

Surgeon Related Quality In Colorectal And Breast Cancer Surgery

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Abstract

The matter of quality of surgical treatment is widely discussed nowadays worldwide. It seems to be related to surgeon himself, to his professional knowledge and skills, and also to hospital and department level. Authors retrospectively reviewed hospital database in two cancer centres in the south Poland, taking into account breast and colorectal cancer surgery. There were 688 colorectal cancer cases treated in one and 1309 breast cancer cases treated in another. Significant differences among colorectal surgeons were noticed in surgical site infection prevalence (2,9% - 40,6%), postoperative complications ratio (5,71% - 31,25%), length of postoperative stay (mean 13,7 - 26,3 days; longer stay for less experienced surgeon), number of lymph node dissected and local failure rate (9,76% - 50%). In the multivariate analysis 5 and 10 years survival was dependent on surgeon. Results in analysis of breast cancer surgery outcomes also differed between surgeons. There were significant differences observed in operation time (mean 72 - 83 minutes), number of lymph node dissected (12 - 15), surgical site infection rate (3,5% - 10,9%), length of postoperative stay (9 - 12 days) and local recurrence rate (7,9% - 17,6%). The difference in 10 years survival was of borderline significance (51.6% to 62%; $p=0,05$).

Quality of surgical skills and knowledge seems to be one the most important factors influencing cancer surgery outcomes. Further investigation should be performed and individual results of surgery should be known for every hospital and for every surgeon.

INTRODUCTION

There is evolving question in today's medicine of costs and quality in different treatment modalities. A lot of modern randomised trials do analyse effectiveness of modern therapeutical interventions. That matter is particularly important in oncology, because nowadays there are a lot of extremely sophisticated and expensive devices routinely used for cancer patients. On the other side, there are only a few papers published concerning quality of treatment in oncology and surgery and probably one of the most significant factors influencing outcomes – surgeon himself. Do surgeon-related factors really, significantly influence short and long term results of surgical treatment? If and how

much patient's outcome depends on his surgeon skills? We all intuitively feel that it is so. Our patients also do. There are no many evident and unquestionable proofs to support this opinion. Not to omit is that it is always very hard to properly assess professional activities of our colleagues and ourselves. The observation by Fielding (1) was probably the first study to suggest that surgeons differ in terms of number of postoperative complications.

The goal of this study was to assess the quality of surgical therapy in breast and colorectal cancer.

MATERIALS AND METHODS

Data were retrospectively collected from the two cancer

hospitals in southern Poland (Regional Cancer Centre in Bielsko—Biala and in the Cancer Centre in Cracow).

All statistical analyses were done with Statistica for Windows PL, version 5.0, StatSoft Inc.

There were 688 patients with full clinicopathological information identified, who underwent colorectal surgery in Bielsko—Biala for adenocarcinoma (1978 and 1997). Only 8,1% of colorectal procedures were performed of urgent conditions. Male to female ratio in this group was almost 1, with mean age 62 years. In the 66% of patients tumour was localised in the rectum, in 37,7% in the sigmoid and in 18,2% in the colon. The surgical procedure was performed with radical intention in 78,6% of patients. In the remaining 21,4% operation was done with palliative intent. There were six surgeons working in the operating theatre during the study period. There were significant differences in experience and technical skills between surgeons because case volume on that ward varied from 8 to 58 colorectal adenocarcinoma cases per year.

The other study group consists of 1305 breast cancer patients (BCP) operated on by 10 surgeons in Cancer Centre in Cracow (1980-1989). The case volume was from 14 to 49 cases treated every year. Included were only cases with ductal cancer after radical or modified mastectomy with full clinicopathological information.

RESULTS

COLORECTAL CANCER

It was showed in the multivariate analysis, that the surgeon was an independent factor of the surgical site infection prevalence. The most experienced surgeon had 17,1% of surgical site infection (SSI). SSI incidence ranged between 2,9% and 40,6% ($p=0.001$) between others.

Postoperative complications ratio (mostly bleeding or ileus) varied also between surgeons (31,25% - 5,71%; $p=0.02$). The length of hospital stay postoperatively also varied between surgeons (mean 26,3 - 13,7 days; $p=0.04$), with longer stay for patients operated upon by surgeons with lower case volume. The average number of lymph nodes dissected was 6.4 and varied (1,9 - 13; $p=0.005$) significantly between surgeon who performed the operation and pathologist (2.2 - 8; $p=0.04$) who analysed the specimen. Patient's obesity influenced on numbers of lymph nodes excised in abdomino-perineal resection but not in anterior resections. Local failure was observed in 9,76% patients operated by the most experienced surgeon and in as much as

50% of patients operated by surgeon with the smallest experience ($p=0.01$). In multivariate analysis the surgeon was an independent factor influencing the risk of the local recurrence. In the multivariate analysis long-term survivals was independently influenced by clinical stage of the disease, by surgeon and by intraoperative blood transfusion. Relative risk of death was 6.74 times higher for Dukes C than B ($p=0.001$), from 2.2, 2.6 and 4.8 higher for surgeons No 4, 3, 2 compared to surgeon No1 ($p=0.03$), and 2.2 higher for patients with intraoperative blood transfusion than without ($p=0.02$).

BREAST CANCER

The mean operating time differed among surgeons, and ranged between 72 to 83 minutes ($p=0.005$). The average number of axillary lymph nodes dissected was 12 to 15 ($p=0.003$). There were observed differences among surgeon in Cancer Center in surgical site infection rate (range 3,5% to 10,9%; $p=0.005$) and length of postoperative hospital stay (9 to 12 days; $p=0.03$). It was noted that local recurrence was also dependent on surgeon (7,9 to 17,6%; $p=0.04$). There was borderline difference among surgeons in Cancer Center in 10 years survival (51.6% to 62%; $p=0.05$). In the multivariate analysis the only significant factor influencing survival after breast cancer surgery was clinical stage of the disease. Relative risk of death was 10 times higher for pN+ than pN- ($p=0.001$), 6.4 times higher for high-grade tumours, than for low grades ($p=0.001$). Relative risk of death for surgeons No 6 was 1.7 higher than for surgeon No 3 ($p=0.089$).

DISCUSSION

There are several studies suggesting that surgeon himself has an impact on the results as well as on the costs of surgical treatment. One of the factors identified as influencing the results of breast cancer surgery was hospital status. Mettlin (8) in 1987 suggested that non-specialised medical centres tend to have better 5-year survival rates than specialised ones. Also the work by Kee (5) showed that hospitals with higher caseloads had a slightly better results of patients survival. However the study by Karjalainen (4) did not confirmed such a findings. On the other hand data published by Scorpiglione (11) in 1995 clearly showed that almost 38% of breast cancer patients in Italy received inappropriate, unnecessary mutilating surgery. This finding was true as referred to non-specialised medical centers.

It seems that surgeon himself plays more important role than hospital status when it comes to breast cancer surgery

results. Sainsbury (10) stated that surgeons dealing with more than 30 breast cancer patients per year have better results. The relative risk for women treated by surgeons performing less than 30 operations annually was established for 0.85. Between surgeons with higher case-volume there were also several differences in the outcomes, however they did not influence 5-year survival rate. Gillis (2) found similar variations. Surgeons with no special interest in breast cancer surgery sampled three or fewer lymphnodes in 38% of procedures compared with 10% for specialist breast surgeons. Patients treated by the latter had an overall 10-year survival benefit of 8%.

This conclusion in general accords with our results for breast cancer surgery. However we were not able to show that benefit in 10-years survival because most of breast surgeons in Cancer Center has case load quite big. The significant differences between the surgeons were found for number of dissected lymph nodes, duration of hospital stay, surgery time, infection and recurrence rates. The overall survival did not differ among surgeons significantly, however the tendency was observed. In some studies differences between surgeons are more clearly seen, even in specialised medical centers. Reynolds (9) reported non-radical lymphadenectomies reaching 47% for some surgeons. What is especially interesting, he noted in his study, that this rate collapsed to 20% during study period due to the introduction of the quality control programme. It suggests that the fact that surgeons were being evaluated influenced their surgical technique.

The number of lymph nodes found in the specimen depends also on a pathologist. This finding is true not only for breast cancer surgery but also for colorectal surgery (6).

Interestingly in this multivariate analysis was noticed, that patient's obesity was a significant factor influencing number of lymph nodes excised only in abdomino-perineal resection. That was not true for anterior resections.

According to Hermanek (3) certain differences in surgical mortality and long term outcome for different surgeons cannot be explained by case volume only. In his study locoregional recurrence and 5-year survival differed between surgeons significantly. Hermanek suggested that for surgeons dealing with colorectal cancer there is certain minimal volume (44 resections during 28 months training) after which differences between surgeons are due to different surgical technique. Mc Ardle (7) also noticed important differences among surgeons in perioperative morbidity,

mortality and patients survival. Curative resections varied from 40% to 76%, mortality from 8% to 30%, local recurrence rate from 0% to 21%, anastomotic leaks from 0% to 25%, and 10 year survival after curative resection from 20% to 63%. Our results from Bielsko-Biala unfortunately also showed that surgeon himself had an independent influence on survival. Important differences between surgeons as shown in mentioned studies and in our breast and colorectal series explain why McArdle (7) classified the surgeon not as a prognostic but as a risk factor.

The reason why this aspect of surgery is so scarily being published is quite obvious. The study by Kee (2) showed that 14 of 71 surgeons concerned would not match the acceptable criteria of postoperative mortality. Surgical skills of single surgeon not only influence postoperative course and costs of the treatment what was shown in our breast and colorectal cancer groups, but can also have impact on survival what was shown for colorectal patients in our study. Medical professionals are not yet ready to show their weaknesses and disadvantages. Even description of surgery often differs from that actually performed (3) which makes this kind of research even more complicated.

CONCLUSIONS

The quality of surgical knowledge and skills seems to be one of the most important factors influencing outcomes in surgical oncology. It is obvious, that the more experienced is surgeon, probably the more atraumatic and on the other hand the more radical is his operating technique the better are short and long-term results. The knowledge of individual results of treatment should be known for every department and surgeon himself.

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References

1. Fielding LP, Wells BW. Large bowel obstruction: survival after curative resection for carcinoma. *Proc R Soc Med* 1973; 66: 683-4.
2. Gillis CR, Hole DJ. Survival outcome of care by specialist surgeons in breast cancer: a study of 3786 patients in the west Scotland. *BMJ* 1996; 312:145-148.
3. Hermanek P, Hohenberger W. The importance of volume in colorectal cancer surgery *Eur J Oncol* 1996; 22: 205-215.
4. Karjalainen S. Geographical variation in cancer patient survival in Finland: chance, confounding, or effect of treatment? *J Epidemiol Commun Health* 1990; 44: 210-4.
5. Kee F, Wilson RH, Harper C, Patterson CC, McCallison

K, Houston RF, Moorehead RJ, Sloan JM, Rowlands BJ. Influence of hospital and clinician workload on survival from colorectal cancer: cohort study. *BMJ* 1999; 318:1381-6.

6. Lesniak T. Koszty, jakosc i wyniki leczenia operacyjnego chorych na raka jelita grubego. Bielsko-Biala 1999, PhD thesis.

7. McArdle CS, Hole D. Impact of variability among surgeons on postoperative morbidity and mortality and ultimate survival. *BMJ* 1991; 302:1501-5.

8. Mettlin CJ, Schoenfeld ER, Natarajan N, Suk O. Interhospital differences in cancer survival. *J Chron Dis* 1987; 40: 157-64.

9. Reynolds JV, Mercer P, McDermott EW, Cross S, Stokes M, O'Higgins NJ. Audit of complex axillary dissection in early breast cancer. *Eur J Cancer* 1994; 30A: 148-9.

10. Sainsbury R, Haward B, Rider L, Johnstone C, Round C. Influence of clinician workload and patterns of treatment on survival from breast cancer. *Lancet* 1995; 345: 1265-70.

11. Scorpiglione N, Nicolucci A, Grilli R, Angiolini C, Belfiglio M, Carinci F, Cubasso D, Filardo G, Labrozzi D, Mainini F. Appropriateness and variation of surgical treatment of breast cancer in Italy: when excellence in clinical research does not match with generalised good quality care. *J Clin Epidemiol* 1995; 48: 345-52.

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