

1-7-2015

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Ian Reynolds
Beaumont Hospital, Dublin

Jarlath Bolger
May General Hospital

Z Al-Hilli
Royal College of Surgeons in Ireland

Arnold DK Hill
Royal College of Surgeons in Ireland, adkhill@rcsi.ie

Citation

Reynolds I, Bolger J, Al-Hilli Z, Hill AD. Breaking Barriers to Successful Implementation of Day Case Laparoscopic Cholecystectomy. Irish Medical Journal. 2015;108(7):202-4.

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Breaking Barriers to Successful Implementation of Day Case Laparoscopic Cholecystectomy

Ian Reynolds, Jarlath Bolger, Zahraa Al-Hilli, ADK Hill

I Reynolds, J Bolger, Z Al-Hilli, ADK Hill

Department of Surgery, Beaumont Hospital, Beaumont, Dublin 9

Abstract

Laparoscopic cholecystectomy is a common procedure performed in both emergency and elective settings. Our aim was to analyse the trends in laparoscopic surgery in Ireland in the public and private healthcare systems. In particular we studied the trend in day case laparoscopic cholecystectomy. National HIPE data for the years 2010-2012 was obtained. Similar datasets were obtained from the three main health insurers. 19,214 laparoscopic cholecystectomies were carried out in Ireland over the 3-year period. More procedures were performed in the public system than the private system from 2010-2012. There was a steady increase in surgeries performed in the public sector, while the private sector remained static. Although the ALOS was significantly higher in the public sector, there was an increase in the rate of day case procedures from 416 (13%) to 762 (21.9%). The day case rates in private hospitals increased only slightly from 29 (5.1%) in 2010 to 40 (5.9%) in 2012. Day case laparoscopic cholecystectomy has been shown to be a safe procedure, however significant barriers remain in place to the implementation of successful day case units nationwide.

Introduction

Laparoscopic cholecystectomy is one of the most frequently performed procedures in both the emergency and elective settings with over 700,000 of these operations taking place each year in the USA¹ and over 6,000 taking place each year in Ireland. Laparoscopic cholecystectomy has been shown to be safe, associated with a reduced hospital stay, a quicker return to work and improved post-operative pain in comparison to open cholecystectomy²⁻⁵, furthermore a Cochrane Review has shown that day case laparoscopic cholecystectomy (DCLC) is as safe as overnight surgery⁶. Day case surgery offers patients the opportunity for early discharge and frees up hospital beds as well as accident and emergency departments. However, it seems as if there has been a delay in keeping up with the evidence for laparoscopic cholecystectomy in Ireland with average length of stay in public hospitals still exceeding 72 hours. Private hospitals in Ireland also continue the practice of overnight stay for the most part, although with an average length of stay just over 48 hours they are proving themselves to be more efficient than public hospitals. In this study we analysed the trends in laparoscopic cholecystectomy in Ireland in the public and private settings. In particular we focused on the day case rates in Ireland and compared our rates to the UK. We describe some of the barriers to implementing the routine practice of day case laparoscopic cholecystectomy in Ireland.

Methods

A retrospective review of National Hospital Inpatient Enquiry (HIPE) data for the years 2010 – 2012 inclusive was performed. Similar datasets were acquired from the three major private health insurers in Ireland, Aviva, Laya and VHI. The reported data from the private insurers has been anonymised due to potential commercial sensitivities in reporting these data. Data on number of procedures, average length of stay (ALOS), and rates of day case procedures were compared. This allowed us to demonstrate the difference in ALOS between public and private hospitals as well as the trend in the number of procedures performed as day cases during the three year time period. Statistical analysis was performed as appropriate using GraphPad Prism version 6.03 (GraphPad Software Inc).

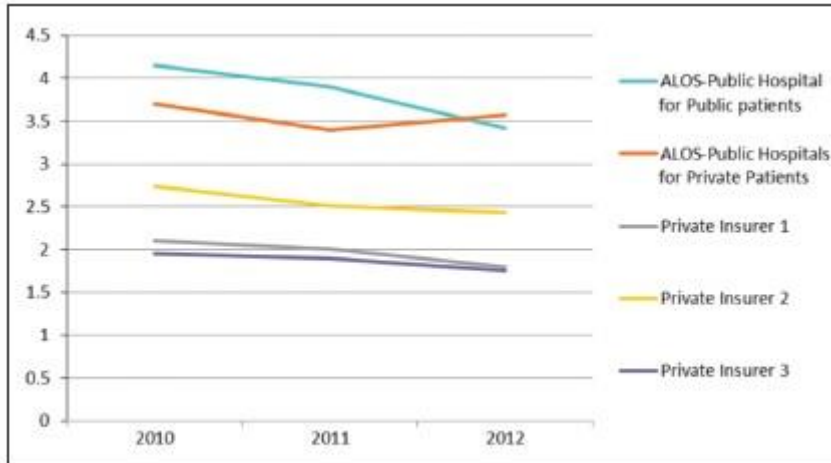


Figure 1 ALOS 2010-2012

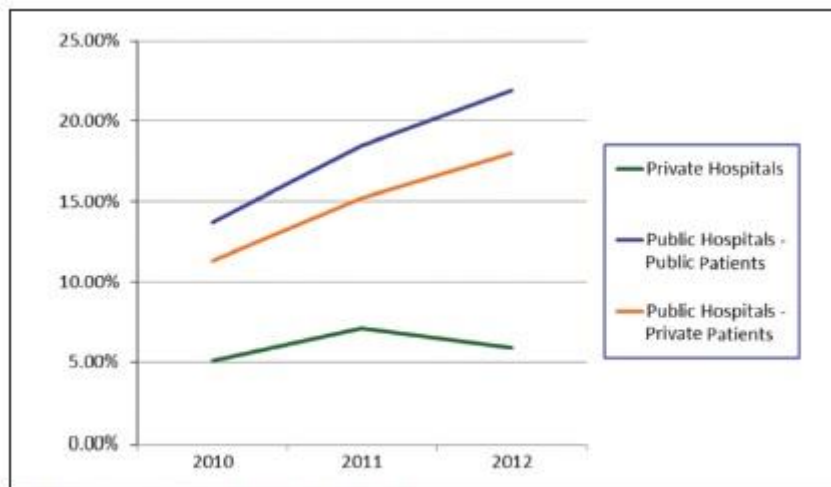


Figure 2 Day Case Rates 2010-2012

Results

Over the 3-year period from 2010-2012, there were 19,214 laparoscopic cholecystectomies performed in the public health system or covered by the three major health insurance providers. 5,489 of the total number of procedures were carried out in private/hi-tech hospitals and a further 4,063 were carried out on private patients in public hospitals. This leaves 9,662 public patients having laparoscopic cholecystectomies in public hospitals over the 3-year period. Of note, the number of procedures performed per year increased by over 400 during this time period, in spite of significant cutbacks to health expenditure. In addition, the proportion of procedures funded through insurance fell from 51% to 47.7% from 2010 to 2012, reflecting the reality that patients may be abandoning private health insurance. Average length of stay (ALOS) reduced significantly in the public sector over the course of the study, with a reduction in length of stay from 4.0 days to 3.46 days ($p=0.01$). ALOS decreased for each of the private insurers over the same time period. The ALOS was significantly shorter for each of the private insurers as compared with the public sector in each of the years studied ($p<0.05$ in each case). Rates of day case surgery were low in all healthcare settings for laparoscopic cholecystectomy, with a mere 5.1% of cases performed as day case procedures in the private setting in 2010. This is in spite of the shorter overall ALOS seen in private patients. The number of day case procedures rose in the public setting, both for public and private patients over the study period, increasing to 21.9% and 18% respectively. This is compared with a day case rate of 5.9% in the private sector in 2012, relatively static as compared with 2010.

| | Public patient in public hospital | Private patient in public hospital | Private patient in private hospital | Total |
|-------|-----------------------------------|------------------------------------|-------------------------------------|-------|
| 2010 | 3035 | 1385 | 1802 | 6222 |
| 2011 | 3152 | 1359 | 1840 | 6351 |
| 2012 | 3475 | 1319 | 1847 | 6641 |
| Total | 9662 | 4063 | 5489 | 19214 |

| | Public patient in public hospital | Private patient in public hospital | Private patient in private hospital |
|------|-----------------------------------|------------------------------------|-------------------------------------|
| 2010 | 13.7% | 11.3% | 5.1% |
| 2011 | 18.5% | 15.2% | 7.1% |
| 2012 | 21.9% | 17.5% | 5.9% |

Discussion

There has been a significant increase in the burden of gallstone disease in Europe in recent years, and given increasing life spans and aging populations, it is likely this trend will continue⁷. Reflecting this pattern, the rate of laparoscopic cholecystectomy increased over the three-year period in our study. The total number of procedures performed increased year-on-year, although the number of procedures performed in the private sector remained static. There was a corresponding increase in the number of procedures performed as day cases in the public system in the three years studied, which almost entirely accounts for the increase in volume in the public system. This suggests that in spite of financial challenges, there has been increased efficiency in the public hospital service, mostly through increasing utilization of day-case beds. It has been estimated that an efficient day surgery unit can save up to €1,000 per patient⁸. Based on this estimation, if day-case rates of 60% were achieved as recommended by British Association of Day Surgery (BADS), the potential direct cost saving would be in excess of €1,000,000 per annum. The demands being placed on hospitals for beds is forcing them to consider shortening the length of stay after elective procedures, with this day case surgery is looking more and more like the solution. From the above results it is clear that public hospitals have been making steps towards increasing the number of laparoscopic cholecystectomies performed as day cases with an increase from 13% of the total number of laparoscopic cholecystectomies in 2010 to 21.9% in 2012. Unfortunately for those cases not performed as day cases the average length of stay still remains quite long with a small decrease from 3.9 days in 2010 to 3.5 days in 2012. However, it is easy to criticize this ALOS without looking at the reasons why it remains so long. Important factors to be assessed include patient co-morbidity, number of previous attacks and duration of cholecystitis, hospital infrastructure or surgeons concern.

The rates of laparoscopic cholecystectomy performed in the private system remained relatively static over the study period. This is true both for private patients in public hospitals and for those in private hospitals. Of more interest however is the comparison between day case rates for private patients on each pathway. There was an increase in day procedures in those treated in public hospitals to a level similar to that seen for public patients. However, the rates of day case procedures in the private system remained low and static. We can speculate that this may be due to a lack of surgical trainees in the private system providing pre-operative and post-operative care to patients and a lack of emergency departments to facilitate the rare cases where re-admission is required. However, this should not be an impediment to discharging on the day of surgery. A recent study from Graham et al showed that nurse-led discharge following laparoscopic procedures is safe, with low re-admission rates⁹. The increased demand on surgical beds in public hospitals may also account for the increased number of private patients undergoing day case laparoscopic cholecystectomy in public hospitals.

BADS has recommended that 60% of all laparoscopic cholecystectomies can be carried out as day cases. The data from this study has shown that in 2012 the day case rates in public hospitals were 21.9% and 17.5% for public and private patients respectively. The day case rate in private hospitals in 2012 was only 5.9%. This forces us to ask, how do we compare to other health systems and what are the barriers that are stopping us from reaching day case rates of over 60%? The issues that come to

mind are; is the correct infrastructure in place? What are the attitudes of healthcare staff and patients towards day case surgery? What can hospitals do to ensure the changes they make are effective and continue to improve? The day case rates for laparoscopic cholecystectomy in the U.K. have been estimated by the BADS. The national median is 39% and the top 25% of hospitals have a day case rate of 54% with the top 5% of hospitals having an impressive day case rate of 65%. In order to provide an effective day case service appropriate infrastructure needs to be in place. Hospitals must have a dedicated day surgery ward and allocated time in theatres for these procedures. Pre-assessment clinics are vital to ensure that only patients who are suitable for DCLC are selected and their preoperative work up is completed prior to their admission. Hospitals must have a discharge plan for patients, as mentioned above nurse led discharge has been shown to be safe. Patients should be discharged based on parameters such as vital signs, pain scores and ability to wash and dress as opposed to strict time limits. Patients should have access to a phone help line and rapid access back to the hospital in cases where there are complications. Along with infrastructure a care pathway for those who need cholecystectomy has been shown to help improve the day case rate¹⁰.

Changing attitudes is the next most important step in implementing a successful DCLC service. Surgeons need to be aware of the importance of patient selection for DCLC. Selecting only those patients who are suitable will reduce the rate of unexpected admission and hence improve service planning and provision. There still remains understandable doubt amongst many surgeons about the safety of DCLC. The Cochrane review mentioned above has shown that day case surgery is as safe as overnight surgery and as the rate of day case procedures increases surgeons may become more comfortable with making earlier discharges. The attitude of other staff in the hospital towards DCLC is also a factor that can determine success. All ward and theatre staff involved in the care of these patients should understand the goals that are trying to be achieved. Patients should be admitted and taken to theatre in a timely fashion so that they have an adequate recovery period before their discharge in the evening. Patients are the final group whose attitudes need to be addressed. This can start in the outpatient clinics and pre-assessment clinics and patients may even need reassurance right up to the time of their discharge. Patients should also be provided with information leaflets well before their admission for surgery to help them understand the process. In order to maintain high rates of day case surgery each unit needs to continuously monitor and audit their performance. Regular feedback to all those involved is vital to ensure that the service continues to run efficiently.

DCLC has been shown to be as safe as overnight surgery. In the current financial climate there is increasing pressure being placed on hospitals to increase their rate of day surgery. While Irish hospitals have shown an increase in day case rates in recent years we still lag behind our counterparts in the U.K. Improved infrastructure, changing attitudes and continuous audit are vital components required to implement a successful day surgery unit.

Correspondence: IS Reynolds

Department of Surgery, Beaumont Hospital, Beaumont, Dublin 9

Email: reynoli@tcd.ie

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