Race of the Clock: Reducing Delay to Curative Breast Cancer Surgery

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Abstract
Analysis of Moffitt Cancer Center data on time from breast biopsy to first definitive surgery showed an average of 6.9 weeks, which concerned the breast program faculty members. Delays in curative surgery may impact mortality, quality of life, and time to adjuvant therapy. The purpose of this study was to analyze steps from breast biopsy to definitive breast cancer surgery and to develop proposals and strategies for improvement. Data were collected from various sources, including the tumor registry, patient appointment system, tumor board lists, and the NCCN Oncology Outcomes Database for Breast Cancer. Three phases of the surgical process were identified with regard to lead time: biopsy to first consult (BX-FC); first consult to tumor board (FC-TB); and tumor board to surgery (TB-SU). Other factors, including operating room capacity and schedules, were also evaluated. The greatest percentage of total lead time occurred in the TB-SU phase (52% vs 35% in BX-FC, and 13% in FC-TB phases). The longest average lead time, 3.6 weeks, was also in the TB-SU phase. The TB-SU time was greatest when surgery was scheduled after tumor board and if surgery required breast reconstruction. Limitation of physician capacity was a major factor in treatment delay. The Opportunity for Improvement project enabled institutional analysis of the need for quality improvement in time for curative surgery for breast cancer. A significant factor that created time delay was physician capacity. As a result, additional faculty and staff have been recruited. A new expanded facility is currently in progress that will provide more physical space and services. (J Natl Compr Cancer Netw 2014;12[Suppl 1]:S13–S15)

Breast cancer is the leading solid tumor site diagnosed at Moffitt Cancer Center and accounts for almost 15% of the overall patient population. The 5-year observed survival rate for all stages of breast cancer analyzed at Moffitt Cancer Center is 87.8% compared with 85.4% for all other Commission on Cancer–approved programs. The higher survival rate may be attributed to physician adherence to the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) for Breast Cancer and high-quality multidisciplinary patient care.

Moffitt Cancer Center participated in the NCCN Oncology Outcomes Database for Breast Cancer, which collected detailed information on various measures related to breast cancer diagnosis and treatment. Feedback with comparison data among sponsored institutions was provided. Analysis of the NCCN TiC-ToC (Timing in Continuation and Transition of Care) Measures revealed that Moffitt Cancer Center lagged in the time from breast biopsy to first definitive surgery with an average of 6.9 weeks, benchmarked in the bottom third. This fact concerned the faculty of the Breast Program, because delay in time to curative surgery may be associated with increased mortality. Further, awaiting breast cancer surgical procedures increases patient anxiety, which impacts quality of life. Delays in surgery, especially involving immediate breast reconstruction, also create delays in the initiation of adjuvant systemic therapy and postoperative radiation therapy.

In 2011, NCCN provided generous funding to Moffitt Cancer Center to participate in the Opportunity for Improvement (OFI) project. The goal of this program was to determine institutional areas of breast cancer care in need of improvement. Based on background data analysis, the team at Moffitt Cancer Center sought to obtain detailed information on steps in delay from...
breast biopsy to definitive surgery and to develop proposals and strategies for improvement.

Methods

The team used data from the Moffitt Cancer Center tumor registry, the patient appointment system, breast cancer surgery database, breast cancer tumor board, and the NCCN Oncology Outcomes Database for Breast Cancer for patients diagnosed with stage 0–III breast cancer in 2010 for this study. Benchmark comparison data from institutions participating in the outcomes database for breast cancer were also available. Analytic cases in the cancer registry involved patients with breast cancer who were diagnosed or received all or part of their first treatment course at Moffitt Cancer Center. Patients who underwent breast reconstruction were also identified. Type of reconstruction was analyzed based on immediate or delayed procedures.

Lead time from breast cancer diagnosis by needle biopsy to first definitive surgery was analyzed to determine causes for potential delays. Three phases of the process were identified: biopsy to date of first consult (BX-FC); first consult to date of tumor board (FC-TB); and tumor board to date of surgery (TB-SU). Potential contributing factors, including operating room capacity and schedules, were also examined to evaluate their effect on specific steps in the process. The Moffitt Cancer Center Process Excellence team assisted in collecting and analyzing the information.

Results

Findings showed that 52% of the total lead time was spent in the TB-SU phase, with 35% in the BX-FC and 13% in the FC-TB phases. Average lead time and variation in duration of lead time of 3.6 weeks (standard deviation [SD], 2.2 weeks) was longest for the TB-SU phase compared with 2.4 (SD, 1.6 weeks) and 0.9 weeks in the BX-FC and FC-TB phases, respectively. Additionally, 35% of the cases involved coordination of surgery schedules between breast surgical oncology and plastic surgery, which added an average of 1 week to the TB-SU phase. Patients who elected immediate reconstruction averaged 4 days longer lead time than those without immediate reconstruction.

Stage III cases had the longest average total lead time of 8.8 weeks compared with mean total lead times for stages I and II of 6.6 and 6.9 weeks, respectively. Additionally, TB-SU phase times were approximately 2.4 weeks longer when surgery was scheduled after TB (7.5 weeks) compared with before TB (5.1 weeks). Additionally, 38% of surgeries were booked less than 2 weeks before surgery and 46% within 2 to 4 weeks. The likelihood of surgery scheduled within 2 weeks decreased significantly if the patient required breast reconstruction, from 46% without plastic surgery to 15% with plastic surgery.

Analysis of additional lead time measures showed no significant differences among breast surgeons or in cases from outside the 7-county region. The average lead time was 6 days from FC-TB for all case types, and 2% of cases were presented at TB more than once. For biopsies, 19% were completed at Moffitt Cancer Center. A total of 33% of patients had Medicare or Medicaid coverage, which added approximately 1 week lead time.

Because the TB-SU phase showed the greatest lead time variation, further analysis was conducted to determine operating room (OR) use, capacity, scheduling, policies, and processes that could affect this outcome. The average OR use by the breast program was 74%, with an average block use by surgeon of 88%, indicating potential capacity for additional cases with assigned blocks. Of overall surgery time, 12% occurred outside the scheduled block, and interviews with individual surgeons revealed that the lengths of assigned blocks did not accommodate certain procedures. Furthermore, high OR use and the need to coordinate between schedules for breast surgical oncologists and plastic surgeons created difficulty in booking concurrent cases. Scheduled duration versus actual surgery time was also analyzed to determine the accuracy of scheduled surgery time. Of scheduled procedures, 83% were completed within 60 minutes of the scheduled time. The average OR capacity across all programs was also 83%, indicating some, but limited, capacity for additional cases.

Discussion

The OFI project provided a tremendous opportunity to develop insight into breast program processes to streamline care of patients with breast cancer. As a result of the analysis, all new patients are offered an appointment for first consultation within 7 days of
The greatest opportunity for improvement was in the TB-SU time frame. Due to the high volume of breast cancer cases for surgical treatment and the complexity of schedules, especially for immediate breast reconstruction, a substantial amount of the time surgeons spend in the OR occurs outside their assigned block schedule. This constrains the capacity of the breast surgeons and plastic surgeons, and is the primary root cause of delay.

Analysis revealed a need for additional surgical faculty, and recruitment is currently underway. An additional plastic surgeon joined the faculty this year, and another mid-level practitioner was hired for support. An emphasis has been placed on fine-tuning scheduling, especially in the TB-SU phase. Steps have also been taken to decrease the interval from abnormal diagnostic imaging result to biopsy. This helps decrease patient anxiety and improve patient satisfaction.

Patient demographics, such as age, ethnic background, race, medical insurance coverage, and geographic area, have also been related to delay in surgical treatment of breast cancer. These factors provide the opportunity for further institutional study.

Finally, Moffitt Cancer Center is expanding the physical outpatient facilities of the breast program, which should dramatically improve times for all phases. The multiphase project includes a new 7-story, 200,000-square-foot building. The breast program will be housed in the new structure, which will allow for a higher capacity for patients with breast cancer and expanded services, including an ambulatory surgery center and procedure suites. The new facility is anticipated to be operational in early 2015.

References