



# Practice patterns regarding drains management in breast surgery: Results of a survey of Senonetwork Italia breast centers

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Surgery for breast cancer has changed in the last few decades in favor of more conservative approaches, without compromising loco-regional control and survival. Common immediate complications following breast surgery are hematoma, seroma, and wound infection.<sup>1</sup> Traditionally, surgeons have implemented the use of closed-suction drains in this setting with the aim of preventing these complications, which can cause discomfort, morbidity, increased follow-up visits, and possible delay in the beginning of adjuvant therapies.<sup>2</sup> On the other hand, potential benefits of performing breast procedures without using a drain have been increasingly considered.<sup>3</sup> There is lack of modern and official guidelines on use of drains in breast surgery, with no consensus regarding their management and the appropriate use of antibiotics in this setting. Almost all reports agree with the use of drains after breast procedures, especially if they are associated with reconstruction or axillar lymph node dissection (ALND), but an extreme variability is reported regarding practice patterns.<sup>4</sup>

A national survey regarding the management of drains after breast cancer surgery was sent by email on January 2018 to all Breast Centers (BC) registered with Senonetwork Italia. Data collected by the administrative office of Senonetwork were de-identified and exported for statistical analysis. A Steering Committee

composed of general surgeons and plastic surgeons was appointed to coordinate the survey, which consisted of 22 multiple choice questions, designed to inquire about surgeons' demographics, use of drains after breast procedures with and without reconstruction and/or ALND, antibiotic use and to characterize drain management in their clinical practice.

A total of 105 BC, performing more than 40 000 breast cancer cases each year, were surveyed electronically and 73 complete responses were returned (72%).

All 73 evaluable respondents described themselves as breast surgeons, among whom 48 (63%) performed both breast cancer surgery and reconstruction. Most respondents (n = 34; 45%) reported that more than 300 cases of breast cancer operations were performed in their BC each year.

In cases of breast conservative surgery, 18 (25%) BC affirmed that they use "always" a drain, 19 (26%) "never," and 36 (49%) "sometimes." The choice of the latest answer was often associated with the increased volume of the breast, the quantity of breast parenchyma asportation, the need of glandular flap for oncoplastic purpose, and the presence of high-risk factors for hematoma and/or seroma.

Drains after mastectomy were used in 96% (n = 70) of cases, while 4% (n = 3) of respondents affirmed that they used drains only if mastectomy was associated with breast reconstruction.

Senonetwork Italia Breast Centres Responders are present in Appendix 1.

In cases of implant-based breast reconstruction, 51 (70%) BCs used two drains, one placed in the submuscular pocket and one in the subcutaneous space. When only one drain was used (30%), it was placed subcutaneously or in the submuscular pocket in 16% and in 14% of cases, respectively.

If ALND was associated with a mastectomy, one, two, or three drains were used in 3%, 60%, and 37%, respectively.

The gauge of drains used was 14-16 Fr in 56% of cases, <14 Fr in 15%, while more than 16 Fr in 29% of cases.

Respondents stated that hospitalization was not prolonged for the presence of drains and that discharge of the patients occurred 24 hours after the operation in 50% of cases, while they affirmed that drains "sometimes" affect hospitalization by two to three days, or "always" prolonged it more than three days in 43% and 7% of cases, respectively.

A dedicated nurse service was involved in the drain management in 57 (78%) cases, while in 16 (22%) this was not present.

Shoulder immobilization after ALND and/or breast reconstruction was not adopted by 56 (77%) BC, while shoulder immobilization was "always" or "sometimes" applied in 12 (16%) and 5 (7%) cases, respectively.

Drains were removed when 24 hours output was <50cc, <30cc, after 24 hours, and after 4-7 days in 55%, 34%, 3%, and 8% of cases, respectively.

Sixty-six (90%) respondents reported adopting a routine practice of using antibiotics beyond 24 hours, while 7 (10%) BC did not use postoperative antibiotic prophylaxis.

Among respondents who reported postoperative prophylactic antibiotic use, the duration of treatment was variable. Antibiotic prophylaxis for "2-5 days" or "until all drains were removed" was reported in 53% and 22% of cases, respectively, especially if breast reconstruction was performed.

Many differences were found among postoperative antibiotics. First-generation cephalosporins, second- or third-generation cephalosporins, amoxicillin plus clavulanic acid, and fluoroquinolones were used in 25%, 25%, 34%, and 7% of cases, respectively.

When asked to comment about the clinical relevance of drains both in the present and in the future, 88% of respondents reported that, nowadays, drains are of clinical relevance in breast surgery, and 63% stated that they will continue to be important in the next future.

We report the first national survey in Italy regarding the use of drains in breast cancer surgery.

Data showed that the use of drains was associated with a prolonged hospitalization in 50% of BC. This finding is consistent with an analysis of five systematic reviews which concluded that the insertion of a drain is associated with a longer hospital stay and reduced seroma formation.<sup>5</sup>

Half of BC surveyed removed drains when the 24 hours output was <50cc. To date, the correct "timing" of the removal of drains remains unclear and literature reports do not provide precise indications. Some studies, especially in the setting of breast reconstruction, show evidence supporting late removal (<30 mL drainage in

24 hours or postoperative day 14),<sup>6</sup> while others stress the advantages of early removal (postoperative day 2, regardless of volume).<sup>7</sup>

Antibiotic use has always been an important topic in breast surgery. In a survey of the American Society of Breast Surgeons (ASBrS), cephalosporins were utilized uniformly as preoperative antibiotic prophylaxis.<sup>8</sup> This is consistent with the Surgical Care Improvement Project guidelines established in 2005 and confirmed in 2015.<sup>9</sup> In our survey, this recommendation was adopted by only 25% of BC.

Use of postoperative antibiotic prophylaxis has been strongly associated with the presence of immediate breast reconstruction after mastectomy. Despite a Cochrane study, a meta-analysis and recent guideline's recommendations stated that for clean and clean-contaminated procedures additional prophylactic antimicrobial agents should not be administered after the surgical incision is closed in the operating room, even in the presence of a drain,<sup>10</sup> our survey confirmed this lack of uniformity regarding both the timing of antibiotic discontinuation and the type of antibiotic eventually used.

In this national survey, we report a large variability regarding drain use in the breast conservative setting. After mastectomy or axillary node dissection, drains are usually employed and generally removed when 24 hours output was <50cc. Consistent with literature data, their use has still an impact on the hospital length of stay. Surgeons generally continue antibiotic prophylaxis during the 24 perioperative hours and antibiotic use is still controversial regarding both the timing of discontinuation and the type used, despite precise guidelines present in literature. Furthermore, according to our results, most surveyed surgeons believe drains play a clinically relevant role in breast surgery and that they will continue to have importance in the future.

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## APPENDIX 1

### SENONETWORK ITALIA BREAST CENTRES RESPONDERS

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