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Impact of warm ischemic time during partial nephrectomy on postoperative renal function

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Objective:

Ischemic time during partial nephrectomy can affect renal function. This study aims to investigate the effect of warm ischemic time(WIT) during partial nephrectomy on renal function.

Patients & Methods:

This is a retrospective cohort study. 100 patients with partial nephrectomy with normal contralateral kidney and warm ischemia done in New Territories East Cluster between 8/2004 and 11/2019 were included. The renal function was measured in terms of eGFR and renal functional scan(DSMA/DTPA). The eGFR was measured preoperatively and 12 months post-operatively. Among 100 patients, 37 patients had renal functional scan done.

Results:

46 patients had WIT≤25 minutes and 58 patients had WIT≤30 minutes.

There is an increase in the mean eGFR deterioration if WIT increases. For WIT between ≤25 minutes and >25 minutes, the mean eGFR deterioration were 10ml/min v.s. 13ml/min respectively, with p=0.166. For WIT between ≤30minutes and >30minutes, the mean eGFR deterioration were 11ml/min v.s. 12ml/min respectively, with p=0.272.

The mean differential function deterioration of ipsilateral kidney also increases with WIT increase. For WIT between ≤25 minutes and >25 minutes, the mean differential function deterioration was 5.3% v.s. 9.4% respectively, with p=0.59. For WIT between ≤30 minutes and >30 minutes, the mean differential function deterioration was 6.1% v.s. 8.4% respectively, with p=0.52.

Conclusion:

With the increase in WIT, there is apparent reduction in renal function. However, in patient with normal contralateral kidney, there is no statistically significant influence on renal function if WIT keeps below 30 minutes. Further studies with larger sample size and multivariate analysis, including tumor size and subjective parenchymal preserved, maybe useful.