

SP699

**RENAL FUNCTIONAL RESERVE IN LIVING KIDNEY DONORS:
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INTRODUCTION AND AIMS: Kidneys obtained from living donors (LD) are important in overcoming the organ shortage in kidney transplantation. Known favorable short-term outcomes in LD have led to expansion of accepted donors. However, long-term consequences on renal hemodynamics are not yet well enough understood. The renal functional reserve (RFR) reflects the ability of a kidney to increase its glomerular filtration rate (GFR) in the setting of a higher functional demand. The implications of RFR in kidney donation have not been fully elucidated.

METHODS: We performed a systematic literature review of physiology studies that assessed RFR in LD in the time period 1956-2017. Databases Web of science, PubMed and EBSCO were searched using the following terms: kidney function, glomerular filtration rate, renal functional reserve capacity, renal blood flow and kidney donor.

RESULTS: 3071 studies matched our searched terms and 272 studies were related to living kidney donation. Of these, 47 analyzed physiological changes in LD by measuring GFR and/or effective renal blood flow (ERBF). Only 16 studies measured RFR, defined as the difference between baseline and stimulated GFR, and 6 studies were performed in 'borderline' donors. These studies showed that stimulus-induced increase in GFR pre-donation was 18 ± 9.36 ml/min/1.73m², whereas the increase in the remaining kidney post-donation was 4.52 ± 4.83 ml/min/1.73m². RFR was reduced by up to 88% in obese compared to non-obese donors (37%), whereas in older donors RFR decreased by 72% compared to younger donors (31%).

CONCLUSIONS: Prediction of long-term safety for living kidney donors is not possible without clear understanding of the physiological i.e. hemodynamic process in the remaining kidney after donation. Currently, there are not enough prospective data on RFR in living kidney donors, especially in 'borderline' donors, and the implications for long-term kidney function. Further studies on RFR in LD are needed in order to ensure minimal consequences of the kidney donation.