MEDICAL PRACTICE

Contemporary Themes

Increasing use of private practice by patients in Oxford requiring common elective surgical operations

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Abstract

A random sample of 6000 people from eight general practices in and around Oxford was studied to ascertain their surgical histories and method of care received. The proportion of operations that were performed privately had increased with time and had a steep gradient according to social class. Different procedures had different likelihoods of being performed privately, but the age and sex of the patient had a non-significant association with private surgery.

Adjustment for possible confounding variables using logistic analysis indicated that in the 1980s elective surgery is five times more likely to be performed privately than it was at the institution of the National Health Service.

Introduction

What has happened to private medicine since the creation of the National Health Service has been estimated from the proportions of the population with private insurance[1] and the availability of private beds.[2] Nicholl *et al* carried out some detailed research on regional variations in the proportion of elective surgical operations performed privately,[3] but it is often said that because routine statistics are lacking in the private sector "private practice is an especially difficult subject to study."[4]

We report a study, conducted in 1983, of 6000 randomly selected patients from eight general practices in and around Oxford from whom detailed surgical histories were obtained, including information about the type of care received. The survey was planned to investigate any differences between social classes in their use of public and private elective surgery, and these are reported in detail elsewhere.[5] Briefly, questionnaires were sent to 3002 men and 3012 women aged between 40 and 64 in eight Oxfordshire general practices selected from the Oxford community health project. Details of occupational state were sought as well as histories of all surgical operations in each respondent's lifetime. The eventual response to two reminders after deleting those returned undelivered or ineligible was 74% and a sample of the 4120 responses was validated against general practice records.[6]

In our sample 406 (19%) women and 413 (21%) men had had no surgical operation. The most common operations were dilatation and curettage for women (761 (35%)) and tonsillectomy (655 (33%) men and 749 (35%) women); 403 (19%) of the women had had a hysterectomy and 345 (16%) an appendicectomy. Of the men, 272 (14%) had had an appendicectomy and 219 (11%) hernia repair. In this report we include only those operations that occurred with sufficient frequency after 1950 and exclude circumcision and sterilisation operations as well as obstetric procedures. We thus excluded tonsillectomy because most of these occurred before the creation of the NHS. We, therefore, studied dilatation and curettage, hysterectomy, appendicectomy, operations on the breast, hernia repair, operations for varicose veins, cholecystectomy, operations on ovaries and the thyroid gland and prostatectomy in order of their frequency.

Method

When the NHS came into being the subjects in our sample were aged between 5 and 30. Each operation was recorded in our questionnaire as

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having been performed by the NHS, privately, or abroad or in the armed forces. We studied only the first two and deleted all other operations, which constituted a small proportion of all those performed after 1948 (4%). Because our interest lay in the changing proportion of private surgery after the creation of the NHS the method of analysis had to take account of confounding with age and procedure. Certain operations are more likely at particular ages, and in our sample such ages were associated with particular calendar periods. For instance, subjects in our sample who had an operation at age 30 would, firstly, have been unlikely to be having a cholecystectomy and, secondly, could not have done so after 1973 because the lower age limit was 40 in 1983.

We therefore fitted a multiple logistic model in which the independent variables represented calendar period, age at operation, sex, type of procedure, and social class of the patient.[7] In our sample people operated on in 1980, for instance, could only be aged 37 to 62, while operations in 1955 could only be performed on people aged 12 to 37, and thus any difference in the proportion having private operations between the two periods could be attributed to age as much as changes in the overall preference for or availability of private surgery.

By adopting the classical techniques of regression analysis, however, adjustment for age could be performed before we looked for the effects of calendar period. The dependent variable in the model was the logit of the probability of having a private operation, and therefore the exponential of a fitted constant was roughly equivalent to the rate ratio of private operations for the value compared with the value of the reference category of a fitted variable. We fitted each variable separately after it had been suitably categorised and then adjusted each for the remaining variables to allow, as far as possible, for confounding. We report here both the unadjusted and adjusted rate ratios.

Results

Table I summarises the operations in our sample by calendar period according to whether they were private or not. A general increase in the proportion of private operations was apparent. To test for the importance of an independent variable on the proportion of private surgery we examined the improvement in goodness of fit to the above model consequent on including the variable after all the others had been included. Table II shows the usual difference in this goodness of fit expressed as a χ^2 statistic.[7]

Social class was a highly significant predictor of private surgery, calendar period was less so, and type of operation was significant at 5%. Age and sex did not add significantly after the other variables had been included. This indicated that in terms of the above observation calendar period was a more plausible determinant of the proportion of private surgery than age, because it contributed significantly to the goodness of fit even after the inclusion of age, sex, and other independent variables.

Table III shows the rate of private surgery before adjustment for possible confounding and after adjustment. Each category within each variable was compared with the first category. When values were unadjusted for confounding women were 1·48 times more likely than men to undergo private surgery; but after adjustment for age, social class, calendar period, and type of procedure they were only 1·19 times more likely than men to do so.

Of the significant effects, social class (in 1983) stood out as the most important, with people in social classes IV and V having one 20th the rate of private surgery of those in social class I. Each rate ratio was significant at less than 1%. Calendar period showed an increase in rate ratio until the late 1950s and then a decrease until the late 1960s and thereafter a steady increase, until the 1980s showed nearly a fivefold increase in the proportion of private elective operations compared with the early days of the NHS. Type of operation showed a predictable pattern, although the data were often sparse. All operations had a higher chance of being performed privately than appendicectomy, with operations for varicose veins, prostatectomy, and hysterectomy being significantly higher. The rate ratio for prostatectomy reflected the fact that three out of the six such operations were performed privately compared with 16 out of 313 appendicectomies (5%).

The weak association with age showed that when other variables were not taken into account the highest rate ratio for private surgery was between ages 40 and 49, declining as people became older. After adjustment for the other variables the highest rate of private surgery occurred in those under 20 years of age. This partly reflected adjustment for calendar period, which in our sample, of course, had the greater effect on more recent operations, which necessarily took place when respondents were well over 20. It also reflected a slightly higher rate of private surgery among the young. None the less, the rate of private surgery after adjustment was three times as high for people aged 40-49 as for people aged over 60 (0·68/0·24).

TABLE I—*Operations performed either by the National Health Service or privately by calendar period*

	National Health Service	Privately	Total No of operations	% of operations performed privately
1950-4	153	6	159	3·8
1955-9	175	15	190	7·9
1960-4	216	17	233	7·3
1965-9	288	19	307	6·2
1970-4	357	33	390	8·5
1975-9	354	47	401	11·7
1980-3	284	57	341	16·7
	1827	194	2021	9·6

TABLE II—*Overall significance of association of each variable with private surgery after adjustment for all other variables*

Variable	χ^2 For inclusion	df	p Value
Calendar period	20	6	p<0·01
Age	7	5	NS
Sex	1	1	NS
Procedure	21	9	p<0·05
Social class	145	3	p<0·001

TABLE III—*Rate ratios of private surgery before adjustment for confounding and after adjustment for all other independent variables*

	Unadjusted rate ratio	Adjusted rate ratio	95% Confidence limits for adjusted rate ratio
Sex:			
Male†	1·00	1·00	
Female	1·48	1·19	0·59-2·40
Age:			
<20†	1·00	1·00	
20-29	0·76	0·48	0·15-1·56
30-39	1·33	0·59	0·17-2·02
40-49	1·91	0·68	0·19-2·47
50-59	1·71	0·52	0·14-1·96
≥60	1·45	0·24	0·04-1·37
Social class:			
I and II†	1·00	1·00	
III	0·17*	0·16	0·10-0·24*
IV and V	0·05*	0·05	0·02-0·12*
Not known	0·35*	0·32	0·17-0·60*
Period:			
1950-4†	1·00	1·00	
1955-9	2·18	2·29	0·79-6·63
1960-4	2·01	2·00	0·63-6·33
1965-9	1·68	1·53	0·48-4·87
1970-4	2·36	2·10	0·66-6·73
1975-9	3·38*	2·96	0·93-9·43
1980-3	5·11*	4·88	1·49-15·98*
Operation:			
Appendicectomy†	1·00	1·00	
Hernia	1·61	1·42	0·58-3·51
Varicose veins	3·26*	2·37	1·00-5·58*
Thyroid operations	1·73	1·41	0·69-2·87
Cholecystectomy	1·59	1·28	0·48-3·40
Prostatectomy	18·56*	20·05	2·47-162·60*
Dilatation and curettage	1·68	1·39	0·66-2·92
Hysterectomy	3·15*	2·47	1·13-5·36*
Ovarian operations	2·32	2·60	0·70-9·62
Breast operations	1·93	1·07	0·43-2·67

† Reference category.
* p<0·05 compared with reference category.

Discussion

As data on private surgery are not routinely recorded it is difficult to estimate the extent of private surgery and in particular how it is changing. In our study of common operations the proportion of private surgery increased from about 4% before 1954 to 9% in the late 1950s, decreased to 6% until the late 1960s, and has reached 17% in the 1980s. This is comparable with the estimate of Nicholl *et al* of 18·5% for all elective operations in the Oxford region in 1981.[8] In their study the overall proportion of private operations in England and Wales was 13·2%.

The proportion of the population covered by private medical insurance has been increasing, particularly since 1980.[8] In the General Household Survey of 1982, 7% of both sexes had some form of private medical insurance.[9] At that time the proportion insured

was highest among those aged 45-64 and lowest among people over 64. As might be expected, 23% of social class I, 19% of social class II, and only 2% of social class V had some private medical insurance cover. Insurance cover was negligible among those elderly people classified as social class III and below.

Our study used a randomly selected group of people to provide unique information about who uses private facilities for common elective operations. We investigated changes in the use of private surgery from a cross sectional survey, using reliable surgical histories. We conclude that age and sex have a weak association with private surgery, although this might reflect the small numbers studied. The effects of age and sex were certainly consistent with results of previous research, although most of this has been fairly recent, and we observed these effects through the 35 years between the creation of the NHS and the time of our survey.

Our results on the probability of private surgery by type of operation are consistent with the results of Nicholl *et al*,[3] which might indicate a more lasting relation than they observed in a single year. Our results on social class, however, indicate a stronger relation than interpretation of the data from the General Household Survey seems to indicate. This is perhaps because any insurance cover for the disadvantaged social classes is relatively recent.

Finally, our data suggest that the proportion of private operations is increasing, such that the likelihood of having an operation done privately is five times greater now than it was at the creation of the NHS. This effect appears not to be confounded by age and type of operation. This provides no reliable insights, however, into what will happen in the future.[10]

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Efficiency of use of blood for surgery in south and mid Wales

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The need for blood in hospitals continues to exceed the amount collected by the transfusion services. As a result there may be recurrent blood shortages. In addition, the risk of shortages is also increased because many red cell units are lost through outdating. This waste occurs mainly because of the practice of ordering more blood to cover operations than is needed. Overordering is shown by an excessively high ratio of blood crossmatched to that transfused.[1-4] The risk of waste is increased when there is delay in recrossmatching the blood which is not transfused, so that it cannot then be used for other patients.[5] Unnecessary crossmatching can be reduced by using tariffs or maximum blood order schedules[6] that suggest the appropriate amounts of blood to be crossmatched for various operations. These can be combined with a policy of performing only the blood group and antibody screening procedures for operations which rarely require blood.[1 7 8]

Blood ordering policies that will be accepted should be derived not only from analyses of blood usage rates but also by discussion and agreement between interested parties. The policies can then be used as a guide by inexperienced medical staff to ensure economical and consistent surgical blood ordering practices. Their implementation should reduce blood wastage, alleviate working pressure on blood bank staff, and thereby contribute towards improved safety for patients. Apart from a recently published guide to surgical blood ordering based on experience at St Mary's Hospital,[9] most of the data on tariffs were published several years ago in the USA.[2 6 10] This study was designed to provide an up to date analysis of blood use within hospitals in south and mid Wales serving a population of 2·2 million that might more closely reflect practice within the rest of the United Kingdom.

Materials and methods

Blood bank records in 17 hospitals in the Welsh region were analysed to show the amounts of blood requested and used for surgical procedures. For each hospital the overall ratio of units crossmatched to units used was calculated. In addition, operating theatre lists were analysed to discover the numbers of any given operation being performed irrespective of whether crossmatched blood was requested. A list was then drawn up of the 68 most common surgical procedures that might require blood transfusion cover, other minor surgical procedures not being considered further.

For each type of operation the total numbers of blood units that were ordered and actually used were counted. From these data we calculated the blood needs that would satisfy over 90% of operative cases. The closest integer value was selected as the provisionally recommended tariff for ordering purposes. When the consumption of blood averaged less than 0·5 unit a case the group and antibody screen procedure was proposed.[8] At least 25 cases of each procedure were counted, except for those less common procedures separately identified.

This provisional tariff was circulated to the 238 consultant surgeons, anaesthetists, obstetricians, and gynaecologists in the 17 hospitals with a request for critical comments regarding the classification of procedures or the tariff totals selected. The final tariff was devised after taking into account the suggestions received. Analysis of the replies allowed more precise definition of certain operations and identification of high risk categories, which were used to assist analysis of further data.

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