Outpatient angiography and angioplasty for peripheral and coronary interventions

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TREK 2020
Questions

• Outpatient program for lower limb interventions?
• Outpatient program for CAS?
• Outpatient program for coronary interventions?
Outpatient program for lower limb interventions
Outpatient program for lower limb interventions

• Definition:
  • Patient discharged home in 4-12 hs after the intervention

• Criteria:
  • Haemodinamic stability
  • Proper foot perfusion and no pain
  • No septic wound
  • Normal or improved ABI
  • No bleeding or occlusion at puncture site

• Potential problems:
  • Late bleeding
  • Pseudoaneurysm
  • Renal failure
  • Acute limb ischemia
Access site selection for lower limb interventions

- Femoral
- Radial
- Brachial
- Dual- Radial + Femoral
- Dual- Radial + Transpedal
- Dual- Femoral + Transpedal
Transradial iliac artery intervention

Pts: 156 consecutive pts
Success: 155 (99.4%)
Cross over: 3.8%
Access site complications: 5.1%
  Only minor!!
Learning curve: important role
Left or right side: not different

TABLE VI. Perioperative Complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>n (%   )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedural complications</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Distal embolisation</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Psoas haematoma</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Summary</td>
<td>2 (1.3)</td>
</tr>
<tr>
<td>Access site complications</td>
<td>7 (4.5)</td>
</tr>
<tr>
<td>RAO</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>UAO</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Compartment syndrome</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Spasm</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Summary</td>
<td>8 (5.1)</td>
</tr>
<tr>
<td>MAE at two month FU</td>
<td>2 (1.3)</td>
</tr>
<tr>
<td>Death</td>
<td>2 (1.3)</td>
</tr>
<tr>
<td>Major amputation</td>
<td>2 (1.3)</td>
</tr>
<tr>
<td>Urgent operation or PTA</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Summary</td>
<td>6 (3.85)</td>
</tr>
</tbody>
</table>

- But no VUS in all patients
- No distal radial access
- No Patent haemostasis
- 8.5 F Sheathless guiding
Technical success was achieved in 138 patients (95.2%).
Combined radial and pedal access was obtained in 22 patients (15.1%).

1. Transradial access with a 5F Terumo sheath
2. Intrararterial verapamil, nitroglycerine and NaHeparin
3. Crossing the aorta with a 125 cm pig tail or Simmons 1 catheter
4. Advancing the pigtail in the common iliac artery
5. Angiography with a long pig tail
6. Changing the pig tail for the SG over long 0.035 GW
7. - Cannulation of the CIA with a 120 cm 6F SG PV or
8. - Placing the 100 cm 6F coronary SG in the aorta and 
telescoping technique with a long 5F MP 125 cm catheter (7)
9. Road map imaging of the SFA lesion
10. Passing with an 0.018” guidewire
11. Balloon angioplasty for 2-5 min
12. Stenting only for recoil and flow limiting dissection
   1. Senting from TR access (180 cm shaft)
13. Final angiography
14. Placing the TR Band (Terumo) on the puncture site
15. Immediate mobilisation

**Favours single radial access:**
- Focal instent restenosis
- Short CTO
- CTO non-involving the popliteal artery
- Inflow and SFA disease
- Intact outflow track

**Favours dual access:**
- Long SFA CTO involving the popliteal artery
- SFA CTO and failed reentry or GW passage
- Treatable outflow disease (popliteal, BTK)
- Extreme calcification and suboptimal result
- Diffuse proliferative SFA restenosis

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1. Transpedal access with a 4F Cook introducer
2. Selective angiography
3. Intraarterial Nitroglycerine and NaHeparin 
   administration
4. 4F Terumo sheath insertion
5. Retrograde sheath insertion with a 0.014” GW
6. Retrograde balloon angioplasty
7. Retrograde stent implantation for recoil or flow 
   limiting dissection
8. Final angiography
9. Placing the TR Band on the puncture site
10. Immediate mobilisation
## Perioperative complications

<table>
<thead>
<tr>
<th>POC</th>
<th>n (%)</th>
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</thead>
<tbody>
<tr>
<td><strong>Procedural complications</strong></td>
<td></td>
</tr>
<tr>
<td>- Distal embolisation</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>- Edge dissection and additional stent</td>
<td>5 (3.5)</td>
</tr>
<tr>
<td><strong>Renal failure</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td></td>
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<tr>
<td><strong>Access site complications</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Minor</strong></td>
<td></td>
</tr>
<tr>
<td>- RAO</td>
<td>3 (2.1)</td>
</tr>
<tr>
<td>- Compartment syndrome</td>
<td>0 (0)</td>
</tr>
<tr>
<td>- Spasm</td>
<td>0 (0)</td>
</tr>
<tr>
<td>- Perforation</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Major</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td>3 (2.1)</td>
</tr>
</tbody>
</table>

RAO 2.1 %

Due to Patent haemostasis
US when the RA was not palpable

Ruzsa Z. JACC Interventions 2017
What is the most frequent complication - RAO

- Patient with CAD has limited forearm disease, but patient with lower limb PAD can have forearm stenosis

Allen’s test in patients with peripheral artery disease

92 patients with PAD referred for angiography
- Significant RA stenosis in 6 cases (6.5%)
- Significant UA stenosis in 32 cases (34.8%)
How to reduce RAO ??

• Intraarterial cocktail
• Single and anterior wall puncture
• Slender technique (5F and virtual 3F, sheathless technique)
• Use of dedicated compression devices
• Patent haemostasis
• Distal radial artery puncture
• US based puncture
Vascular abnormalities

Normal

RAO

RAS

Small RA

Tortuosity

Calcification
Introduction, purposes

The purpose of this pilot study was to evaluate the acute success and complication rate of the distal radial artery access for femoral artery intervention.

Method

The clinical and angiographic data of 195 consecutive cases with symptomatic superficial femoral stenosis, treated via distal radial (DR) or proximal radial (PR) access using 6F sheathless guiding between 2014 and 2018, were evaluated in a pilot study. Secondary access was achieved through the pedal artery.

Primary endpoint:
- major adverse events (MAE),
- rate of major and minor access site complications.

Secondary endpoints:
- angiographic outcome, procedural factors, cross-over rate to femoral access site, and duration of hospitalization.

Angioplasty technique:
- US based radial artery puncture in all cases
- Advancement of the 5F TR sheath
- Selective angiography with 5F 125 cm Pig tail or MP catheter
- 6F coronary JR or MP 100 cm guiding advancement in the aorta

Results

<table>
<thead>
<tr>
<th>Technique and procedural data</th>
<th>Proximal radial n (%)</th>
<th>Distal radial n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balloon angioplasty</td>
<td>149 (27.2)</td>
<td>26 (30.7)</td>
</tr>
<tr>
<td>Stenting</td>
<td>46 (27.2)</td>
<td>8 (34)</td>
</tr>
<tr>
<td>Dual access (TP and RAD)</td>
<td>39 (23)</td>
<td>9 (34)</td>
</tr>
<tr>
<td>Cross over to femoral</td>
<td>4.7%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Success</td>
<td>161 (95.2)</td>
<td>25 (96.1)</td>
</tr>
</tbody>
</table>

Mean radiation dose (Dyev/cm²)
32.1 ± 7.9 (50.3) ± 29.2 [27.8-39.1]

Mean fluoroscopy time (sec)
768 [717.6-868] ± 682 [501.8-822.1]±

Mean procedure time (min)
36.5 ± 12.9 (40) ± 31.4 [27.8-39.1]

Mean contrast volume (ml)
120 [108.4-131.8] ± 93.4 [78.8-108.2]±

Average stent length (mm)
122.1 ± 80.8 ± 115 ± 58.3

Conclusion:

- Femoral artery intervention can be safely and effectively performed using distal transradial access.
- Distal radial access is associated with low radial artery occlusion rate, but small forearm haematomas occurs more frequently.
Primary transpedal-distal lesion, high patient, long arm
BTK and primary transpedal (radial angio and TP PTA)

60/40 Hgmm

160/80 Hgmm
CASE 1. Critical limb ischaemia and Silent CAD (LBBB during cath)
Admission 2. LAD and CX FFR

CX: 0.89  LAD: 0.81
BTK PTA + DES
Case: Pt with CLI

Right foot pre PTA

Image settings
- Image size: Width 6.6 cm, Height 6.6 cm
- Frame rate: 21 images/s
- Color photo rate: One per second
- No of meas. points: 82896
- Resolution: 0.23 mm
**TRI-ACCESS Study**

**Design**

- **DESIGN**: Prospective, randomized, tri-arm, dual-center clinical evaluation of the transpedal, transfemoral and transradial access for SFA interventions

- **OBJECTIVE**: To evaluate the success and complication rate of the TR, TF and TP access for SFA interventions

- **PRINCIPAL INVESTIGATOR**
  - Zoltán Ruzsa, MD, PhD, Invasive Cardiology, Kecskemét, Hungary
  - Balázs Nemes, MD, PhD, Cardiac and Vascular Center, Budapest, Hungary

150 patients enrolled between January and December 2017-2018 in 2 clinical sites in Europe

Excluded patients

Randomization
50 pts TF, 50 pts TR, 50 pts TP access

- Transfemoral access
  - Clinical follow-up at 2 months
  - Clinical follow-up at 6 months

- Transradial access
  - Clinical follow-up at 2 months
  - Clinical follow-up at 6 months

- Transpedal access
  - Clinical follow-up at 2 months
  - Clinical follow-up at 6 months
Outpatient program for CAS
Same-Day Discharge After Transradial Percutaneous Coronary Intervention and Carotid Stenting in a Single Session

Figure 1. (A) Coronary JR 5-French guiding catheter positioned at the ostium of the right common carotid artery; (B) 7-French guiding catheter in the right common carotid artery; (C) severe lesion at the origin of the right internal carotid artery; (D) a 7 × 30-mm Wall stent after initial deployment with filter wire in the distal internal carotid artery; (E) stent after dilatation with a 5.0-mm balloon; and (F) final angiography.

Outpatient program for carotid interventions

• Definition:
  • Patient discharged home in 4-12 hs after the intervention

• Criteria:
  • Haemodinamic stability
  • No neurological symptoms
  • No distal embolisation or bleeding
  • No bleeding or occlusion at puncture site

• Potential problems:
  • Late bleeding
  • Stent thrombosis
  • Hyperperfusion syndrome
A randomised comparison of transradial and transfemoral approach for carotid artery stenting: RADCAR (RADial access for CARotid artery stenting) study

Inclusion criteria
1. Asymptomatic critical ICA stenosis (>80%)
2. Symptomatic significant ICA stenosis (>70%)

Exclusion criteria
1. History of stroke, AMI and surgery within 2 months
2. Unconsciousness and unwillingness to undergo the procedure
3. Known subclavian or anonym artery stenosis
4. Known iliac and common femoral artery stenosis
5. Contraindication of the radial artery puncture

265 surgically high-risk patients referred CAS
Excluded 5 patients

Randomised and enrolled 260 patients in the study

130 patients for transradial CAS
130 patients for transfemoral CAS

Crossover

117 (90%) patients performed from the primary access
2 patients (1.5%) performed from secondary access
13 (10%) patients performed from secondary access
128 (98.5%) patients performed from the primary access
# Procedural data

## Table 3. Procedural data in different aortic configurations and right- and left-sided lesions.

<table>
<thead>
<tr>
<th>Arch Configuration</th>
<th>Radial group (n=130)</th>
<th>Femoral group (n=130)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arch type I (n=194)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crossover, n (%)</td>
<td>7 (8.1)</td>
<td>0 (0.0)</td>
<td>0.003</td>
</tr>
<tr>
<td>Procedure time (sec)</td>
<td>1,590 (1,200-2,100)</td>
<td>1,500 (1,095-2,100)</td>
<td>0.298</td>
</tr>
<tr>
<td>X-ray dose (mGy)</td>
<td>198 (140-288)</td>
<td>140 (105-236)</td>
<td>0.002</td>
</tr>
<tr>
<td>Fluoroscopy time (sec)</td>
<td>540 (400-779)</td>
<td>513 (378-696)</td>
<td>0.245</td>
</tr>
<tr>
<td>Arch type II-III (n=66)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Crossover, n (%)</td>
<td>6 (13.6)</td>
<td>2 (0.9)</td>
<td>0.594</td>
</tr>
<tr>
<td>Procedure time (sec)</td>
<td>1,690 (1,260-2,100)</td>
<td>1,850 (1,035-2,430)</td>
<td>0.995</td>
</tr>
<tr>
<td>X-ray dose (mGy)</td>
<td>181 (123-292)</td>
<td>201 (90-320)</td>
<td>0.854</td>
</tr>
<tr>
<td>Fluoroscopy time (sec)</td>
<td>548 (430-744)</td>
<td>495 (373-1,174)</td>
<td>0.634</td>
</tr>
<tr>
<td>Right-sided lesion (n=127)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Crossover, n (%)</td>
<td>6 (8.2)</td>
<td>1 (1.9)</td>
<td>0.120</td>
</tr>
<tr>
<td>Procedure time (sec)</td>
<td>1,560 (1,200-2,100)</td>
<td>1,500 (1,065-2,100)</td>
<td>0.260</td>
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<tr>
<td>X-ray dose (mGy)</td>
<td>174 (130-286)</td>
<td>150 (105-252)</td>
<td>0.071</td>
</tr>
<tr>
<td>Fluoroscopy time (sec)</td>
<td>549 (426-719)</td>
<td>507 (387-685)</td>
<td>0.303</td>
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<tr>
<td>Left-sided lesion (n=133)</td>
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</tr>
<tr>
<td>Crossover, n (%)</td>
<td>7 (12.2)</td>
<td>1 (1.3)</td>
<td>0.009</td>
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<tr>
<td>Procedure time (sec)</td>
<td>1,700 (1,350-2,100)</td>
<td>1,500 (1,200-2,280)</td>
<td>0.561</td>
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<tr>
<td>X-ray dose (mGy)</td>
<td>200 (126-290)</td>
<td>150 (102-230)</td>
<td>0.014</td>
</tr>
<tr>
<td>Fluoroscopy time (sec)</td>
<td>540 (369-851)</td>
<td>513 (368-784)</td>
<td>0.366</td>
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</table>
## Complications

### MACCE by intention-to-treat analysis

<table>
<thead>
<tr>
<th>Event</th>
<th>Radial group (n=130)</th>
<th>Femoral group (n=130)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACCE, n (%)</td>
<td>2 (1.5)</td>
<td>1 (0.8)</td>
<td>0.561</td>
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<tr>
<td>Death</td>
<td>2 (1.5)</td>
<td>0 (0.0)</td>
<td>0.156</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Reintervention</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Neurological events (all)</td>
<td>1 (0.8)</td>
<td>1 (0.8)</td>
<td>1.000</td>
</tr>
<tr>
<td>Stroke</td>
<td>1 (0.8)</td>
<td>0 (0.0)</td>
<td>0.316</td>
</tr>
<tr>
<td>TIA</td>
<td>0 (0.0)</td>
<td>1 (0.8)</td>
<td>0.316</td>
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</tbody>
</table>

### Vascular complications by intention-to-treat analysis

<table>
<thead>
<tr>
<th>Event</th>
<th>Radial group (n=130)</th>
<th>Femoral group (n=130)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor, n (%)</td>
<td>10 (7.7)</td>
<td>6 (4.6)</td>
<td>0.302</td>
</tr>
<tr>
<td>Spasm</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Haematoma</td>
<td>2 (1.5)</td>
<td>5 (3.8)</td>
<td>0.250</td>
</tr>
<tr>
<td>Asymptomatic RAO</td>
<td>8 (6.2)</td>
<td>3 (0.0)</td>
<td>0.004</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0.0)</td>
<td>1 (0.8)</td>
<td>0.316</td>
</tr>
<tr>
<td>Major, n (%)</td>
<td>2 (1.5)</td>
<td>1 (0.8)</td>
<td>0.561</td>
</tr>
<tr>
<td>Symptomatic RAO</td>
<td>1 (0.8)</td>
<td>0 (0.0)</td>
<td>0.316</td>
</tr>
<tr>
<td>Bleeding and compartment syndrome</td>
<td>1 (0.8)</td>
<td>1 (0.8)</td>
<td>1.000</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Total vascular complications, n (%)</td>
<td>12 (9.2)</td>
<td>7 (5.4)</td>
<td>0.234</td>
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</tbody>
</table>

### MACCE by per-protocol analysis

<table>
<thead>
<tr>
<th>Event</th>
<th>Radial group (n=117)</th>
<th>Femoral group (n=128)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACCE, n (%)</td>
<td>1 (0.9)</td>
<td>1 (0.8)</td>
<td>0.949</td>
</tr>
<tr>
<td>Death</td>
<td>1 (0.9)</td>
<td>0 (0.0)</td>
<td>0.295</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Reintervention</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Neurological events (all)</td>
<td>1 (0.9)</td>
<td>1 (0.8)</td>
<td>0.949</td>
</tr>
<tr>
<td>Stroke</td>
<td>1 (0.9)</td>
<td>0 (0.0)</td>
<td>0.295</td>
</tr>
<tr>
<td>TIA</td>
<td>0 (0.0)</td>
<td>1 (0.8)</td>
<td>0.295</td>
</tr>
</tbody>
</table>

### Vascular complications by per-protocol analysis

<table>
<thead>
<tr>
<th>Event</th>
<th>Radial group (n=117)</th>
<th>Femoral group (n=128)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor, n (%)</td>
<td>9 (7.7)</td>
<td>6 (4.7)</td>
<td>0.327</td>
</tr>
<tr>
<td>Spasm</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Haematoma</td>
<td>1 (0.9)</td>
<td>6 (4.7)</td>
<td>0.072</td>
</tr>
<tr>
<td>Asymptomatic RAO</td>
<td>8 (6.8)</td>
<td>0 (0.0)</td>
<td>0.003</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Major, n (%)</td>
<td>1 (0.9)</td>
<td>1 (0.8)</td>
<td>0.949</td>
</tr>
<tr>
<td>Symptomatic RAO</td>
<td>1 (0.9)</td>
<td>0 (0.0)</td>
<td>0.295</td>
</tr>
<tr>
<td>Bleeding and compartment syndrome</td>
<td>1 (0.9)</td>
<td>1 (0.8)</td>
<td>0.338</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.000</td>
</tr>
<tr>
<td>Total vascular complications, n (%)</td>
<td>10 (8.6)</td>
<td>7 (5.5)</td>
<td>0.344</td>
</tr>
</tbody>
</table>

RAO 6.2%
Introduction, purposes

The aim of our study was to demonstrate the feasibility and safety of the distal transradial approach (DTRA) for carotid artery stenting (CAS).

Method

We included 209 consecutive patients (151 Trans-Radial Access (TRA) and 58 DTRA) treated in a single center by CAS with cerebral protection between 2016 and 2018.

Endpoints

The following parameters were applied to evaluate the potential advantages of DTRA:
- Primary endpoint: major adverse cardiac and cerebral events (MACCE), rate of major and minor access site complications.
- Secondary endpoints: angiographic outcome of the CAS, fluoroscopy time and X Ray dose, procedural time, crossover to another puncture site and hospitalization days.

Inclusion and exclusion criteria

Inclusion criteria were:
- Inclusion of patients aged ≥ 18 years.
- Symptomatic or asymptomatic carotid artery stenosis ≥70% determined by magnetic resonance angiography (MRA) or computer tomography angiography (CTA) and (2) critical asymptomatic (80%) ICA stenosis by MRA or CTA.

Exclusion criteria were:
- History of myocardial infarction, and surgery or trauma within the preceding 2 months,
- Unconsciousness or unwillingness to undergo the procedure,
- Known subclavian or brachiocephalic artery stenosis,
- Contraindications of the transradial access (Negative Allen test, non-palpable radial artery).

The CAS procedure through distal radial artery access (SLENDER TECHNIQUE):
- 1. US guided puncture
- 2. Introduction of the 5F Terumo TR sheath
- 3. Cannulation with 5F Simmons 1-2 diagnostic catheter
- 4. Advancement of the Jindo ES guidewire in the ECA
- 5. Introduction of the 6F sheathless guiding in the CCA
- 6. Utilizing distal protection system
- 7. CAS with 6F compatible stent
- 8. Final angiography

Results

Table I. Demographic and clinical data of all study patients

<table>
<thead>
<tr>
<th></th>
<th>DTRA (n=58)</th>
<th>TRA (n=151)</th>
<th>p =</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>67.78±8.00</td>
<td>68.27±7.40</td>
<td>0.693</td>
</tr>
<tr>
<td>Male (%)</td>
<td>62.25</td>
<td>63.79</td>
<td>0.874</td>
</tr>
<tr>
<td>Hypertension (%)</td>
<td>93.10</td>
<td>88.07</td>
<td>0.449</td>
</tr>
<tr>
<td>Hyperlipidaemia (%)</td>
<td>39.66</td>
<td>35.76</td>
<td>0.873</td>
</tr>
<tr>
<td>Diabetes mellitus (%)</td>
<td>62.07</td>
<td>64.23</td>
<td>0.415</td>
</tr>
<tr>
<td>Body Mass Index (BMI)</td>
<td>27.90±4.90</td>
<td>27.32±4.24</td>
<td>0.436</td>
</tr>
<tr>
<td>Smoker (%)</td>
<td>25.86</td>
<td>19.21</td>
<td>0.344</td>
</tr>
<tr>
<td>PCI / ACBG (%)</td>
<td>18.54</td>
<td>15.51</td>
<td>0.689</td>
</tr>
<tr>
<td>Tortuous artery (%)</td>
<td>32.76</td>
<td>33.77</td>
<td>1.000</td>
</tr>
<tr>
<td>Calcified lesion (%)</td>
<td>55.17</td>
<td>61.59</td>
<td>0.433</td>
</tr>
</tbody>
</table>

Table II. Safety data of all procedures

<table>
<thead>
<tr>
<th></th>
<th>DTRA (n=58)</th>
<th>TRA (n=151)</th>
<th>p =</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACCE n. (%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Minor vascular comp. n. (%)</td>
<td>0 (0%)</td>
<td>5 (3.31%)</td>
<td>0.325</td>
</tr>
<tr>
<td>Spasm</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Haemotoma</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Asymptomatic RAO</td>
<td>0 (0%)</td>
<td>5 (3.31%)</td>
<td>0.325</td>
</tr>
<tr>
<td>Major vascular comp. n. (%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Symptomatic RAO</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Compartment syndrome</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>AV fistula</td>
<td>1 (1.72%)</td>
<td>0 (0%)</td>
<td>0.277</td>
</tr>
<tr>
<td>Total vascular comp. n. (%)</td>
<td>1 (1.72%)</td>
<td>5 (3.31%)</td>
<td>1.000</td>
</tr>
</tbody>
</table>

DTRA is a safe and effective alternative of conventional trans-radial approach for CAS, with a potential to further improve the patient comfort.

Zoltán Ruzsa MD PhD1,2, Sándor Nardai MD PhD1, Viktor Öriás MD2, Eszter Végh Md PhD3, Balázs Nemes MD PhD3, Szabolcs Ördög1, Béla Merkely MD DSC1

1: Heart and Vascular Center of Semmelweis University, Budapest, Hungary; 2: Bács-Kiskun County Hospital, Kecskemét

References

1. Introduction of the 5F Terumo TR sheath
2. Cannulation with 5F Simmons 1
3. Introduction of the 6F US guided puncture
4. Hypertension
5. Diabetes mellitus
6. Body Mass Index
7. Smoker
8. Tortuous artery
9. Calcified lesion
10. Successful procedure from primary access (%)
11. Cross over to femoral n (%)
12. Puncture time (sec)
13. Fluoroscopy time (sec)
14. X Ray dose (mGy)
15. Procedure time (sec)
16. Successful cannulation n (%)
17. Successful puncture in all patients n (%)
18. Total data of all study patients

Table III. Procedural data of all study patients

<table>
<thead>
<tr>
<th>Procedure</th>
<th>DTRA (n=58)</th>
<th>TRA (n=151)</th>
<th>p =</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Reintervention</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Neurological events (all)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>Stroke</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
<tr>
<td>TIA</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1.000</td>
</tr>
</tbody>
</table>

| MACCE n. (%)                          | 0 (0%)     | 0 (0%)      | 1.000 |

| Minor vascular comp. n. (%)           | 0 (0%)     | 5 (3.31%)   | 0.325 |

| Spasm                                 | 0 (0%)     | 0 (0%)      | 1.000 |
| Haemotoma                             | 0 (0%)     | 0 (0%)      | 1.000 |
| Asymptomatic RAO                      | 0 (0%)     | 5 (3.31%)   | 0.325 |

| Major vascular comp. n. (%)           | 0 (0%)     | 0 (0%)      | 1.000 |

| Symptomatic RAO                       | 0 (0%)     | 0 (0%)      | 1.000 |
| Compartment syndrome                  | 0 (0%)     | 0 (0%)      | 1.000 |
| AV fistula                            | 1 (1.72%)  | 0 (0%)      | 0.277 |

| Total vascular comp. n. (%)           | 1 (1.72%)  | 5 (3.31%)   | 1.000 |

| Successful puncture in all patients n (%) | 58 (100%)     | 151 (100%)   | 1.000 |
| Successful cannulation n (%)            | 58 (100%)     | 142 (94%)    | 0.065 |
| Successful procedure from primary access n (%) | 58 (100%)    | 142 (94%)    | 0.065 |

| Cross over to femoral n (%)            | 0 (0%)      | 9 (6%)       | 0.189 |
| Puncture time (sec)                    | 20.8 ± 9.9   | 56.6 ± 9.9   | <0.001 |
| Fluoroscopy time (sec)                 | 67.76 ± 108.0| 41.17 ± 122.4| 0.179 |
| X Ray dose (mGy)                       | 112.3 ± 75.6 | 245.0 ± 333.4| 0.811 |
| Procedure time (sec)                   | 2612 ± 2110 ± 926.6| <0.001 |

Conclusion

DTRA is a safe and effective alternative of conventional trans-radial approach for CAS, with a potential to further improve the patient comfort.

EMAIL: zruzza25@gmail.com
RADCAR-OUT study

• Aim of the study
  • To investigate the safety and efficacy of the CAS with early discharge

• Methods
  • Radial or Ulnar access for CAS
  • Routine neurological investigation
  • Routine vascular access examination
  • Routine BP, HR and ECG
  • CUS not recommended
Outpatient program for coronary interventions
Transradial penetration in Hungary

Radial access (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Oszlop2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>26,9</td>
</tr>
<tr>
<td>2008</td>
<td>44</td>
</tr>
<tr>
<td>2009</td>
<td>53,4</td>
</tr>
<tr>
<td>2010</td>
<td>76,6</td>
</tr>
<tr>
<td>2014</td>
<td>84,2</td>
</tr>
<tr>
<td>2015</td>
<td>96</td>
</tr>
</tbody>
</table>
There is no medical need to keep the patient overnight with an optimal result following elective TRI in well selected patients, meaning:

**NO BLEEDING COMPLICATIONS**

**NO CARDIAC COMPLICATIONS**

BETWEEN 6 - 24 HOURS after PCI:


Cumulative incidence of 30-day mortality or rehospitalization between patients undergoing same-day discharge versus those hospitalized overnight. PCI, Percutaneous coronary intervention.

Log-rank $P = .91$

<table>
<thead>
<tr>
<th>No. at risk</th>
<th>Time after PCI, days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overnight stay</td>
<td>105,679  101,954  98,003  94,128</td>
</tr>
</tbody>
</table>
| Same-day discharge   | 1,339    1,294    1,244     1,202     

# Table 1. Definition of Complications and MACE per Study Included in Meta-Analysis

<table>
<thead>
<tr>
<th>First Author, Year (Ref. #)</th>
<th>Study Design*</th>
<th>Number of Centres</th>
<th>Population Total N</th>
<th>Definition of Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kneip et al., 1990 (5)</td>
<td>1</td>
<td>1</td>
<td>99</td>
<td>Death, MI, urgent revascularization, acute vessel dissection/occlusion, cardiac arrhythmia, AV fistula with repair, recurrent chest pain</td>
</tr>
<tr>
<td>Caire et al., 2000 (6)</td>
<td>1</td>
<td>1</td>
<td>100</td>
<td>Need for vascular surgery, external bleeding, hemorrhage, blood transfusion</td>
</tr>
<tr>
<td>Koch et al., 2000 (7)</td>
<td>0</td>
<td>1</td>
<td>1,015</td>
<td>Death, MI, urgent revascularization during hospitalization, pericardial effusion, or any complication requiring prolonged hospitalization</td>
</tr>
<tr>
<td>Slagboom et al., 2001 (8)</td>
<td>0</td>
<td>1</td>
<td>159</td>
<td>Cardiac death, MI, urgent revascularization, MI, UA, major access site complication, major bleeding</td>
</tr>
<tr>
<td>Delby et al., 2002 (9)</td>
<td>0</td>
<td>1</td>
<td>70</td>
<td>Death, MI, TIA</td>
</tr>
<tr>
<td>Yee et al., 2004 (10)</td>
<td>0</td>
<td>1</td>
<td>75</td>
<td>MACE, vascular access site complications</td>
</tr>
<tr>
<td>Slagboom et al., 2005 (11)</td>
<td>0</td>
<td>1</td>
<td>644</td>
<td>Cardiac death, urgent revascularization, MI, hospitalization, major access site complications and bleeding</td>
</tr>
<tr>
<td>Bertrand et al., 2006 (12)</td>
<td>1</td>
<td>1</td>
<td>1,005</td>
<td>Death, MI, urgent revascularization, major bleeding, repeat hospitalization, severe thrombocytopenia, and access site complications</td>
</tr>
<tr>
<td>Hoyles et al., 2007 (13)</td>
<td>1</td>
<td>1</td>
<td>800</td>
<td>Cardiac death, MI, stroke, urgent revascularization, access site complications</td>
</tr>
<tr>
<td>Khater et al., 2007 (14)</td>
<td>0</td>
<td>1</td>
<td>150</td>
<td>Death, MI, urgent revascularization, access site complications</td>
</tr>
<tr>
<td>Chung et al., 2010 (15)</td>
<td>0</td>
<td>1</td>
<td>665</td>
<td>Death, MI, urgent revascularization, stroke, bleeding, transfusion, rehospitalization, access site complications</td>
</tr>
<tr>
<td>Rao et al., 2011 (16)</td>
<td>0</td>
<td>903</td>
<td>107,018</td>
<td>Death, rehospitalization, bleeding, access site complications</td>
</tr>
<tr>
<td>Falcone et al., 2011 (17)</td>
<td>1</td>
<td>1</td>
<td>44</td>
<td>Death, MI, stroke, rehospitalization, access site complications</td>
</tr>
</tbody>
</table>

*Significant heterogeneity of the definition of outcomes and complications was noted between studies. *O* = observational study; *R* = randomized.

MACE = major adverse cardiovascular event; MI = myocardial infarction; TIA = transient ischemic attack; DMI = discharge medical illness; AMI = acute myocardial infarction; PCI = percutaneous coronary intervention; CAGB = coronary artery bypass graft; CABG = coronary artery bypass grafting; MIRF = medical intensive care unit; ICD = implantable cardioverter-defibrillator; PCI = percutaneous coronary intervention; BMS = bare-metal stent; DES = drug-eluting stent; NSTEMI = non-ST segment elevation myocardial infarction; STEMI = ST segment elevation myocardial infarction; CABG = coronary artery bypass grafting; PCI = percutaneous coronary intervention; DMI = discharge medical illness; AMI = acute myocardial infarction; CAGB = coronary artery bypass graft; CABG = coronary artery bypass grafting; MIRF = medical intensive care unit; ICD = implantable cardioverter-defibrillator; PCI = percutaneous coronary intervention; BMS = bare-metal stent; DES = drug-eluting stent; NSTEMI = non-ST segment elevation myocardial infarction; STEMI = ST segment elevation myocardial infarction.
### Forest plot of the incidence of 30-day total complications (A) and 30-day major adverse cardiovascular event (MACE) rates (B) in patients undergoing same-day versus overnight hospitalization.

#### A

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Same-day discharge</th>
<th>Overnight stay</th>
<th>Odds ratio (M-H, Random, 95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Randomized trials</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kroop et al. 1999</td>
<td>0</td>
<td>43</td>
<td>1.77 (0.39, 3.68)</td>
</tr>
<tr>
<td>Carne et al. 2000</td>
<td>2</td>
<td>50</td>
<td>1.89 (0.52, 6.86)</td>
</tr>
<tr>
<td>Bertrand et al. 2006</td>
<td>56</td>
<td>504</td>
<td>25.41 (11.74, 54.97)</td>
</tr>
<tr>
<td>Heyde et al. 2007</td>
<td>6</td>
<td>405</td>
<td>8.93 (4.50, 17.77)</td>
</tr>
<tr>
<td>Falcone et al. 2011</td>
<td>3</td>
<td>23</td>
<td>2.11 (0.79, 5.51)</td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td>1023</td>
<td>1016</td>
<td>41.49 (12.82, 134.17)</td>
</tr>
<tr>
<td><strong>Total events</strong></td>
<td>67</td>
<td>56</td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: $I^2 = 0.30$, $P = 0.61$, $Q = 4 (P = 0.00)$, $I^2 = 0.00$.

Test for overall effect: $Z = 3.94 (P = 0.56)$.

#### B

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Same-day discharge</th>
<th>Overnight stay</th>
<th>Odds ratio (M-H, Random, 95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Randomized trials</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kroop et al. 1999</td>
<td>0</td>
<td>43</td>
<td>1.77 (0.39, 3.68)</td>
</tr>
<tr>
<td>Carne et al. 2000</td>
<td>2</td>
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<td>6</td>
<td>405</td>
<td>8.93 (4.50, 17.77)</td>
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<td>Falcone et al. 2011</td>
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<td>23</td>
<td>2.11 (0.79, 5.51)</td>
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<td><strong>Subtotal (95% CI)</strong></td>
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</tr>
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<td>67</td>
<td>56</td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: $I^2 = 0.30$, $P = 0.61$, $Q = 4 (P = 0.00)$, $I^2 = 0.00$.

Test for overall effect: $Z = 3.94 (P = 0.56)$.

#### Calculation:

- **Total events**: 13 + 13 = 26
- **Subtotal (95% CI)**: 1023 + 1016 = 2039

**Confidence interval**: M-H, Mantel-Haenszel.

(From Abela et al., 2013)
STATE-OF-THE-ART PAPER

Same-Day Discharge Compared With Overnight Hospitalization After Uncomplicated Percutaneous Coronary Intervention

A Systematic Review and Meta-Analysis

Eligah Abdeldad, MD,* Sanil V. Rao, MD;† Ian C. Gilchrist, MD;‡ Ivo Bernat, MD;§ Adhir Shroff, MD, MPH;¶ Ronald Caputo, MD;¶ Olivier Costerousse, PhD,* Sarni B. Pancholy, MD,§ Olivier F. Bertrand, MD, PhD*

Quebec City, Quebec, Canada; Durham, North Carolina; Hershey and Scranton, Pennsylvania; Plzen, Czech Republic; Chicago, Illinois; and Syracuse, New York

OBJECTIVES This study sought to evaluate outcomes of same-day discharge (SDD) following percutaneous coronary intervention (PCI) versus overnight hospitalization (ON).

BACKGROUND Although there are data on the safety and feasibility of SDD after PCI, ON continues to be prevalent.

METHODS The Cochrane search strategy was used to search the PubMed database, EMBASE, and the Cochrane Library for relevant literature. Thirteen studies (5 randomized and 8 observational) of SDD after uncomplicated PCI versus ON met inclusion criteria. Data were pooled using a random effects model, and reported as odds ratios (OR) with their 95% confidence intervals (CI). The primary outcomes were incidence of total complications, major adverse cardiovascular events (MACE), and rehospitalization within 30 days after PCI.

RESULTS A total of 13 studies, involving 111,600 patients were pooled. There was significant variation in the definition of outcomes across studies. For total complications, the strategy of SDD compared with ON after PCI had an estimated OR of 1.20 (95% CI: 0.82 to 1.74) in randomized and 1.07 (95% CI: 0.92 to 1.24) in observational studies. Similar results were found for MACE randomized, OR 0.99, 95% CI: 0.91 to 1.10; observation, OR 0.56, 95% CI: 0.50 to 0.63; and rehospitalizations (randomized, OR 1.39, 95% CI: 0.70 to 1.74; observational, OR 0.69, 95% CI: 0.50 to 0.94) at 30 days post PCI.

CONCLUSIONS There is considerable heterogeneity across published studies comparing SDD with ON. This, coupled with the low event rate and wide corresponding CIs, suggest that an adequately powered multicenter randomized trial comparing SDD with ON would require a very large sample size (>17,000). Until such a trial is completed, SDD after uncomplicated PCI seems a reasonable approach in selected patients. J Am Coll Cardiol Interv 2013;6:99–112 © 2013 by the American College of Cardiology Foundation.
Consensus document on the radial approach in percutaneous cardiovascular interventions: position paper by the European Association of Percutaneous Cardiovascular Interventions and Working Groups on Acute Cardiac Care** and Thrombosis of the European Society of Cardiology

Martial Hamon1**, MD; Christian Pristipino2, MD; Carlo Di Mario3, MD, PhD; James Nolan4, MD; Josef Ludwig5, MD, PhD; Marco Tubaro6, MD; Manel Sabate7, MD, PhD; Josepa Maury-Ferre8, MD; Kurt Huber9, MD; Kari Niemelä10, MD; Michael Haude11, MD; William Wijns12, MD, PhD; Dariusz Dudek13, MD; Jean Fajadet14, MD; Ferdinand Kiemeneij15, MD, PhD

International experts: Gerald Barbeau16, MD; Shigem Saito17, MD; Sanjit Jolly18, MD; Yves Louvard19, MD; Tejas Patel20, MD; Sunil V Rao21, MD; Nikolaus Reifart22, MD; Philippe Gabriel Steg23, MD; Orazio Valsecchi24, MD; Yuenjun Yang25, MD
DAY-CASE ANGIOGRAPHY AND ANGIOPLASTY

The immediate availability of the patient, safety of the entry site and, for PCI patients, reliable immediate outcome of an optimal coronary stent procedure, theoretically allow patients to be discharged from the hospital after a few hours of uneventful observation. Day-case angiography is already routine practice after femoral access, especially when closure devices are used. Of course, early discharge should not prevent the attending physician from discussing the results with the patient. A radial approach facilitates the process and avoids prolonged hospital stays. Because of the potential risk of bleeding after anticoagulation, day-case angioplasty is less frequently practised with the femoral approach, and is often limited to unstable patients transferred back to admitting hospitals. The first outpatient transradial coronary stent implantation was reported in 1994. Day-case angiography/PCI has several advantages: patient preference, ease of ward management, shortened waiting lists, and enhanced cost-effectiveness. Overnight stay sometimes is prudent or required in selected groups meeting the following characteristics:

- **Preprocedural:** unstable angina pectoris, acute myocardial infarction, shock, heart failure, renal failure, severe comorbidities, poor social circumstances limiting family support after discharge.
- **Procedural:** transient vessel closure, arrhythmias or resuscitation during procedure, prolonged chest pain, persistent ECG changes, suboptimal PCI result, major or symptomatic side branch occlusion, entry site complication(s).
- **Post-procedural:** any cardiac or vascular complication within the 4-6 hour observation period.
If these criteria are applied consistently, outpatient PCI is safe. However, these data stem from single-centre studies performed by expert operators at high-volume institutions. Therefore, at present, no definitive recommendations can be made based on published evidence; larger studies in the real world remain necessary to confirm the safety and efficacy of this technique.

Stable patients undergoing transradial diagnostic studies without complications in the first 2-3 hours post procedure can be considered for early discharge. Stable patients with an optimal PCI result, optimal pharmacological treatment according to ESC guidelines and no cardiac or vascular complications during the procedure or up to 4-6 hours afterwards can be considered for outpatient treatment if performed at high-volume centres by experienced interventionalists. Close follow-up and immediate readmission should be possible for delayed complications.
Same day discharge  PCI

Legal reasons:

• Efficacy and safety of outpatient PCI has been clearly demonstrated and described in a large series of publications from different groups in the past 20 years.

• In several countries outpatient PCI has become clinical routine.

• Thus, there is no ground for any legal objections anymore
Same day discharge PCI

Financial reasons:

Outpatient PCI using the transradial approach leads to a reduction in costs:

- Shorter hospital stay
- Less bleeding complications
- More efficient nursing care
- Back to work earlier
The Radial Lounge in Brno (Ivo Bernat)

800 patients annually
Lounge in Kecskemét- more than 2000 pts annually with diagnostic cath
Best Practices for the Prevention of Radial Artery Occlusion After Transradial Diagnostic Angiography and Intervention

An International Consensus Paper

Ivo Bernat, MD, PhD; Adel Aminian, MD; Samir Pancholy, MD; Mamas Mamas, MD, PhD; Mario Gaudino, MD; James Nolan, MD; Ian C. Gilchrist, MD; Shigeru Saito, MD, PhD; George N. Hishalis, MD, PhD; Antonio Ziakas, MD, PhD; Yves Louvard, MD; Gilles Montalescot, MD, PhD; Gregory A. Siguéla, MD, PhD; Maarten A.H. van Leeuwen, MD, PhD; Avandil M. Babunashvili, MD; Marco Vuligimigli, MD, PhD; Sunil V. Rao, MD; Olivier F. Bertrand, MD, PhD;* for the RAO International Group

ABSTRACT

Transradial access (TRA) is increasingly used worldwide for percutaneous interventional procedures and associated with

**FIGURE 2** Flowchart to Achieve Non-Occlusive Compression of the Radial Artery Following TRA Procedures

- **How to achieve non-occlusive compression of the radial artery?**
  - Patent hemostasis protocol
  - Prophylactic ulnar compression
  - Occlusive hemostasis 5-25% (21,25,39,43,47)
  - Oclusive hemostasis < 5% (47)

- **Reduce hemostasis pressure and time**

- RA = radial artery, TRA = transradial access, UA = ulnar artery.

**FIGURE 4** Simple and Effective Hemostasis Protocol Using a Dedicated Compression Device

- **CATHLAB**
  - Patient on the table:
    1. Start compression with the device (according to manufacturer instructions)
    2. Remove the sheath
    3. Decrease to minimal pressure without bleeding

- **WAITING ROOM**
  - Before transfer to the ward:
    4. Decrease again to minimal pressure just before leaving (record the residual pressure level if possible)

- **WARD**
  - As soon as possible after arrival:
    7. Decrease again to minimal pressure (e.g. every 20 min, record the residual pressure level if possible)
    8. Check for patency hemostasis (if possible)
    9. When the pressure is off, wait 30 min for safety and remove the device
    10. Perform early Reverse Barbeau Test (and record the result for institutional RAO rates)

RAO = radial artery occlusion.
Ultrasound guided distal transradial („snuff box” area) angiography and angioplasty using 5F guiding or 6F sheathless guiding system

Ruzsa Z., Tóth J., Nyerges A., Molnár L., Édes I. F., Merkely B.
Semmelweis University, Cardiac and Vascular Center and Bács-Kiskun County Hospital, Invasive Cardiology

Aim
To demonstrate the feasibility and safety of the distal transradial approach (snuff box) for coronary angiography and interventions.

Methods
Prospective study performing all transradial diagnostic catheterisations and interventions from the anatomical „snuff box” area with a 5F guiding or 6F sheathless guiding

Primary end-point
- Technical success of the intervention
- Procedural complications

Secondary end-point
- MACCE at 2 months and one year
- Procedural releated factors (Radiation, Contrast, Hospitalisation)

Results

Study group: 177 consecutive pts
- Only diagnostic angiography: 43
- Percutaneous coronary intervention and or FFR/ IVUS: 134
- 100% success and no cross over to femoral access site
- 5F guiding or diagnostic catheter in 81 cases and 6.5F guiding in 53 patients

Procedures
PCI / FFR: 134/ 29 (21.6%)
Procedures by 5F guiding: 81 (60.4%)
Procedures by 6.5F sheathless guiding: 53 (39.5%)
Coronary C 9 (6.7%)
Rotational atherectomy: 8 (5.9%)
Left main PCI: 14 (10.4%)
Non left main bifurcation: 22 (16.4%)

Cut off value FFR < 0.6 and IVUS

Additional procedure
- Radial artery angioplasty: 2
- Subclavian angioplasty: 2

Procedural releated factors
- Mean contrast consumption 84.39 [76.3-92.4] ml
- DAP: 27.67 [23.2-32.1] Gy
- Fluoroscopy time 6.5 [5.6-6.2] minute
- Hospitalisation 0.6 0.2 day

Complications
Vascular access site complications
- Radial artery occlusion 0%
- Forearm haematoma 2/177 (1.1%)

MACCE
- 2 MACCE at one month (2/177- 1.1%)
- 1 stent thrombosis, 1 periop AMI

Conclusion
Ultrasound guided distal transradial access from the snuff box area is safe and effective and the rate of radial artery occlusion is extremely low.

Limitations
- Radial artery tortuosity
- Radial artery calcification
- RAO, SAO
How it works ??
Patent haemostasis for pedal

Reply: Superficial Femoral Artery Recanalization Via a Transradial Access or a Combined Radial-Pedal Access Strategy.
Ruzsa Z, Bertrand OF, Merkely B, Nemes B.

Conclusion

• Transradial and transpedal access opened the door to perform outpatient lower limb interventions routinely

• Transradial and ulnar access facilitate also outpatient CAS procedures

• Transradial access for coronary interventions is safe and has more than 20 years experience

• TAG is recommended after PCI or CAS if you ambulate the patient

• RAO or pedal occlusion must be prevented with patent haemostasis or DRA

• Diagnostic angiography can be done with fast release in 4 hours in all vascular beds
Thank You!!
SB access and compression
Our recent study - comparison of two devices with pressure reduction to minimum every 20 minutes (n=280)

(n=140) mean compression time was 60´and 90´ ...

... and RAO in both groups was 0%
How to reduce RAO and compression time with TR Band to minimum?

(In case of different compression device - identical steps with minimal pressure without bleeding)

CATHLAB

Patient on the table:
- Inflate 15 cc of air
- Remove the sheath
- Decrease to minimal pressure without bleeding!

WAITING ROOM (before transfer to the ward)

5-15 min
- Decrease again to minimal pressure just before leaving!
- Note the residual amount of air in cc!
- Check for patent hemostasis if possible

WARD

- Decrease again to minimal pressure every 20 minutes and note the residual volume!
- Check for patent hemostasis if possible
- When 0 cc > wait 30 min and remove TR band!

By this way you minimize the risk of RAO with very short compression time 😊
Patient with Ulnar artery stenosis and hand ischemia
Thank You!!