Renal insufficiency is not a contraindication to TEVAR, FEVAR or CHEVAR: how should such patients be managed

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Impact of chronic kidney disease on outcomes after aneurysm repair

- Patients who have preoperative renal insufficiency are prone to postoperative renal failure
- Preoperative renal insufficiency is the only independent, significant determinant of postoperative ARF in multivariate analysis
- Chronic kidney disease in patients with aortic aneurysm is associated with significantly increased mortality and morbidity

Strategies for reducing the risk of postoperative renal failure

- Optimize hemodynamical monitoring
- Avoid repetitive episodes of hypovolemia
- Hydration
- N-acetylcysteine?
- Avoid nephrotoxic agents/drugs?

Minimize the use of nephrotoxic contrast agents before and after the treatment

CTA via transbrachial straight flush Katheter
(20ml contrast agent)

Conflicts of interest

Consultant/grants:
Medtronic
Cordis
Cook
Maquet

Minimize the use of contrast medium with the fusion technique
3D/3D Registration

Extra Radiation Exposure needed
Extra Contrast agent needed

SkinDose 300 mGy
SkinDose ca 50ml

Fusion Prototype: 2D/3D Registration

- Intraoperative fluoroscopy (2D imaging) with the preop CT scan (3D imaging)
- Automated matching based on the aortic shape (initial aortography) and the vertebral bodies' shape (single shot in a forced lateral projection)

MASH model: The circles orthogonal to the vessel axis allow to choose the best projection during the procedure.

Vessel catheterization
the interventionalist just needs to select the target vessel and the C-arm moves automatically to the desired working projection.
Fusion assisted deployment

the MESH model deforms with devices in place, giving the interventionist an idea of how the shape and position of the vessel alters with a device in it.

Conclusion

- Renal insufficiency is not a contraindication to TEVAR, FEVAR or CHEVAR
- Avoid hypotension
- Avoid nephrotoxic agents/drugs?
- Reduce the amount of contrast medium

Conclusions

- Fusion reduces the risk of ARF
  - Less angiography
  - No pre catheterization of the target vessel
- 2D/3D Registration simplify the workflow
  - No Rotational Scanning
  - Just 10mGy radiation exposure
- Overlapping MESH Model
  - Reduce time to identify the targets
  - Improve Image quality (noise reduction)
  - Distortion Correction
Thank you!