An Interesting Case:

Adult Cardiology
University of Western Ontario, London, Ontario
CANADA
Case Report:

- ID: 51 y.o. male from a peripheral centre
- Reason for Cath: Unstable angina
- PMHx: Hyperlipidemia and 30 p/y smoking Hx
- Meds: ASA, Crestor prior to admission
- FHx: Unremarkable
- ECG: Sinus bradycardia/HR 50/LAFB
Cath 2:
Cath 3:
Who is This?

Pete Maravich

Played college basketball for LSU in the late 1960's. He is still the all-time NCAA scoring leader with 3,667 points. Went on to play in NBA. In 1988 he died suddenly while playing a basketball game. He was only 40 years old. He had only RCA that wrapped around and supplied the entire heart.
Yamanka and Hobbs reviewed the Cleveland Clinic Foundation angiographic database from 1960-1988.

Total 126,595 coronary angiograms done, and 1686 (1.3%) identified as showing isolated coronary anomaly.

87% had anomaly of origin and distribution.

Reports vary that 4-15% of young adults who die of SCD have some type of coronary anomaly.

*Cath and Cardiovascular Diag. 1990 21:28-40*
Incidence

* A newer study reviewed 1950 consecutive angiograms at Texas Heart Institute
* Incidence of coronary variants were 5.6% in patients with & w/o CAD

* 3.8% had congenital AV disease
  * 27% of these patients had coronary anomalies
* Coronary anomalies do not predispose patients to CAD

* Angelini; Coronary artery anomalies; 2007
Incidence of anomalies in 1950 angiograms

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
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<tbody>
<tr>
<td>Coronary anomalies (total)</td>
<td>110 (5.64)</td>
</tr>
<tr>
<td>Split RCA</td>
<td>24 (1.23)</td>
</tr>
<tr>
<td>Ectopic RCA (right sinus)</td>
<td>22 (1.13)</td>
</tr>
<tr>
<td>Ectopic RCA (left sinus)</td>
<td>18 (0.92)</td>
</tr>
<tr>
<td>Fistulas</td>
<td>17 (0.87)</td>
</tr>
<tr>
<td>Absent left main coronary artery</td>
<td>13 (0.67)</td>
</tr>
<tr>
<td>Circumflex arising from right sinus</td>
<td>13 (0.67)</td>
</tr>
<tr>
<td>LCA arising from right sinus</td>
<td>3 (0.15)</td>
</tr>
<tr>
<td>Low origination of RCA</td>
<td>2 (0.1)</td>
</tr>
</tbody>
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> Low incidence

> ARCA is ~6 times more common than ALCA

Dominant LCA (circumflex) | 164 (8.4)
Codominant arteries (RCA, circumflex) | 48 (2.5)
Intraseptal

Prepulmonary

Between great vessels

Retroaortic

Retrocardiac
Risk of sudden death??

- Eckart, Ann Int Med, 2004
  - 6,300,000 military recruits over 25 yrs
  - Healthy young adults subjected to intense exercise
  - 126 non-traumatic deaths > autopsies

- 21 had ALCA
- None had ARCA

- Selected population
- Suggests that ARCA risk is low/ALCA is higher
Risk of sudden death??

- Basso, JACC, 2000
  - Registries of sudden death in athletes
  - 27 had no symptoms

- 14 ALCA
- 1 ARCA

- Selected population
- Suggests that ARCA risk is low/ALCA is higher
ALCA

Freidman, Cardiology in the Young, 2007
Interesting Question?

- Do we need cardiac CT to decide the path of the anomalous coronary artery?
Cath 1:
Cath 2:
Rapid Identification of the Course of Anomalous Coronary Arteries in Adults: The “Dot and Eye” Method

Harvey Serota, MD, Charles W. Barth, III, MD, Carlos A. Seuc, MD, Michel Vandormael, MD, Frank Aguirre, MD, and Morton J. Kern, MD
Objective:

* Improve reliability of coronary flow at ostium
  * e.g. Prevent sudden death
* Relieve symptoms of angina
* Prevent infarction
Surgical repairs

Options:
* Bypass
* Unroof
* Reimplant
1. Detection of coronary anomalies of wrong sinus origin in which a coronary artery passes between great arteries should result in exclusion from all participation in competitive sports.

2. Participation in all sports three months after successful operation would be permitted for an athlete without ischemia, ventricular or tachyarrhythmia, or dysfunction during maximal exercise testing.
Current recommendations

* Symptomatic patients
  * Sx due to ischemia
  * Unroofing procedure/reimplantation

* Asymptomatic patient
  * Demonstrable ischemia: repair
  * No demonstrable ischemia:
    * ALCA: repair
    * ARCA: observe
Another Case: Clip 1
Another Case: Clip 2
Thank you!

* Special Thanks to Dr. Steven Goldberg
* Dr. Shahar Lavi and Dr. Patrick Teefy