Nepean Experience with the Reverse slider technique

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Introduction

New EVAR techniques have emerged to conquer the hostile neck, one recently described is by the Japanese Vascular surgeons is the reverse slider technique (RST). This is a technique we have embraced at Nepean hospital, Australia, to minimise type1a-endoleaks.

Method

A limited retrospective study of cases undertaken at Nepean Hospital between 2020 and 2021. We identified 9 patients that underwent the RST using the Endurant stent system (Medtronic, Santa Rosa, California) endovascular graft. The procedure was undertaken by the Vascular surgeons of the unit all using the endurant system. The surgical technique used for deployment is as described by Morikage N. et al. (1) Patients were identified upon planning for the RST+/- use of endoanchors. Features that were suggestive of employing the RST were: conical, short, ectatic, angulated necks or a combination of the listed. Endoanchors in this review were primarily used for ectatic bulges in the neck or for short and angulated necks. The grafts were oversized between 10-30%. Our primary outcomes were technical success, defined as the absence of a type 1a endoleak, and the presence of endoleak upon follow up. Secondary outcomes include complications and reintervention for aneurysm exclusion.

Results

We had identified a total of 9 patients in Nepean Hospital that had underwent the RST, 6 Male and 3 Female. The median age of the patient group was 73.5 years, with a range of 61 – 86 years. 2 of the patients had no comorbidities. Of the remaining 7, 3 had type 2 diabetes, 1 had ischemic heart disease and 1 had respiratory illness. Within this cohort there were 7 smokers (78%), three that were currently smoking (33%) and 4 (44%) that were ex-smokers.

Results continued

The average aneurysm size was 5.53cm with the largest being 10.7cm and the smallest 4.9cm. The neck length ranged from 11mm to 40mm with 4 patients (44%) having ectatic bulges in the neck, 2 (22%) with conical necks and 3 (33%) having angulated necks. A total of 4 patients underwent endoanchors whilst 5 underwent a standard EVAR.
Of the 9 patients 1 (11%) patient had a type I endoleak upon completion of the case. This was found to be in a repair without endoanchors. Upon follow up there were 0 type I endoleaks confirmed on either US or CT scan, reporting a success of 100%. Post operatively there were no identified complications or reinterventions.

Discussion

The RST can be employed to improve the quality of the seal at the proximal segment by allowing increased contact with the aortic wall by pushing the graft upward. This technique can be applied to both favourable and non-favourable necks improving the ability to exclude the aneurysm without additional procedures such as chimney. As per Konstantinos et al. we can see that the incidence of a type 1 endoleak in the endurant device over 7 years was 1.4% under instruction for use whilst the off- label had an incidence of 4.2%.(3) Whilst de Guerre et al. show that hostile neck anatomy was associated with a Type 1a leak to the incidence of 5.0% in comparison to 1.9% in a favourable neck(4). Our limited study shows explores that one patient with RST and EVAR with a hostile neck had a type 1a endoleak that resolved upon follow up.
We as a unit however did implement the use of Heli-FX

Discussion continued

EndoAnchors within the study. A device that if used in conjunction with Endurant extends the IFU to include patients with necks of 4-10mm with ≤ 60 degrees infrarenal and ≤ 45 degrees suprarenal angle. A cohort that was previously ineligible for an EVAR. This procedure is aptly named EndoSutured aneurysm repair (ESAR). Valdivia et al. defines with his retrospective study of ESAR had a technical success rate of 89.4% and an success rate of 95.5% at 30days. This number increasing upon long term follow up given spontaneous resolution of endoleaks with an overall success of 96.8%. (5) However, this study includes both revisions and primary EndoAnchor repairs .Upon further review, Arko et al. have shown a technical success rate 97.1% (n=70 patients) with a type 1a in 4 patients (5.7%) at 30 days of which 3 had self-resolved at 12 month follow up. (6) These findings were further supported by the ANCHOR trial by Jordan Jr et al. where there was 5% of incidence of type 1a endoleak in the primary ESAR arm. (7) Collectively we can see an incidence of Type 1a ranging from 5% to 5.7% within a ESAR repair. Within our study none of the cases that underwent RST and ESAR had a type 1 endoleak.

Conclusion

This study highlights the merit of utilising the RST in patients with hostile neck anatomy, in particular those that are: conical, short, ectatic, angulated necks or a combination of the listed. A technique that can be used in EVARs or ESARs without excluding further intervention if required. From the small sample size it shows favourable initial outcomes, however given it is underpowered further studies would need to be undertaken with longer follow up.