



Proactive Nursing Care is the Key to Successful Day Case Laparoscopic Cholecystectomy at a Rural Hospital

Aemelia Melloy¹, Ria De Rouw¹ and Arkadiusz Peter Wysocki^{1*}

¹Beaudesert Hospital, 64 Tina Street, Beaudesert, Queensland 4285, Australia.

Authors' contributions

This work was carried out in collaboration among all authors. Author APW developed the idea for the study. Authors RDR and APW collected the data. Author APW analyzed the data. Author AM performed the literature search and prepared the first version of the manuscript. Authors APW and AM revised the manuscript. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JAMPS/2016/29117

Editor(s):

(1) Dongdong Wang, Department of Pharmacogony, West China College of Pharmacy, Sichuan University, China.

Reviewers:

(1) Mushtaq Chalkoo, Govt.medical college, Srinagar, Kashmir, India.

(2) P. K. Hota, NTR University of Health Sciences, India.

(3) Wagih Mommtaz Ghannam, Mansoura university, Egypt.

Complete Peer review History: <http://www.sciencedomain.org/review-history/16047>

Original Research Article

Received 23rd August 2016
Accepted 31st August 2016
Published 5th September 2016

ABSTRACT

Aim: Day case laparoscopic cholecystectomy is achievable but in most hospitals it is not routine. We describe our experience with day case laparoscopic cholecystectomy in a rural Queensland hospital.

Methods: Retrospective analysis of consecutive adult patients with uncomplicated cholelithiasis who underwent day case laparoscopic cholecystectomy by the one surgeon.

Results: 75% of patients were women with a mean age of 38 years and ASA class 2. The nurse in Post Anaesthesia Care Unit was pivotal in enabling 48 out of 51 patients to be discharged home on the day of surgery. All operations were performed by the one surgeon. Anaesthesia was not protocolled.

Conclusion: While good patient selection, optimized anaesthesia and sound surgical techniques are recognised as prerequisites for day case surgery, the role of the nurse in the Post Anaesthesia Care Unit is pivotal.

*Corresponding author: E-mail: arek_p@ecn.net.au;

Keywords: Nursing; rural surgery; laparoscopic cholecystectomy; day case surgery.

1. INTRODUCTION

Patients undergoing elective laparoscopic cholecystectomy (LC) generally have an overnight stay due to post-operative pain, nausea and vomiting. Day-case surgery, while reducing the financial burden on the health care system, may offer patients more comfort by being able to recuperate in their own environment. Day-case elective LC has been shown to be safe in select patient groups with an unanticipated admission rate of 3.4% to 24.3% [1-4]. This is typically due to nausea and vomiting, pain, and conversion to an open procedure. Operative time over 60 minutes has been shown to have a four-fold increase in the likelihood of unplanned admission [2]. Patients should be American Society of Anaesthesiologist (ASA) class I or II, consent to day surgery, have a responsible adult at home on discharge, live within 30 minutes of the hospital [4] and have BMI <35 [5].

Approximately 25% of the Australian population live in rural Australia, however over 85% of Australian surgeons currently work in a metropolitan area [5,6]. Establishing a surgical service in a rural hospital is of benefit both to the patient, who has the convenience of being in close proximity to the hospital, but also the hospital staff, who are able to establish and maintain skills. There are no reports of routine day-case LC in a rural hospital [7].

We reviewed the outcome of 51 patients who were planned to undergo day-case laparoscopic cholecystectomy at Beaudesert Hospital in Queensland. Beaudesert Hospital is a 40 bed rural hospital some 60 km from a tertiary centre in Brisbane and the Gold Coast.

2. MATERIALS AND METHODS

Patients were referred to Beaudesert Hospital Surgical Outpatients clinic by their General Practitioner via a Central Referral Hub. Based on symptoms and preoperative investigations, the senior author (APW) determined whether the patient was eligible for day case cholecystectomy at Beaudesert Hospital. Those who were not (e.g. suspicion of choledocholithiasis) were referred to another institution. Day case surgery was discussed with the patient in the nursing preadmission clinic, by the anaesthetist as well as the senior author (APW). Choledocholithiasis was suspected if there was a history of jaundice or acute pancreatitis, liver function tests were

elevated or ultra sound scan showed biliary dilatation. The constraints of a small hospital prevented day of surgery ultrasonography.

Only patients ASA class 1 or 2 with BMI below 35 kg/m² were offered day case cholecystectomy at Beaudesert Hospital. The anaesthetic technique was not protocolled. All patients were paralysed with a non-depolarizing muscle relaxant (rocuronium, Merck Sharp & Dohme, Australia) and intubated. Typically, anaesthesia was induced with propofol (AstraZeneca, Australia) and maintained with a volatile agent (sevoflurane, Baxter Healthcare, Australia) without the use of nitrous oxide. Multimodal antiemesis was provided with dexamethasone (Aspen Pharmacare, Australia) plus ondansetron (Mayne Pharma, Australia). Multimodal analgesia was provided with fentanyl (AstraZeneca, Australia), morphine (Hospira, Australia), paracetamol (Phebra, Australia) and parecoxib (Pfizer, Australia). Muscle paralysis was reversed (neostigmine (AstraZeneca, Australia) and glycopyrrolate (Aspen Pharmacare, Australia)) at completion.

A typical 4 port laparoscopic cholecystectomy was performed with pre-emptive local anaesthetic (port site + intraperitoneal). Insufflation was with unwarmed, non-humidified carbon dioxide. A drain was never used. Intraoperative cholangiography was never performed. Bile duct injury was avoided by implementing the critical view of safety [8].

Patients were recovered on a one to one basis in the Post Anaesthesia Care Unit during the initial stage, focusing on pain level, consciousness level, nausea and vomiting, wound assessment and comfort. These were managed by listening to patient needs and making the patient part of their recovery process decision making. Symptoms were managed by a combination of pharmacological and non-pharmacological means. Postoperative instructions were discussed with the patient and their carer and an information leaflet provided. Any questions the patient or their carer had were answered. To help each patient feel safe and cared for, all were given a contact phone number and all were reassured that a nurse would give them a courtesy phone call the next day.

3. RESULTS

Between October 2013 and November 2015, 51 laparoscopic cholecystectomies were performed

by the senior author (APW) at a 40 bed rural hospital in Queensland. 38 patients were female and 13 male. Mean age was 38 years (range 20 – 66 years). 49 patients had a history either consistent with or typical of biliary colic. Median ASA was 2 (range 1 – 2). Median BMI was 27 (range 18 – 34). Nassar Grade 1 operative difficulty (easy) was encountered during 20 operations, Grade 2 (normal) during 19 and Grade 3 (difficult) in 12 (duodenal adhesions to gallbladder in 6, fibrosed hepatobiliary triangle in 5 and low entry of right posterior sectoral duct in 1). Nassar Grade 4 was not encountered [9]. There were no conversions to open cholecystectomy. Post operatively there were no bile leaks and no bile duct injuries. One patient with normal preoperative liver function tests and non dilated biliary tree on ultrasound scan required a postoperative Endoscopic Retrograde Cholangio Pancreatography with sphincterotomy upon presenting with a retained bile duct stone.

48 patients were discharged home from recovery on the day of surgery. Length of stay in Post Anaesthesia Care Unit ranged from 2 hours to 10 hours (median 3.6 hours). While many met the discharge criteria after 2 hours and were happy to go home to sleep it off in their own environment, some patients required a longer stay for the following reasons: pain management, being stable but sleepy, nausea, needing extra reassurance and awaiting pickup by carer. Three patients required over night admission (1 vomiting, 1 pain, 1 pain and vomiting). Table 1 shows patient and surgical features based on the pain score upon arrival to the Post Anaesthetic Care Unit.

During this time frame, 17 patients seen at the surgical clinic at Beaudesert Hospital were booked onto the senior author's waiting list at the larger Logan Hospital due to comorbidities or the suspicion of choledocholithiasis.

4. DISCUSSION

Successful day case surgery is typically attributed to advances in surgical and anaesthetic care [10]. Our observations suggest that without one on one proactive nursing care in the Post Anaesthesia Care Unit, routine day case laparoscopic cholecystectomy may not be achievable – but this component is not always stressed [11]. A successful day case surgical programme consists of multiple intertwined elements including the identification of appropriate and motivated patients, thorough preoperative patient preparation, optimized

anaesthesia and surgery being performed by a senior surgeon. However, tying these together is the crucial role of the experienced motivated Post Anaesthesia Care Unit nurse who ensures smooth patient recovery and rapid turnover which is required to run a unit efficiently [10].

In this study 94% of selected patients (48 / 51) following elective laparoscopic cholecystectomy were discharged home on the day of surgery at a median of less than 4 hours following completion of surgery. Overall, 75% of patients undergoing laparoscopic cholecystectomy were women with a mean age of 38 years and median ASA class 2. The surgical technique was standardized by virtue of being performed by the one surgeon. Anaesthesia was not protocolled: a non-volatile agent was used for induction and a volatile was used for maintenance. A multimodal approach to analgesia and antiemesis was employed.

Surprisingly, the patient's first pain score in the Post Anaesthesia Care Unit was not related to the dose of intraoperative fentanyl, morphine, parecoxib and paracetamol. In the Post Anaesthesia Care Unit, physiological parameters such as oxygen saturation were used in combination with psychosocial aspects as part of a patient-centred approach to successfully managing their recovery [12]. All patients were counselled regarding postoperative pain, wound management, personal hygiene, level of exercise and return to work as these have previously been identified as being deficient [12].

The key features of this study include employing a safe standard surgical technique, non-protocolled anaesthesia and a rural hospital setting. Limitations include its retrospective nature and selection of only healthy patients with uncomplicated cholelithiasis.

During the preoperative clinic visits, patients were made aware that same day surgery does not imply same day recovery. While patients often appreciate having the option of day case surgery, several obstacles exist: lack of postoperative surveillance, overoptimistic expectations concerning recovery and patient and carer insecurity regarding what to expect during the recovery process [12]. One of the roles of the Post Anaesthesia Care Unit nurse is to build up patient confidence through reassurance, advice about what to expect during a 'normal' recovery, and explanation of patient concerns was crucial. This allows the patient feel well enough physically and confident enough emotionally to go home on the day of surgery.

Table 1. Post anaesthetic care unit pain score and patient characteristics

PACU pain score	Female	Mean age	Mean intraop fentanyl (number received)	Mean intraop morphine (number received)	Number received intraop 1 gram paracetamol	Number received intraop 40 mg parecoxib	Mean duration of surgery	Nassar 3 difficulty	Admitted
0 – 4 N = 24	18 (75%)	40 years	132 µg (24)	5 mg (15)	17 (71%)	16 (67%)	52 min	5 (21%)	1 (4%)
5 – 6 N = 12	9 (75%)	37 years	122 µg (12)	7 mg (6)	9 (75%)	8 (67%)	49 min	3 (25%)	1 (8%)
7 – 10 N = 15	11 (73%)	35 years	128 µg (15)	6 mg (8)	11 (73%)	9 (60%)	48 min	4 (27%)	1 (7%)
Total N = 51	38 (75%)	38 years	129 µg (51)	6 mg (29)	37 (73%)	33 (65%)	50 min	12 (24%)	3 (6%)

PACU: Post Anaesthetic Care Unit; intraop: intraoperatively; N = number; Nassar level of surgical difficulty (see text)

5. CONCLUSION

During our study we found that successful day case cholecystectomy requires not only educated and motivated patients, optimized anaesthesia, sound surgical technique but also proactive nursing care especially in the Post Anaesthesia Care Unit.

CONSENT

It is not applicable.

ETHICAL APPROVAL

Ethics Board approval was obtained for this retrospective study. Local Hospital approval was obtained for review of medical notes for this study. This study did not involve human or animal experimentation. This study is not against the public interest, and the release of information is allowed by legislation.

CORE TIP

Surgical units planning on introducing same day discharge following laparoscopic cholecystectomy need to have well trained Post Anaesthetic Care Unit nurses.

ACKNOWLEDGEMENT

The authors wish to acknowledge the support of Dr Jamie Musson, Senior Anaesthetist at Logan Hospital, Queensland, Australia for helping with interpretation of the anaesthetic data.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Fleming WR, Michell I, Douglas M. Audit of outpatient laparoscopic cholecystectomy.

2. Universities of Melbourne HPB Group. Aust N Z J Surg. 2000;70(6):423-7.
2. Lau H, Brooks DC. Predictive factors for unanticipated admissions after ambulatory laparoscopic cholecystectomy. Arch Surg. 2001;136(10):1150-3.
3. Leeder PC, et al. Routine day-case laparoscopic cholecystectomy. Br J Surg. 2004;91(3):312-6.
4. Metcalfe MS, et al. Is laparoscopic intraoperative cholangiogram a matter of routine? Am J Surg. 2004;187(4):475-81.
5. Green A. Maintaining surgical standards beyond the city in Australia. ANZ J Surg. 2003;73(4):232-3.
6. RACS. RACS 2014 Activities Report; 2014. [Cited 2015 13/12/2015]. Available:<http://www.surgeons.org/media/21713909/activities-report-jan-dec-2014.pdf>
7. Campbell NA, Franzi S, Thomas P. Caseload of general surgeons working in a rural hospital with outreach practice. ANZ J Surg. 2013;83(7-8):508-11.
8. Strasberg SM, Hertl M, Soper NJ. An analysis of the problem of biliary injury during laparoscopic cholecystectomy. J Am Coll Surg. 1995;180(1):101-25.
9. Nassar AHM, et al. Is laparoscopic cholecystectomy possible without video technology? Minimally Invasive Therapy. 1995;4:63-65.
10. Quemby DJ, Stocker ME. Day surgery development and practice: Key factors for a successful pathway. Continuing Education in Anaesthesia, Critical Care & Pain; 2013.
11. Al-Qahtani HH, et al. Day-case laparoscopic cholecystectomy. Saudi Med J. 2015;36(1):46-51.
12. Berg K, Årestedt K, Kjellgren K. Postoperative recovery from the perspective of day surgery patients: A phenomenographic study. International Journal of Nursing Studies. 2013;50(12): 1630-1638.

© 2016 Melloy et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://sciedomains.org/review-history/16047>