



RESEARCH ARTICLE

COMPARISON BETWEEN RADIOCEPHALIC ARTERIOVENOUS FISTULA SIDE TO SIDE ANASTMOSIS WITH AND WITHOUT DISTAL VEIN RUNOFF AT GUJRANWALA MEDICAL COLLEGE/DHQ HOSPITAL GUJRANWALA

^{1,*}Rao Nouman Ali, ²Muhammad Khalid Butt and ³Khalid Hussain

¹Registrar Urology Department, Gujranwala Medical College, Affiliated With DHQ University Teaching Hospital Gujranwala Pakistan

²Professor of Urology, DHQ University Teaching Hospital Gujranwala Pakistan

³Associate Professor of Urology, DHQ University Teaching Hospital Gujranwala Pakistan

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ABSTRACT

In hemodialysis vascular access is of prime importance. There are different types of techniques used for arteriovenous anastmosis.1) side to side anastmosis 2) end to side anastmosis,3) end of vein with end of artery. These different techniques are associated with different incidence of complications and patency. **Objective:** We intended to compare the efficacy of side to side anastmosis with distal vein ligation in terms of complication rate and patency rate with side to side anastmosis without distal vein ligation. **Materials and Methods:** We fashioned 60 radiocephalic fistula from January 2016 to May 2017 at DHQ teaching hospital Gujranwala which 30 patients were dealt with side to side anastmosis with distal vein runoff (group A) and 30 patients dealt with side to side anastmosis without distal vein runoff (group B).We compared data in terms of complications and patency rates after surgery performed at wrist between cephalic vein and radial artery. **Results:** During study period total 60 radiocephalic fistula were fashioned in which 30 patients were dealt with side to side anastmosis with ligating distal vein and 30 patients dealt with side to side anastmosis without distal vein ligation. There were 24 males(40%) and 36 (60%) females which were divided into two similar groups each having 12 males and 18 females irrespective of their age and their weight. The mean age was 49.63 years with standard deviation of 10.41 in Group A patients while in Group B patients mean age was 50.83 years with standard deviation of 11.0. Patency rate was 90 % with a p value of 0.9 in patients with distal vein runoff while it was 86.6 % with a p value of 0.8 in side to side anastmosis without distal vein runoff at 6 months. Surgical complications e.g post operative infection found 6.66 % in both groups 6df ccand numbness at thumb in 3.33 % in group A and 10 % in group B. Venous hypertension documented in 3.3% in group B patients and 0 % in group A patients. About 6.6 % patients of group B encountered aneurysm formation postoperatively while carpal tunnel syndrome symptoms not found postoperatively in any group. **Conclusion:** It is concluded that distal vein runoff should be the preferred option for Radiocephalic fistula as it is more efficacious in terms of patency rate with minimum complications.

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INTRODUCTION

Hemodialysis is the most commonly performed renal replacement therapy before kidney transplantation (David et al., 2014). According to national kidney foundation s kidney disease outcomes quality initiative (KDOQI) guide lines, surgically created fistula is recommended (National kidney Foundation, 20169). Radiocephalic fistula is the first treatment choice for vascular access (Mayooran Siva, 2002).

There are different techniques of making anastmosis between an artery and vein at wrist. In our study we compared the distal vein ligation in a side to side anastmosis without without ligating distal vein in terms of patency rates and postoperative complications.

MATERIALS AND METHODS

We performed 60 radiocephalic fistula in total and categorized them in two groups of patients, Group A, which included 30 patients (50%) dealt with distal vein runoff and 30 patients

*Corresponding author:

(50%) dealt with side to side anastomosis without distal vein runoff. Each group was consist of 18 females (60%) and 12 males (40%).Inclusion criteria includes patients with end stage renal disease, diabetic, hypertensive and obese patients. However diabetic and hypertensive patients with atherosclerosis of vessels found on Doppler ultrasound or per operatively not included in the study. Surgery performed as single stage procedure carried out on lower aspect of left wrist with vertical incision on the anatomical snuff box. All patients had pre and post operative Doppler ultrasound of the vessels. Allen’s test performed preoperatively in all patients to check the dominance of radial or ulnar arterial systems of the respective patients. Maturity time of arteriovenous fistula was 6 weeks in both groups of study. Follow up information was obtained for 6 months from patients dialysis technician. Death with a fistula was considered loss to follow up when course of death was not related to fistula.

Patency rate was 90 % in patients with distal vein runoff while it was 86.6 % in side to side anastomosis wit out ligating distal vein at 6 months. Surgical complications e.g post operative infection found 6.66 % in both groups and numbness at thumb in 3.33 % in group A and 10 % in group B. Venous hypertension documented in 3.3% in group B patients and 0 % in group. A patients. About 6.6 % patients of group B encountered aneurysm formation postoperatively while carpel tunnel syndrome symptoms not found postoperatively in any group.

Patients demographic and clinical characteristics

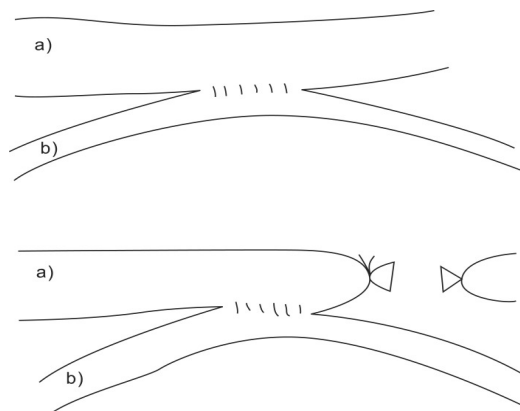
GROUP A	GROUP B
Male 12(40%)	Male 12(40%)
Females 18 (60%)	Female 18 (60%)
Mean age 49.63 (years) with standard deviation of 10.41	Mean age of 50.83 Standard deviation of 11.21
Weight (kg)	Weight (kg)
Mean 71.4	Mean 71.53
Standard deviation 11.21	Standard deviation 11.33

Etiology of Kidney Disease

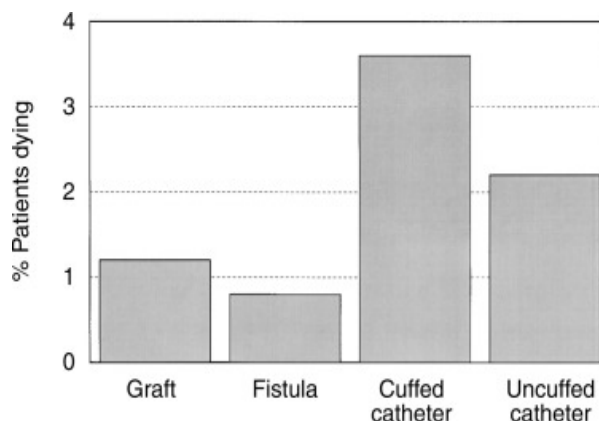
Diabetes mellitus	25 (41.6%)
Hypertension	15(25%)
Diabetes mellitus and hypertension	15(25%)
Chronic glomerulonephritis	4 (6.66%)
Polycystic kidney disease	1 (1.66%)

RESULTS

During 17 months from January 2016 to May 2017 total 60 patients were included in study. There were 24 (40%) males and 36 females (60%)in each groups. The mean age was 49.63 +-10.41 years in group A and 50.83 +- 11.09 years in group B.



Above (Side to side to anastomosis witout ligating distal vein).
Below (side to side anastomosis with distal vein ligation).
a)Vein b) Artery



Distribution about complications of patients in study groups

VARIABLES	GROUP A Distal vein ligation	P value	GROUP B Without distal vein ligation	P value	TOTAL	P value
No of patients	30 (50%)		30 (50)		60 (100%)	
Mean age (years) + S.D	49.63+-10.41	-	50.83 +- 11.09	-	-	-
Mean weight(kg) +S.D	71.4 +- 11.21	-	71.53 +-11.33	-	-	-
Patency rate	27 (90%)	0.9	26 (86.6%)	0.86	-	-
Complications						
Infection	2 (6.6 %)	0.06	2 (6.6%)	0.06	4 (6.66%)	0.06
Aneurysm	0 (0 %)	0	2 (6.66 %)	0.06	2 (3.33%)	0.03
Numbness of thumb	1 (3.3%)	0.03	3 (10%)	0.10	4 (6.66%)	0.06
Venous hypertention	0(0%)	0	1 (3.3%)	0.03	1 (1.66%)	0.03
Carpel tunnel syndrome symptoms	0 (0%)	0	0 (0%)	0	0 (0%)	0

The mean weight was 71.4 +- 11.21 kg in group A and 71.53 +- 11.33kg in group B. The cause of end stage renal disease was diabetes in 25 patients (41.6%), hypertension in 15 patients (25 %), both illness present in 15 patients (25 %), chronic glomerulonephritis in 4 patients (6.6 %) and APKD in 1 patient (1.66 %).The indication for procedure was need of hemodialysis in patients with chronic disease because of above mentioned causes).

DISCUSSION

Increasing need for vascular access in patients of renal failure lead to importance of fistula surgery. Radiocephalic fistula surgery on non dominant hand mostly the left wrist is first preference. Its failure lead to making of a fistula between basilica vein and brachial artery at cubital fossa. Radiocephalic fistula can be fashioned in different ways.

In our study we compared between two different techniques of fashioning radiocephalic fistula one is, distal vein ligation and other is side to side anastomosis in terms of patency rate and complications documented. Generally fistula surgery at wrist encounter complications like carpal tunnel syndrome, venous hypertension, numbness at thumb, aneurysm formation, gangrene of limb and wound infection (Allon, 2002) We found none of above mentioned complications in our study groups except aneurysm formation documented in group B patients who were dealt with side to side anastomosis. In a Korean study done in 2013 by sung yong hong patency rate and complications rate is better in patients who are dealt with distal vein ligation than side to side anastomosis sung yong hong, 2013). There results are comparable to our study as patency rate in their study was 93% at the end of 6 months while in our setup it was 90 % in patients with distal vein ligation. In another study by Ahsan zu primary patency is superior in distal vein ligation technique than side to side anastomosis (Ahsan Zu, 2010). Vascular access related mortality and morbidity is internationally accepted. A large number of randomized control trial results focus the need of fistula creation for hemodialysis patients because of good results, better outcome and less complications (Stephan, 2002).

Conclusion

We found end to end to anastomosis with ligation of distal vein in radiocephalic fistula surgery far superior than end to end anastomosis without vein ligation in terms of patency rate and possible complications.

Hence we will prefer distal vein ligation technique in our setup for making a radiocephalic fistula in future.

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