

Is Cell Saver Mandatory for Liver Transplantation?

Report of 544 Liver Transplants Without Auto-transfusion

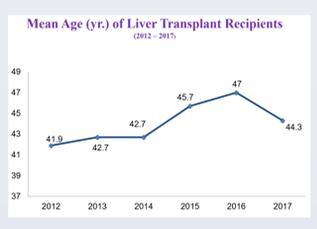
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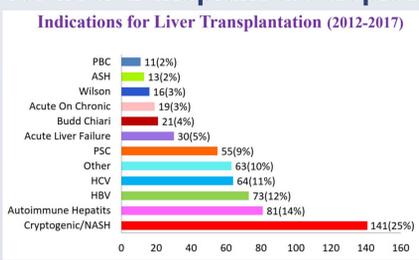
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Introduction

Liver Transplant program was started in January 2002 in our center, Imam Khomeini Hospital Complex, Tehran, Iran; affiliated to Tehran University of Medical Sciences. We used a brand of Cell Saver infrequently in the first series of 90 patients but no cell saver was used from 2012 when we did more than 50 liver transplants per year. The main reason for not using Cell Saver was unavailability of the sets but another reason was the complications attributed to the mechanism of Red Blood Cells retrieval in the machine that may cause or aggravates coagulopathy. Mean age and mean MELD score of transplanted patients are as follows:



Indication for liver transplant are depicted below:



Method

We did 587 liver transplants in 6 years starting from January 2012. The routine technique is Cava preserving hepatectomy (484 Cases) and standard hepatectomy was done for 88 patients, usually in PSC cases with very large livers.

Coagulation status was monitored intraoperatively with Rottem system and corrected accordingly. Before this time we have to correct coagulopathy according to surgical field observations.

Those patients with the first liver transplant were included in this study. We categorized the patients according to the amount of Blood Transfusion (units of Packed Cell) in 4 groups:

Categorization of Liver Graft Recipients According to the Amount of Intraoperative Blood Transfusion

Number Of Packed Cell Transfusion	G 1 0 U	G 2 <5 U	G 3 5-10 U	G 4 >10 U	Total
Number of Patients (%)	166 (31)	260 (48)	103 (19)	15 (2)	544 (100)

Results

544 first liver transplants were done from January 2012 to December 2017. Mean age of the patients was 44.48 years, 60 percent male and average MELD score of 21. The series include acute liver failure and acute on chronic liver failure.

Primary non-function and sever early dysfunction was significantly more common in group 3 and 4. Arterial thrombosis was also more common in group 4 and early mortality was increased in a linear correlation with transfusion from 9% in group 1 to 60% in group 4. Operative time was also directly correlated with the amount of Blood transfusion, from 266 min. in group 1 to 373 in group 4.

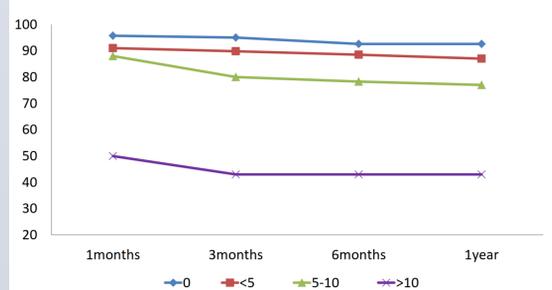
Correlation Between The Amount of Blood Transfused and PNF

Number Of Packed Cell Transfusion (No. Of Patients)	0 (166)	<5 (260)	5-10 (103)	>10 (15)	Total (544)	P-value
PNF (%)	2 (1.2%)	10 (3.8%)	10 (9.7%)	4 (26.6%)	26 (4.7%)	0.00

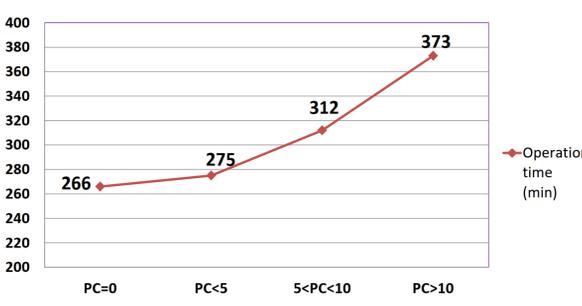
Correlation Between The Amount of Blood Transfused and Early Arterial Thrombosis

Number Of Packed Cell Transfusion (No. Of Patients)	0 (166)	<5 (260)	5-10 (103)	>10 (15)	Total (544)	P-value
HAT (%)	5 (3%)	8 (3%)	5 (4.8%)	5 (33%)	23 (4.2%)	0.00

Correlation of The Amount of Intraoperative Blood Transfusion (units) and Patient Survival



Correlation of Operation Time and the Amount of Blood Transfusion



There was no significant correlation between the amount of blood transfusion and MELD score, early Portal vein thrombosis and Biliary complication.

Correlation Between The Amount of Blood Transfused and MELD Score

Number Of Packed Cell Transfusion (No. Of Patients)	0 (166)	<5 (260)	5-10 (103)	>10 (15)	Total (544)	P-value
MELD	20.1	21.21	21.7	22.29	21	0.1

Correlation Between The Amount of Blood Transfused and Early Portal Venous Thrombosis

PC (No)	0 (166)	<5 (260)	5-10 (103)	>10 (15)	Total (544)	P-value
PVT (%)	2 (1.2%)	8 (3%)	6 (5.8%)	1 (6.6%)	17 (3.1%)	0.1

Correlation Between The Amount of Blood Transfused and Biliary Complications

Number Of Packed Cell Transfusion (No. Of Patients)	0 (166)	<5 (260)	5-10 (103)	>10 (15)	Total (544)	P-value
Biliary Problem (%)	12 (7.2%)	28 (10.7%)	8 (7.7%)	2 (13.3%)	50 (9.1%)	0.5

Conclusion

Although autotransfusion is a well-known substitute for allotransfusion, there are pros and cons for using cell saver machines in the setup of liver transplantation. This report shows that liver transplantation without cell saver is a viable alternative to using this device routinely.

Total Patient Survival

Survival Time	Survival (%)
1 months	90.4%
3 months	87.8%
6 months	86.2%
1 year	85.1%
3 years	81.2%

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