

Robotic Partial Nephrectomy in Geelong: an audit analysis of perioperative, oncological and functional outcomes

Ivan Hoh, M Le, J Sewell, A Pearce, G Mirmilstein, P Kearns, R Grills
Dept. of Urological Surgery, University Hospital Geelong

INTRODUCTION

Due to greater utilisation of imaging, the increased detection of asymptomatic small renal masses has meant more lesions maybe suitable for a nephron sparing approach, which in turn, may lead to better oncological and functional outcomes.

Given the morbidity of surgery, a stricter definition of success has been proposed. The “trifecta” combination of Warm Ischaemic Times (WIT), Negative Surgical Margins, and Minimal Complications has been used to provide an achievable threshold for a successful result(1). Every effort is made to avoid prolonged warm ischaemic time (> 25-30 mins.), which has been associated with irreversible ischaemic insult (2).

AIM

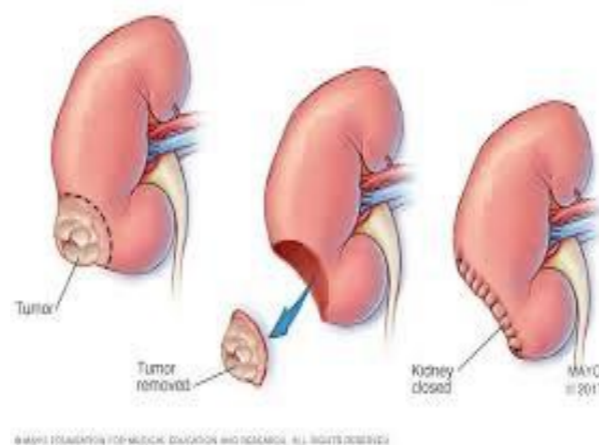
To evaluate the surgical outcome in Robotic Partial Nephrectomy in Geelong based on Warm Ischaemic Time, Surgical Margins and Complications

METHODS

Data from all consecutive patients (n=87; MEDIAN AGE = 63) were collected prospectively commencing from June 2016 to Dec 2019, and operated by three surgeons (PK, GM, RG) in all public (n=34) and private (n=53) hospitals in Geelong. Patient demographics, preoperative renal function and intraoperative factors including estimated blood loss, warm ischaemic time (WIT), use of Firefly® were collated.

Perioperative outcomes collected include complications (Clavien-Dindo classification), Hb and renal function at regular intervals (Table 1).

In this study, the Trifecta outcomes were defined as negative surgical margins, Clavien-Dindo complications of ≤ 3 and WIT < 30 min.



RESULTS

There were a total of 93 patients (32 public and 52 private; mean age 62 years). Due to the complexities and potential inaccuracies of estimating blood loss and WIT in patients in whom more than one lesion were excised, only patients with solitary lesions were included for analysis. Hence, only the 87 patients with solitary lesions were studied.

Intra-operative median Estimated Blood Loss was 50 mls (range 10-800) with total operative time of 185 minutes (range 105-300), median WIT was 23 mins (7-35m) with Firefly® used in 79 patients(85%). Seven patients (92%) had > 30 minutes of WIT.

Histopathology demonstrated - 65 were malignant lesions, 49 clear cell, 11 papillary, 3 multicystic (low malignant potential), 1 chromophobe, and 1 granular variant. The histological grades were illustrated in Fig 1. All had clear margins except 3 (96.5%), but only one of which was malignant. Complications were graded according Clavien-Dindo classification and were as follows: Grade 1 (n=10); Grade 2 (n=1) and Grade 3 (n=2) (Fig2). There was 100% Clavien-Dindo grade of ≤3.

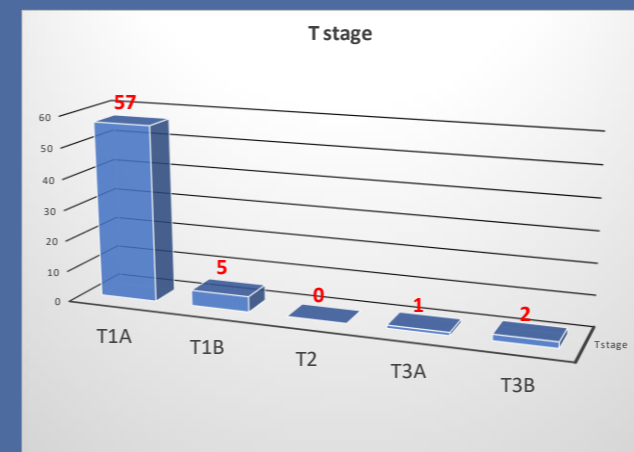


Fig 1. T stage for malignant lesions

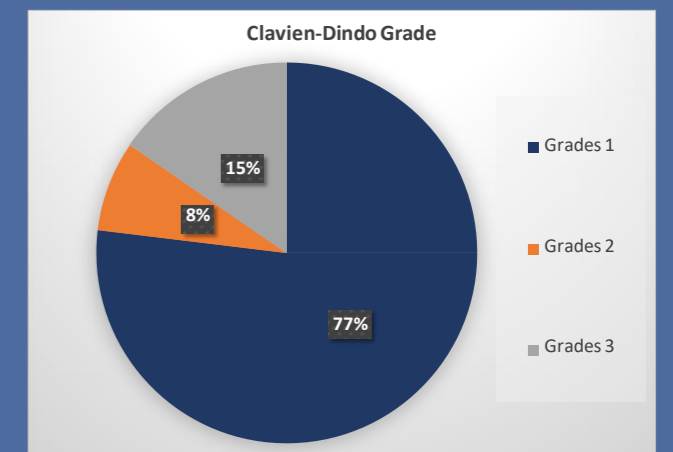


Fig 2. Clavien-Dindo Grades

The trifecta outcome in the series was 80/87 (92%). There has been no recurrence reported during the 3.5 yrs mean follow-up period. Similarly, the functional outcome in terms of renal function remained unchanged (Table 1).

Table 1: Functional Outcome in terms of Hb and Renal function (eGFR)

Mean	Preop	Day 1	6m	12m	18m
Hb	147.4	131.4			
eGFR	74.5	64.3	68.6	69.7	68.6

CONCLUSION

In this local study, the perioperative surgical rates in this regional centre are comparable with large published international series. Although small, this regional centre achieved 96.5% negative surgical margin rates, zero major complications (ie. > grade 3) and 92% WIT <30mins. There was no recurrence over 3.5 years with no renal deterioration. Further validation with longer term follow-up and larger sample size will be required.

REFERENCES

- Khalifeh A, Autorino R, Hillyer SP, Laydner H, Eyraud R, Panumatrassamee K, et al. Comparative outcomes and assessment of trifecta in 500 robotic and laparoscopic partial nephrectomy cases: A single surgeon experience. J Urol. 2013;189:1236–1242.
- Xavier Rod., Benoit Peyronnet, Thomas Seisen, Benjamin Pradere, Florie D. Gomez, Gregory Verhoest, Christophe Vaessen, Alexandre De La Taille, Karim Bensalah, Morgan Roupret. Impact of ischaemia time on renal function after partial nephrectomy: a systematic review. BJU Int 2016; 118: 692–705