



Online Appendix

**This appendix was part of the submitted manuscript and has been peer reviewed.
It is posted as supplied by the authors.**

Appendix to: Chavda MP, Patel A, Bihari S. Membrane-based therapeutic plasma exchange in tertiary care ICU: demographic characteristics and predictors of complications. *Crit Care Resusc* 2022; doi: 10.51893/2022.1.OA6.

Figure 1. Flow chart of available mTPE data

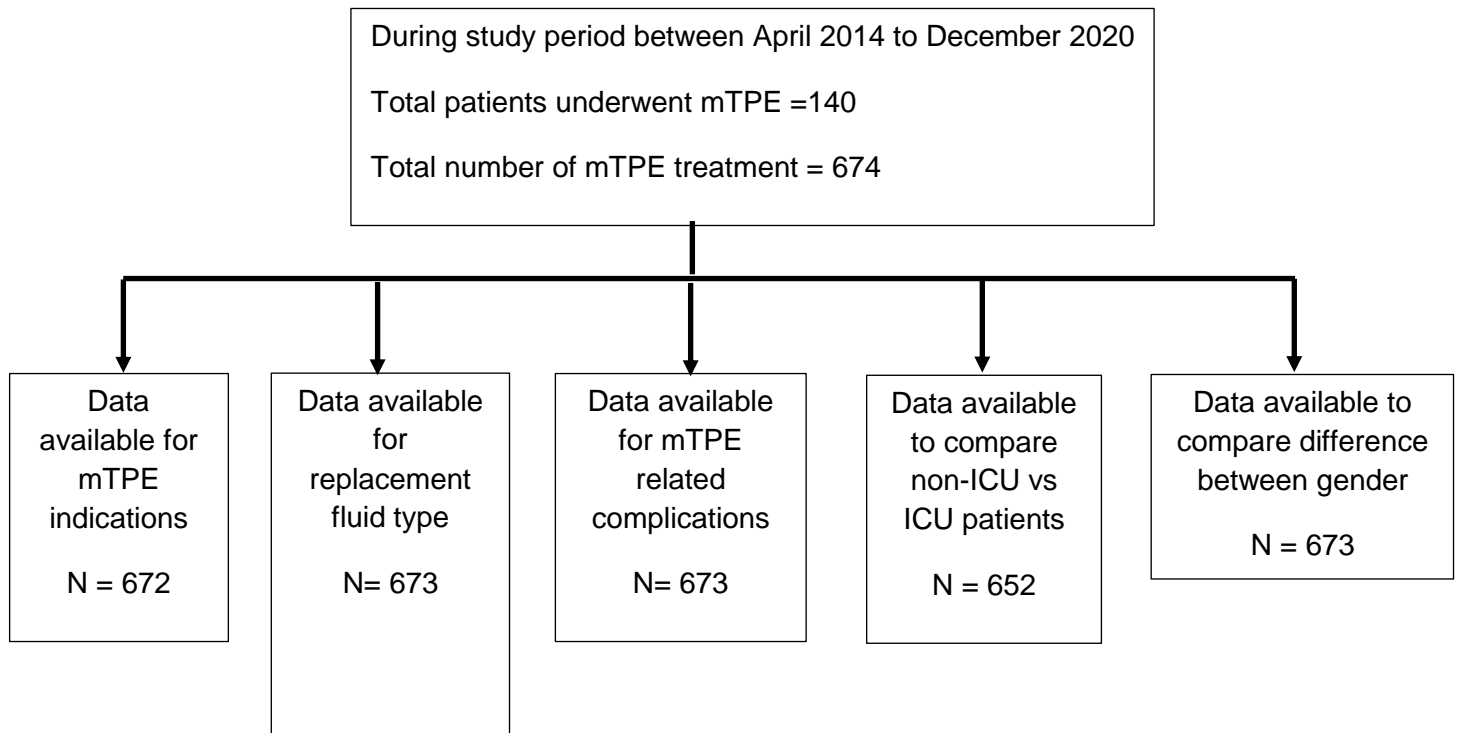
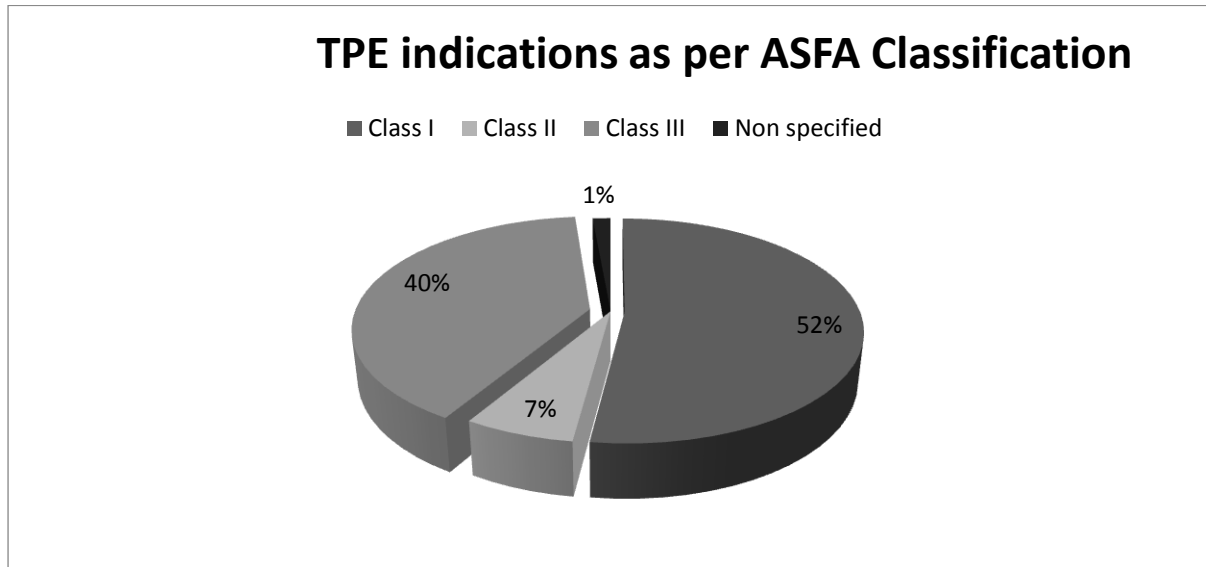


Figure 2. Indications of mTPE as per ASFA classification



Category	Description
I	Disorder for which TPE is accepted as first-line therapy.
II	Disorder for which TPE is accepted as second-line therapy.
III	Optimal role of TPE is not established.
IV	Disorder for which TPE is to be ineffective or harmful.

Table 1: Comparison of non-ICU and ICU patients for mTPE (N= 652)

	Non-ICU patient (N=304)	ICU patient (N =348)	p value ¹
Age (years) [#]	52.9 (17.6)	53.7 (17.7)	0.564
Female (%) *	133 (43.7%)	197 (55.7%)	0.001
Duration (minutes) [#]	171 (85.1)	177.6 (93.2)	0.348
Maximum blood flow (ml/minute) [#]	285.7 (58.1)	284.1 (57.6)	0.725
Volume exchange (ml) [#]	4349.6 (1235.4)	4488.4 (1197.7)	0.835
Replacement times plasma volume [#]	1.23 (0.3)	1.26 (0.3)	0.203
Replacement fluid type			
Albumin*	178 (58.6%)	106 (30.5%)	0.0002
FFP*	43 (14.1%)	137 (39.4%)	0.0001
Albumin + FFP*	83 (27.3%)	105 (30.1%)	0.0003
Anticoagulation			
No*	9 (3%)	41 (11.8%)	0.0001
Citrate*	281 (92.4%)	290 (83.3%)	0.0005
Heparin*	4 (1.3%)	14 (4%)	0.0526
Citrate + Heparin*	6 (2%)	3 (0.9%)	0.0317

Citrate + PGE1*	4 (1.3%)	0	0.0468
Indications			
Neurological disease*	91 (29.9%)	103 (29.6%)	0.932
Haematological disease*	82 (27%)	108 (31%)	0.263
Liver disease*	33 (10.9%)	57 (16.4%)	0.053
Vasculitis*	24 (7.9%)	42 (12.1%)	0.091
Hypertriglyceridemia Pancreatitis*	5 (1.6%)	9 (2.6%)	0.434
Renal diseases*	37 (12.2%)	17 (4.9%)	0.0009
Miscellaneous*			
Severe Sepsis*	1 (0.3%)	5 (1.4%)	0.223
Neurobotica xanthogranuloma*	31 (10.2%)	7 (1.4%)	0.0001
Patient complications*	30 (9.9%)	55 (15.8%)	0.027
Circuit complications*	62 (20.4%)	63 (18.1%)	0.486

* Data represented as number, percentage

Data represented as mean, standard deviation

¹ Using t-test, Mann-Whitney test or chi-squared test as appropriate.

FFP = fresh frozen plasma, PGE1 = Prostaglandin E1 = Alprostadil

Table 2: Difference in mTPE treatment between gender (N= 673)

Variables	Male (N=331)	Female (N= 342)	p value ¹
Weight #	84.9 (17.3)	73.2 (15.8)	0.0001
Exchange volume #	4457.2 (1146.7)	4386.8 (1268.2)	0.45
Duration of mTPE #	178.5 (92.8)	162.0 (75.4)	0.011
Pre-treatment iCa #	1.18 (0.14)	1.21 (0.13)	0.0038
Anticoagulation			
No*	19 (5.7%)	43 (12.6%)	0.0021
Citrate*	300 (90.4%)	280 (81.9%)	0.0011
Heparin*	5 (1.5%)	13 (3.7%)	0.092
Citrate + Heparin*	3 (0.9%)	6 (1.8%)	0.52
Citrate + PGE1*	4 (1.2%)	0 (0%)	0.058
Replacement fluid			
Albumin*	161(48.7%)	124 (36.3%)	0.0023
FFP*	64 (19.3%)	133 (38.8%)	0.0001
Albumin + FFP*	106 (32.0%)	85 (24.9%)	0.033
Disease categories			
Neurological disease*	140 (42.8%)	55 (16.1%)	0.0001

Haematological disease*	70 (21.1%)	134 (39.2%)	0.0001
Liver disease*	51 (15.4%)	44 (12.9%)	0.376
Vasculitis*	24 (7.2%)	42 (12.3%)	0.037
Hypertriglyceridemia pancreatitis*	10 (3.0%)	5 (1.5%)	0.198
Renal disease*	31 (9.3%)	23 (6.6%)	0.256
Severe Sepsis*	4 (1.2%)	2 (0.6%)	0.443
Neurobotica xanthogranuloma*	0 (0%)	37 (10.8%)	0.0001

* Data represented as number, percentage

Data represented as mean, standard deviation

¹ Using t-test, Mann-Whitney test or chi-squared test as appropriate.

FFP = fresh frozen plasma, iCa= ionised calcium, PGE1 = Prostaglandin E1 = Alprostadiil

Table 3: Circuit Complications-Univariate analysis

Variables	Circuit complications (Number, Percentage)	p value¹
Sex		< 0.001
Male	79 (19%)	
Female	46 (13.5%)	
Anticoagulation		0.041
Citrate	110 (18.9%)	
Heparin	3 (16.7%)	
Citrate + Heparin	4 (44.4%)	
Citrate + PGE1	2 (50%)	
Replacement fluid		0.003
Albumin	60 (21%)	
FFP	21 (10.7%)	
Albumin + FFP	44 (22.9%)	
Replacement volume times plasma volume		0.595
< 1.5	47(63.5%)	
≥ 1.5	27(36.5%)	

Diagnostic categories		
Neurological disease	55 (28.2%)	<0.001
Haematological disease	21 (10.3%)	
Liver disease	10 (10.5%)	
Vasculitis	11 (16.7%)	
Hypertriglyceridemia	4 (26.7%)	
Pancreatitis		
Renal disease	22 (40.7%)	
Miscellaneous	2 (4.8%)	
mTPE numbers #	3 (1-5)	

Data represented in median, Inter-quartile range

¹ Using t-test, Mann-Whitney test or chi-squared test as appropriate.

FFP = fresh frozen plasma, mTPE= membrane-based therapeutic plasma exchange, PGE1 = Prostaglandin E1 = Alprostadil

Table 4: Patient complications -Univariate analysis

Variables	Patient complications (Number, Percentage)	p value¹
Sex		0.005
Male	32 (9.6%)	
Female	58 (17 %)	
Anticoagulation		0.003
Citrate	68 (11.7%)	
Heparin	3 (16.7%)	
Citrate + Heparin	0 (0%)	
Citrate + PGE1	2 (50%)	
Replacement fluid		<0.001
Albumin	15 (5.3%)	
FFP	48 (24.5%)	
Albumin + FFP	27 (14.1%)	
Replacement volume times plasma volume		<0.001
< 1.5	38 (43.7%)	

≥ 1.5	49 (56.3%)	
Diagnostic categories		
Neurological disease	12 (6.1%)	<0.001
Haematological disease	32 (15.7 %)	
Liver disease	22 (30.1%)	
Vasculitis	7 (10.6%)	
Hypertriglyceridemia	1 (6.7%)	
Pancreatitis		
Renal disease	9 (16.7%)	
Miscellaneous	7 (16.3%)	
mTPE numbers #	3 (1-5)	0.229

Data represented in median, Inter-quartile range

¹ Using t-test, Mann-Whitney test or chi-squared test as appropriate.

FFP = fresh frozen plasma, mTPE= membrane-based therapeutic plasma exchange, PGE1 = Prostaglandin E1 = Alprostadil

Table 5: Replacement fluid type and Anticoagulation

	Number (%)
Replacement Fluid	N= 673
Albumin	285 (42.3%)
FFP	196 (29.1%)
Albumin + FFP	192 (28.5%)
Anticoagulation	N= 669
Citrate	576 (86.1%)
Heparin	18 (2.7%)
Citrate + Heparin	9 (1.3%)
Citrate + PGE1	4 (0.6%)
No anticoagulation	62 (9.2%)

Data presented as Number, %

PGE1 = Prostaglandin E1 = Alprostadil, FFP= Fresh Frozen Plasma