



Interventions chirurgicales pour les sténoses de l'arc céphalique: une expérience monocentrique

Surgical interventions for cephalic arch stenosis: a single-center experience

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Conflicts of interest

- None to declare

Introduction

- Cephalic arch stenosis is an important cause of dysfunction of brachiocephalic fistulas for hemodialysis (HD)
- There is no definitive management strategy for this issue
- Both endovascular and surgical techniques can be used to treat cephalic arch stenosis
- There are studies comparing surgical and endovascular techniques with good surgical results

• **Type of Research:** Retrospective, single-center cohort study

• **Take Home Message:** In 219 patients with failing brachiocephalic arteriovenous fistula who underwent intervention at the cephalic arch, endovascular interventions had higher failure rates and required more interventions to maintain cephalic arch patency than surgical reconstructions with bypass or transposition.

• **Recommendation:** The authors suggest that surgery should be considered early when cephalic arch stenosis is identified in angioaccess patients.

Results

Seventy-seven (16.7%) patients had CAS and 42 of them (54.5%) were treated for clinically significant CAS. PTA was performed in 36 patients (85.7%), and CVT was done in 6 patients (14.3%) as the initial treatment. Nine patients underwent CVT after PTA, resulting in a total of 15 patients treated with CVT. Investigation of the patency of the 36 cases of PTA and 15 cases of CVT revealed that primary-assisted patency rates at 6 and 12 months were 68.2% and 57.3% for PTA and 100.0% and 87.5% for CVT, respectively ($P = 0.038$). Secondary patency rates at 6 and 12 months were 72.0% and 56.9% for PTA and 100% and 100% for CVT, respectively ($P = 0.010$). The median intervention rate was 2.5 interventions per access-year in the 36 cases treated with PTA and 1.5 interventions per access-year in the 15 cases treated with CVT.

Results

Six-month and 12-month postintervention primary patency rates of endovascular treatment for restenosis were 56.7% and 15.6% and secondary patency rates were 89.7% and 72.1%, respectively. In the BCF-CVT group, 6-month and 12-month postintervention primary patency was 56.8% and 17.6% and secondary patency was 93.3% and 79.4%, respectively. In the BCF-GIP group, 6-month and 12-month postintervention primary patency was 56.5% and 8.7% and secondary patency was 85.7% and 56.3%, respectively. There was no significant difference in postintervention primary patency between the two groups ($P = .79$). However, the BCF-CVT group demonstrated higher postintervention secondary patency ($P = .034$). The BCF-GIP group had a higher number of stenosis sites ($P < .01$). There was no significant predictor of reduced postintervention primary patency. The only adverse variable of postintervention secondary patency was BCF-GIP (hazard ratio, 3.14; 95% CI, 1.06-9.34; $P < .05$).

Davies MG et al. Outcomes of intervention for cephalic arch stenosis in brachiocephalic arteriovenous fistulas. *J Vasc Surg.* 2017 Nov;66(5):1504-1510. doi: 10.1016/j.jvs.2017.05.116. Epub 2017 Aug 8. PMID: 28800839.

Kim SM et al. Treatment Strategies for Cephalic Arch Stenosis in Patients with Brachiocephalic Arteriovenous Fistula. *Ann Vasc Surg.* 2019 Jan;54:248-253. doi: 10.1016/j.avsg.2018.04.037. Epub 2018 Jul 26. PMID: 30055242.

Jeong J et al. Outcomes of endovascular treatment for stenosis occurring after cephalic vein transposition and graft interposition. *J Vasc Surg Venous Lymphat Disord.* 2022 Jan 21:S2213-333X(22)00056-7. doi: 10.1016/j.jvs.2022.01.001. Epub ahead of print. PMID: 35074520.



Objective

- Compare cephalic vein transposition vs graft interposition for the treatment of cephalic arch stenosis in brachiocephalic arteriovenous fistulas

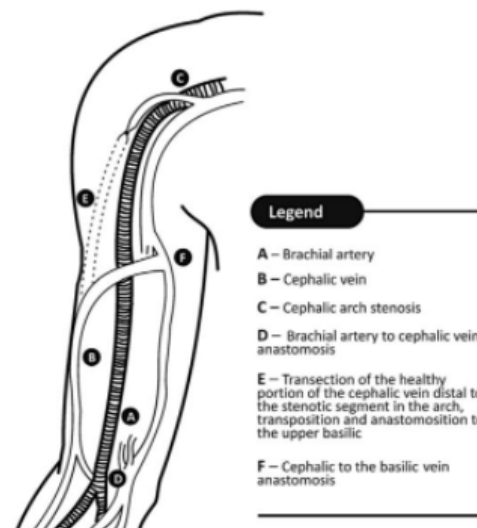


Fig. 1. Illustration of the cephalic vein transposition technique.

Cândido C et al. Transposition of the cephalic vein in therapeutic rescue of cephalic arch stenosis. Clin Kidney J. 2014 Oct;7(5):501-3. doi: 10.1093/ckj/sfu089. Epub 2014 Aug 30. PMID: 25878790; PMCID: PMC4379347.

Materials and methods

- Retrospective review of electronic medical records of 21 patients on chronic hemodialysis program in 6 hemodialysis centers in Portugal
- Intervention: cephalic vein transposition (CVT) vs graft interposition (GIP)
- Period: January 2019 to January 2022
- Statistical analysis performed with IBM SPSS Statistics 24®



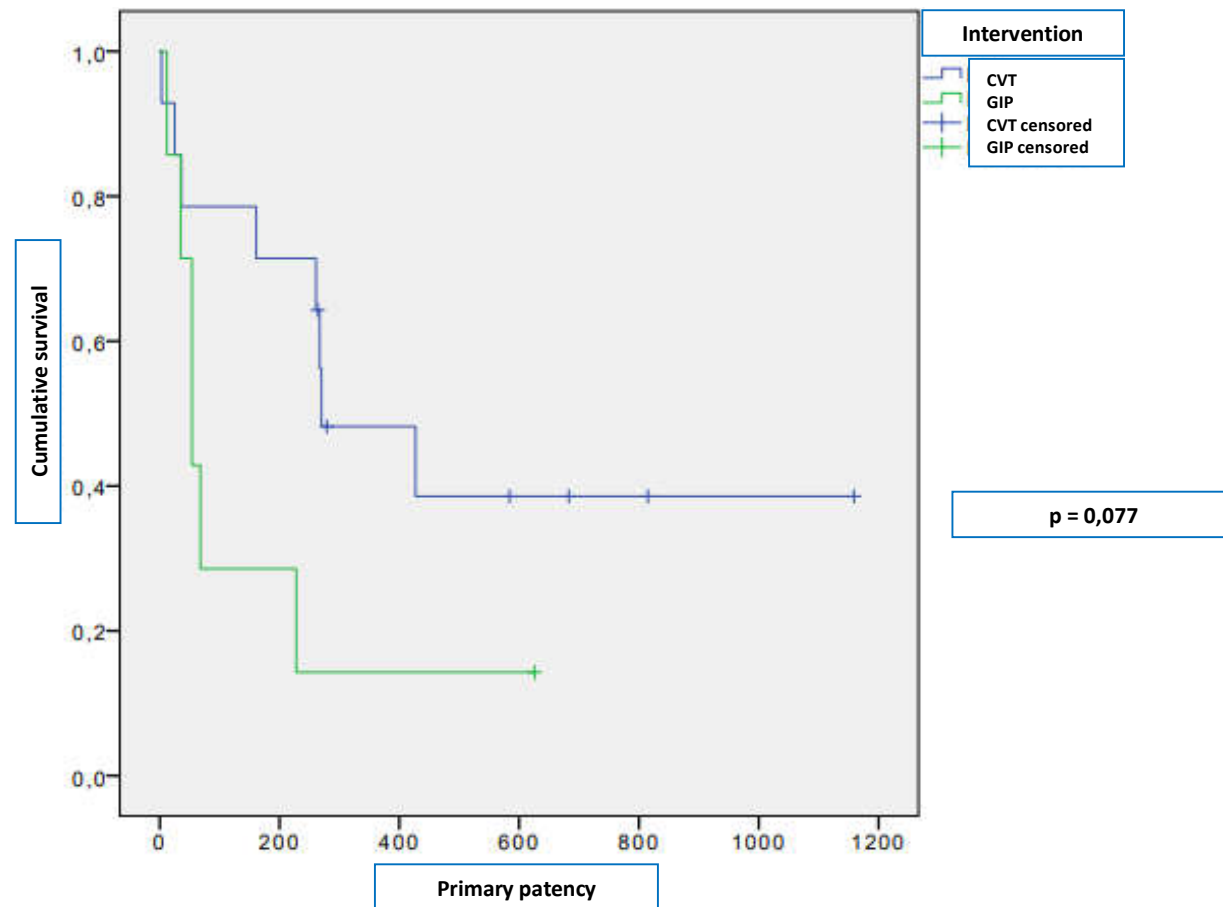
Results

	CVT group	GIP group	p value
Patients, %	14 (66.7%)	7 (33.7%)	
Age, mean \pm SD, years	71.1 \pm 16.9	75.7 \pm 8.4	0,506
Male, %	71.4%	57.1%	0,638
Caucasian, %	92.9%	85.7%	0,567
HD vintage, median, months	45.1	31.4	0,197
Vascular access vintage, median, months	44.9	32	0,488
Procedures prior to index intervention/patient.year, mean	1.8	2.9	0,393

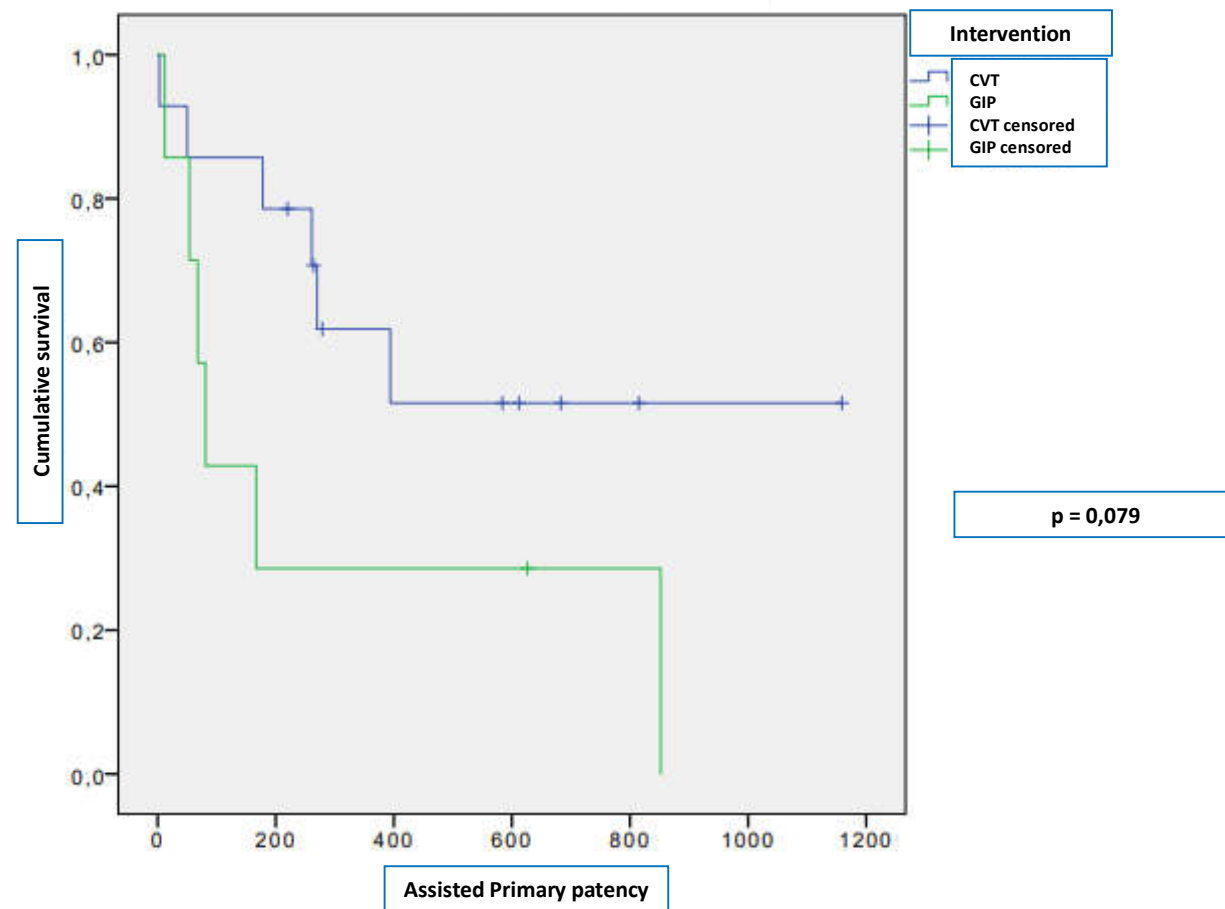
Results

	CVT group	GIP group	p value
Primary patency, mean, days	566 ± 135	154 ± 77	0,077
3 months	78.6%	28.6%	
6 months	71.4%	28.6%	
12 months	48.2%	14.3%	
Assisted primary patency, mean, days	699 ± 139	298 ± 146	0,079
3 months	85.7%	42.9%	
6 months	78.6%	28.6%	
12 months	61.9%	28.6%	
Secondary patency, mean, days	927 ± 119	686 ± 153	0,7
3 months	85.7%	85.7%	
6 months	78.6%	85.7%	
12 months	78.6%	68.6%	
Procedures after index intervention/patient.year, mean	-0.014	-0.014	ns

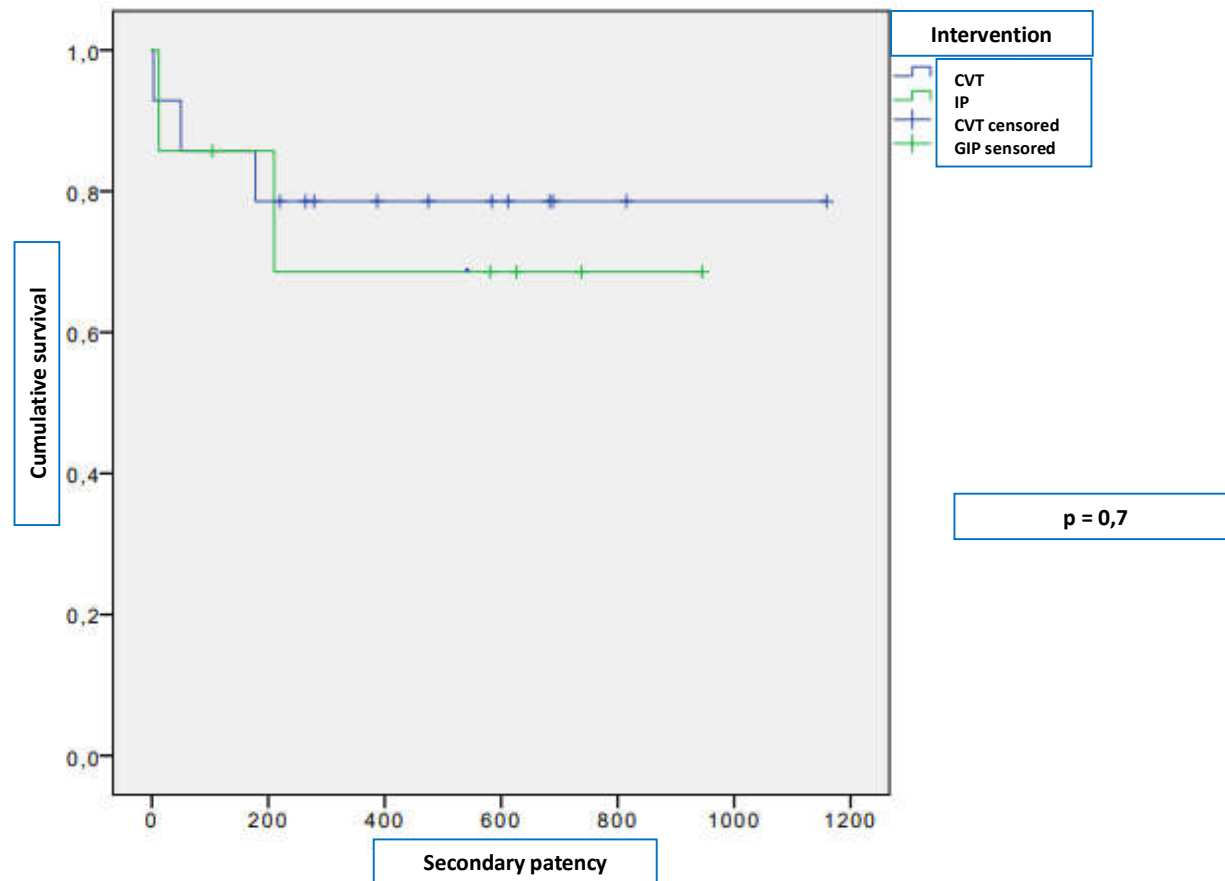
Results – Primary Patency



Results – Assisted Primary Patency



Results – Secondary Patency



Take-home message

- There is no consensus for cephalic arch stenosis management;
- There is increasing data documenting the impact of a surgical treatment of cephalic arch stenosis;
- We found a **trend towards a beneficial effect of CVT** over GIP in **primary and assisted primary** patency, despite not reaching statistical significance;
- We found **no differences** between the two techniques regarding **secondary** patency;
- Surgical solutions may allow for a reduction in required interventions;
- Further studies are warranted to evaluate the impact of both procedures.

Merci pour votre attention!

