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“Direct percutaneous embolization of aneurysm sac: a safe and effective procedure to treat post-EVAR type II endoleaks”.

Fanelli F, et al. 2020



Highlights:

1. Double-center, prospective study
2. 50 patients
3. Percutaneous direct sac puncture with Onyx™
4. Follow-up at 6 and 12 months
5. Sac size reduced (68%) or stabilized (32%) at 1-year follow-up

Background

- Type II endoleaks remain the most common complication of endovascular aneurysm repair (EVAR).
- In approximately 40-58% of the cases, type II endoleaks are not correlated with sac enlargement and solve spontaneously. In those cases where they are responsible for a progressive increase in the aneurysm sac, treatment is required.
- Different percutaneous techniques have been already described, but none of them can be considered definitive, especially in more complex situations or in case of persistent endoleak.
- The paper reports the outcomes of fifty cases of type II endoleaks with increasing aneurysm sac diameter, successfully treated with direct percutaneous sac approach using Onyx™ liquid embolic agent (alone or in combination with detachable micro-coils).

Study objective

To report safety and effectiveness of type II endoleak embolization, with percutaneous direct aneurysm sac puncture.

Materials and methods

Study Design

- This is a prospective, physician-initiated, study conducted in two centers, with approval by local ethics committees.
- Fifty patients, 31 males, mean age 63 ± 8 years (range 50-71 years), with post-EVAR type II endoleaks underwent percutaneous direct sac puncture.
- Indication to treatment was based on the presence of type II endoleak on CT angiography, performed during the follow-up, with aneurysm sac enlargement >5 mm in the last 6 months.

Embolization technique

- Procedures were performed under deep sedation to reduce pain related to DSMO injection.
- Sac puncture was done using a 20G needle under rotational angiography guidance. A coaxial system (4 Fr catheter + 2.7 microcatheter) was used to navigate the sac.
- Onyx™ liquid embolic device was injected to fill completely the aneurysm sac.

| Patients' Feature | Value |
|--------------------------------|---------|
| Male, n (%) | 31(62) |
| Age, range | 50-71 |
| Smoking habit, n (%) | 10 (20) |
| Coronary artery disease, n (%) | 20 (40) |
| COPD, n (%) | 10 (20) |
| Hypertension, n (%) | 35 (70) |
| Obesity (BMI > 30), n (%) | 7 (14) |
| Diabetes, n (%) | 21 (42) |

Follow-up

- Follow-up was arranged with contrast-enhanced ultrasound at 6 and 12 months. In case of suspicious findings or endoleak recurrence, a CT angiography was performed.

Results

- Technical success, with complete embolization of the aneurysm sac with no more evidence of blood flow within the sac, was achieved in all cases.
- No complications, correlated with the direct percutaneous sac puncture or to Onyx™ injection, occurred.
- All patients were discharged the day after the procedure.
- Freedom from re-intervention for recurrent endoleak was 97.9% at 12 months.
- A second embolization was required only in two cases (4%) for endoleaks type II recurrence - after 9 and 12 months, respectively

68%

of cases with a **sac size reduction** after 1-year follow-up

32%

of cases with a **stable sac size** after 1-year follow-up



Procedure Outcomes

| | |
|--|-------------------------------|
| Median time between initial EVAR and endoleaks treatment | 27 months (range 6-48 months) |
| Mean procedure time | 51.36 min (range 36-68 min) |
| Mean fluoroscopy time | 16.7 min (range 10-20 min) |
| Percutaneous sac puncture cases (%) | |
| with posterior left access | 82% |
| with posterior right access | 12% |
| with anterior access | 6% |
| Cases with feeding vessels embolized with micro-coils (alone or with Onyx) (%) | 38% |
| Total amount of Onyx (ml) (mean) | 8 (range 3-15) |

Conclusions

Percutaneous direct sac embolization using Onyx™ is a safe and valid technique to solve post-EVAR type II endoleaks.

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Reference

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Go to
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