Surgical Coaching Project

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National Pediatric Cardiology
Quality Improvement Collaborative

FONTAN
OUTCOMES NETWORK

Disclosures

- HeartWise LLC

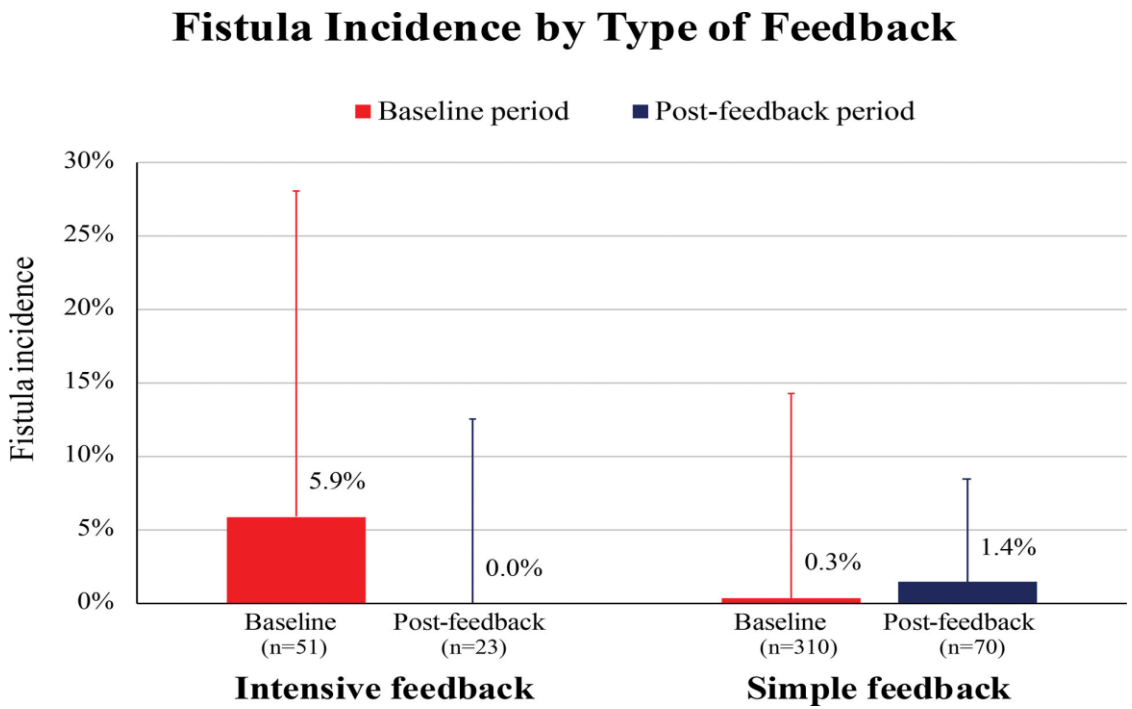
PEDIATRIC/CRANIOFACIAL: SPECIAL TOPIC

Feasibility of Surgeon-Delivered Audit and Feedback Incorporating Peer Surgical Coaching to Reduce Fistula Incidence following Cleft Palate Repair: A Pilot Trial

Sitzman, Thomas J. M.D., M.P.H.; Tse, Raymond W. M.D.; Allori, Alexander C. M.D., M.P.H.; Fisher, David M. M.D.; Samson, Thomas D. M.D.; Beals, Stephen P. M.D.; Matic, Damir B. M.D., M.Sc.; Marcus, Jeffrey R. M.D.; Grossoehme, Daniel H. D.Min.; Britto, Maria T. M.S.

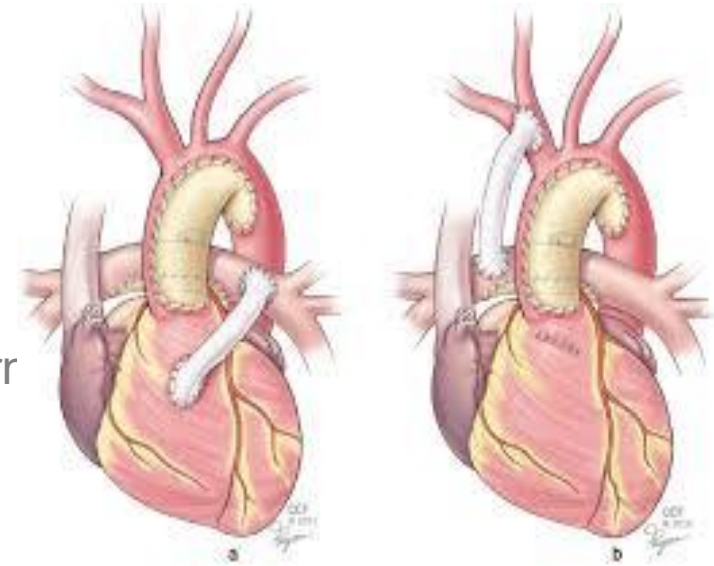
Plastic and Reconstructive Surgery 146(1):p 144-153, July 2020.

- Surgical Mentoring / Teaching
- Cleft Palate Repair Project
- 7 surgeons enrolled in Project
- Baseline Audit of Fistula Incidence
- Those above median – Surgical Coach
- "Intensive" v "Simple" Feedback
  - Improvement in Outcomes
  - Reduced Overall Healthcare Expenditures
  - Validity of Surgical Coaching



Project Rationale / Objectives

- Teaching / Mentorship
- NPC-QIC focus on Stage I Palliation – Norwood Procedure
  - Surgical Coaching Project – Collaborative Learning: ”All Teach – All Learn
  - Profound Degree of Technical Variability
  - Value of Programmatic Visitation
  - Fostering of Professional Relationships
  - Structure / Define Coaching Visits
  - Potential to Collect Useful Data
    - What to Collect?
    - How to Analyze?



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Study Purpose

- Primary Objective
  - Determine ***feasibility*** of formalized visiting surgical mentorship
- Secondary Objectives
  - Identify areas of interest amongst surgeons
  - Acknowledge patterns of surgical practice variation
  - Catalog technical and programmatic skills acquired by coaching visits
  - Monitor changes made by visiting surgeons within their own practice
  - Track potential changes in surgical outcomes for surgeons following participation

Study Design

- Identify 5 host institutions
  - Host program publicly reports data to the Society of Thoracic Surgeons
  - Host program is “high volume” and has performed on average > 15 Norwood Procedures per year for past four years
  - Host program has STAT V mortality rate < 15% over past 4 years
- Open program to 10 visiting surgeons
  - Visiting surgeon is Congenital Board Certified
  - Visiting surgeon has formal sponsorship from Division or Departmental Chairperson
- IRB Process: ”Patient” = Visiting Surgeon
- All “traffic” for program will be organized via NPC-QIC Web Based Platform / Calendar

Web-Based Process - Application

- Applicant ”Application Form”
  - Demographics / Contact Information
  - Personal and Institutional Experience with HLHS / Norwood Procedure
  - Consent Form
  - Letter of Support from Division / Dept. Chairperson
  - Access to Host Site Links
- Host Site Link
  - Primary Surgical Contact – Information
  - Credentialing Office Contact
  - All Credentialing Paperwork – PDF – Challenge of Credentialing Variability
- Applicant “Approved”
  - Proof of Credentialing Approval
  - Confirm Completion of Initial Survey
  - Access to Web Based Platform / Calendar

Password Protected Web Based Platform / Calendar

- Host programs would post on the calendar when a Norwood has been scheduled at their institution
- Approach to HIPAA Compliance - Non-identified information
- Automatic electronic notification to “accepted” applicants of a case being scheduled
- Point of contact at institution – host surgeon or other individual
- Mechanism for a visiting surgeon to accept invitation and be identified as visitor so that it would be “closed” to other interested visiting surgeons

Visitation Logistics

- Visiting surgeon is responsible for arranging logistics of travel and lodging
- Visiting surgeon and host surgeon speak directly once calendar “sign up” has been completed
- Visiting surgeon commits to arrive night before operation and leave morning after operation
- Pre-operative briefing morning of case
- Post-operative debrief following case
- NPCQIC formal contact with host site following a visit to ensure any concerns are identified and addressed

Study Data Collection: Visiting Surgeon Surveys

- Visiting Surgeon Surveys (3)
  - Pre Visit
    - Surgeon Demographics
    - Three defined technical / programmatic variables of interest – goals?
  - Post Visit (to be completed within one week of visit)
    - Visit site Demographics
    - Details of Procedure Observed
    - Scaled set of Feasibility Questions
  - Follow-Up (6 months post visit – if not completed automatic resend)
    - Answers to three variables of interest - goals
    - Continued Dialogue with host program?
    - Any additional programmatic changes?
    - Outcomes Metrics
      - Morbidity / Mortality
      - Rates of Re-Intervention

Pre-Visit Areas of Interest

- Operative Logistics
- Perfusion Strategies
- Arch Reconstruction
- Source of Pulmonary Blood Flow
- Intra operative monitoring strategies
- Initial post operative approaches
- Programmatic Considerations
  - Pre Op Note to Heart Center
  - Pre Brief in Operating Room
  - Team Composition in Operating Room
  - ICU Hand Off Post Op
  - Expectations within first 24 hours

Potential Detailed Outcomes Metrics

- % of infants leaving the OR with optimal anatomy / function after stage 1 palliation
- % of infants undergoing unplanned reintervention following Stage 1 palliation
- % of infants who experience Adverse Events after stage 1 palliation until discharge

Current Project Status

- 5 Host Institutions Identified
  - UT Southwestern
  - University of Michigan
  - Columbia University
  - Cincinnati Children's Hospital
  - University of Utah / Primary Children's Hospital
- Web Based Calendar Site Constructed -
  - Application Process
  - Credentialing Warehouse
  - Scheduling Calendar
- Project Surveys Developed
  - Pre-visit
  - Post-visit
  - Six-month follow up

Post Visit Survey Sample Comments

- Aortic Arch:
  - Technique of Arch Reconstruction – to include material employed
  - Approach to DKS
- Source of Pulmonary Blood Flow:
  - Use of Venous-valved homograft for systemic to pulmonary artery shunts
  - “Dunking” Technique
- Perfusion Strategies
  - Miniaturizing Circuit for CPB
  - LFCP v DHCA
- Intra Op Resuscitation
- Time to Norwood following birth
- When / If to use Hybrid – short interval before Norwood?
- Video recording of cases to take back to home institution

Current Project Status Next Steps

- 7 Visiting Surgeons have been identified (8th surgeon application in process)
- Confirmation of Credentialing Process Complete
- 11 Observational Visits have been completed – All 11 post visit survey's complete
- 2 Visiting Surgeon has completed all three visits
- 8 six month post visit surveys complete
- Identify 2-3 more visiting surgeons
- Survey Analysis / Data Collection
- Virtual Gathering of all Visiting Surgeons to examine process and discuss
- Virtual Gathering of all Host Programs to ensure enrollment is being optimized
- Publish Proof of Concept Findings
- Identify more tangible scientific approaches to surgical coaching projects

Surgeon Coaching Project Website Pages

- Surgeon Coaching Page: https://www.npcqic.org/surgical-coaching

- Surgeon Coaching Calendar Page:
  - You will need to copy and paste the url into your internet browser, you cannot click the link to access: https://www.npcqic.org/surgical-coaching-project-calendar
    - Password:
- Surgeon Coaching Calendar events:
  - You will need to copy and paste the url into your internet browser, you cannot click the link to access: https://www.npcqic.org/surgical-coaching-project-calendar-dates
    - Password:
- Surgeon Coaching Project Host Centers:
  - You will need to copy and paste the url into your internet browser, you cannot click the link to access: https://www.npcqic.org/surgical-coaching-project-host-centers
    - Password:

Thank You

- Jim Tweddell
- Jim Hammel
- Gail Wright
- Shari Wooton
- Tom Sitzman
- Linda Lambert
- Sarah McGovern

Norwood Surgical Coaching Project:

My personal experience

Brian Kogon MD

Chief, Congenital Cardiac Surgery

VCU, Children's Hospital of Richmond

National Pediatric Cardiology
Quality Improvement Collaborative

FONTAN
OUTCOMES NETWORK

Background

20 years out of training

Emory University/Children's Healthcare of Atlanta
University of Mississippi Medical Center
Advent Health Orlando
VCU/Children's Hospital of Richmond

Performed over 100 Norwood Operations

88% survival

	Large academic center	Small Academic center	Small private practice	Summary
Number of Norwood operations	20-25	4-8	2-5	
Program longevity	1977	2010	2012	
Team experience	High	Low	Low	
Survival	High	Medium	Low	
Team morale (Communication/trust)	High	Medium	Low	

WHY DID I WANT TO PARTICIPATE IN THE NORWOOD SURGICAL COACHING PROJECT ?

Questions?

1. Why was I never able to achieve the 90-95% survival achieved by some surgeons ?

   (How do I need to do the operation differently to get better?)

2. Although the overall survival was very good, why was it lower at the smaller academic and private program ?

3. What accounted for the poor team dynamics (the breakdown in communication and trust) within some programs surrounding the Norwood patients ?

My experience

- The Logistics

Scheduling the visit

Rolling schedule with little advanced notice

Schedule changes rapidly

Cincinnati – changed from a surgical Norwood to a hybrid Norwood
Columbia – postponed to following day for baby with TAPVR

Duration of visit

Who are you going to visit

Dr Hussain: “You are going to visit center, not a surgeon”

Michigan

Dr. Sood – fellowship in 2020

Cincinnati

Dr. Awais - fellowship 2020

Columbia

Dr. Goldstone – fellowship 2021

Cost of the visit

$1,000-1,500 per visit

CME allowance
Program support
Personal expense

My experience

- The Surgery

Surgical technique

Norwood project 1 (7 years ago)

Tom Spray

- RA/ductus cannulation
- Cool for 20 minutes
- Complete repair 33-37 minutes
- Warm for 20 minutes
- Sternal wires 10:30 am

Vaughn Starnes

Jim Tweddell

- Music and humming
- Shunt on innominate
- RA/shunt cannulation
- Cool with selective
- Slow meticulous repair
- Warm
- Sternal wires 3:30 pm

Surgical technique

Variability

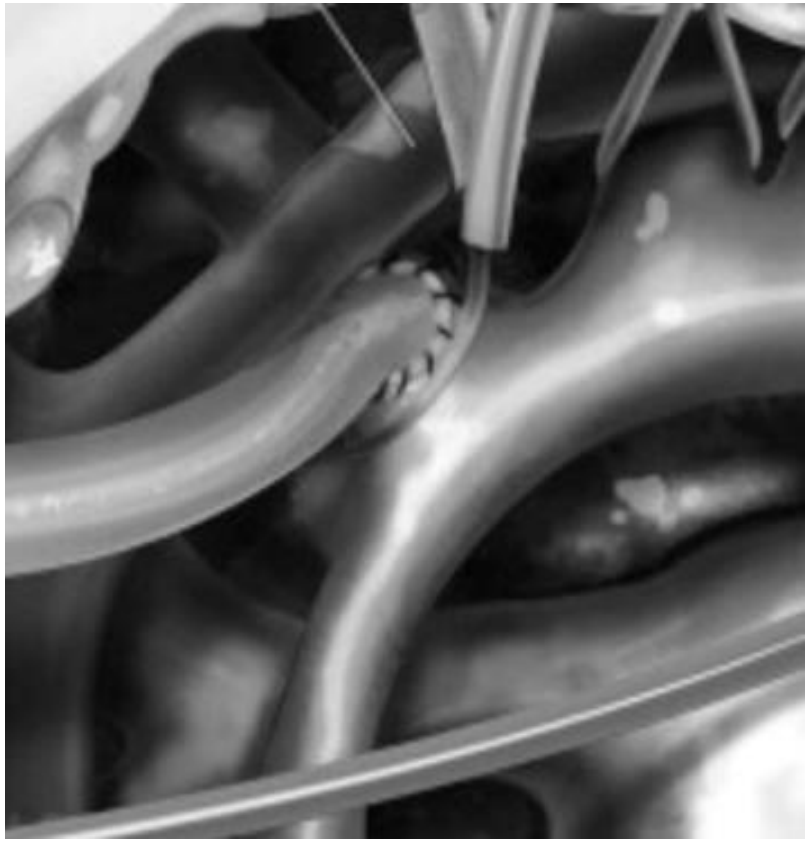
Cannulation, CPB/perfusion strategy

Sano – size, proximal and distal connections

DKS

Arch reconstruction

Cannulation, CPB/perfusion strategy



Selective cerebral perfusion

Circulatory arrest

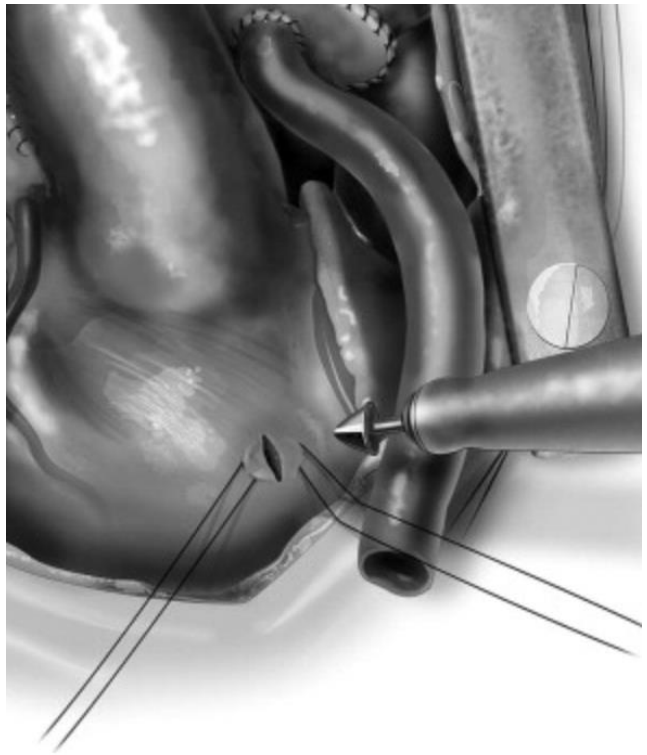
Cannulation, CPB/perfusion strategy

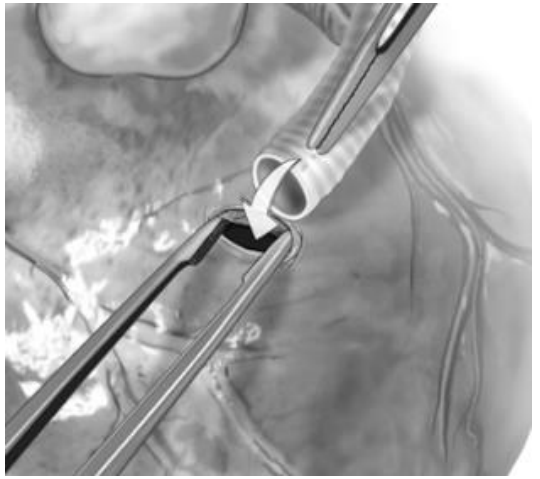
	1	2	3
Cannulation	Innominate/RA	Innominate/RA	Ductus/RA
Perfusion	Selective	Selective	Circulatory Arrest
Temp	18 degrees	18 degrees	18 degrees

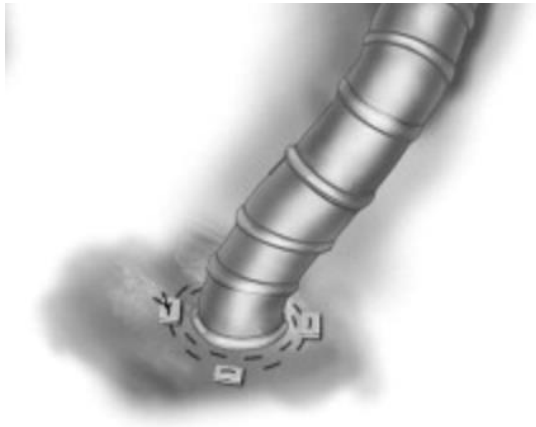
*Surprised that the selective cerebral perfusion teams continued to cool to 18 degrees

Sano Size and Composition

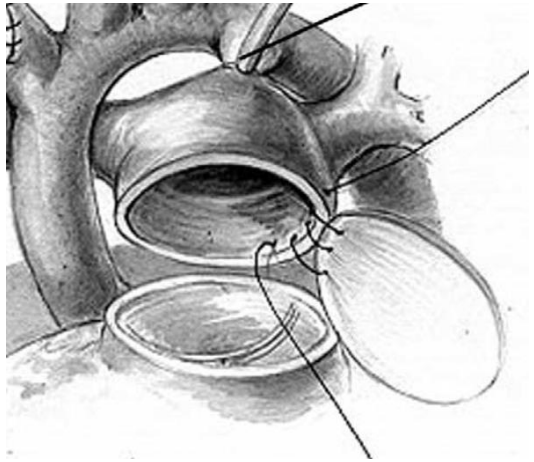
Sano - Proximal

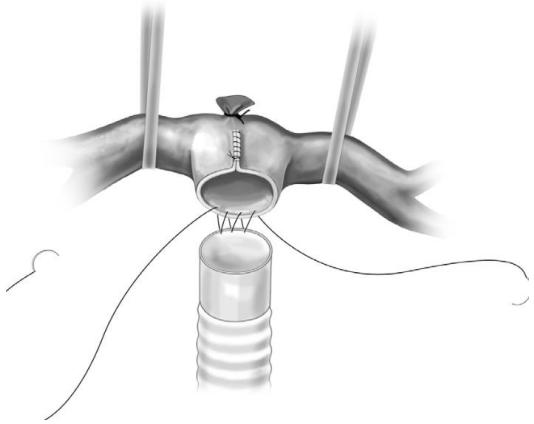


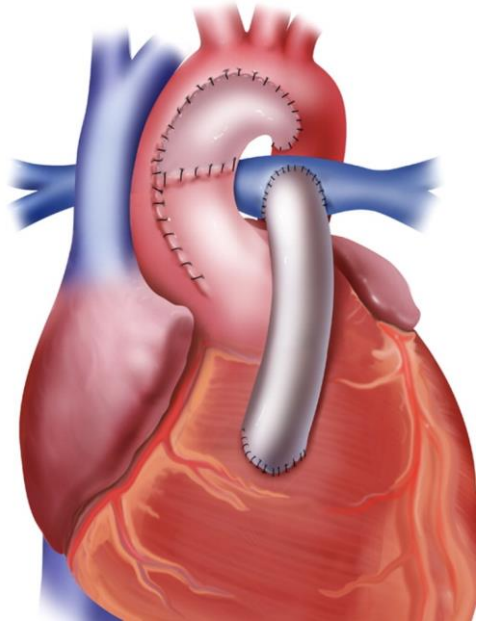


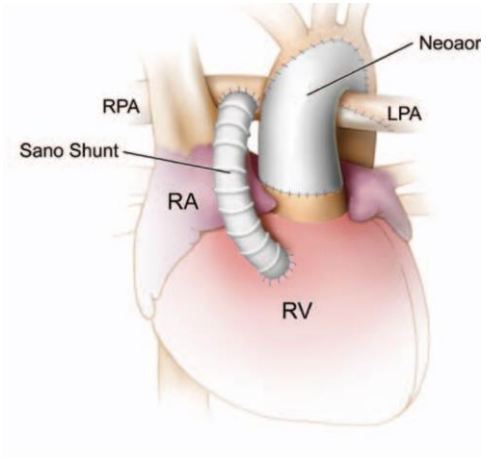


Sano - Distal







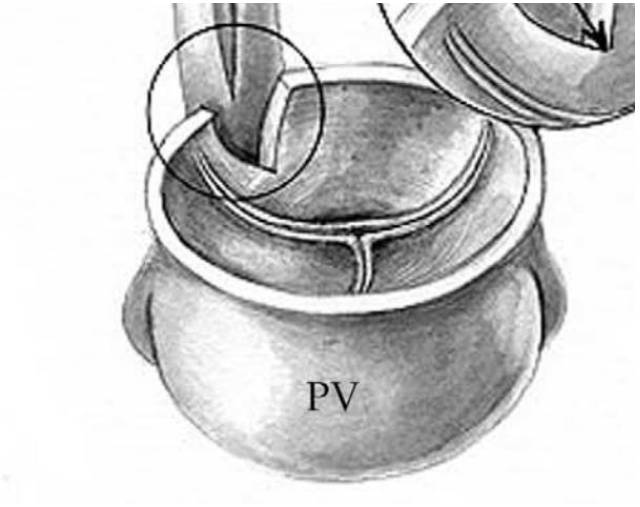


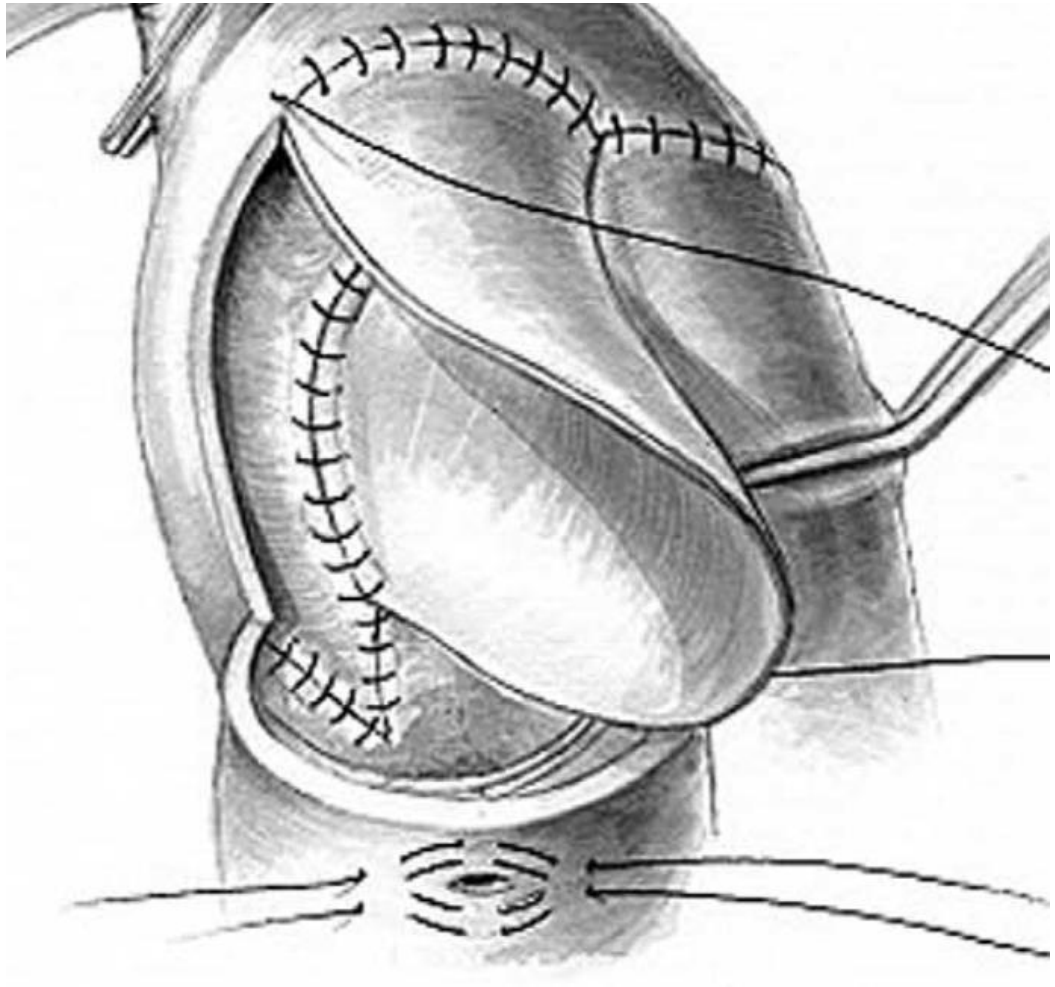
Sano

	1	2	3
Size/Comp	5 mm Ringed	5 Ringed	Composite
Proximal	Dunked	Dunked	Dunked
Course	Right	Right	Left
Distal	Bifurcation patch Dunked	Bifurcation patch Dunked	Into bifurcation, no patch

*Dunk technique varied in respect to how many purse-strings were used and whether additional tacking sutures were placed

DKS and arch reconstruction





DKS and Arch Reconstruction

	1	2	3
DKS	Cutback Running 7.0 Proline	Cutback Running 7.0 Proline	No Cutback 3 interrupted 7.0 Proline
Aortic arch	Similar <u>Subtleties</u> Homograft patch vs Hemi-PA Preference based on curve or availability Imbricated patch along posterior arch suture line for improved hemostasis Very scientific about shape and trimming patch vs. eyeball and trim and you go		

Surgery - variability

Just taking 3 different ways of doing just a handful of the steps of the operation…

$3^5 = 243$

Hundreds of ways to do the operation

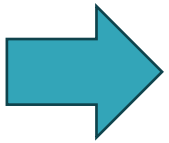
My experience

- Tangible Lessons

It’s all about collaboration

A process where individuals or groups compete against each other to achieve a specific goal

Goal – take great care of patients and achieve a top US News and World Report ranking



A process where individuals or groups work together to achieve a common goal

Goal – take great care of babies and improve the outcomes for all Norwood patients across the country

It’s all about collaboration

GO VISIT ANOTHER PROGRAM EVERY FEW YEARS

Opportunities

- Morning rounds
- Multidisciplinary conference
- Meet the entire team
  - Surgery, Cardiology,
  - Anesthesia, Perfusion,
  - Nursing, Residents/Fellows

Team Relationships

Patient care philosophy

It’s all about the operation

Variability in the surgery

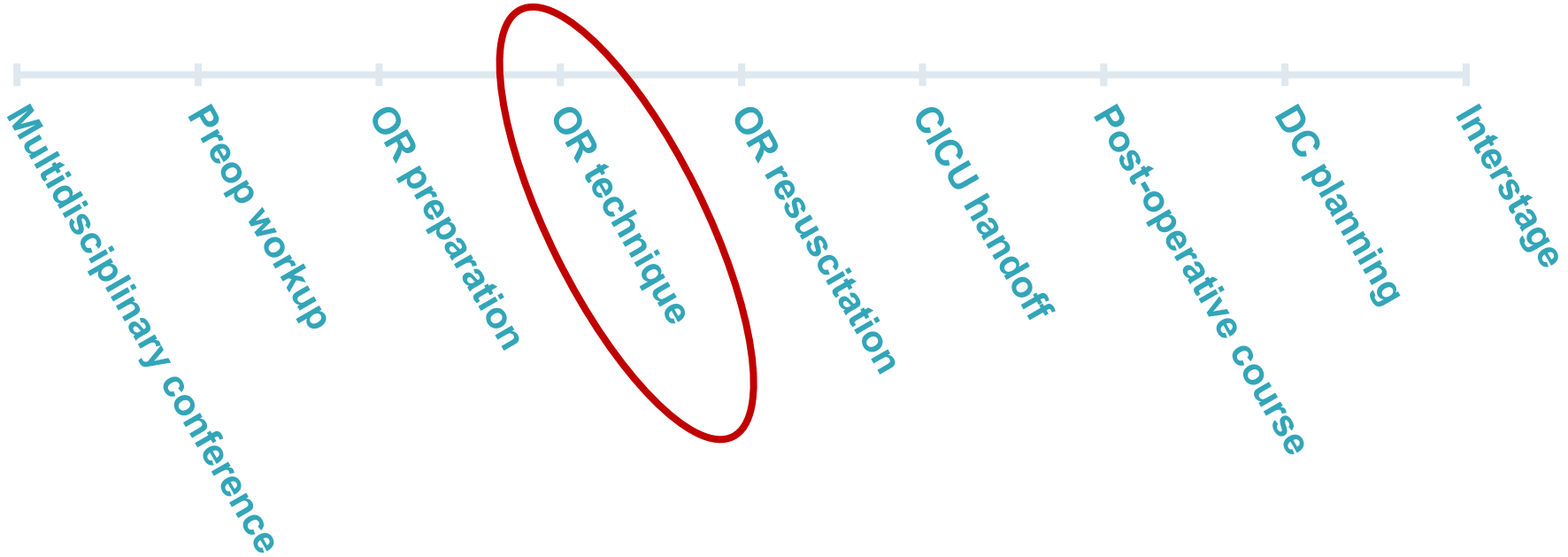
The operation does have to be “perfect” but it doesn’t matter how it’s done or who does it

Take what you’ve seen, pick a way to do it that you like, and get really really good at it that way

It’s about a lot of things other than the operation

There is the ”Norwood operation”

….. And there is the ”Norwood Process”



National Pediatric Cardiology Quality Improvement Collaborative

FONTAN OUTCOMES NETWORK

	Large academic center	Small Academic center	Small private practice	Summary
Number of Norwood operations	20-25	4-8	2-5	
Program longevity	1977	2010	2012	
Team experience	High	Low	Low	
Survival	High	Medium	Low	
Team Morale (Communication/trust)	High	Medium	Low	

	Large academic center	Large academic center (VCU/UVA collaborative)	Small Academic center	Small private practice	Summary
Number of Norwood operations	25	15	5-10	2-5	
Program longevity	1977	1960	2010	2012	
Team experience	High	High	Low	Low	
Survival	High	High	Medium	Low	
Team Morale (Communication/trust)	High	High	Medium	Low	

???