Summary and conclusions

The dialysis population is growing in number, becoming more elderly, and has increasingly complex medical co-morbidity. The ability to establish and maintain optimal hemodialysis access in this population requires the planning and commissioning of operating and diagnostic facilities and the training of sufficient suitable surgical specialists. Various recent studies recommended the native arteriovenous fistula as the optimal vascular access for chronic maintenance hemodialysis.

This study aimed to evaluate autogenous AVF as regards the technique, maturation time, patency rates, short and long term outcomes, and complications in two groups of ESRD patients categorized into 40 diabetics and 40 non-diabetics.

This study was conducted at Benha University Hospital, Benha University since the period from July 2004 till Dec 2005.The study comprised 80 patients with chronic renal failure and in need for renal replacement therapy and must be candidate for chronic hemodialysis. All patients were subjected to preoperative evaluation included full history taking and thorough clinical examination. Laboratory assessment included routine investigations, BUN, serum creatinine, creatinine clearance, chest X-ray, abdominal ultrasonography. Specific investigations included Duplex ultrasound scanning, venography and total serum homocysteine and IgG-anticardiolipin antibody.

The results of the present study can be summarized as follow:

1. In diabetic group; 27 patients underwent AVF at elbow and upper arm and 13 patients at wrist; while in non-diabetic group 16 patients

underwent fistula at elbow and upper arm and 24 patients underwent AVF at wrist, with a significant increase of the use of elbow region in diabetics.

2. There were 19 brachiocephalic AVF; 9 in non-diabetics and 10 in diabetics, 8 brachioantecubital AVF; 3 in non-diabetics and 5 in diabetics and 16 brachio-basilic AVF; 4 in non-diabetics and 12 in diabetics.
3. Maturation of created AVF was non-significantly earlier in non-diabetics compared to diabetic patients.
4. The majority of created AVF (66.3%) were mature and ready for use within 2 months after surgery and at the end of 3-months 70 AVF (87.5%) were mature and functioning.
5. The patency rate in non-diabetic patients was 75% and in diabetic patients was 70%. There was a significant increase of patency rate in non-diabetics compared to diabetics irrespective of the feeding artery.
6. The mean flow-rate showed significant ($p<0.01$) progressive increase with time of maturation in both groups irrespective of the site of the fistula.
7. The mean flow-rate was non-significantly higher in non-diabetics compared to diabetic group.
8. There was a significant increase of patency rate on using the brachial artery compared to using of radial artery as feeding vessel.
9. There was a significant ($p<0.001$) decrease of mean flow rate in the failing fistulae.
10. There was a positive significant correlation between the flow-rate at 3-months and the patency of the AVF.
11. Late thrombosis occurred in 10 patients (12.5%); 4 non-diabetics and 6 diabetics.

I2. Ten patients (12.5%); 3 non-diabetics and 7 diabetics had superficial wound infection.

13. There was non-significant increase of the frequency of postoperative complications in diabetics compared to non-diabetic patients.

Conclusions:

1- It could be concluded that AVF creation carries a risk of failure with a total failure rate at 3-months follow-up of 12.5 %. which increased to 27.5% at 18 months,the end of follow up period.

2- Doppler/duplex investigation has become an essential part of the preoperative diagnostic procedure, providing information on diameter and wall structure of the blood vessels as well as arterial blood flow rates.

3- The presence of preoperative arterial calcification in diabetic patients and venous diameter <3mm increases the risk of failure especially with decreased blood flow-rate through the created fistula less than 547.6±73.7m1/min.