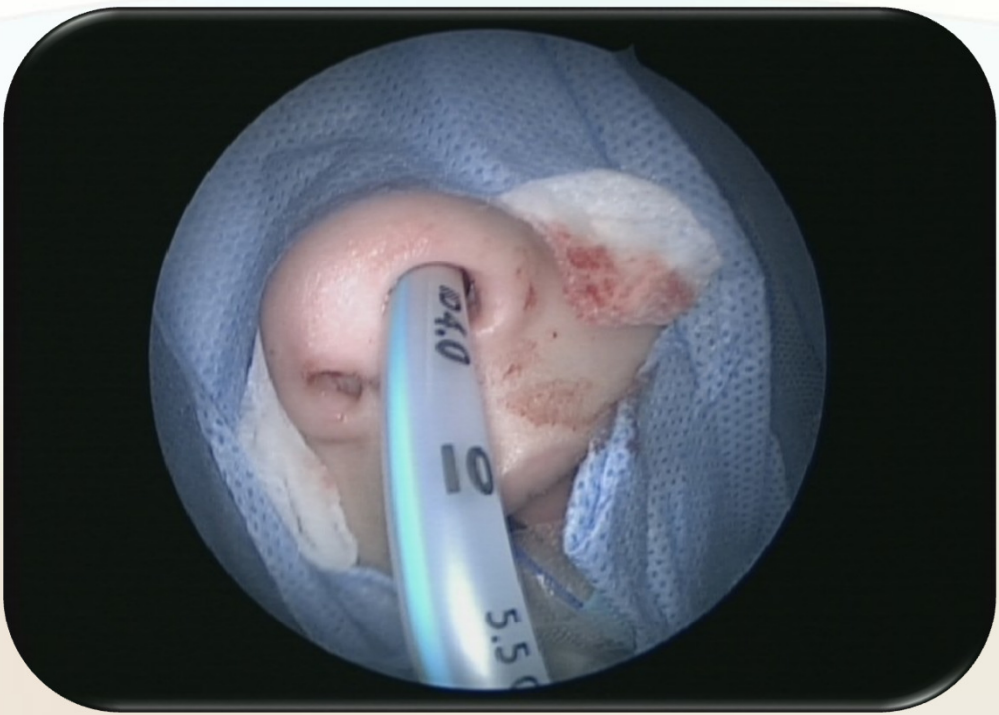
# Material and methods

Dilatation after laser work by  
Urethral dilator is important



Mitomycin-C  
used in all revision cases (concentration of 2mg/ml for 2  
minutes )

Measuring the size of choana after repair is done by  
ETT



# Results

including all cases( 7 patients ) done 2012 - 2014  
(using OmniGuide CO2 laser ,microdebrider)

- ⊕ 4 male & 3 female patients.
- ⊕ 4 cases - bilateral CA
- ⊕ 2 cases - Fryns syndrome & Down syndrome
- ⊕ All CA --mixed type
- ⊕ Age range from 18 days to 9 yrs (median=4 months)

# Results

- ⊕ *OmniGuide co2 laser* used-- 2 cases ( 1 case 3 times )
- ⊕ *OmniGuide co2 laser* frequency per case range from 1 to 3 sessions ( mean = 1.3)
- ⊕ 1 case of unilateral CA - no revision was needed.
- ⊕ Revision was done in 6 cases .
- ⊕ Revision rate 85.7%.

**7 cases**

**First  
operation**

**Revision 6 cases**

**2 cases  
OmniGuide  
co<sub>2</sub> laser**

**5 cases  
microdebrider**

**1  
OmniGuide  
co<sub>2</sub> laser**

**3  
Balloon  
dilation**

**2  
microdebrider**



# Results

- ⊕ Depend on the type of restenosis the revision will be:
  1. Early restenosis by **granulation tissue** in 2/5 cases (treated by microdebrider)
  2. revision of **scar tissue** formation in 3/5 cases (Balloon dilation used)
- ⊕ Granulation tissue removal and scar tissue management is expected after laser surgery.
- ⊕ Scar tissue formed from 3 months to 1 year (mean 4.7 months).

# Discussion

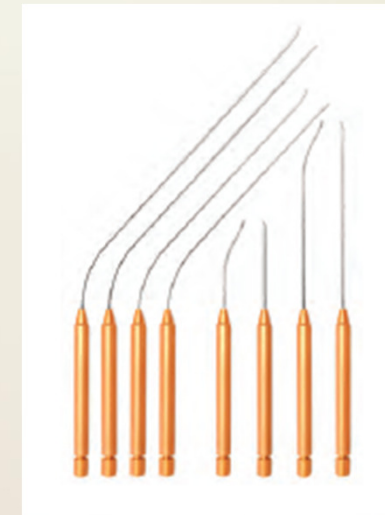
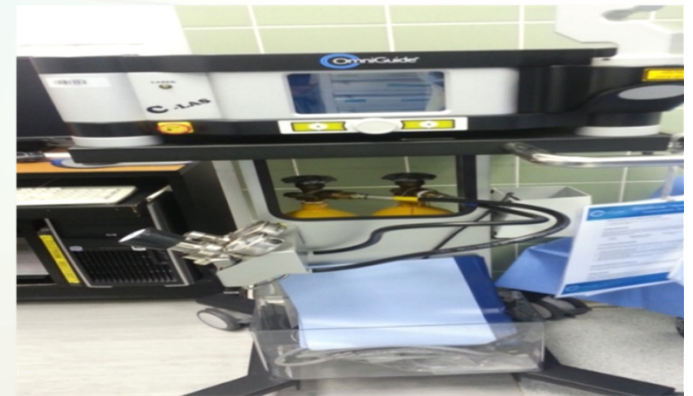
- ❏ In our study CA more common in **male** patient ,**bilateral** , **mixed type** .
- ❏ May be this because our hospital is a referral centre for infant airway disorders .
- ❏ **No complications** were documented with our approach endoscopic transnasal .

# Discussion

- ❏ Our revision rate same which was documented in literature 10.2% - 89%
- ❏ May be because of :
  - ❏ all cases mixed type .
  - ❏ regular follow-up ,regular fiberoptic scope examination→ early detection of granulation tissue
  - ❏ We defined revision surgery : as all cases with granulation tissue & scar tissue .

# Discussion

- ❏ OmniGuide Co<sub>2</sub> laser :allows the surgeon to operate with confidence near delicate anatomy by providing minimally invasive access.
- ❏ The micron-level thermal spread of CO<sub>2</sub> laser energy
- ❏ Spot size = 320µm, Outside Diameter = 1.21mm , Length of fiber = 150 cm.
- ❏ Wavelength : 10.6 µm.
- ❏ Hand piece with different length 6, 13, 18,24 cm, curved tip & straight tip.



# Discussion

## Advantages of OmniGuide Co<sub>2</sub> laser:

- ☑ Less time consuming
- ☑ Intuitive design provides more control
- ☑ Multiple modes of operation :  
continuous wave , single pulse,  
repeat pulse & superpulse
- ☑ Good visualization
- ☑ Less thermal damage
- ☑ Rapid recovery
- ☑ Short hospital stay
- ☑ Low morbidity



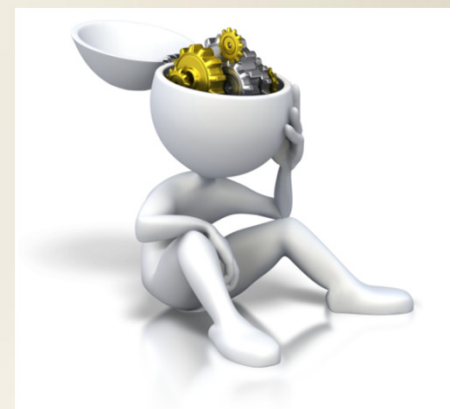
# Discussion

## Disadvantages :

- ✗ No ↓ revision rate.
- ✗ Expensive device .

# Conclusion

- ⊙ Our revision rate equal to published data.
- ⊙ The Omni Guide co2 laser - ∅ decrease the rate of revision.
- ⊙ Weak points in our study :
  - ⊕ small number of cases with short period of time .
  - ⊕ Retrospective study.



## Supervisor :

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