

PATIENT SUMMARY

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Hypertension and Cardiovascular Morbidity Following Surgery for Kidney Cancer

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Introduction

Removal of the kidney (*nephrectomy*) is a common treatment for kidney cancer. There are different techniques used which include *radical nephrectomy* (the removal of the whole kidney) and *nephron sparing surgery* also known as *partial nephrectomy* (where only part of the kidney is removed). As neither approach has been shown to be better or worse in terms of treating the cancer, it is generally believed that if appropriate, the treatment should save as much of the kidney as possible.

Surgery which saves part of the kidney tends to result in better kidney function, but it is not known whether there are other benefits. Previous studies have suggested that partial removal may also reduce the risk of developing serious heart related events after surgery. There are theories as to why a reduction in kidney function may be associated with later heart problems but much of this work has looked at patients with kidney disease (e.g. chronic kidney disease, kidney transplants and diabetes) rather than kidney cancer. It is therefore important to see whether the risks are the same for people who are having kidney cancer treatment and whether the risk depends on the type of surgery they have.

The objective of this study

To investigate whether patients who have kidney cancer surgery (either total removal or partial removal of the kidney) experience high blood pressure or other heart problems after surgery, and when this may occur.

How did they do this?

The researchers collected data of 898 patients from 3 different centres with localised kidney cancer (cancer that has not spread elsewhere) and no history of heart problems, who were treated with total or partial removal of the kidney. Heart problems were categorised into:

- (1) new high blood pressure (*hypertension*) and
- (2) new heart problems. These were classed as *major cardiovascular events* (MCEs) and included:

- **coronary heart disease** (when heart arteries become narrowed by a build-up of fatty material within their walls)
- **cerebrovascular event** (a stroke)
- **thromboembolic event** (a blood clot formation (thrombus) that breaks loose and is carried by the blood stream to plug another vessel in another place e.g. the lung)
- **dysrhythmias** (irregular heartbeat)
- **peripheral arteriopathy** (where a build-up of fatty deposits in the arteries restricts blood supply to leg muscles)

What did they find?

In this study, 326 (36%) of patients had a total removal and 572 (64%) had a partial removal of their kidney. The patients treated with partial removal tended to have smaller tumours.

After 5 years, 3.3% of patients who had a partial kidney removal and 5.1% of patients who had a total kidney removal had reported high blood pressure. Among patients treated with total removal, 38% of high blood pressure events occurred immediately after surgery. Conversely, the group of patients who had a partial removal, the onset of their high blood pressure occurred later and was spread out over the years after surgery.

When examining major cardiac events, 6.3% of patients who had a partial kidney removal experienced an event versus 4.2% of patients who had a total kidney removal. There was no statistical difference in the rate of these events between the two groups, or when they occurred.

What was the conclusion?

Nephron sparing surgery (partial kidney removal) is currently recommended for patients who are candidates for surgery for a localised kidney cancer, when technically feasible. Both total and partial kidney removal are equal in terms of getting the cancer under control, but partial removal is associated with better kidney function.

In kidney cancer patients without a medical history of previous heart problems, saving healthy kidney tissue at surgery is associated with a lower risk of developing high blood pressure after surgery. This is not the case for other heart problems, which may develop in the long-term period for some patients, regardless of the type of surgery performed.

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