Abstract

Objective(s):
To evaluate the efficacy of treating type 2 endoleaks (T2L) after aortic endovascular repair with image guidance translumbar puncture using intraoperative Cone Beam Computed Tomography (CBCT) with pre-procedure computed tomographic angiography (CTA) fusion in hybrid operating rooms.

Methods:
26 consecutive T2L patients in three different institutions were treated between March 2015 and September 2017 utilizing direct translumbar puncture of the abdominal aortic aneurysm (AAA) sac after previous endovascular aortic repair. All patients were treated at a single setting using a needle trajectory planning and guidance software (Needle ASSIST, GE Healthcare, Chicago).
Results:
All patients (n=26; 19 M/7 F, ages ranging from 59 to 95, mean BMI=27.44±3.06) underwent treatment due to AAA sac expansion and/or symptoms. Four patients had failed previous catheter directed T2L treatment. Time to initial endoleak diagnosis ranged from two to 1914 days (average 404 days). Initial aneurysm size after initial repair was 60.27±7.5mm; sac size had increased 10.12±6.5mm at the time of treatment. Onyx or glue (1N-butyl cyanoacrylate) and coil embolization was utilized in 20/26 cases; six patients were treated with coiling alone. Total procedure time was 75.9±40.7min, contrast 19.9±29ml, fluoroscopy time 13.74±12.2min and radiation dose 121.16±167.7mGy. Following embolization, the mean sac diameter decreased by 4.3mm to 64.6±9.3mm. Average follow up period was 214 days. In 18 patients, the sac reduced in size from 0.2 to 47.62mm/100 days; in 3 patients there was continued AA expansion (0.6 to 4.31mm/100days); there was no change in the sac size in 4 patients after the procedure. Once treated, the recurrence rate of T2L was low (Figure1). The patients with sac growth, tended to be associated with higher BMI and baseline eGFR levels. P=0.09.

Conclusions: This initial multicenter evaluation of the effectiveness of fusion image guided translumbar obliteration of T2L demonstrated that the technique was effective at all three study centers and showed excellent midterm efficacy to reduce AAA sac size. This may become a more effective and efficient method of treating T2L after endovascular aortic repair going forward.

Figure 1: Freedom from recurrent T2L after treatment (n=26)