# Stenting of Proximal Veins in Dialysis Patients With Upper Extremity Clinically Evident Venous Hypertension

*Thesis submitted for Partial Fulfillment of*
***MD Degree in Cardiology***

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# INTRODUCTION

A haemodialysis arteriovenous fistula (AVF) can lead to venous hypertension in the upper extremity because of stenotic and/or obstructive complications of the deep venous system **(Basile C, et al, 2001)**, due to the extensive utilization of central venous catheters as a vascular access for haemodialysis. Stenotic and/or obstructive complications of the deep venous system may lead to venous hypertension, oedema of soft tissues and collateral circulation at the level of the shoulder **(Aytekin C, et al, 2004).**
Venous hypertension associated with a haemodialysis AVF may be asymptomatic, if an adequate collateral circulation develops.
Alternatively, it may manifest itself as a vascular access thrombosis, sometimes with a large oedema of the arm with bluish discoloration and pigmentation of the skin and, in more severe cases, with ulcerations of the finger tips, neuralgias and functional impotence of the arm **(Neville RF et al, 2004)**.

Upper extremity DVT is not as innocuous as it was thought to be in the past; severe acute symptoms can develop that may rarely progress to venous gangrene **(Kammen BF, Bolitho DG, et al 2000)**. Recent series suggest high pulmonary embolism rates (between 7% and 20%), which approach those in lower extremity DVT **(Hingorani A, et al, 1995)**.
The primary goal of therapy is to reduce venous hypertension by means of open surgical and/or percutaneous catheter-based techniques, which tend to establish *de novo* central venous circulation **(Lookstein RA, et al, 2004).**

Percutaneous management of haemodialysis access grafts and fistulas is an alternative to surgical thrombectomy and revision operation **(Owens JR, et al 1997).**

Stenosis or obstruction can be treated with endovascular stenting, in some instance thrombectomy to restore luminal diameter
To functional state **(Cohen MAH, et al, 1994).**

## AIM OF WORK

To evaluate acute and intermediate term efficacy of stent placement for treating upper extremity central venous obstruction in chronic hemodialysis patients.

# PATIENTS AND METHODS

This study will be conducted on twenty chronic renal failure (CRF) patients (or all patients diagnosed in one and half year) collected from Ain-Shams hospitals suffering from upper extremity clinically evident venous hypertension with arteriovenous fistula on regular haemodialysis.

***All patients will be subjected to the following:***

## *A- History taking*

Through history that will focus on the cause and duration of chronic renal failure, history of ipsilateral central venous catheters used for haemodialysis, its duration of application, number used .

### B-Clinical examination

Examination of upper limb: for oedema, complexion, Scar of previous angioaccess procedure, vascular thrills and full clinical examination of other systems.

## C- Upper extremity venography

Venography will be performed for patients who developed symptoms of upper limb venous hypertension.

Venography will be done by catheterization of a big vein usually the cephalic vein in the swollen upper extremity using the Seldinger's technique, a 6 French sheath of will be passed and the position and length of the obstruction will defined.

## D-Stenting of stenosed or obstructed central vein:

Direct stenting of narrowed (stenting after prediltation in case of total obstructation) central vein by a self-expandable stent at least 1cm longer than the lesion will be done. Stent to vein diameter ratio will be at least 1:1 in case of subclavian and innominate veins; in case of Superior Vein Cava (SVC) stenting, diameter will be at least 12mm. Post stenting dilatation by a suitable Peripheral Transluminal Angioplasty (PTA) balloon. A final venogram will be done to assure adequate deployment of the stent. Any procedural complication will be documented and reported.

## E-Follow up

Patients will undergo dialysis through the treated access on the same day. Clinical follow up will be done by observing the resolution of edema, its extent ,duration ,recurrence of edema after initial resolution ,any attacks of dyspnea and follow-up venography after 6 month of the procedure.

## F- Statistics

Data will be tabulated and statistically analyzed

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| AVF | Arterio-venous fistula |
| CRF | Chronic Renal Failure |
| CVC | Central Venous Catheter |
| CVD | Central venous Disease |
| DM | Diabetes mellitus |
| DOQI | Dialysis Outcome and Quality initiatives |
| DPAVP | 1-Desmamino-8 D argnine vasopressin |
| DVT | Deep Venous Thrombosis |
| ESRD | End Stage Renal Disease. |
| Fr | French |
| IJV | Internal Jugular vein |
| IV | Intra-Venous |
| PTFE | PolyTetroFluro Ethylene |
| PV | Peripheral Vein |
| PTA | Percutaneous transluminal Angioplasty |
| PPG | Photoplethysmography |
| S.aures | Satphylococcus aureus |

| | |
|---|---|
| SSV | Short Saphenous Vein |
| TIPS | trans jugular intra hepatic porto systemic shunt |
| TR | Tricuspid Regurgitation |

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