

Chronic Kidney Disease Patients: Collateral Damage Due to Suspension of Vascular Access Services

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ABSTRACT

This study was conducted at the Department of Vascular Surgery at Combined Military Hospital Lahore from December 2019 to June 2020. The mortality of patients on the waiting list for vascular access in our institution three months after implementing strict policies for elective surgeries (30th March 2020 to 29th June 2020) was compared with the preceding three months. The mortality of patients in the pre-COVID-19 periods on the waiting list for HD was 11 (7.9%) in the pre-COVID-19 period, while this increased to 5 (12.5%) in the post-COVID-19 period. COVID-19 related suspension of vascular access services negatively influences CKD patients waiting for permanent vascular access.

KEYWORDS: Arteriovenous fistula, Collateral Damage, COVID-19, Hemodialysis centre, Vascular Access

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INTRODUCTION

The world has seen an unprecedented change in the practice of medicine during the COVID-19 pandemic. Different departments and specialities are still struggling to figure out who have been the real victims of this disease and what the new "normal" will be. It is estimated that the collateral damage caused by the COVID-19-associated lockdowns and public scares will probably be more than the COVID-19 related deaths.^{1,2} Cardiac emergencies, stroke, cancers, and other potentially life-threatening diseases have been put on the back seat.² Chronic Kidney disease (CKD) patients have been no exception. Health care in general and hemodialysis (HD) in particular are exceptions to the social distancing practices, and the health care workers have to rely on personal protection equipment to deliver the care to patients. HD centres kept working during the pandemic, but the number of patients reporting to many centres declined—possible due to non-availability of transport and fear of catching the disease.³ Another contributor to the collateral damage to CKD patients is the postponement of elective vascular access services as recommended by many guidelines.^{4,5} In our hospital, since the day Government announced special measures to fight COVID-19, we postponed all arterio-venous fistula (AVF) work except for emergencies.⁵ This has an adverse effect on the patients requiring an arteriovenous fistula. This

paper aims to analyze the adverse effect of the COVID-19 pandemic on CKD patients requiring permanent vascular access.

METHODOLOGY

The Institutional Review Board approved the study of Combined Military Hospital Lahore (IRB # 220/2020). It was carried out at Combined Military Hospital Lahore, from March till June 2020. We stopped our vascular access work on 29th March; three months into the lockdown, we assessed the mortality of CKD patients on the waiting list for vascular access. It was also compared with the mortality rate in the previous three months, i.e. Jan to March 2020. The patients were offered a new date for AVF creation during this tenure. If the patients were unavailable, then the reason was recorded. In addition, we surveyed the hemodialysis access pattern in our dialysis centre to see if there was any change from the previous three months. All patients were recruited after taking informed consent, and confidentiality of their identity was maintained. No coding was done. Student t-test was applied to calculate statistical significance between pre and post-COVID-19 groups. The *p*-value of ≤ 0.05 was considered statistically significant.

RESULTS

In the pre-COVID-19 period, 139 patients had vascular access surgery. While from March to June 2020, forty booked access surgeries were postponed. Five of these patients had their fistulas made at a private hospital, but three of these fistulas did not

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mature. Out of the remaining thirty-eight, 5(12.5%) patients had died while waiting for AV Fistula. In the pre-COVID period, 11 patients out of 139 died in the waiting period (7.9%) (p -value=0.009). In addition, we also surveyed changes in the pattern of the mode of HD in our HD centre. The results were summarized in Table.

catheter last" initiative, the mortality of patients with CKD can be improved, maybe it is time to review these guidelines and start elective access work.¹⁰

In addition to mortality, there was a change in the vascular access pattern, as reflected by our survey of HD centres. The proportion of patients dialyzing from AVF decreased from 36% to 28% in the COVID period.

Table: Summary of Collateral Damage to End Stage Renal Disease Patients (n=139)

	Duration	Arteriovenous Fistula (AVF) n(%)	Patient Post-poned n(%)	Arteriovenous Fistula (AVF) Made Elsewhere n(%)	Deaths While On Waiting List n(%)	Hemodialysis with Central Catheter n(%)
Pre-COVID Period	30th Dec 19 -29th Mar 20	139(100.0)	0	0	11(7.9)	36(25.8)
COVID Period	30th Mar 20 -29th Jun 20	0	40(28.7)	2(0.5)	5(12.5)	28(20.1)
p -value		-	-	-	0.009	0.001

DISCUSSION

In 1966, Bresica and Cimino reported successful HD using a surgically created arteriovenous fistula.⁶ This was nothing short of a revolution in the lives of CKD patients. HD without a fistula increases the mortality and morbidity of these patients.⁷ In a developing country like ours, a multidisciplinary team to manage access remains a dream. A survey in 2013 from five HD centres in Northern Pakistan showed that the rate of initial HD from the line was 80%, and 76% of patients were still being dialyzed from a variable temporary dialysis line even after eight months.⁸ There is no good national data about the waiting time of patients for AV access. The average waiting time in our centre is 45 days, although we are making around 46 access surgeries a month. Still, there is a need to do more. Our data showed that the mortality during the waiting period is around 7.9%.

With the COVID-19 pandemic, all elective surgeries were stopped. We tried to continue making fistulas but had to stop all elective access work due to the non-availability of resources in operating theatres as most of the workforce was relocated to the COVID duties and difficulties in screening patients from COVID-19. During this time, we continued doing access-related emergencies. Many international guidelines recommended that elective surgeries be stopped; they left certain non-emergent areas to the discretion of local health authorities, like cancer surgery, vascular diseases, etc.^{4,9} In line with local and international recommendations, we started access surgeries on 30th June 2020. Surprisingly, many 5(12.5%) of our patients died during this period. This is in line with collateral damage reported for other diseases as well. Since it has been shown clearly that with the "fistula first and

This may be due to increased mortality of patients dialyzing from a line or to reluctance of patients to seek expert help for insertion of a temporary line, skipping their routine dialysis for fear of contracting COVID-19 or reduced nephrology services. All these factors can contribute to a decrease in overall patients in a dialysis centre. However, No local or international literature is available on this subject.

CONCLUSION

The world over, vascular surgical services have been disrupted by COVID-19. As a result, most of the vascular surgical services were postponed, including fistula work. Like other diseases, CKD patient waiting for access surgery also seems to be victims of COVID-19 collateral damage. Therefore, we must take necessary measures to streamline and proactively organize vascular access services.

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

AMB: Study design, data analysis, critical review, drafting the manuscript, critical review, approval of the final version to be published.

AA: Conception, study design, data acquisition drafting the manuscript, approval of the final version to be published.

MM & KS: Data analysis, data interpretation, critical review, approval of the final version to be published.

AS & AK: Critical review, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the

accuracy or integrity of any part of the work are appropriately investigated and resolved.

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