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Although the normal anatomy of the breast is relatively simple, a myriad of hyperplastic, atypical, and frankly malignant processes exist. Though a histologic continuum exists, the natural progression of breast disease is not always on a continuum. Moreover, the distinction between hyperplastic, atypical, and frankly malignant processes rests on subtle qualitative and sometimes quantitative features. The treatment of breast-related lesions has always been, and continues to be, a multidisciplinary task. A general understanding of histopathologic features of breast disease will allow clinicians to identify scenarios that are potentially inconsistent with the working diagnosis.	
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Randomized clinical trials have been essential in guiding the surgical and systemic treatment of breast cancer, with most focusing on de-escalation. Here, we discuss key clinical trials that have shaped the modern approach to the treatment of breast cancer, focusing on studies that are more recent.	
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Genetic testing plays an important role in assessing breast cancer risk and often the risk of other types of cancers. Accurate risk assessment and stratification represents a critical element of identifying who is best served by increased surveillance and consideration of other prevention or treatment options while also limiting overtreatment and unnecessary testing. The indications for testing will likely continue to expand, and ideally, more women with a genetic predisposition to breast cancer will be identified before they are diagnosed with breast cancer and thus have the option to consider effective screening and prevention management strategies.	

Genomic Profiling and Liquid Biopsies for Breast Cancer

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Clayton T. Marcinak, Muhammed Murtaza, and Lee G. Wilke

The cancer genome plays an increasingly large role in the care of patients with breast cancer. Commercially available gene-expression profiling assays are now a part of staging and treatment guidelines, and their use continues to be examined in large-scale studies. With the advent of next-generation sequencing, the cancer genome can now be examined more quickly, less invasively, and in much greater detail. These technologies have led to a more nuanced understanding of molecular pathways, allowing providers to better match patients to clinical trials. Furthermore, a new era of diagnostics based on liquid biopsies is expected to revolutionize disease detection and clinical care.

Breast Cancer Screening Modalities, Recommendations, and Novel Imaging Techniques

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Sarah Nielsen and Anand K. Narayan

Among women, breast cancer remains the second leading cause of cancer death in the United States. Mammography remains the only validated screening tool to reduce breast cancer mortality. The American Society of Breast Surgeons recommends that average-risk women undergo breast cancer screening every year starting at age 40. This article reviews the fundamentals of mammography screening, current age-based mammography screening recommendations, supplemental breast cancer screening recommendations in high-risk women, and novel imaging technologies. This review summarizes recommendations from the American Society of Breast Surgeons and published guidelines from major societies to reflect a range of evidence-based perspectives regarding mammographic screening.

De-Escalating Breast Cancer Therapy

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Mary A. Varsanik and Sarah P. Shubeck

The potential value of de-escalation in breast cancer therapy cannot be overstated. From reducing complications and morbidity of surgical therapy to the avoidance of chemotherapy in certain populations, the benefits of eliminating low-value therapies are significant. Further, those interventions that have minimal to no benefit may also further low-risk care cascades resulting in additional treatments or interventions without associated value, with increased financial toxicity, and resulting excess health care expenditures.

Operative Management in Stage IV Breast Cancer

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Sudheer R. Vemuru and Sarah E. Tevis

Traditionally, surgical therapy for primary breast lesions in stage IV breast cancer has been reserved for palliation. Several retrospective studies have suggested a possible survival benefit with surgical resection of the primary tumor in patients with distant metastases. However, evidence from prospective, randomized controlled trials suggest that locoregional control provides no clear survival advantage for patients with stage IV breast

cancer. Future areas of inquiry include identification of subsets of patients who may derive a survival benefit from locoregional control.

New Technology for the Breast Surgeon

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Michele Carpenter and Julie Le

New innovations aid the breast surgeon with better ability to localize tumors using wireless techniques, reduce re-excision rates by intraoperative margin evaluation and perform aesthetically; pleasing, and safe surgeries. In addition to improving oncological outcomes, we can continue to improve the quality of life for our patients through evolving surgeries including nerve-sparing mastectomies, robotic mastectomies, and lymphovascular surgeries (LYMPHA). Our article reviews current and evolving techniques and technology that all breast surgeons should add to his or her armamentarium to provide optimal surgical care.

Postoperative Complications from Breast and Axillary Surgery

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Sam Z. Thalji, Chandler S. Cortina, Meng S. Guo, and Amanda L. Kong

Although surgery of the breast and axilla is generally well-tolerated by patients, the breast surgeon recognizes that complications can occur even when operating with experience on the lowest risk patients. The operative repertoire ranges from breast conserving surgery, mastectomy (including skin-sparing and nipple-sparing types), to modified radical mastectomy, with each procedure carrying a different expected surgical morbidity. Patients and families who are fully informed of potential complications before their operation describe greater trust in their surgeon and are better able to co-manage complications with the surgical team, when they occur.

Novel Approaches to Breast Reconstruction

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Anne Warren Peled and Nicholas W. Clavin

As breast oncologic surgical procedures and approaches have evolved in recent years, so have breast reconstruction techniques. Newer advances focus on expanding the options of reconstructive approaches and patient selection, optimizing quality of life, and helping improve postsurgical survivorship. These advances span from techniques to expand criteria for nipple-sparing mastectomies, optimizing and enhancing oncoplastic surgery, evolving autologous reconstruction options, and preserving and restoring sensation after mastectomy.

Quality of Life Issues Following Breast Cancer Treatment

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James Abdo, Holly Ortman, Natalia Rodriguez, Rachel Tillman, Elizabeth O. Riordan, and Anna S. Seydel

Breast surgeons are trained in diagnostic modalities, treatment effectiveness, patient safety, and operative techniques, with emphasis on “the right treatment at the right time for the right patient.” But delivering quality breast cancer care means more than achieving good outcomes. Physicians have routinely measured disease-free survival and overall survival to determine success in treating breast cancer. Patients are demanding attention to “quality of life” outcomes as well. As clinicians caring for

patients with breast cancer, our focus must shift from early detection to survivorship to re-evaluate our own definition of cure and address the important issues affecting the quality of life of all of our patients.

Follow-up and Cancer Survivorship

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Heather B. Neuman and Jessica R. Schumacher

Survivorship focuses on individual's health and well-being. Assessing for cancer recurrence is a follow-up priority for survivors and providers. However, providers also emphasize the importance of assessing for adherence to ongoing treatment. Providers should also assess for sequelae of local-regional and systemic treatment. Assessing for mental health is important, as many cancer survivors experience anxiety or depression. Finally, survivors should be encouraged to have ongoing visits with their primary care to ensure screening for other health conditions. This article reviews the recommendations for survivorship and the level of evidence supporting each aspect of high-quality survivorship care.

Radiation Treatment for Breast Cancer

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Anderson Bauer

Radiation treatment is a well-established component of breast cancer treatment, in both breast conservation and also for many patients who have had mastectomy as well as those with metastatic disease. The basis for this was established in multiple large meta-analyses, and multiple modern studies have further defined the role of radiation. The radiation must be delivered to the area at risk, which can include the partial breast, whole breast, chest wall, and/or regional lymph nodes. There are a number of acceptable radiation treatment techniques and dose-fractionation schedules that can be individualized to each patient. Radiation can also play an important role in patients with metastatic cancer.

Preoperative Systemic Therapy for Breast Cancer

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Abhigna Kodali and Vijayakrishna K. Gadi

The indications for preoperative/neoadjuvant systemic therapy in breast cancer have changed over the past few years. In this article, the authors review the current data for use of neoadjuvant therapy in inoperable and operable settings. The evolution of various neoadjuvant regimens used in triple-negative breast cancer, human epidermal growth factor receptor 2 (HER2) overexpressing/gene-amplified (HER2+) tumors, and hormone receptor positive breast cancer is discussed as well as the role of neoadjuvant chemotherapy in tailoring adjuvant treatment.