

Postoperative Anaemia In Renal Transplant

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Background

Renal transplant recipients are commonly anaemic preoperatively¹ due to a combination of impaired erythropoietin production and other chronic causes. This is often exacerbated in the immediate post-operative period due to intraoperative blood loss. This is a significant source of short term morbidity, and in the longer term post-transplantation anaemia is associated with higher mortality and graft rejection rates.^{2,3,4}

As a result, allogeneic red cell transfusion is likely to be necessitated in these patients. There are risks associated with allogeneic transfusion in all cases, including febrile, allergic or hypotensive reactions, transfusion-associated circulatory

overload or transfusion-related acute lung injury⁵. Moreover in transplant patients transfusion may be associated with increased rates of graft rejection due to immune sensitisation^{6,7}.

As one of the "pillars" of blood management, minimising exposure to allogeneic transfusion except where necessary is held to be desirable. Current guidance from the Association of Anaesthetists advocates the use of intraoperative cell salvage (IOCS) when it can be expected to reduce the risk of transfusion⁸; there has been extensive investigation of its utility in orthopaedic surgery but its potential in renal transplant has not been established.

Methods

To assess the potential utility of IOCS as standard practice in renal transplant we conducted a retrospective audit of perioperative changes in haemoglobin concentration and the incidence of intra- and postoperative allogeneic red cell transfusion in renal transplant recipients. All adult patients who had received a renal transplant in Southmead hospital, Bristol, within a 12 month period between June 2020 and June 2021 were included. 116 patients were identified, and their demographic information, perioperative haemoglobin concentrations and incidence of blood transfusion were recorded.

Results

The most striking finding was an average

28.5g/L drop in Hb,

comparable to that seen in total hip replacement⁹. The average values on specific days are laid out in table 1:

Day	Preop	Day 1	Day 3	Day 5	Home
Mean Hb	116.1	99.7	91.9	92.5	93.4

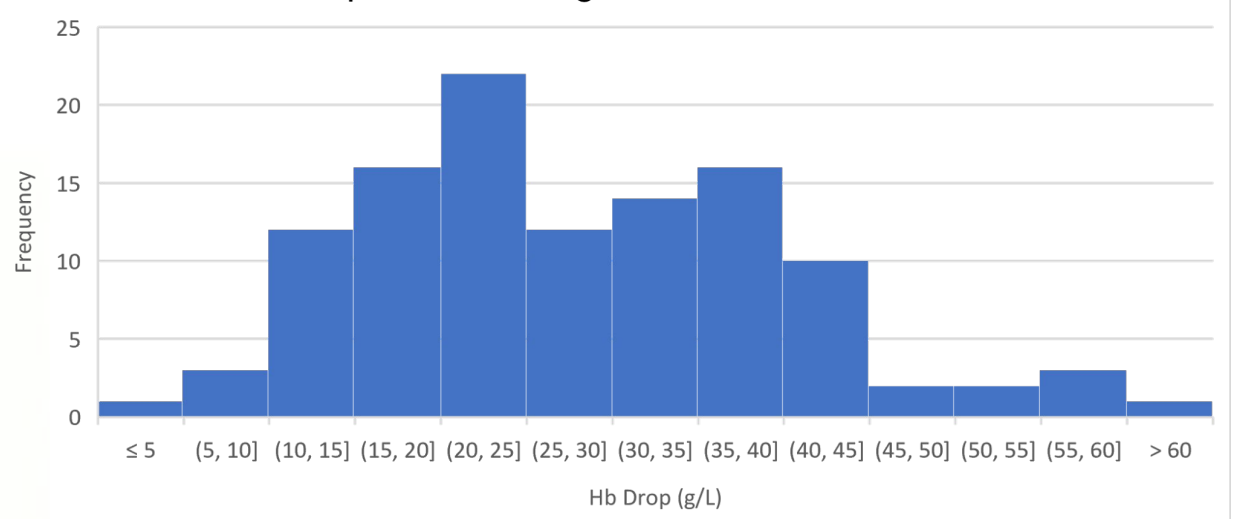
Also notably:

90 patients (77.6%) were anaemic preoperatively (Hb <120 in females or <130 in males)

Of 116 patients **16** received allogeneic transfusions (**14%**)

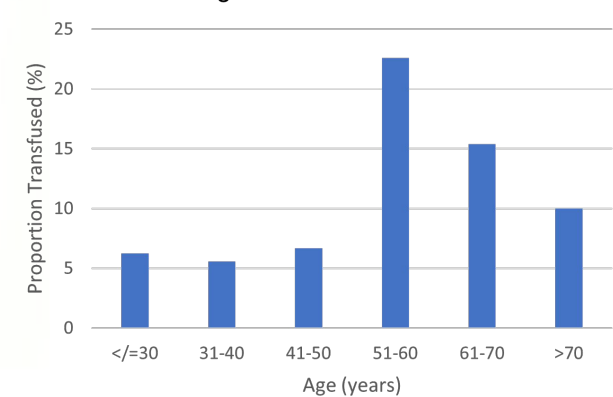
An average of **3.3** units were transfused per patient (Total 53 units RBC)

Postoperative changes in Hb concentration



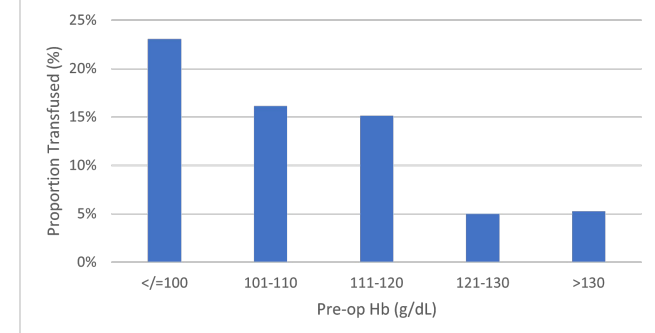
Of the data analysed, increasing age and pre-operative anaemia appeared to increase the risk of requiring transfusion

Effect of Age on Need for Transfusion



Risk ratio of transfusion in people over 50 to under 50 is **2.9254** (95% C.I. 0.8720 to 9.8136)

Effect of Pre-op Hb on Need for Transfusion



Risk ratio of transfusion from pre-operative anaemia is **3.2922** (95% C.I. 0.7816 to 13.8680)

Outcomes

Based on these findings we have instituted a change within our centre to make the use of IOCS a standard in renal transplant cases. A preliminary re-audit has demonstrated an absolute reduction in transfusion rates of 4%, representing a relative risk reduction of 31%. We believe this constitutes a potentially productive area for future research, specifically into the possibility for targeted use of IOCS in cases where the risk of transfusion is higher.

References

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