

Assessment at elective totally implantable venous access device removal: what is the status of the device under a maintenance interval of 3 months?

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Background and objective

The most common indication for Totally Implantable Venous Access Device (TIVAD) insertion is the administration of intravenous chemotherapy. A TIVAD that remains in place but is no longer in use, is flushed at established intervals to maintain patency. However, maintenance intervals vary among institutions and some of them even omit this procedure. Our hospital currently prescribes a 3-monthly flush regimen. No data are available about the TIVAD status under this regimen. Therefore, our study objective was to gain insight in the TIVAD status under the current flush regimen at elective removal in adult patients.

Methods

We conducted an academic pilot study (NCT03948958) from July 2019 till July 2022. The primary outcome is TIVAD functionality, scored using the Catheter INjection and ASpiration (CINAS) classification. Secondary endpoints are the presence of catheter sleeve and/or tip thrombosis visualized by linogram, and after TIVAD removal, chamber and tip colonization and macroscopic catheter and chamber status.

Results

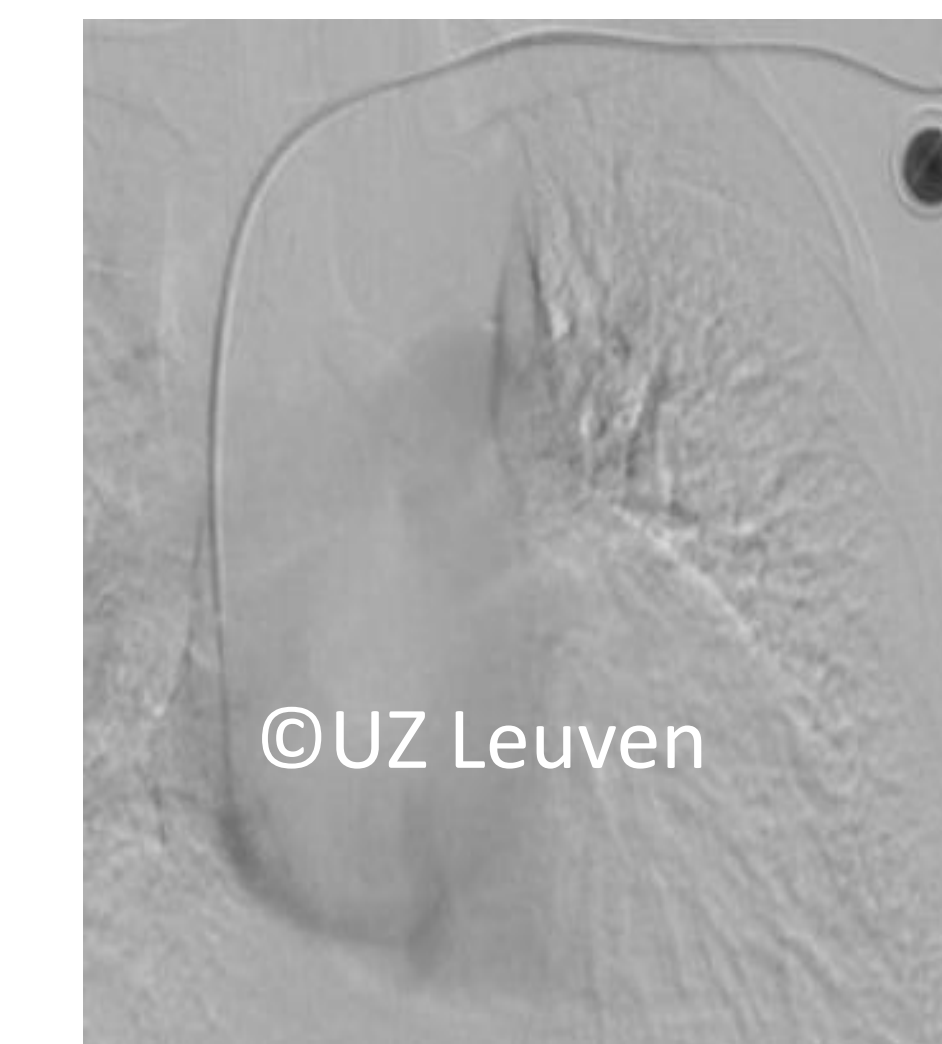
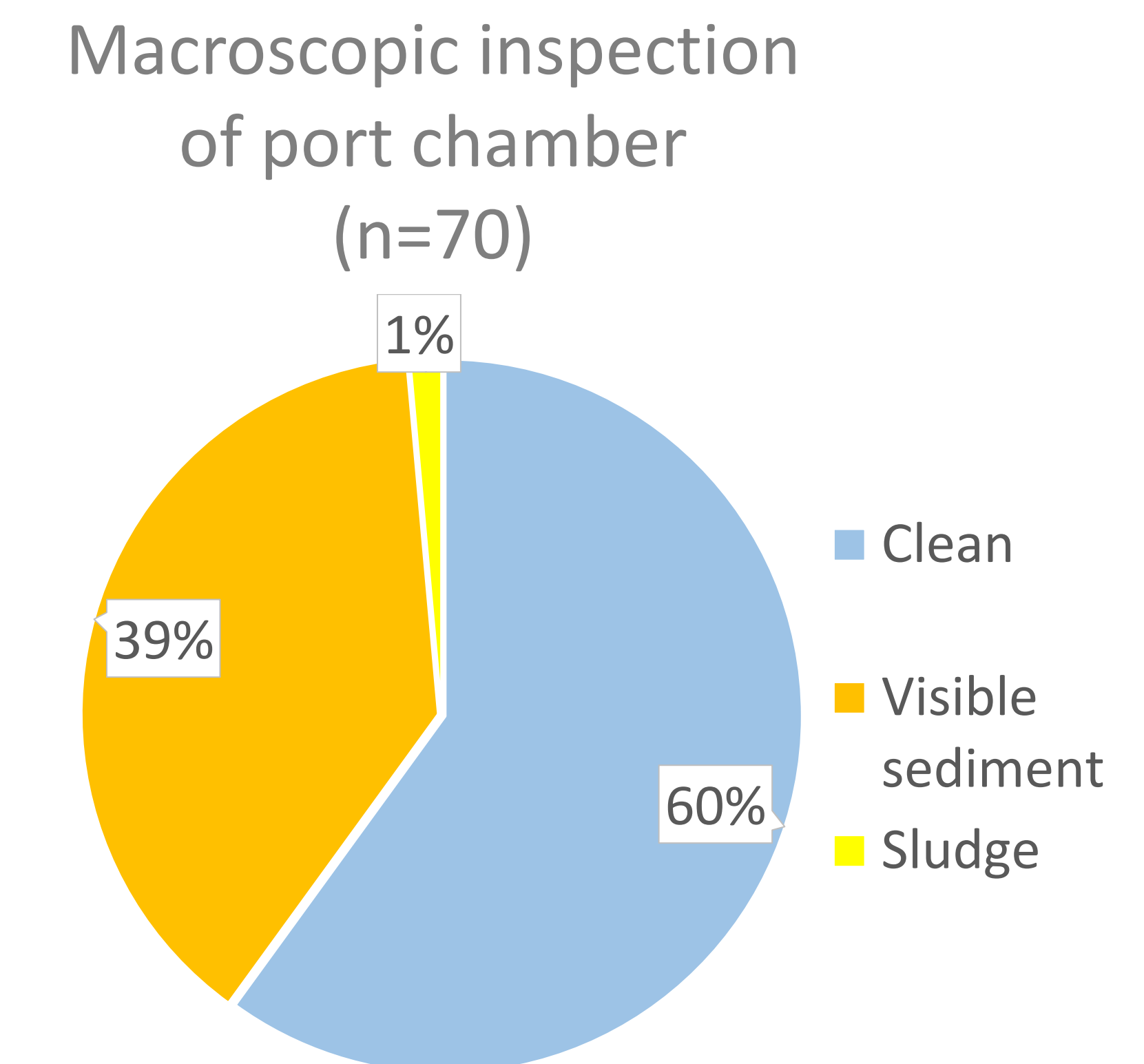
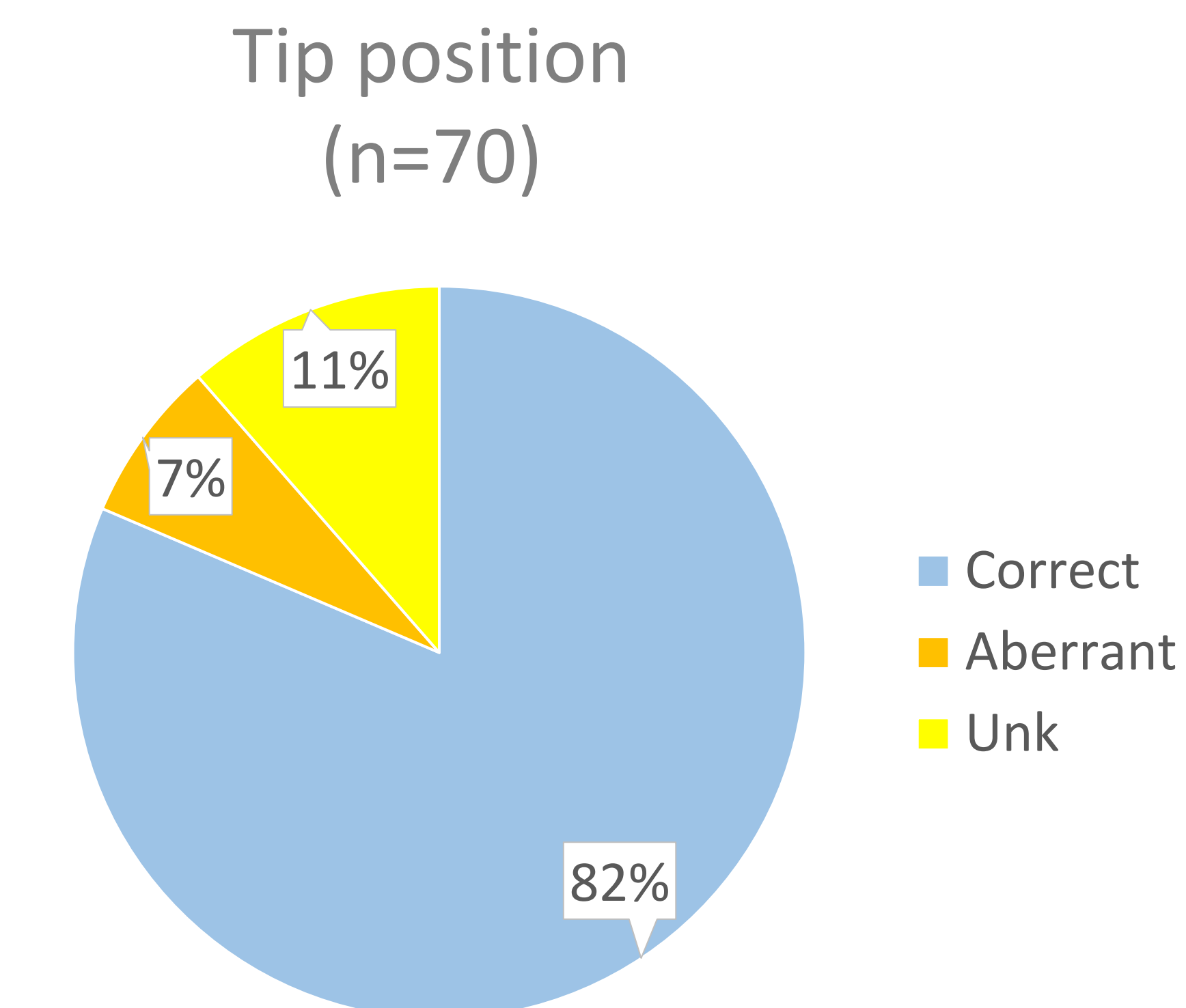
Of the 100 patients included, 70 patients with a followed strictly 3-monthly flushing regimen were analyzed (table 1). The median time since last maintenance was 53 days (Q1=19; Q3=89 days). No TIVAD was completely blocked (CINAS-score IN3AS3), only 1 patient (0,1 %) had injection and aspiration problems (CINAS-score IN2AS3). We observed in 9 patients (12,9%) difficult or impossible aspiration ability, while injection was easy (table 2). After injection of contrast dye, linogram (n=61), showed in 6,5% of patients (n=4) an aberrant jet due to a fibroblastic sleeve (n=3) or a tip thrombus (n=1). No TIVAD colonization was observed. Regarding the macroscopic inspection, 40% (n=28) on 70 cases had visible sediment (n=27) or sludge (n=1) in the port chamber.

Patient (n=100)		n	%
Gender	Female	79	79
	Male	21	21
Type of Cancer	Breast	41	41
	Colorectal	28	28
	Gynaecological	6	6
	Hematological	15	15
	Upper GI/ pancreas	5	5
	Lung	5	5

TIVAD (n=100)		n	%
Type	Celsite®	72	72
	Districath®	18	18
	Dignity® CT	2	2
	Port-a-cath®	5	5
	Powerport®	2	2
	Pro-Fuse® CT	1	1
Catheter material	Silicone	94	94
	Polyurethane	2	2
	Unknown	4	4
External diameter (Fr)	6.5	81	81
	8	2	2
	8.5	7	7
	Unknown	10	10

Table 1 : Maintenance Flush regimen (n=100)	Frequency	Percentage
Every 3 months	70	70
3-12 months	18	18
> 12 months	12	12

Table 2 : Functionality TIVAD (%) (n=70)		Injection		
		Easy	Difficult	Impossible
Blood aspiration	Easy	87	0	0
	Difficult	4,3	0	0
	Impossible	8,6	0,1	0



Normal jet



Tip thrombus



Clean

Sediment

Sludge

Conclusion

This investigation describes a low incidence of functional problems under a 3-monthly flush regimen of the TIVAD. The results may support further investigation to extend or omit the flush regimen when the TIVAD is no longer in use.