

# Palliative Intervention in TOF

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# Introduction

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- Several Policy in TOF
  - Staged Repair
  - Early primary Repair
  - Palliative intervention

# Staged Repair

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- Symptomatic pt. with TOF
  - B- T shunt in neonate or early infancy
  - later, total correction

# Staged Repair

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- Advantage
  - Op. morbidity & mortality ↓
  - Neurologic sequelae ↓
  - preserve RV infundibulum or pul. valve

*. Ann Thorac Surg 2005;80: 1431-9*

*. Semin Thorac Cardiovasc surg Pediatr Card Surg Annu 2009;12:54-8*

# Staged Repair

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- Problems
  - shunt failure : occlusion → mortality
  - PA distortion
  - longer exposure to hypoxia
  - abnormal growth of Pul. vv bed.
  - RVH & fibrosis
  - Arrhythmia...

# Early Primary Repair

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- Advanced surgical tech &  
post – op care

-> It's possible ...

# Early Primary Repair

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- Advantage
  - shunt Cx ↓
  - chronic hypoxia ↓ → organ damage ↓
  - PA growth ↑
  - late RV dysfunction ↓
  - Arrhythmia ↓

# Early Primary Repair

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- Problems
  - Neonatal brain
    - : more prone to surg-related neurologic injury
  - ICU & Hosp. stay
  - mech. Ventilation
  - need for inotropics
  
- : inter-institutional variability...



# Palliative Intervention

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#. In symptomatic TOF pt,

- PDA dependent pt
- worsening cyanosis

=> PDA stent

=> RVOT Balloon Dilatation

=> RVOT stent

# Palliative Intervention

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- Symptomatic TOF
  - with Prematurity,
  - Low B. wt,
  - Severe PA hypoplasia,
  - critical pre-op condition
- ; B-T shunt or Early prim. repair
  - increased morbidity & mortality

# Palliative Intervention (1)

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- RVOT balloon dilatation

→ adequate for valvar PS

=> not adequate for infundibular or  
supravalvar PS

: most TOF pt → combined PS

# Palliative Intervention (2)

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- PDA stent
  - diastolic runoff c low diast. BP
    - : end- organ perfusion ↓ (→ NEC in prematurity)
  - neo-intimal proliferation
  - Need for art. Access in pt. c low wt.

# Palliative Intervention (3)

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- RVOT stent ...
  - > . increase Oxygen saturation,
    - . encourage PA growth,
      - ; minimize the surgical augmentation of PA
    - . Bridge to surg.- complete repair-

# Palliative Intervention (3)

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- RVOT stent

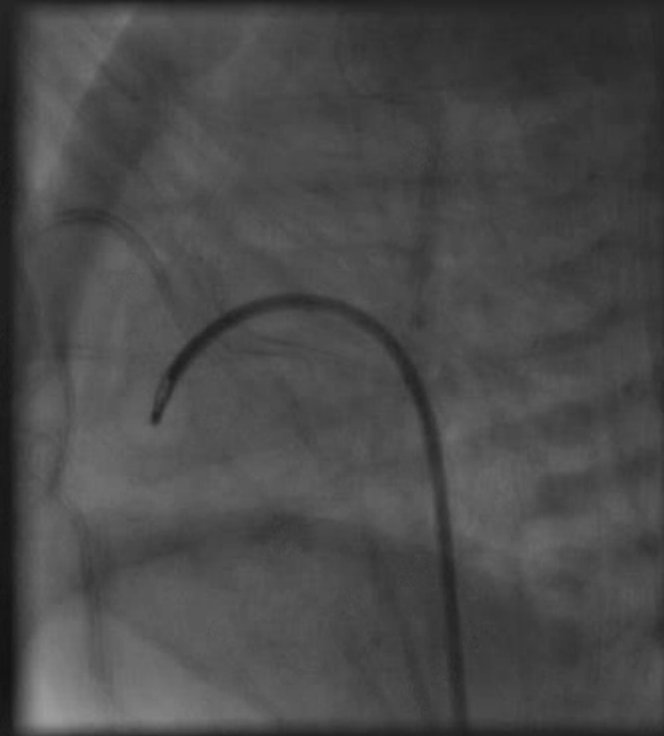
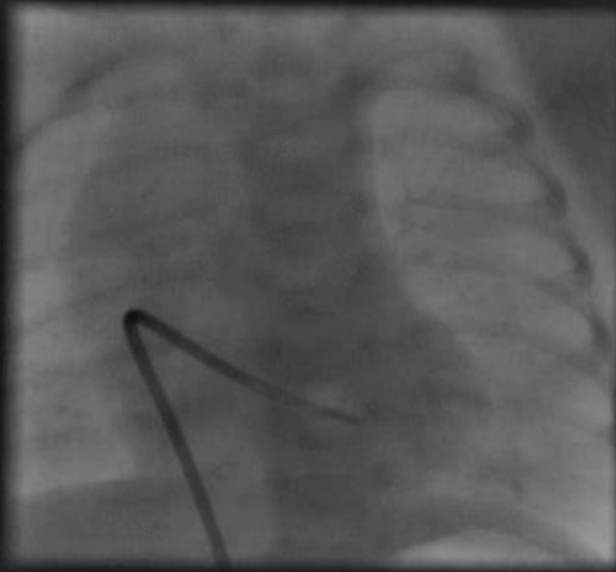
=== → useful option in prematurity,  
low wt,  
PA hypoplasia.

# **CASE-1**

## **- AMC case -**

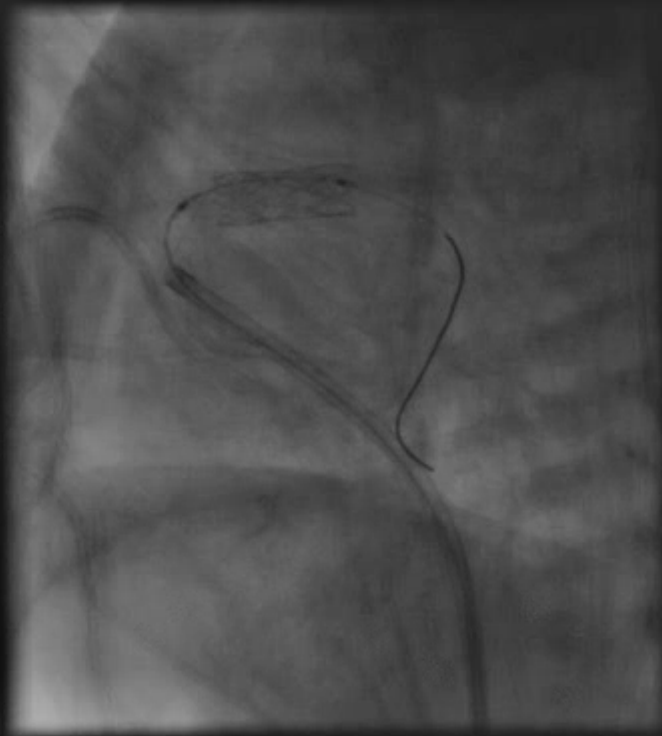
- 36 wks, 2,150 gm
  - TOF, severe RVOTO
    - : sat < 60%
    - : PG E1 dependent  
(RPA- 4.3mm, LPA-4.2mm)
- > not adequate for early repair,

**CASE-1**  
**- cath, 7 days -**





# RVOT stenting



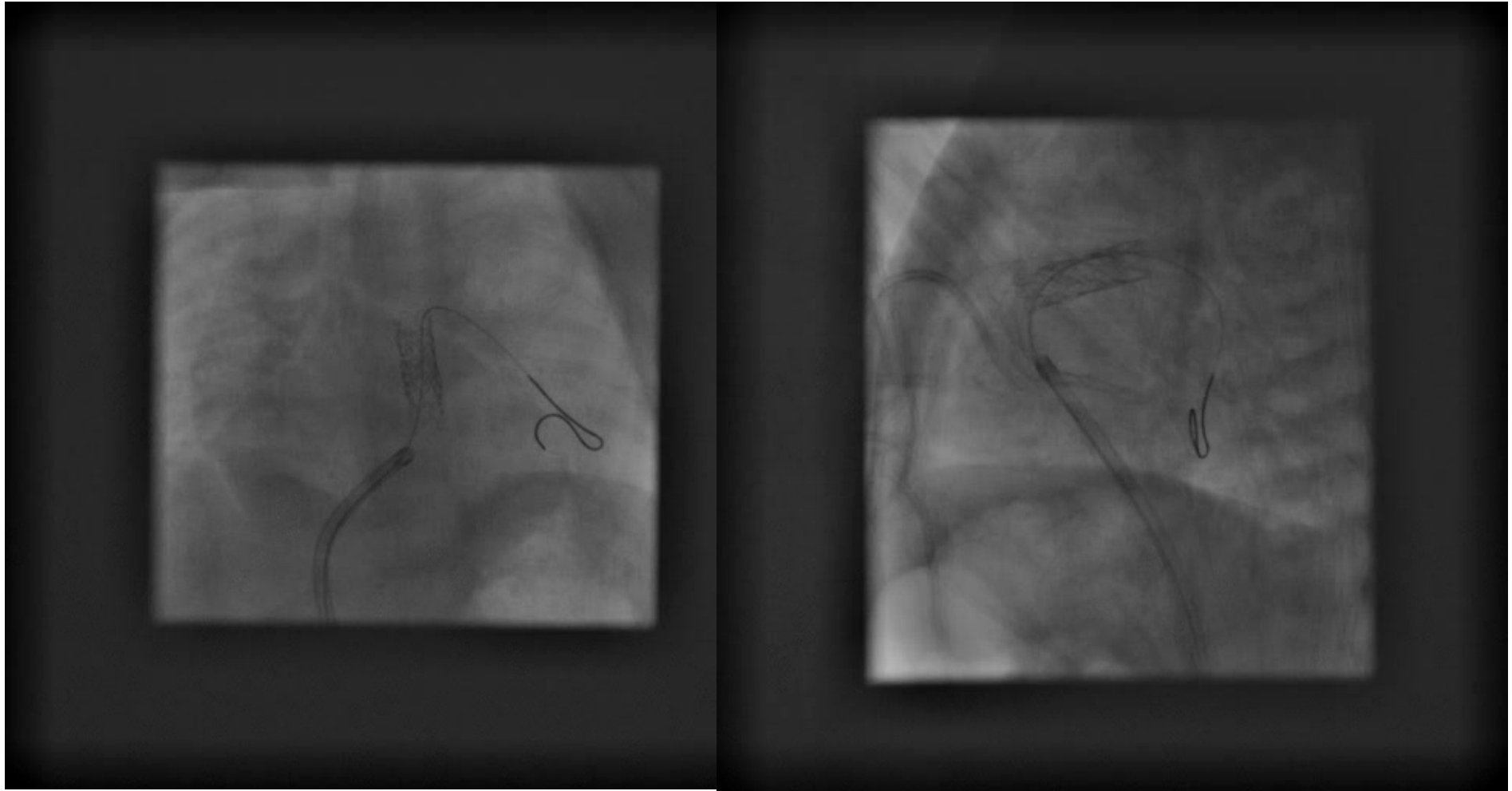
5 \* 15 mm, Palmaz Genesis



4 \* 15 mm, Palmaz Genesis

# CASE-1

## - AMC case -



→ Sat: 92 % , after stenting

# **CASE-1**

## **- AMC case -**

- 77 days of age, 4.9kg  
; signif. Cyanosis, 68% at crying.  
; stenosis of below the stent

=> tot. correction.

# CASE-2

## - prematurity -

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- Gest. Age- 28wks, 840 gm
  - worsening cyanosis (Sat ; 70 %)
  - aggravation of RVOTO

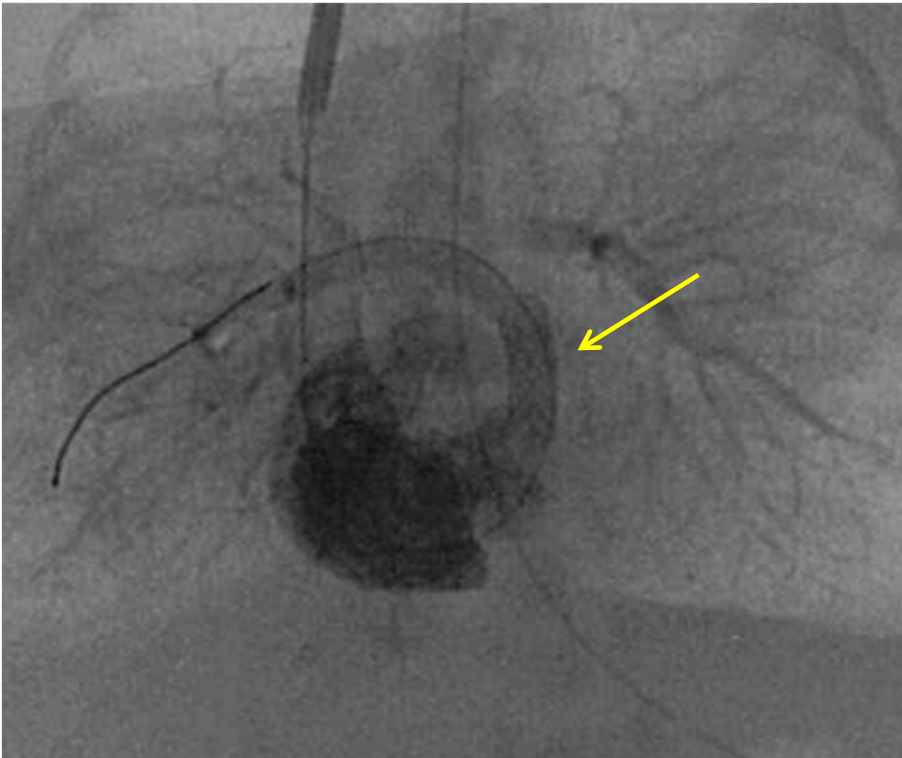
=> cath, 2 wks of life, 970 gm  
( RPA- 2.5mm, LPA – 1.6mm)

# CASE-2

## – prematurity –

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- Coro. Stent ( 4 x 12 mm ).



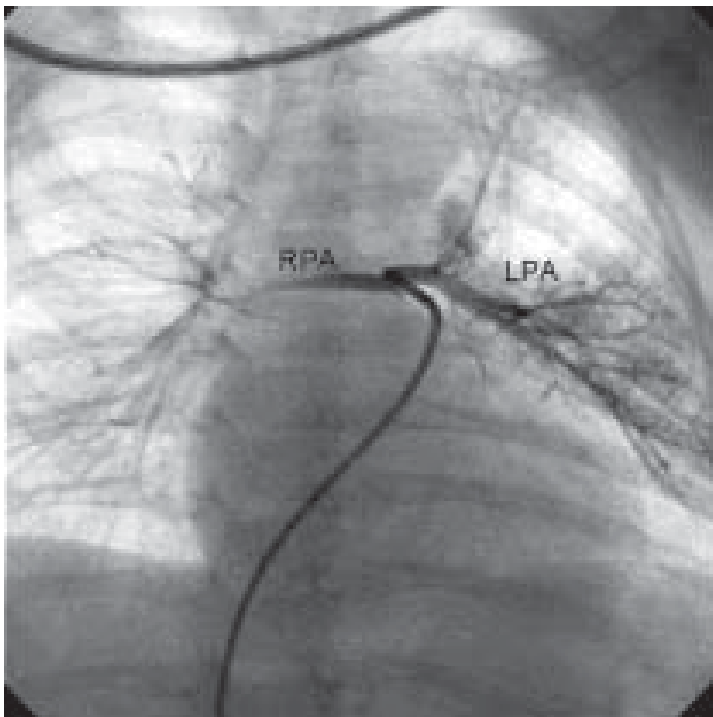
- . Sat : 70 → 90%
- . Complete repair  
: 12 wk of life, 3.0 kg

# CASE-3

## – severe PA hypoplasia –

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- 2-mon, 4.5 kg ( Sat : 70 %)
- TOF with 3- MAPCA  
with hypoplastic central PA



: RPA- 1.8mm, LPA- 1.5mm

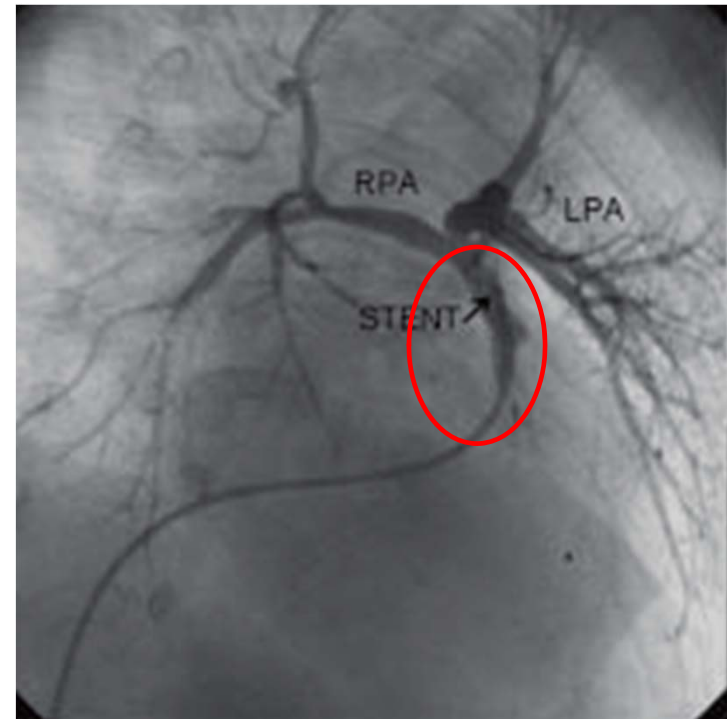
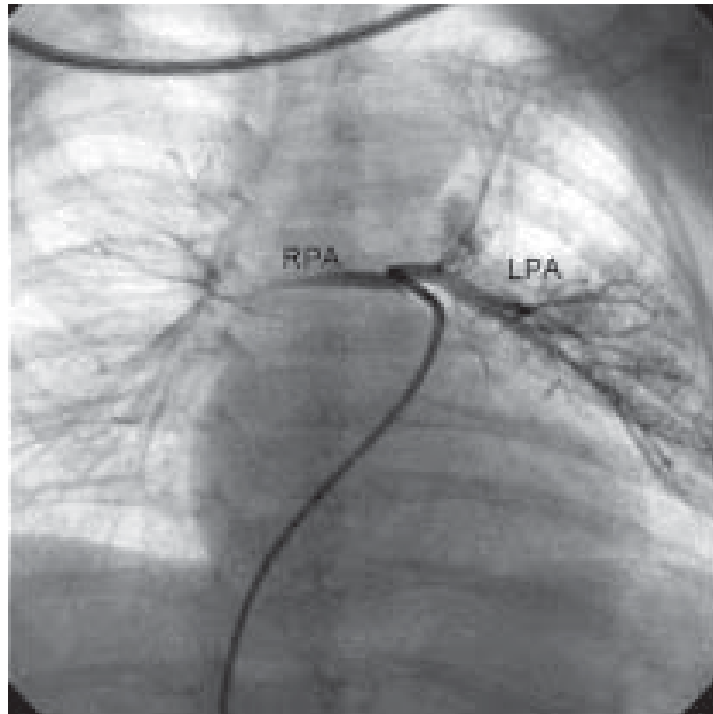
→ not suitable for surg. Correction.

# CASE-3

## – severe PA hypoplasia –

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- Coro. Stent (3.5 x 16mm)



- . Sat : 70 → 89%
- . f/up, Both PA → 6 mm

# RVOT stent in TOF

## –Toronto–

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- 11 RVOT stenting
  - : 23 days (3-119 days),  
3.1 kg (2.1-4.1kg)
- Indication
  - PG E1 dependent,
  - severe cyanosis
  - cyanotic spell



# RVOT stent in TOF –Toronto–

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- After stent implantation

- Sat : 73 → 94 % (median)

- RPA : 2.9 → 4.5mm

- LPA : 2.5 → 4.5mm

- Nakada index : 56 → 150

=> underwent surg. Correction (142 days)

# Given Case

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#. 3wks, 3.5kg, sat : 70-75%

RPA = 4.5, LPA = 3.5mm, PV z : -2

- Staged repair – shunt Cx
- Early prim repair – increased morbidity

(longer ICU stay,

prone to get neurologic injury)

=> RVOT stent in neonate,

later, subsequent complete repair

# Conclusions

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- RVOT stenting in pt. with symptomatic TOF is a useful option, especially in pts. With

*prematurity, Low B. wt,  
severe PA hypoplasia,  
or critical pre-op condition.*