

# POSTER PRESENTATION

## EVALUATION AND MANAGEMENT OF CENTRAL VEIN STENOSIS IN PATIENTS UNDERGOING HEMODIALYSIS THROUGH ARTERIOVENOUS ACCESS: EXPERIENCE FROM UNIVERSITY HOSPITAL OF NEPAL

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### INTRODUCTION

Adequate delivery of hemodialysis is only possible through effective access. This is most commonly achieved through an arteriovenous fistula, followed by an arteriovenous graft, and tunneled cuffed catheter. Central vein stenosis is a common and troublesome issue in patients undergoing hemodialysis through arteriovenous access, usually due to preexisting temporary internal jugular catheter or permanent cuffed tunneled catheter. They commonly present with swelling of the neck, breasts and extremities. Some of the major predisposing factors for development of CVS are placement of multiple catheters, longer duration, location in subclavian vein, and placement on the left-hand side of the neck.

### AIM

The main aim of this study is to identify the interventions done for failed arteriovenous fistula and evaluate the cases feasible for balloon angioplasty.



Figure 1: Central Vein Stenosis in Left Subclavian Vein (red arrow)

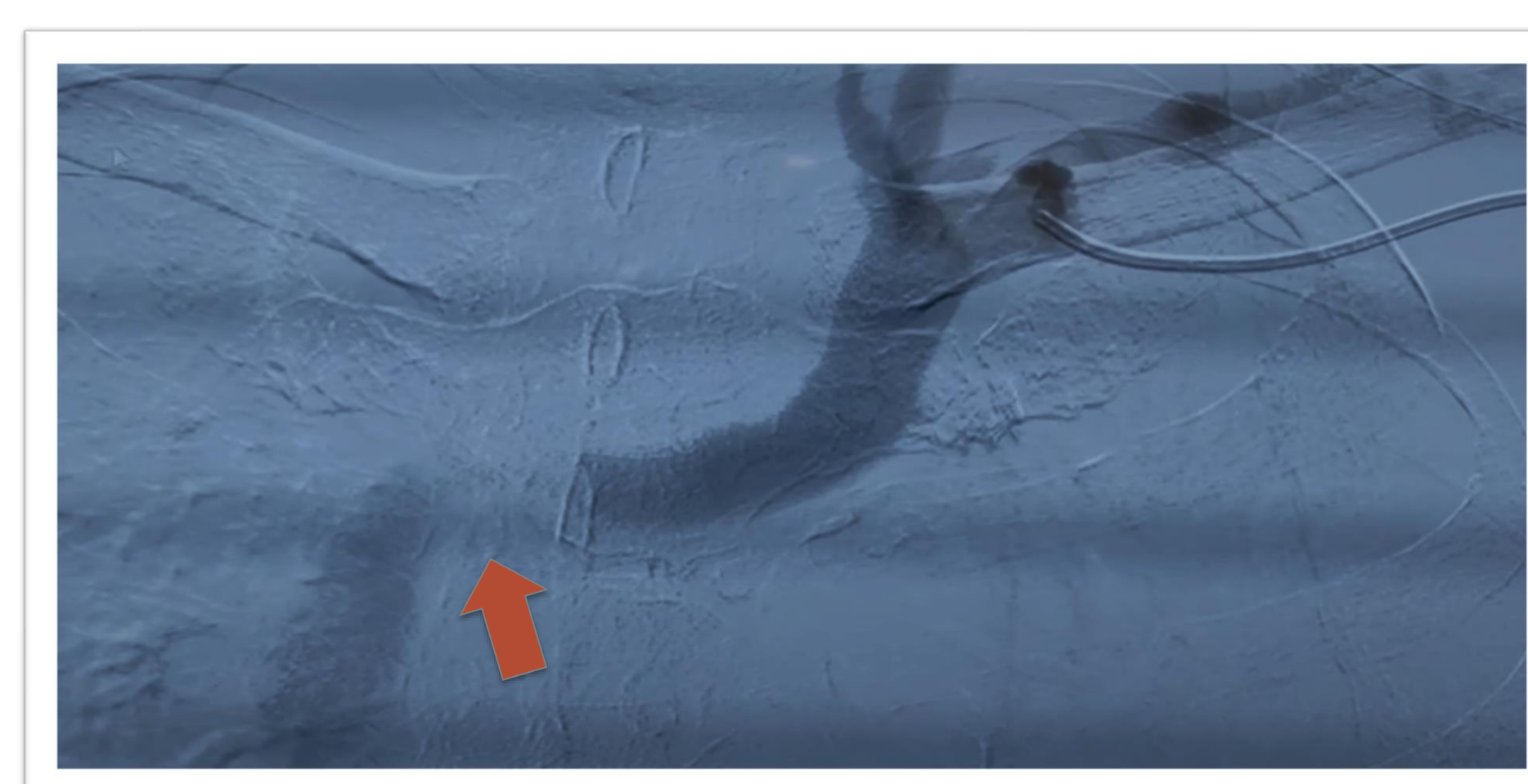


Figure 2: Central vein stenosis in innominate vein (red arrow)

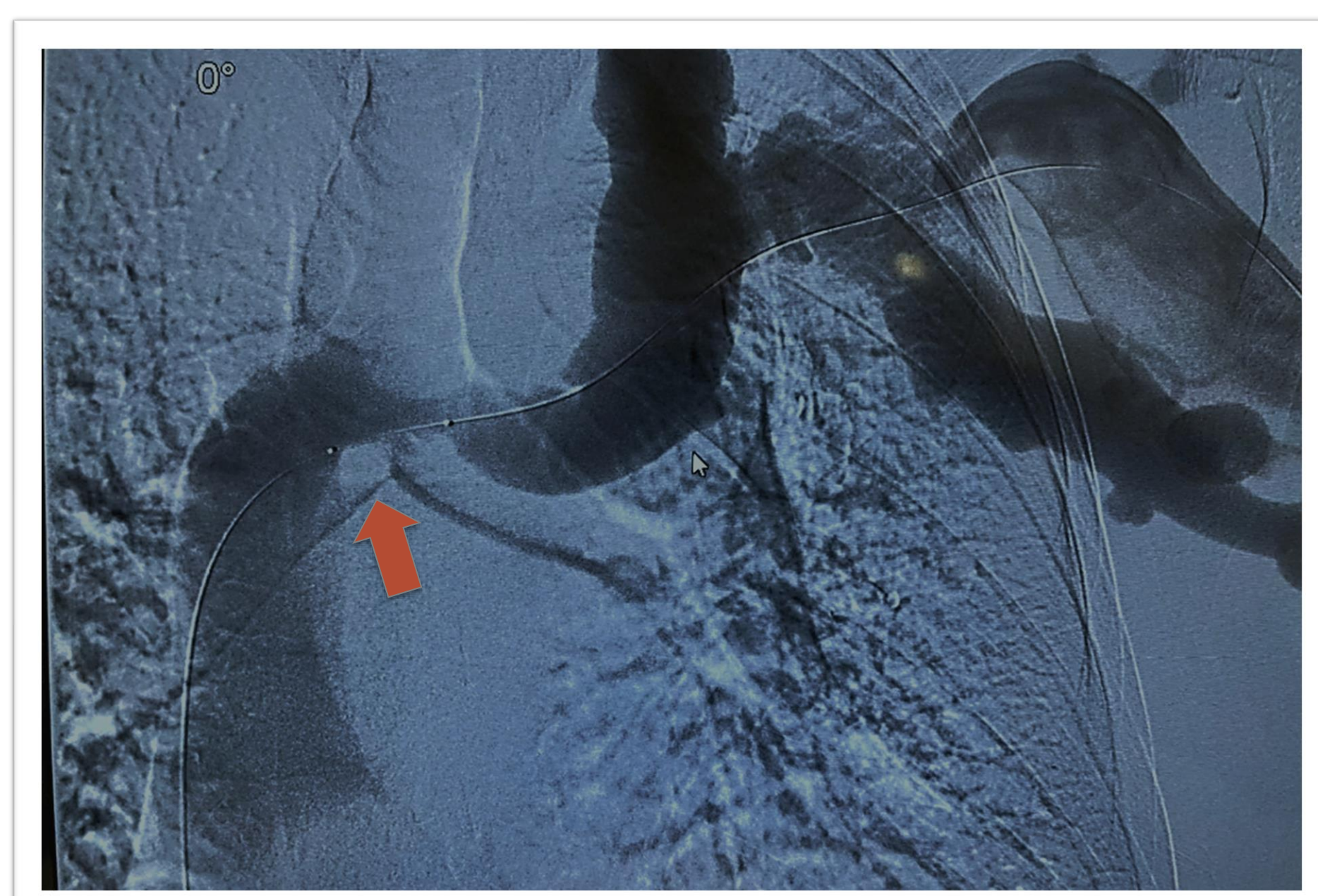


Figure 3: Figure showing balloon angioplasty (red arrow) being done for case shown in figure 2.

### METHODS

All the cases of angiogram with or without angioplasty for stenosis in drainage of artero-venous fistula, created for dialysis access, from October 1<sup>st</sup> 2020 to January 31<sup>st</sup> 2022 were included in the study. Detailed imaging of drainage along with presence of central vein stenosis were noted in each case. Location of stenosis in internal jugular vein, subclavian vein, innominate vein and superior vena cava. With confirmation of presence of CVS, the presence of collaterals and sites of collateral were also noted. Collaterals were classified anatomically as collaterals of neck or chest. The lesion was defined as stenosis if there is at least 50% reduction in the size of lumen compared to pre-stenotic normal site. The database was created in Microsoft excel and was analyzed using SPSS 19.0. nominal variables were analyzed using frequency analysis and scalar variables in mean, SD and range.

Table 1: Table showing details on cases of central Vein Stenosis.

Details	Number
Total cases of central vein stenosis	27
Total male patients with central vein stenosis	16 (59.3%)
Total female patients with central vein stenosis	11 (40.7%)
Central vein stenosis on the right side	12 (44.4%)
Central vein stenosis on the left side	15 (55.6%)
History of catheterization in involved central vein	26 (96.3%)
<b>Number of catheterization in involved central vein</b>	
1	6 (22.2%)
2	20 (74.1%)
More than 2	4 (14.8%)
Number of central vein stenosis with possibility of negotiation of catheter	15 (55.6%)
Presence of collateral in central vein stenosis	11 (40.7%)
Location of collaterals in central veins stenosis	Neck only 2 (18.2%) Chest only 3 (27.3%) Neck and chest 5 ((45.4%) Neck, chest and abdomen 1 (9.1%)
Indication of intervention in AV fistula failure cases due to central vein stenosis.	Ipsilateral upper limb Swelling 22 (81.5%) High venous pressure causing issues during dialysis 12 (44.4%) Clotted fistula 6 (22.2%)
Central veins involved	Subclavian vein 11(40.7%) Brachiocephalic (innominate) vein 15 (55.5%) Superior vena cava 6 (22.2%)

### RESULTS

Details on cases of central vein stenosis is shown in Table 1. Total of 62 interventions were done for failed AV fistula. Of them, central vein stenosis was present in 27 cases (43.5%). Of the patients with central vein stenosis, 16 (59.3%) were male and 11 (40.7%) were female. Mean age of the patient with central vein stenosis was 39.9 years (range 18 years-69 years, SD 18.4years). In 12 cases, central vein stenosis was present on the right side (44.4%) while in 15 cases that was present in the left side (55.6%). None of the cases had central vein stenosis on both sides. In 26 patients (96.3%) there was a history of catheterization involving the central vein at least once. In 6 patients (22.2%), there was history of catheterization in the involved vein for one time while in 15 cases (55.6%) it was two times and in 4 cases (14.8%) there was history of catheterization of the involved vein for more than two times. In 15 cases (55.6%), the catheter was able to negotiate via the stenosis. Prominent visible collateral was present in 11 (40.7%) cases. Most common site of collateral was both neck and chest present in 5 cases. Most common indication of intervention was ipsilateral upper limb swelling present in 22 (81.5%) cases. Most common central vein involved was brachiocephalic vein present in 15 (55.5%) cases. In six cases (22.2%) ballooning was possible.

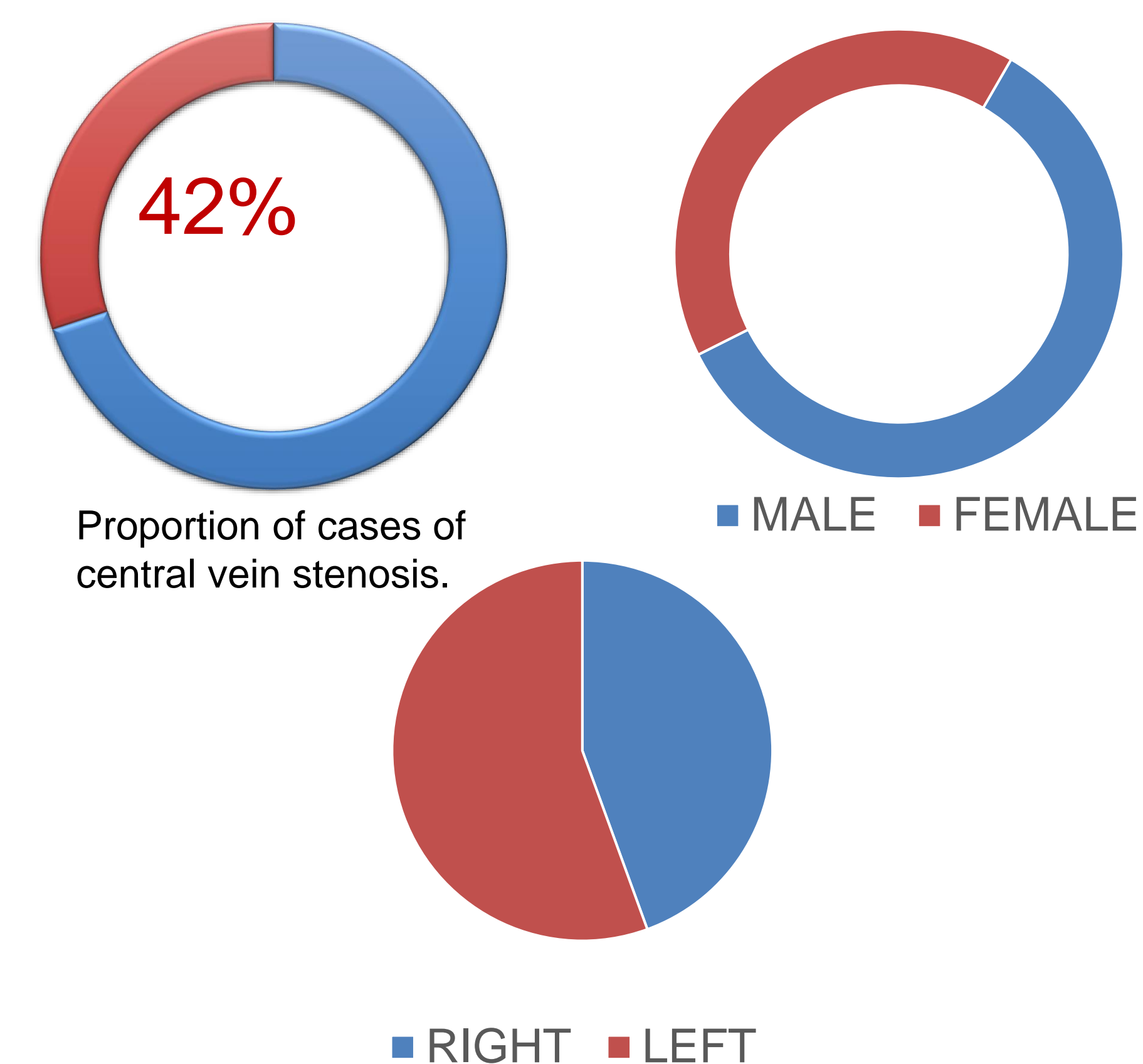


Figure 4: Pie charts showing proportion of cases of central vein stenosis, proportion of male and female and central vein stenosis in right and left.

### CONCLUSION

Central vein stenosis can cause fistula failure. The primary intervention done in these cases includes balloon angioplasty, however, stenting can be done if this fails.

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