

Cholecystectomy and appendectomy utilisation rates in Belgium: trends 1986-1996 and impact of laparoscopic surgery

by

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Abstract

We report here 11-year trends in the utilisation of cholecystectomy and appendectomy in Belgium from 1986 to 1996, computed using the National Belgian Health Insurance databases. Cholecystectomy rates increased by 64% over 7 years (1989-1996) following the introduction of laparoscopic surgery. Appendectomy rates per 100.000 showed a remarkably steady decrease from 282,3 in 1986 to 166,4 in 1996 and did not seem to be affected by laparoscopic surgery. Belgian trends parallel those observed elsewhere. In particular the increase in cholecystectomy use represents a challenge for public health managers and underlines the need for an in-depth evaluation of the new criteria used for this surgery.

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Keywords

appendectomy, cholecystectomy, laparoscopic surgery, epidemiology, physician's-practice-patterns

Introduction

Laparoscopic cholecystectomy (LC) was first performed in France in 1987, and the technique was rapidly and enthusiastically adopted by surgeons in America and Europe. Benefits to patients were claimed to be lower cost per case, less postoperative pain and need for anaesthesia, shorter hospital stay, and earlier return to work(1). More than 85% of all cholecystectomy in the United States were estimated to have been performed laparoscopically in 1993(2). Several studies have noted an increase in the rate of cholecystectomy in the early 90's, after the introduction of the new laparoscopic technique: 18% increase in Scotland (1989-1993)(3); 30% in Ontario (1990-1994)(1), 34% in Stockholm County, Sweden (1990-1993)(4), and up to 60% (1988-1992) in a large Health Maintenance Organisation in the United States(5). Increases over such a short time in several countries are unlikely to be related to epidemiological changes; on the other hand there has been evidence of lower clinical thresholds for performing surgery in particular for patients with uncomplicated gallstone disease undergoing elective surgery(6).

By contrast, epidemiological data reveal a decline in the utilisation of appendectomy, a non-elective procedure. This has been observed in countries like Canada, Switzerland, and New Zealand(7), in Italy(8,9) and Germany(10). In Scotland, appendectomy rate per 100.000 fell from 197 in 1973 to 96 in 1993(11). In the US, this rate fell from 110 in 1990 to 98 in 1993(7). The reason for the decrease are speculative but there is evidence both for a true decline in the incidence of appendicitis(12,13), and for improvement in diagnosis accuracy(13). Diagnosis accuracy for appendicitis has been a long-time problem and several studies have reported high proportions of histologically proven negative appendectomies, e.g. 40% in one serie in Germany(14). Diagnosis accuracy has been systematically lower for females(13,15) where the differential diagnosis from gynaecological diseases is important; this is likely to be improving with the development of advanced ultrasound techniques. Laparoscopic appendectomy (LA) was introduced later than LC but never enjoyed the same popularity. In Scotland

for instance, proportion of LA rose, then fell, between 1990 and 1995(16).

We report here trends in the utilisation of cholecystectomy and appendectomy in Belgium from 1986 to 1996.

Methods

We used databases from the National Belgian Health Insurance (INAMI/RIZIV), which covers over 95% of the Belgian population. Health care providers bill their services either to the patient or directly to the insurance fund using a very detailed list of codes, a fixed amount is refunded per billed code. Codes and their corresponding refund are revised and updated more or less regularly in order to account for changes in medical practice and technology. First LC were performed in Belgium in 1990, and specific billing codes for LC were introduced at the beginning of 1991. Specific billing codes for LA were introduced in 1996, but LA had been used already for several years before.

We computed utilisation rates for cholecystectomy and appendectomy based on the total relevant billing codes and the number of insurees. Incidental appendectomy is not included. Figures for 1986 and 1987 are based on the number of procedures billed these years but for later years, represent procedures actually performed in a particular year. The discrepancy between procedures billed, and performed on a particular year can sometimes be significant and seriously hamper analysis of time-series data in case of late billing or data processing by the Insurance Fund, but such delays were not reported in 1986 and 1987. Only complete, aggregated data are available, and no breakdown (clinical indication, sex, age) or standardisation, is therefore possible.

Results

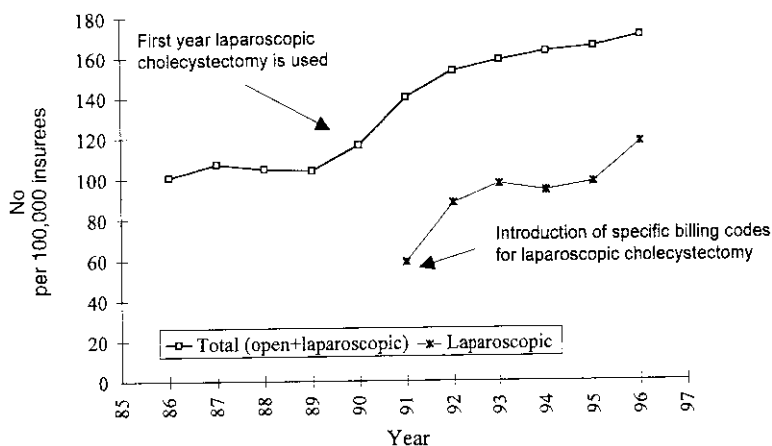
TABLE 1. Cholecystectomies and appendectomies performed in Belgium among National Security Insurees, 1986-96.

Year	86	87	88	89	90	91	92	93	94	95	96
Appendectomies											
Total	27.338	26.795	23.607	21.882	21.041	20.423	19.845	18.115	18.030	17.022	16.321
% laparoscopy											33%
Cholecystectomies											
Total	9.739	10.360	10.092	10.025	11.250	13.572	14.944	15.314	15.635	15.945	16.669
% laparoscopy						42%	57%	61%	58%	59%	69%
National Security Insurees	9.683.410	9.683.227	9.671.373	9.666.880	9.689.585	9.723.812	9.781.096	9.688.124	9.632.634	9.678.970	9.808.914

Cholecystectomy

Cholecystectomy utilisation rates had remained more or less stable from 1986 to 1989, but then rose from 103,7/100.000 in 1989 to 169,9/100.000 in 1996 (64% increase), after the introduction of LC in 1990. Proportion of LC increased from 42% in 1991 to 69% in 1996.

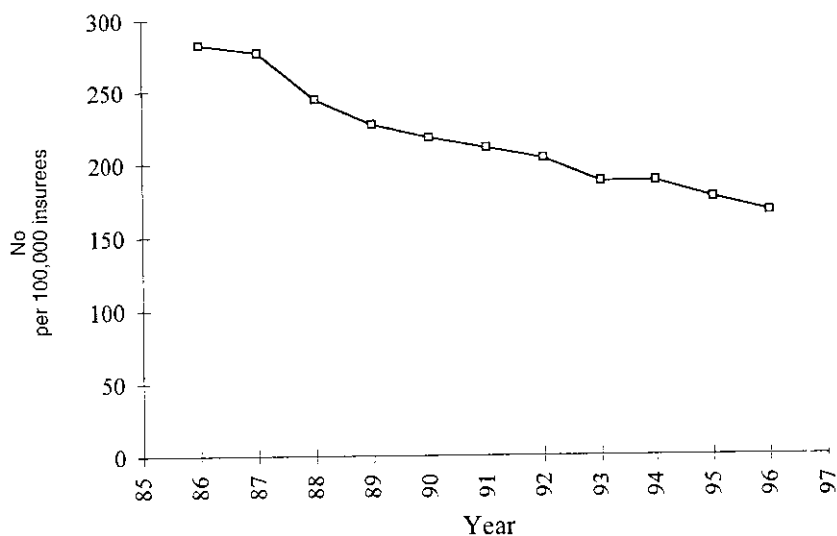
Cholecystectomy in Belgium 1986-1996



Appendectomy

Appendectomy utilisation rates show a remarkably steady decline in the last 10 years from 282,3/100.000 in 1986 to 166,4/100.000 in 1996 (41% decrease). In 1996, 33% of appendectomies were performed laparoscopically.

Non incidental appendectomy in Belgium 1986-1996



Discussion

Given the structure and coverage of the national health insurance in Belgium, billing codes database, although not designed for epidemiological purposes, provides exhaustive and accurate information data on specific procedures and services use trends at country level. However cheating in the billing of procedures is known to occur in some cases. For instance, open cholecystectomy is better refunded than laparoscopic cholecystectomy and was probably sometimes billed where LC had actually been performed. A sudden increase in the proportion of LC in 1996 might be explained by more stringent insurance controls (INAMI/RIZIV, personal communication). The total cholecystectomy utilisation rate however is likely to be very reliable. There is no difference in refunding between open, and laparoscopic appendectomy.

Trends in cholecystectomy rates as related to the introduction of laparoscopic surgery parallel those observed elsewhere - and raise the same questions. As a less invasive procedure, LC was once thought to reduce health care costs but actually resulted in an increased consumption of health care due to changes in the indications for gallbladder surgery. The most recent guidelines nevertheless still advise expectant management for asymptomatic gallstones(17,18). On the other hand, results of large randomised trials comparing open and laparoscopic surgery became available only in the last years, giving rise to hot controversies challenging the early unconditional endorsement of the procedure. A review article concluded recently that laparoscopic surgery 'is not easier, quicker, cheaper, or safer (...) ' than closed surgery(16). The dramatic increase of cholecystectomy utilisation in Belgium since the introduction of LC (64% between 1989 and 1996, showing no sign yet of a possible change in trend) therefore represents a real challenge for public health managers.

By contrast, the introduction of laparoscopy did not seem to have any impact on the declining trends of appendectomy. Indications for appendectomy are not controversial, the problem here being rather diagnosis accuracy which cannot be helped by laparoscopic surgery. However, if 'there is no sound evidence to justify substituting laparoscopic for the standard appendectomy'(16) as argued by the review paper quoted earlier, one can question the fact that one third of appendectomies are performed laparoscopically in Belgium.

These data should be analysed and discussed with medical associations and colleges of practising surgeons: these could then engage in a

wide consultation leading to the elaboration of national guidelines, endorsed by the Belgian medical community. Implementation of these guidelines need to be followed-up, through the study of trends, but also for instance through peer-review or audit of the intervention's indications, as used sometimes for C-sections (19).

Billing codes data in Belgium have the unique advantage to provide a reliable and exhaustive picture of time trends at country level, but given their inherent limitations (no detailed analysis are possible), can merely call attention to particular problems deserving further study.

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