Transition from TF to TR Access in IO: Effect on Patient Radiation Exposure and Fluoroscopy Time

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Disclosures

- No conflicts of interest
Cardiology and IR literature describe the benefits of TR access with regards to:

- Patient preference
- Cost
- Complication profile

- Patient dose
- Fluoroscopy time

IR: Limited
Cardiology: Mixed
Background

• Large cardiology series: No overall difference in procedural parameters during TF to TR transitions over several months\(^{11-12}\)

• But do also describe a learning curve\(^{13-15}\)
  – Potential transient incr. dose & procedure length early on
  – “TR-PCI success depends on operator experience, and a case volume of ≥50 cases is required to achieve outcomes comparable to experienced operators”
    • [FT, contrast used, failure rate]
  – “The improvement in fluoroscopy time and other procedure-related parameters was seen after approximately 25 cases with further improvement after 75 cases.”
Background

Figure 5. Trend of different procedure-related parameters over the first 100 radial access cases. This figure shows an improvement in all procedural variables after 25 cases, with plateauing afterward. There is further improvement after 75 cases are done. Data given as mean ± standard error of the mean.

Purpose

• We sought to evaluate whether this phenomenon applied to interventional oncology (IO) procedures, in particular with regards to the metrics of patient radiation exposure and fluoroscopy times, in intra-arterial IO procedures during our institution's initial adoption of TR access
Materials and Methods

- PACS/EPIC queried under IRB exemption
- IO procedures included:
  - Bland embolization
  - TACE
  - Radioembolization
  - Mapping
- All IO cases performed during the radial adoption period from 7/2014 and 9/2016
- 4 interventional radiologists (experience: 1-8 years) who performed both TR & TF procedures
  - All operators began learning and utilizing TR access within this study period
Materials and Methods

- Assessed:
  - Procedure type
  - Access type
  - Access success/failure
  - Fluoroscopy time
  - Radiation dose (DAP i.e. mGy*cm2)*

*IR CT and CBCT spins are not included in the dose calculation
Results

- A total of 178 procedures were included:
  - 79 TR
  - 99 TF
  - 3 cases of access failure/conversion with TR
    - (one TR to TF and two TR to contralateral TR)

<table>
<thead>
<tr>
<th>Operator</th>
<th>TF</th>
<th>TR</th>
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<td>2</td>
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<tr>
<td>F</td>
<td>21</td>
<td>7</td>
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<td>W</td>
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<td>L</td>
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<table>
<thead>
<tr>
<th>Procedure</th>
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<td>TACE/Bland</td>
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<td>Radioembolization</td>
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## Results

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<td>FT</td>
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</table>

- All FT in minutes
- All DAP in mGy*cm²
### Results – by Procedure

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Results – by Operator

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Summary

• No significant difference in overall patient radiation dose (p=0.7)
• Procedures performed using transradial access trended toward shorter fluoroscopy times (p=0.05)
• Findings generally persisted when procedures were divided into subgroups of Y90, mapping, and TACE/particle embolization.
Study Limitations

• One operator dominated TR access arm
• No account for trainee involvement
• No account for patient size/weight
• Heterogeneity between expected length and dose of IO procedures (dose between treatment subgroups was not adjusted for number of vessels treated, lobar versus superselective therapy, etc.)
• Arms not randomized
• No stratified evaluation between arms (Patients 1-50 vs 51-100, etc.)
Conclusions

• Early institutional experience with starting a TR program for IO suggests this may be done without increase in patient radiation dose and fluoroscopy times.

• Concerns over procedure dose and length should not be barriers to learning TR access.
References

Thank You