

# Superficialized brachiobasilic fistula formed as a 1-step or as a second procedure. What is the best?

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## INTRODUCTION

Initially, superficialized brachiobasilic fistula formed as a 1-step procedure was used. An alternate technique for the brachiobasilic fistula wherein the superficialization of the arterialized basilic vein is performed as a second procedure was used with controversial results. The purpose of our study was to compare patency rates and complications in superficialized brachiobasilic fistula formed as a 1-step and 2-step procedure.

## PATIENTS ET METHODES

### I. Patients :

- Retrospective study : 23 ans ,de 1980 - 2003.
- 70 patients with brachiobasilic fistula performed by a single surgeon (Gh.E) in our hospital or other private centers
- Data regarding procedures, complications, and outcome of the fistula were recorded from its creation to which has occurred of a complication or the stopping of the study in Mach 2004.
- Patients had superficialized of their fistula as a 1-step procedure (GI) or as a second procedure (GII). The patients who, for whatever reason, did not have adequate arterialization were automatically excluded.

### II. Methods:

Patients were reviewed in terms of:

- Age at the creation of the FAV,
- Gender,
- Reason for kidney failure.
- Clinical exam : examination of the upper limb (edema, pulse, color, temperature, big arm) and the fistula (color, temperature, vascular murmur, thrill, hemostasis period).

The procedure is usually performed using local anesthesia. The basilic vein and brachial artery are isolated through a curvilinear incision in the antecubital fossa. The communicating branch to the cephalic vein is ligated, as is the distal basilic vein. An end-to-side basilic vein to brachial artery fistula is created. The maturation of the fistula is followed clinically by a palpable thrill or an audible bruit.

Superficialization is performed at the same time (1step) or delayed (second procedure) 6 to 8 weeks after the first procedure using general or regional anesthesia. The basilic vein is mobilized starting approximately 1.5 cm above the arteriovenous anastomosis and carried almost into the axilla. Branches are ligated or sutured, with extreme care to avoid traction or injury to the nerves. Then, the vein is divided distally near the AVF between atraumatic clamps and delivered proximally. The mobilized vein is brought through a subcutaneous tract created over the anterior upper arm from the cubital fossa to the axilla. The end-to-end anastomosis is performed.

Statistical analysis were performed using STATVIEW logician.

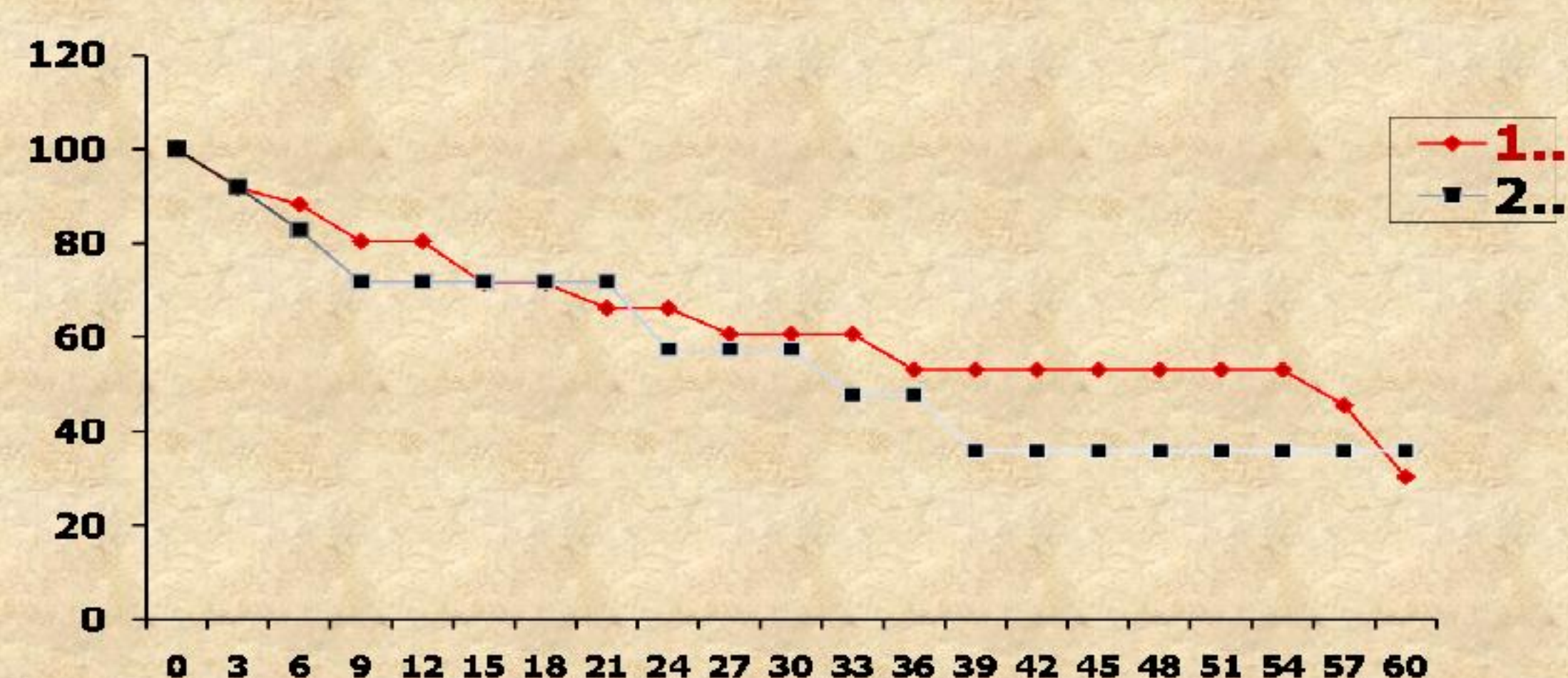
Results were expressed as mean values SD and percentage, with P <.05 considered significant.

## RESULTATS

- 1.Gender:** 30 men / 40 women
- 2.Age:** mean 48 years (18- 80 years) (Table 1).
- 3.Diabetes:** 18
- 4.Procedure:** 1 step (GI) : 43 / second procedure (GII) : 27
- 5.Brachiocephalic AVF** was the first fistula in 32,6% GI VS 66,7% GII.

Complications were similar in the 2 groups (table1). The patency rate is not affected by diabetes.

Actuarial survival of the AVF was the same into the 2 groups (Graph1).



Graph1: Actuarial survival of brachiobasilic AVF superficialized in 1 step or second procedure.

Superficialization	1 Step	2 step	P
Number (%)	43 (61,5 %)	27 (38,5 %)	
Age (years)	50,6 ± 16	44,9 ± 12,2	NS
Sex Ratio	0,75	0,58	NS
Diabetes	12 (66,6 %)	6 (33,3 %)	NS
1st FAV	14 (32,6 %)	18 (66,7 %)	NS
2nd FAV	15 (34,9 %)	4 (14,8 %)	NS
3rd FAV	8 (18,6 %)	3 (11,1 %)	NS
4rdFAV	6 (13,9 %)	1 (3,7 %)	NS
5th FAV	0	1 (3,7 %)	NS
Complications of AVF	24 (44,4 %)	15 (55,5 %)	NS
Hematoma	4 (14,8 %)	4 (14,8 %)	NS
Stenosis	11 (15,71%)	3 (4,28%)	NS
Thrombosis	19 (34,8 %)	8 (29,6 %)	NS
Aneurysm	23 (25,5 %)	4 (14,8 %)	NS
Infection	22 (16,2 %)	4 (14,8 %)	NS
Large arm	2 (4,6 %)	2 (7,4 %)	NS
Survival of the FAV at 1 y	80,4 %	71,8 %	NS
Survival of the FAV at 3 y	53,1 %	47,8 %	NS
Survival of the FAV at 5 y	41,4 %	30,3 %	NS

AVF : arterioveinous fistula, NS : statistically non significant, y : years

## DISCUSSION

In our department, we use brachiobasilic AVF if a radio cephalic fistula is either unusable owing to thrombosis or fails to mature, or cannot be created owing to poor quality of vessels or body habitues (eg, extremely obese). For these reasons, brachiobasilic AVF was the first fistula in 32,6% GI VS 66,7% GII.

The basilic vein is usually of greater diameter than the cephalic vein and is usually not accessed for puncture owing to its deeper location. This results in decreased intimal injury. In the other hand, However, the basilic vein in its native location is inaccessible for repeated access because of its relative deep location and its close proximity to the median and the musculocutaneous nerves. To overcome these problems, it is proposed the superficialization of the AVF by subcutaneous transposition of the basilic vein. The brachial fascia is then closed below the vein, rendering it superficialized and the vein is readily available for repeated per cutaneous access .

Superficialization did not adversely affected AVF patency rates. Arterialized vein is likely to be sturdier and hence can be mobilized more easily with decreased vascular trauma.

Superficialization is performed on 1 step or second procedure. Controversy exists about recommended procedure.

In our study, the patency rate is not affected by superficialization procedure. Mean duration of use is 8,6 months (0-132 months) for 1 step and 20,3 months (0-84,1 months) for the 2 step procedure. In literature, mean duration of use is 22.4 months (range, 10-59 months). Superficialized brachiobasilic fistula formed as a 1-step procedure has a high potency rate and low complication rate. At present we recommend that the basilic vein, should be superficialized by 1 step procedure for easy access. Some authors showed that the delayed superficialized brachiobasilic AVF has a good initial patency rate with minimal complications.

## CONCLUSION

Brachiobasilic AVF should be considered early in patients if the radio cephalic fistula is unavailable.

Superficialized brachiobasilic fistula formed as a 1-step procedure showed a patency rate and complication rate similar to second procedure. Complications are not more frequent than in delayed procedure.

At present we recommend that the basilic vein should be superficialized in 1 step as it can be more quickly used with fewer complications.

