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## **Non-Graft Complications in Kidney Transplantation: Metabolic and Malignancies**

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Introduction Kidney transplantation significantly improves survival and quality of life for patients with end-stage renal disease. However, recipients remain susceptible to various non-graft complications, notably metabolic disorders and malignancies, which contribute substantially to long-term morbidity and mortality.

Metabolic Complications Post-transplant metabolic complications are prevalent, with post-transplant diabetes mellitus (PTDM) being a significant concern. PTDM arises from a combination of pre-existing risk factors and the diabetogenic effects of immunosuppressive agents, particularly calcineurin inhibitors like tacrolimus. The development of PTDM is associated with increased cardiovascular risk and reduced graft survival. Additionally, dyslipidemia and hypertension are common, often exacerbated by immunosuppressive therapy, and necessitate vigilant monitoring and management to mitigate cardiovascular complications.

Malignancies Malignancies represent a leading cause of mortality among kidney transplant recipients. The immunosuppressive state post-transplant impairs immune surveillance, increasing susceptibility to various cancers. Skin cancers, especially squamous cell carcinoma, are the most frequent, with incidences significantly higher than in the general population. Other notable malignancies include post-transplant lymphoproliferative disorder (PTLD), Kaposi sarcoma, and virus-associated cancers such as those linked to human papillomavirus (HPV) and hepatitis B virus (HBV). The risk of malignancy correlates with the intensity and duration of immunosuppression, underscoring the need for individualized immunosuppressive regimens and regular cancer screening protocols.

Conclusion While kidney transplantation offers substantial benefits, the risk of non-graft complications like metabolic disorders and malignancies remains a significant challenge. Early identification, preventive strategies, and tailored management approaches are essential to enhance long-term outcomes and quality of life for transplant recipients.

**Keywords:** Metabolic complication, Malignancy, Kidney transplantation, Mortality, morbidity