

Initial Experiences of a Tertiary Hospital with Indocyanine Green for Sentinel Lymph Node Mapping in Endometrial Cancer and Atypical Hyperplasia

Peta McKay^{1,2}, Rinkita Sinha^{1,2}, Greg Robertson^{1,2}, King Man Wan^{1,2}

¹The Royal Hospital for Women, Sydney ²University of New South Wales, Sydney

Background

Nodal assessment for apparent early-stage endometrial cancer is important for accurate staging and recommendations for adjuvant therapy. Sentinel lymph node (SLN) mapping reduces morbidity associated with lymphadenectomy whilst maintaining a low number of false negatives and allowing accurate staging. We introduced SLN mapping with indocyanine green (ICG) at The Royal Hospital for Women in March 2020.

Aim

To describe our initial experiences and assess our outcomes compared to the literature.

Methods

We performed a prospective cohort study of all patients undergoing minimally invasive surgery for endometrial cancer or atypical hyperplasia who had SLN mapping with ICG between March and October 2020. To perform the mapping, 25mcg of ICG powder was diluted into 10-20 mL of sterile water. 2mL of this solution is then injected (1mL deep and 1mL superficially) into the cervix at 3 and 9 o'clock. 10-20mins following injection, the ICG can be viewed in the sentinel nodes during laparoscopy with real time near infrared imaging.

Results

A total of 38 patients with apparent uterine-confined endometrial cancer had mapping between March and October 2020 of which 31 (82%) had endometrioid adenocarcinoma, 4 (11%) had a high-risk subtype and 3 (8%) had atypical hyperplasia and/or serous endometrial intraepithelial neoplasm. 8 patients had positive lymph nodes discovered from biopsy, with only 2 of these having bulky nodes noted at time of surgery.

SLN Mapping, n=38	Apparent *	Successful Mapping **	Expected outcome 'inexperienced'	Expected outcome 'experienced'
Bilateral	32 (84%)	29 (76%)	40-50%	81%
Unilateral	5 (13%)	7 (18%)	-	12%
None	1 (3%)	2 (5%)	-	6%

*Apparent – ICG confined to an apparent node/nodal area noted intraoperatively and sample taken

**Successful mapping – area mapped, sample taken, sample contains nodes



Figure 1: Laparoscopic view of pelvic side wall with normal light (left) versus near infrared imaging with ICG mapping of sentinel nodes (right).

Results cont...

SLN Results	N=69 Nodal Basins Mapped
Positive	9 (13%)
Negative	55 (80%)
No lymph nodes found	5 (7%)

	Nodes group, n=34	No nodes group, n=4
Age	62.2 years (45-79)	66.8 (51-82)
BMI	35.2 (22.9-51.7)	40.9 (29.8-61.7)
Operating time	135 (66-214)	126 (105-169)

Discussion

Of the eight patients with positive lymph nodes, only two had bulky nodes noted intraoperatively. Using traditional protocols for early endometrial cancer, the other six patients may not have undergone lymph node assessment and therefore been understaged. SLN mapping and biopsy have ensured these patients were staged correctly and had adjuvant treatment accordingly.

Most patients who did not have successful bilateral mapping had scarred nodal beds (one patient with stage 4 endometriosis and one patient previously treated for CRC with nodal involvement) or advanced disease (two patients had bulky, obviously involved nodes and one patient had vaginal involvement discovered intraoperatively with blocked lymphatics). One patient had Stage 1A Carcinosarcoma and had no obvious cause for unsuccessful mapping.

When comparing patients with successfully mapped nodes and patients who did not have nodal tissue in the biopsied samples, we found the group without nodal tissue in their biopsies had a higher BMI on average. An elevated BMI is known to be a factor to non-mapping hemipelvis (Reference).

The literature suggests 'inexperienced centres' can expect a successful bilateral mapping rate of 40-50% whereas 'experienced centres' can expect bilateral mapping in 81% of patients and no mapping in only 6%. Therefore, our preliminary results are approaching the success rates for 'experienced' centres.

References

Available on request.

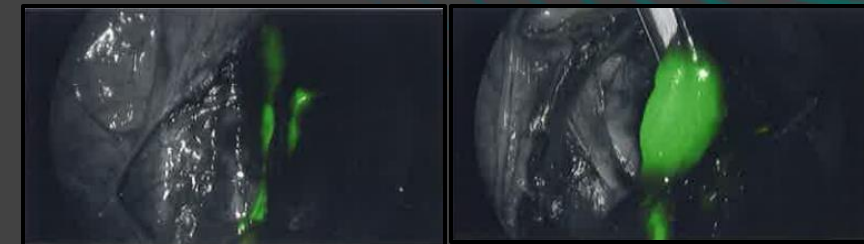


Figure 2: Intraoperative photograph with near-infrared imaging showing tracking of ICG through the pelvic lymphatics.

Figure 3: Intraoperative photograph with near-infrared imaging showing ICG in sentinel pelvic lymph node.