

## **Simultaneous Islet Kidney Transplant (SIK)**

### **Introduction**

There are a small number of type I diabetic patients with chronic renal failure who have been considered for simultaneous kidney and pancreas (SPK) transplantation but considered unsuitable due to co-morbidity or technical barriers. At present, the options for these patients are kidney transplantation alone or islet after kidney transplant. There are immunological advantages to receiving islets from the same deceased donor and evidence that simultaneous islet and kidney (SIK) transplantation modifies the secondary effects of diabetes on both the kidney graft and cardiovascular and microvascular disease.

There is now a nationally agreed pilot programme for simultaneous islet and kidney transplantation. Centres are able to put forward patients who currently meet the listing criteria for SPK transplantation but who have been deemed unsuitable for an SPK transplant. Suitable patients will then be registered with NHSBT for both kidney and islets and will appear in the Pancreas Matching Run with all other patients awaiting a pancreas or islet transplant. Points for these patients will be calculated using the routine islet criteria and the centre will receive the offer on behalf of the SIK patient once they appear at the top of the Pancreas Matching Run.

### **Referral and assessment**

It is anticipated that the majority of patients considered for Simultaneous Islet Kidney Transplant (SIK) will have been through the simultaneous pancreas kidney transplant (SPK) referral pathway and deemed unsuitable for SPK either due to fitness for surgery or the patient does not wish to undergo an SPK. Additionally, patients referred and listed for SPK, but at a later date de-listed or suspended due to co-morbidities or deterioration in functional status can also be considered for SIK. Following SPK assessment patients will be discussed at the SPK MDT. If they are not being listed for SPK but are suitable for kidney alone transplant (as determined by the MDT discussion), they can be considered for SIK transplant. They will then be discussed at the next Islet MDT and if considered a potential SIK will be offered an Islet assessment clinic appointment.

Eligibility criteria as for SPK transplant:

Renal failure defined as  $\text{eGFR} \leq 20\text{ml/min}$  (MDRD) or on dialysis and

1. Type I diabetes mellitus – they should be C-peptide negative .
2. They are aged 60 years or under at the time of referral.

## **Islet cell clinic assessment**

Review by diabetologist, surgeon, dietician and diabetic nurse.

Diabetes history will be taken. **Hypoglycaemic unawareness is not a requirement for listing.**

Additional investigations required for islet cell transplant that have not been completed as part of the SPK assessment will be ordered (e.g. Liver US, auto-antibody screen).

Following Islet clinic assessment patients will be discussed at the Islet MDT and a decision will be made for listing.

## **Organ offers**

As per criteria for Islet transplant offers (age/BMI limits).

## **Admission and pre-operative work-up**

As per renal transplant admission protocol.

When organs arrive, both the kidney and pancreas will be inspected to ensure no contra-indication to proceeding with the transplant. The pancreas will be inspected by the islet laboratory to ensure that the organ is not damaged and there are no contra-indications to islet transplantation. If the pancreas is deemed suitable for islet cell isolation, the kidney transplant will then proceed as per the renal transplant protocol but with immunosuppression as below.

## **Immunosuppression Protocol**

The immunosuppression protocol is based on the '3C trial' steroid-free protocol. The rationale for using this protocol is that there is a proven benefit for steroid free immunosuppression in islet cell transplant and the 3C study demonstrated non-inferiority of this protocol for renal transplant in terms of graft and patient survival and a reduced incidence of rejection at 6 months.

Alemtuzumab 30mg day 0 and day 1 post-transplant

Tacrolimus (aim for level 8-10)

Mycophenolate 500mg bd

If the patient is highly sensitised or there are contra-indications to alemtuzumab induction, a personalised immunosuppression protocol will be discussed and decided at the renal MDT meeting at the time of listing.

## **Islet Cell Transplant procedure**

The Islet cell transplant will proceed approximately 48 hours following renal transplant in the radiology department. The Islet cell Transplant protocol will be followed except there will be no additional immunosuppression. Hydrocortisone and chlorpheniramine will be given pre-procedure as per the islet protocol. As with Islet transplant alone patients, a nurse from the ward will accompany the patient to radiology.

Post-procedure diet and insulin control will be as per the islet cell protocol. Renal transplant and fluid management as per the renal transplant protocol.

## **Follow-up after Discharge**

Follow-up monitoring will be shared between the Islet team with renal input from Dr Henderson. Patients will be followed up weekly in the Monday morning Islet cell clinic. Renal follow-up by local teams will continue as per the renal transplant protocol frequency.

## **2<sup>nd</sup> Islet transplant**

The patient may be listed for a second islet transplant according to clinical need in discussion with the renal team.

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