



## PROSPECTIVE STUDY OF OUTCOMES IN RENAL TRANSPLANT USING RINGER LACTATE AS COLD IRRIGANT

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### INTRODUCTION

In India there is very much scope for getting kidneys for transplant. However there are a big problem of big expenses in transplant surgery which recipient family has to bear. Although it is important to reduce costs, it is important that outcomes are not affected. One potential area of cost savings is the use of a simple preservation fluid in living donor kidney transplantation because of the associated short warm and cold ischemia time.

Lactated Ringer's (LR) was one of the first preservation fluids to be used in transplant surgery, but was replaced by Collins, ViaSpan (Belzer UW), Custodiol HTK, and others (1). These solutions were developed with the goal of reducing organ damage and ischemia/reperfusion injury, including cellular swelling, oxygen-free radical injury, and cell membrane destruction. We have used ringer lactate fluid which is commonly used in daily practice and having same composition as plasma for irrigation fluid for renal transplant which is very cheap 40 rupees per 500 ml. we have added heparin along with potassium in this irrigative fluid in living donor kidney transplantation

### PATIENTS AND METHODS

Between April 2017 to March 2018, we have included all patients whom undergone renal transplantation in meenakshi mission research centre and hospital Madurai tamilnadu india. All kidneys were immediately placed into an iced ringer lactate and flushed with cold (5°C) ringer lactate with heparin with potassium until the effluent was clear. All recipients received pretreatment with a single dose of 30 mg of intravenous alemtuzumab and posttransplant tacrolimus monotherapy. Patients were followed regularly.

### RESULTS

We did 51 transplant in one year in which 49 kidneys functioned immediately 2 kidneys shows delayed graft function (DGF). There was no vascular thrombosis. Actuarial 1-year patient and graft survival were 96.1% and 98.03%, respectively. The incidences of acute rejection was nil.

Donor's average hospital stay was 4.5 days and the mean recipient length of stay was 10.3 days. Serum creatinine came down to base line with in mean 15 days serum creatinine was 1.1 ± 0.46 mg /dl. Renal artery stenosis seen in 3 patients and urinary leak in one patient. Mean cold ischemia time was 40 min ± 15 min.

### DISCUSSION

Cold ischemia is known to be associated with less allograft injury than warm ischemia (2). One unique characteristic in living donor renal transplantation is a short warm (typically <5 min for open kidney extraction and about 30 to 45 min for the vascular anastomoses) and cold ischemia time (typically <1 hr). These short warm and cold ischemia times allowed us to continue the use of the cold (5°C) ringer lactate as a flushing and short-term preservation fluid with excellent results.

Under nonischemic and nonhypothermic conditions, intracellular sodium is extruded through the sodium-potassium adenosine triphosphatase (3) It is stable when freshly prepared and used immediately in slightly acidic cold ringer lactate solution (pH of heparin in LR is 6.28). (4).

The patient cost for 1 L of ringer lactate is 80 Rs heparin= 15 Rs total expenses will 100 Rs . This is a significant cost reduction compared to

the vendors' charges to the hospital of Viaspan (Rs 1200/L) and Custodiol HTK (Rs 10380/L). The use of LR with heparin is as effective as the more expensive Viaspan or Custodiol HTK solutions in living donor kidney transplantation because of the inherent short cold and warm ischemia times, thereby saving about 1000 Rs with ViaSpan or 8000 to 9000 Rs with Custodiol HTK per patient in country like india. It may also not be optimal in smaller transplant centers with long cold ischemia times, particularly in programs that do not have the benefit of two simultaneous operating rooms and may need to do the recipient after the living donor, thus entailing significantly longer cold ischemia times.

### CONCLUSIONS

Cold ringer lactate solution is obviously not a reasonable preservation solution for deceased donor kidney transplantation, but can be used safely for living donor kidney transplantation. Specially in developing countries like india it is very useful to decrease cost of transplant surgery.

### References

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