

Optimal coagulation management in liver transplantation by point-of-care analysis using TEG6s in Japan

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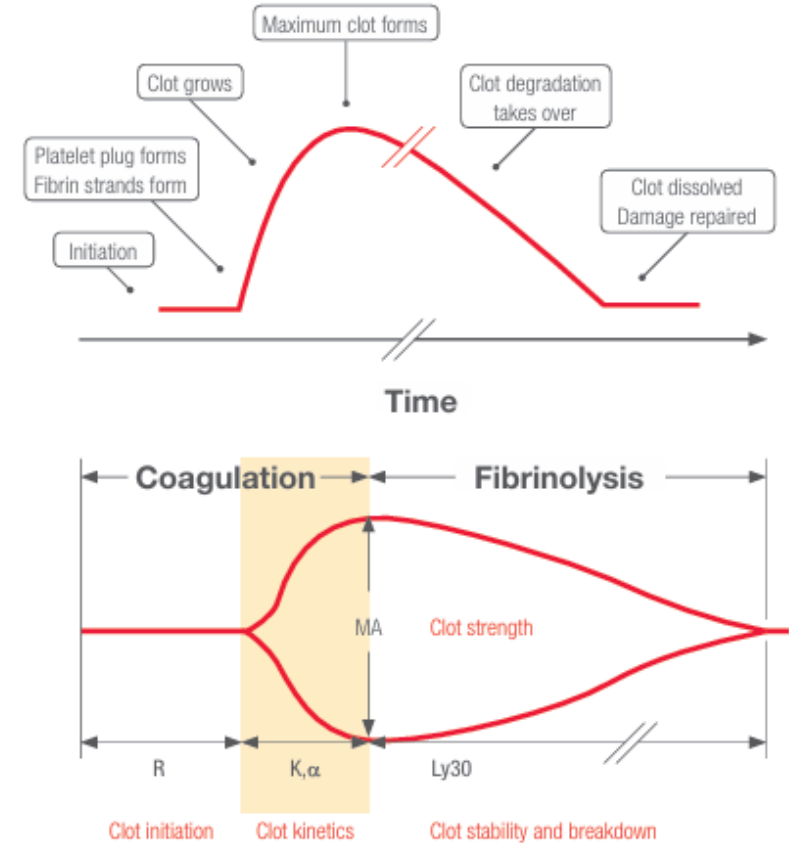
Back ground

- ✓ Liver transplantation(LT) recipients are at high risk of **massive bleeding**.
- ✓ In the same time, recipients are at high risk of **vascular thrombosis** due to precarious balance of pro- and anticoagulation factors.
- ✓ LT coagulation monitoring are challenging and based on standard laboratory tests (PT, aPTT, Plt, fibrinogen), but are not reflect the coagulation profile.¹⁾
- ✓ In US and Europe, thromboelastogram(TEG) are widely used and accepted as standard coagulation monitoring during LT; however, in Japan, it has not yet been widely accepted.



Thromboelastogram (TEG)

- ✓ TEG 5000 was marketed around 1990s.
- ✓ Assesses the entire clotting process
- ✓ Generates coagulation parameters in real time



- ✓ Marketed in Japan around 2010s
- ✓ Easy to Use. Completely automated.

Methods

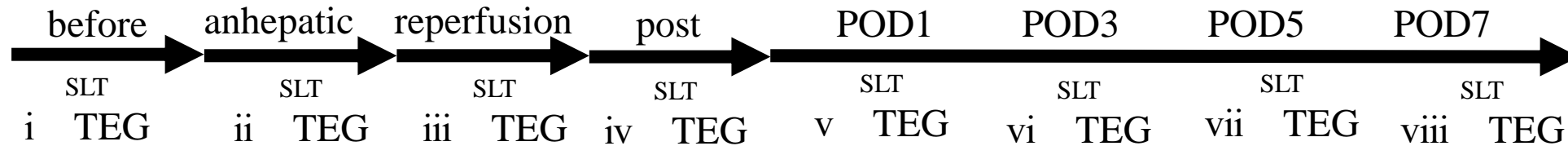
- ✓ We hypothesized that TEG 6s based transfusion algorithms could reduce the amount of blood transfusion.
- ✓ We performed 32 liver transplantations over the last 3 years.

17 patients were managed based on standard laboratory tests
(SLT group: before initiation of TEG 6s).

- FFP if INR more than 1.4
- Cryoprecipitate if fibrinogen less than 150mg/dl
- Platelets if count less than 50,000/mm³
- Attendings discretion

15 patients were managed based on TEG 6s. (TEG 6s group)

TEG 6s analysis :



- FFP if CK-R more than 10 min
- Cryoprecipitate if FF-MA less than 15 mm
- Platelet if CK-MA less than 40 mm
- Attendings discretion

Reference range

CK-R stands for citrated kaolin-reaction time

4.6-9.1 min

FF-MA stands for functional fibrinogen-maximum amplitude

15-32 mm

CK-MA stands for citrated kaolin-maximum amplitude

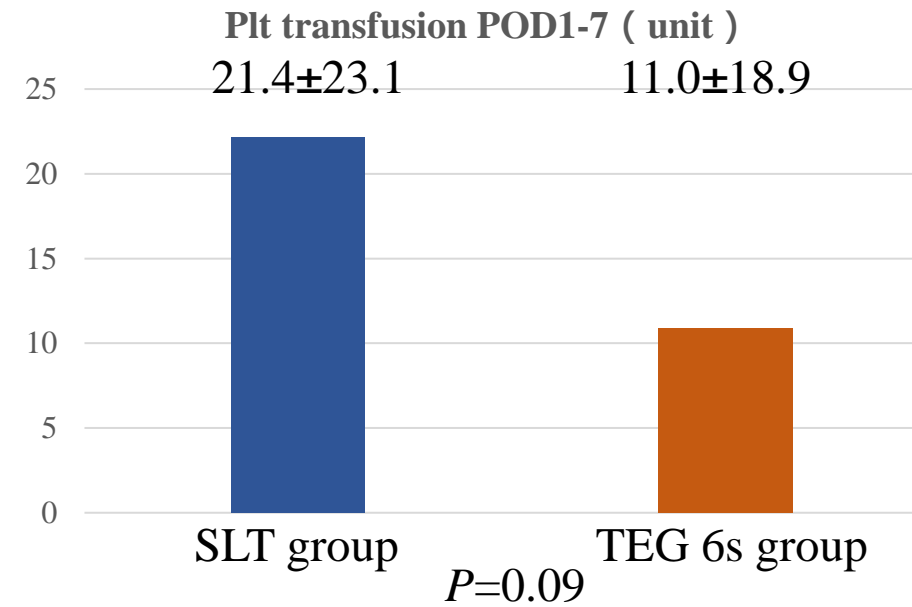
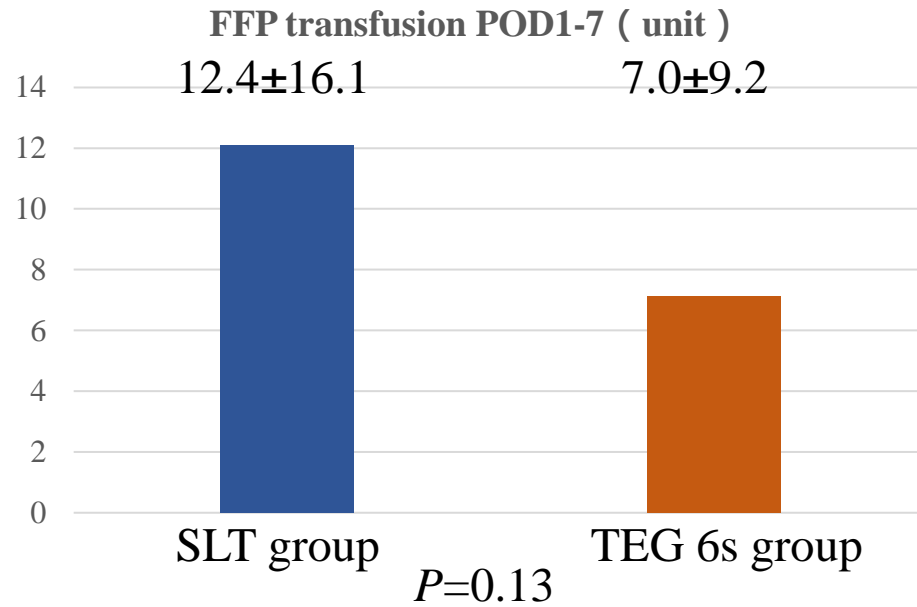
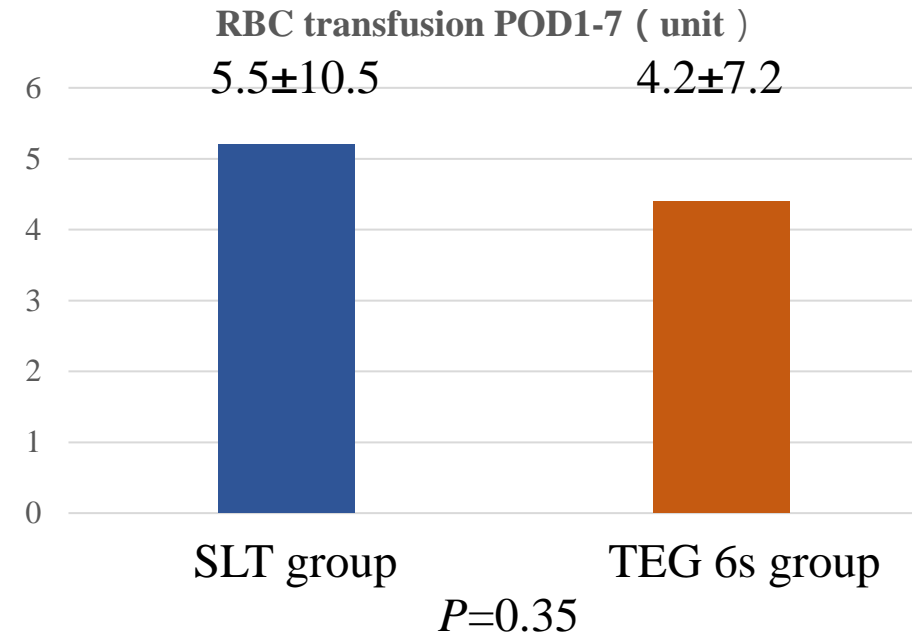
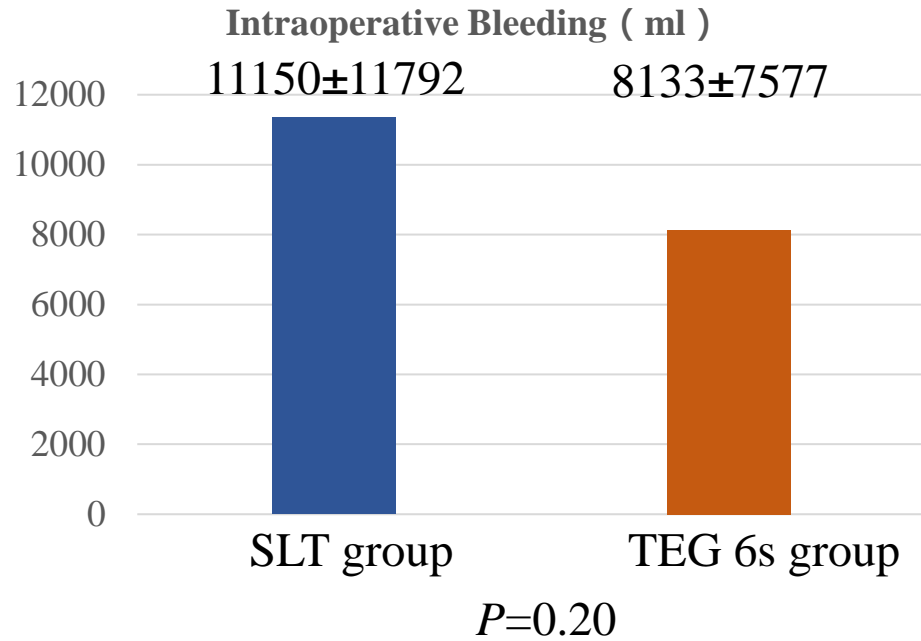
52-69 mm

Patient Demographics

	SLT group		TEG 6s group	
Age (years)	45.9±9.4		41.4±16.4	
Weight (kg)	62.2±10.8		60.3±14.9	
Height (cm)	161.9±8.57		162.3±10.9	
Sex m/f	5/12		8/7	
Duration of Surgery (min)	919±115		680±197	
MELD score	18.7±7.69		20.3±12.9	
DDLT/LDLT	2/15		9/6	
Original Disease	Alcoholic	4(23%)	BA	3(20%)
	PSC	3(17%)	PBC	2(13%)
	Acute liver failure 3	(17%)	NASH	2(13%)
	NASH	2(11%)	Alcoholic	2(13%)
	PBC	1(6%)	PSC	1(7%)
	BA	1(6%)	Cryptogenic	1(7%)
	HCV	1(6%)	Wilson	1(7%)
	Budd Chiari	1(6%)	Acute liver failure	1(7%)
	AIH	1(6%)	AIH	1(7%)

✓ SLT group performed more LDLT compared to TEG 6s group.

Results



Discussion and Conclusion

- ✓ We reported the first pilot study using TEG 6s to manage coagulation status after LT.
- ✓ The amount of bleeding during LT and the amount of transfusion were not statistically different but tended to decrease.
- ✓ The limitation of this study was the substantial difference in background of patients.
- ✓ We will accumulate the case and find the ideal coagulation management using TEG 6s.