Advantages Of The Ziehm Vision RFD Hybrid Mobile Motorized C-Arm & Stille ImagiQ2 Floating Table:

How Do They Compare With Fixed Hybrid Equipment For Complex Aortic Procedures

Disclosure

Speaker’s name: Peter Goverde

I have the following potential conflicts of interest to report:

- Consulting:
  - Abbott Vascular; Angioslide; Atrium Maquet Getinge group; Bard Peripheral Vascular; Cardionovum; Cordis-Cardinal Health; IMDS; Ivascular; Stille; Veyran; Ziehm Imaging

Necessity of better and better imaging

- Endovascular therapy:
  - Longer interventions
  - More complex interventions
  - Re-interventions
- Need for:
  - Longer fluoroscopic time
  - HD imaging
  - Ergonomic interventions

With fenestrated endoprosthesis

With fenestrated endoprosthesis

Necessity of better imaging

- Endovascular therapy:
  - Below The Knee
  - Pedal Arch
  - Visceral arteries
  - Re-interventions
  - EVAR-TEVAR-FEVAR
  - Branched reconstructions
  - Vascular trauma care
  - Ruptured aneurysms
  - etc
Superior Mesenteric artery

Necessity of better and better imaging

Options:

C-arm or Hybrid room

- What to choose:
  - C-arm:
    - available in every OR
    - Are they sufficient enough??
  - Hybrid room:
    - In the OR
    - Nothing but advantages??

or is there an "in between"

Comparison

Ziehm Vision RFD Hybrid / Hybrid room

Surface

€/$/£???
What is the benefit of motorisation

• Comparison of 2 configurations during 3 months
  – 1) Ziehm Vision C arm (non motorised) + Stille Imagiq1 floating table
  – 2) Ziehm Vision RFD Hybrid (motorised 4 axes) + Stille Imagiq2 (longer)

• Every external help (nurse/ technician) to chance :
  – Up-down movement
  – Back-forward
  – Longitudinal rotation
  – Axial rotation
  – Lateral movement (whole system)

2 configurations Comparison in terms of external help to move the system during interventions

• Comparison of 2 configurations during 3 months
  Interventions were divided in :
  – easy interventions :
    • ≤ 60 min
    • SFA, common iliac etc
  – more difficult interventions :
    • 60 – 120 min
    • redo peripheral, iliac, BTK etc
  – difficult interventions :
    • ≥ 120 min
    • aortic, visceral, embolisation

Comparison Ziehm Vision RFD Hybrid / regular non motorised C-arm / movements

mean time external help/hour intervention
non motorised Ziehm Vision + Imagiq1
113 interventions

• easy interventions
  – 58
  – 5.7 min / hour : 9.5 %

• more difficult interventions
  – 39
  – 8.3 min / hour : 13.8 %

• difficult interventions
  – 16
  – 12.4 min / hour : 20.7 %

mean time external help/hour intervention
Ziehm Vision RFD Hybrid +Imagiq2
122 interventions

• easy interventions
  – 63
  – 0.6 min / hour : 1 %

• more difficult interventions
  – 37
  – 1.2 min / hour : 2 %

• difficult interventions
  – 22
  – 1.6 min / hour : 2.7 %

Benefit of a floating Carbon table

• comparative testing of 3 ways to move a table longitudinally
• how long will it take (in sec) to move 30 cm in a longitudinal plane
  1. Stille Imagiq2
  2. C-arm by nurse or technician
  3. motorised Maquet Carbon table top

<table>
<thead>
<tr>
<th>System that moves</th>
<th>Operator</th>
<th>Number</th>
<th>Average</th>
<th>Mean time</th>
<th>Compared to Stille Imagiq2</th>
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<tr>
<td></td>
<td></td>
<td>movement s</td>
<td>time/sec/mov</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option 1</td>
<td>Stille Imagiq2</td>
<td>Surgeon 1</td>
<td>20 pp</td>
<td>2.84 sec</td>
<td>2.68 sec</td>
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<tr>
<td></td>
<td>Surgeo 2</td>
<td></td>
<td></td>
<td>2.82 sec</td>
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<tr>
<td>Option 2</td>
<td>C-arm</td>
<td>Nurse 1</td>
<td>20 pp</td>
<td>13.57 sec</td>
<td>13.85 sec</td>
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<tr>
<td></td>
<td>Nurse 2</td>
<td></td>
<td></td>
<td>14.13 sec</td>
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<tr>
<td>Option 3</td>
<td>Motorised table top</td>
<td>Nurse 1</td>
<td>20 pp</td>
<td>19.56 sec</td>
<td>19.63 sec</td>
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<tr>
<td></td>
<td>Nurse 2</td>
<td></td>
<td></td>
<td>19.70 sec</td>
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</tr>
</tbody>
</table>

Benefit of a floating Carbon table

• Color coded handles and scales
• Wireless Freedom Options
• Endo option
• New removable grid mechanism
• Anatomical Marking Tool (AMT) for easy and digital drawings and markings that can be stored within the image
Anatomical Marking Tool
Clinical Use Case

- Supports e.g. aortic stent graft implantation without RSA
- Easy use in combination with "Storing Position"

Mark side branches of the kidneys, aneurysm and bifurcation
Placement of the stent
Keeping the side branches open
DSA control: Successful placement of the stent

Abdominal Aortic Aneurysm (AAA)

- Vascular Trunk
- Abdominal Aorta
- Ziehm High-Speed ADR
- Latest improvements of ZAIP
- Even with diluted contrast media the edge of all vessels can be evaluated

Transcatheter Aortic Heart Valve Replacement (TAVR)

- Heart Cine/HQ 12pps
- Trans femoral approach
- Ziehm High-Speed ADR
- Latest improvements of ZAIP
- No metal artefacts

Atrial Septal Defect

Even the tiny structures of a Septal occluder can be seen clearly at any time

Vascular Clinic ZNA

Image Courtesy of ZNA Stuivenberg, Antwerp (BEL)

Vascular Clinic ZNA

Image Courtesy of Herzliya M.C., Herzliya, Israel

Vascular Clinic ZNA

Image Courtesy of Binghampton General Hospital (USA/NY)

Vascular Clinic ZNA

Image Courtesy of Herzliya M.C., Herzliya, Israel
11/18/2016

**Vascular Clinic ZNA**

- Vascular Trunk
- Abdominal Aorta
- Ziehm High-Speed ADR
- Latest improvements of ZAIP
- Even with diluted contrast media the edge of all vessels can be evaluated

**Chimney-CERAB**

- Vascular Trunk
- Abdominal Aorta
- Ziehm High-Speed ADR
- Latest improvements of ZAIP
- Even with diluted contrast media the edge of all vessels can be evaluated

**Level 1**: standard EVAR, TEVAR, aortic & peripheral

**Level 2**: iliac branched (IBD), standard FEVAR (2 FEN)

**Level 3**: FEVAR (>2 FEN)

**Level 4**: Branched stent-grafting TAAA, TEVAR

**Fixed Hybrid Room**

**Advanced imaging solutions to provide better care**

- Conventional C-arm
  - Open surgical support
  - Robotic Vascular Access
  - TASC A&B arterial lesions
  - Pacemaker implants
  - Peripheral venous interventions

- RFD Hybrid Edition/RFD 3D
  - ALL OF THE ABOVE
  - Below the knee angioplasty
  - Carotid angioplasty & stenting
  - Visceral angioplasty & stenting, including aneurysms
  - Noc and popliteal artery procedures, including aneurysms
  - Peripheral and visceral embolisations
  - Other peripheral vascular interventions, including hybrid procedures
  - TASC-CAD arterial lesions
  - Venous & central venous interventions
  - TEVAR
  - FENNEL (fenestrations)
  - TAIR
  - Transcatheter Mitral Valve
  - Septal defect closures
  - Hybrid EP procedures
  - Procedures were performed image fusion or 3D facilitated interventions

**Fix C-arm Hybrid room**

- ALL OF THE ABOVE

**Conclusions**

- **Ziehm Vision RFD Hybrid + Stille ImagIQ2 table**:
  - **Advantages**:
    - Compact: footprint: 0,8 m²
    - Extremely mobile
    - Excellent imaging
    - Possibility of single operator
    - No need for extra technical personal
    - Can save procedure time
    - Possibility to perform a lot of endovascular (+/- hybrid) procedures
    - Very efficient and economic way of working

- **Disadvantages**:
  - Lack of table-device communication
  - Still cables on the floor

The mobile hybrid solution "alternative"
The replacement of traditional C arms
Thank you for your attention