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A Comprehensive Review on the Surgical Landscape in Breast Cancer Management

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Abstract

Purpose: The purpose of this narrative review is to examine the literature on the topic of breast surgery and its benefits for women with metastatic breast cancer. Breast surgery can involve either a mastectomy, which involves removing the entire breast along with lymph nodes, nipple, and areola, or a lumpectomy, which involves removing breast tissue and tumour but leaving the nipple and areola intact.

Methodology: We included any English-language study published between 2000 and 2021 that looked at the effects of breast surgery on survival or quality of life for women with metastatic breast cancer, whether it was an interventional study or an observational study. We utilised a combination of keywords like "Breast surgery," "mastectomy," "lumpectomy," "metastatic disease," "survival," "observational studies," "intervention studies," and "quality of life" to scour sources like PubMed and Embase. We considered randomised controlled trials that contrasted hormonal therapy, radiation, chemotherapy, biologic therapy, and supportive care with breast surgery alone or in combination with systemic therapy. A variety of outcomes were considered, including overall survival, quality of life, toxicity from local treatment as measured by one-month mortality, survival without progression, and survival specific to breast cancer.

Findings: The evidence from randomised controlled trials is limited and not conclusive, while observational studies do suggest that breast surgery may benefit with metastatic breast cancer. Since observational studies are prone to problems like selection bias and unmeasured confounding, it is difficult to draw any conclusions regarding the advantages of breast surgery without solid proof from RCTs.

Implications to Theory, Practice and Policy: Each woman diagnosed with metastatic breast cancer should be considered individually when deciding whether or not to undergo surgery. This should be done until results from big ongoing RCTs are available. When considering treatment options, the patient and doctor must weigh the pros and cons of each, as well as the associated costs. The current lack of strong evidence calls for more randomised controlled trials (RCTs) in both developing and developed nations, with bigger sample sizes.

Keywords: *Narrative Review, Surgery, Breast Cancer, Women*

1.0 INTRODUCTION

With a global incidence of 25%, breast cancer is one of the most common malignancies affecting females (Alghamdi & Esam, 2023). In America, it ranks as the second leading cause of cancer-related deaths. The peak incidence rate of breast cancer occurs between the ages of 55 and 64, and it affects about 1 in 8 women throughout their lives. Worldwide, almost 1.67 million new instances of breast cancer are detected every year. Metastatic breast cancer accounts for 20% to 30% of all breast cancer diagnoses and kills 400,000 to 50,000 people every year worldwide. In the US, 3.5% of breast cancer patients had distant metastases at the time of diagnosis; in resource-poor areas, this number is significantly higher. This means that metastatic breast cancer will be detected in around 50,000 women per year (Bjelic, Fitzal, & Kneuar, 2020).

Patients diagnosed with stage IV breast cancer now have a better chance of survival than they had ten years ago. New evidence suggests that better diagnostic tools are leading to decreased disease burden diagnoses for patients (Babiera, Rao & Feng, 2006). These developments have coincided with an explosion in the availability of systemic therapy alternatives, some of which are molecularly targeted medicines. Consequently, women diagnosed with stage IV breast cancer now have a median survival rate of 29 months. Stage IV cancer treatment is shifting toward what many patients perceive as long-term maintenance therapy (Badwe, Hawaldar & Nair, 2015).

Palliation of advanced local illness has historically been the sole purpose of local treatment options for stage IV breast cancer, such as surgery or radiation. Nevertheless, new analyses of population and institutional databases reveal that a considerable number of women (about 40-60 percent) are undergoing surgical removal of their main tumour as part of their treatment for stage IV cancer. This rate is significantly higher than what one would expect for palliative care alone (Wang, Zhu, Liu, Liao, He & Niu, 2019).

According to these retrospective research, patients with stage IV cancer who get surgical removal of their main tumours have a better chance of survival, even though the clinical reasoning behind this practise is not evident (Cady, Nathan, Michaelson, Gulshan & Smith, 2008). Nevertheless, without prospective data, it is impossible to determine which subset of patients with stage IV disease would benefit the most from surgical removal of the main tumour.

Multiple therapy options have increased women's survival rates from metastatic breast cancer, but finding a permanent cure remains an uphill battle. The result is a five-year survival rate that is around 40% after 1995, up from 10% in 1970 (DeSantis, Fedewa, Goding, Kramer, Smith & Jemal, 2016). Additionally, the current data shows that median survival has increased from 20 to 26 months within the past 20 years. Nevertheless, women who have not had their breasts surgically removed may be at a higher risk of experiencing symptoms due to this enhanced life expectancy. The quality of life for women undergoing treatment for breast cancer can occasionally be significantly impacted, despite the fact that this treatment is essential. Possible causes include decreased sexuality, job loss, and dread of relapsing the disease (Ferlay, Soerjomataram & Dikshit, 2015).

Patients typically receive palliation and systemic therapy for metastatic breast cancer because it is an incurable disease with a worse prognosis. If a woman experiences any of these symptoms, she will most likely need breast surgery. Aggressive local treatment is not worth considering as a

treatment option after metastasis, according to the long-held belief that has persisted for decades. Patients with metastatic breast cancer may find relief after surgery to remove the tumour, according to data from retrospective observational studies and a small number of intervention trials (Khan, Zhao & Solin, 2020). The majority of this proof originates from observational studies, which have their limitations due to problems with selection bias and confounding. Preliminary findings about the function of breast surgery in patients with metastatic breast cancer should be based on a thorough evaluation of the data from interventional and observational research (Kim, Kang & Kim, 2018).

In addition, systematic therapy is typically regarded as the primary therapeutic technique in cases of metastasis according to the data. Reducing symptoms and avoiding cancer-related complications may be possible with loco-regional surgery, which involves removing breast and axillary tissues in addition to treating or repairing the metastatic location (Loeffler & Wen, 2018). Our goal in conducting this narrative review was to compile the most recent data on the effectiveness of breast surgery in treating metastatic breast cancer by combining the results of observational and interventional trials.

Breast cancer remains a significant global health concern, and the surgical landscape in its management has witnessed considerable advancements in developed countries, while challenges persist in developing nations. In developed countries, extensive research has led to the establishment of sophisticated surgical techniques such as breast-conserving surgery, sentinel lymph node biopsy, and oncoplastic surgery. These advancements aim to achieve optimal oncological outcomes while preserving the aesthetic appearance and quality of life for patients (Loeffler & Wen, 2018). Additionally, the integration of precision medicine and targeted therapies has revolutionized the approach to breast cancer surgery in developed nations, enabling tailored treatments based on genetic and molecular profiles. However, the research gap in developed countries lies in the optimization and standardization of these advanced surgical techniques to ensure widespread accessibility and uniform implementation across diverse healthcare settings. Disparities in the adoption of cutting-edge surgical interventions and the translation of research findings into clinical practice persist, potentially leading to variations in patient outcomes (Kim et al., 2018).

On the contrary, the surgical landscape for breast cancer management in developing countries faces more fundamental challenges. Limited resources, inadequate infrastructure, and a shortage of skilled healthcare professionals hinder the implementation of modern surgical approaches. Breast cancer diagnosis often occurs at advanced stages, resulting in a higher prevalence of radical surgeries and increased morbidity. Furthermore, the lack of comprehensive data on the prevalence and characteristics of breast cancer in developing countries impedes the development of evidence-based surgical guidelines (Khan et al., 2020).

The crucial research gap in developing nations is the urgent need for context-specific studies that address the unique challenges faced by these regions. Research should focus on the development of cost-effective and feasible surgical strategies tailored to the local healthcare infrastructure. Additionally, initiatives to improve early detection through community-based screening programs and the establishment of reliable cancer registries are paramount. Bridging this gap requires collaborative efforts between developed and developing countries, with a focus on capacity

building, knowledge transfer, and sustainable healthcare infrastructure development (Ferlay et al., 2015).

Problem Statement

Despite significant advancements in the field of breast cancer management, there exists a critical need for a comprehensive review that systematically evaluates and synthesizes the current surgical landscape. The diverse array of surgical interventions, ranging from breast-conserving surgeries to mastectomies, coupled with emerging techniques and technologies, poses challenges for clinicians, researchers, and policymakers in determining the optimal approach for individual patients. Furthermore, the evolving understanding of breast cancer subtypes, genetic factors, and personalized treatment strategies necessitates a thorough examination of the latest evidence and trends in surgical interventions. Addressing this gap in knowledge is imperative to enhance clinical decision-making, improve patient outcomes, and contribute to the ongoing progress in breast cancer research and treatment.

2.0 MATERIALS AND METHODS

The purpose of this narrative review is to examine the literature on the topic of breast surgery and its benefits for women with metastatic breast cancer. Breast surgery can involve either a mastectomy, which involves removing the entire breast along with lymph nodes, nipple, and areola, or a lumpectomy, which involves removing breast tissue and tumour but leaving the nipple and areola intact. We included any English-language study published between 2000 and 2021 that looked at the effects of breast surgery on survival or quality of life for women with metastatic breast cancer, whether it was an interventional study or an observational study. We utilised a combination of keywords like "Breast surgery," "mastectomy," "lumpectomy," "metastatic disease," "survival," "observational studies," "intervention studies," and "quality of life" to scour sources like PubMed and Embase. We considered randomised controlled trials that contrasted hormonal therapy, radiation, chemotherapy, biologic therapy, and supportive care with breast surgery alone or in combination with systemic therapy. A variety of outcomes were considered, including overall survival, quality of life, toxicity from local treatment as measured by one-month mortality, survival without progression, and survival specific to breast cancer.

3.0 FINDINGS

Indication of Locoregional Surgery (Breast and Axilla) in Metastatic Breast Cancer: Evidence from Observational Studies

Breast surgery improves women's survival rates, according to the available evidence from retrospective observational studies. One example is the study conducted by Khan et al. (2020) which included 16,023 patients. The results showed that breast surgery significantly increased women's survival rates by about 40% (HR: 0.61, 95 percent CI: 0.58 to 0.65). Out of 224 patients analysed retrospectively by Babiera et al. in 2006, 37% had surgery. Researchers found that breast augmentation surgery increased survival by 50% (HR: 0.51, 95 percent CI: 0.21 to 1.19), however their findings did not reach statistical significance (Babiera et al., 2006). A research involving 300 patients corroborated these results. Approximately 42% of the women had surgery, and the

researchers discovered that this procedure cut mortality in half (HR:0.60, 95% CI: 0.4 to 1.0). (Cady et al., 2008).

Also, out of 409 patients studied in 2009, 46% of the women had surgery. Surgery significantly increased survival by about 50%, according to the authors (HR: 0.53, 95 percent CI: 0.42 to 0.67). Consistent with previous research showing that breast surgery reduces the risk of death, their results were similar to those of Babiera et al. (2006). Subsequent research spanning 2006–2010 corroborated the results of the original observational studies with respect to the magnitude of the hazard ratio's influence. One large study from 2009 included 9,734 women; 47% of them ladies ended up having surgery. Findings showed that breast augmentation surgery can cut mortality by nearly 40% with statistically significant and reasonably accurate results (HR: 0.63, 95 percent CI: 0.60 to 0.66) (Leung et al., 2010).

Researchers in the same year came to similar conclusions, although their 95% CIs were much wider than average, probably because their sample size was so small (395 people) (HR:0.71, 95% CI: 0.56 to 0.91). (Ly et al., 2010). The results were corroborated by Neuman et al. (2010), who discovered that surgery reduced mortality by approximately 30 to 40 percent. Neuman et al., in contrast to Ruiterkam et al., did not discover any statistically significant outcomes (HR: 0.62, 95 percent CI: 0.51 to 0.76). (HR: 0.71, 95 percent CI: 0.47 to 1.06). Consistent with other retrospective studies done in the same decade, these findings support the idea that breast surgery can increase the survival rate of metastatic cancer patients (Neuman et al., 2010).

Indication of Locoregional Surgery (Breast and Axilla) in Metastatic Breast Cancer: Findings from Interventional Studies

The observational studies have their limitations, but they do show that surgery may protect against metastatic cancer. Prior to drawing any solid conclusions, it is essential to examine the data from interventional research, as these investigations are limited by internal risks to validity such as selection and information bias, as well as unmeasured confounding. This is due to the fact that RCTs are the best and most often used design for addressing the problems associated with unmeasured confounding, as they account for both known and unknown confounders (Bjelic et al., 2020).

Among women with metastatic breast cancer, there have been just four randomised controlled trials (RCTs) comparing locoregional surgery with systematic treatment versus systematic treatment alone in terms of improving survival, quality of life, local progression-free survival, distant progression-free survival, breast cancer-specific mortality, and toxicity from local treatment (Alghamdi & Esam, 2023). The PICOS framework, when applied to randomised controlled trials (RCTs), would identify women with a breast cancer diagnosis as the population, breast surgery plus systematic treatment as the intervention, systematic treatment as the comparison, survival or mortality as the outcome, and inpatient or outpatient departments as the setting. For instance, in 2015 and 2016, two randomised controlled trials (RCTs) compared 624 women who had breast surgery in addition to systematic treatment to those who had systematic treatment alone (Loeffler & Wen, 2018).

Another study indicated that the intervention group had a nearly 20% increase in overall survival at two years, but the results were not statistically significant (HR: 0.83, 95 percent CI: 0.53 to 1.31). The intervention group had a mortality risk of 448 per 1000, with a range of 318 to 608 per

1000, compared to the comparison group's risk of 511 per 1000. But quality of life was not mentioned as a result that the writers were interested in. Breast surgery increased local progression-free survival by nearly 80% at two years, according to statistically significant results (HR: 0.22, 95 percent CI: 0.08 to 0.57). The study was conducted by Poscia et al. in 2017.

Surgery may impair distant progression-free survival, according to the data for invasive procedures (HR: 1.42, 95 percent CI: 1.08 to 1.86). But in 2020, researchers compared the impact of initial surgery on patients' quality of life reports compared to no treatment at all in a study of people with metastatic breast cancer. Ninety women were randomly assigned to either a surgical procedure or a non-surgical systemic therapy. Neither the intervention group nor the control group showed a statistically significant difference in patients' perceived quality of life. The authors came to the conclusion that primary surgery has no effect on quality of life, either positively or negatively (Loeffler & Wen, 2020).

In 2023, researchers from multiple centres randomised 256 patients with stage IV breast cancer who had previously received systemic treatment for 4 to 8 weeks to get systemic treatment again or local surgery with or without radiation, after which they would resume systematic therapy. When comparing the two groups' three-year survival rates, the authors came up empty (HR: 1.09, 95 percent CI: 0.80 to 1.49). Systematic therapy alone increased the likelihood of locoregional advancement in women, although the quality-of-life outcomes for these women were comparable to, or even better than, those for women who underwent local surgery (Alghamdi & Esam, 2023). Until future, larger-sample, more rigorous randomised controlled trials (RCTs) with consistent designs and procedures shed light on the efficacy of breast surgery for metastatic breast cancer, the answer remains uncertain.

Sites of Metastasis in Breast Cancer and Evidence for the Indication of Surgery of Metastatic Site

Brain, eye, bone, lung, liver, ovary, and gastrointestinal tract are some of the potential sites of metastasis in breast cancer. When these areas experience metastasis, it can be deemed an emergency and considerations regarding surgical removal of the metastatic site must be made. Nevertheless, depending on where the metastasis is located, the evidence to conduct surgery or administer any other treatment can vary. If a patient has brain metastases, for instance, it doesn't matter if they're experiencing symptoms; surgical resection, stereotactic radiosurgery, or whole brain radiation should all be options (Badwe et al., 2015).

Nevertheless, this must to be accomplished either prior to or in conjunction with systematic treatment. There are, however, a few number of circumstances where this may not be the case, such as when dealing with HER2-positive breast cancer and limited intracranial disease in certain people; in such cases, only systematic therapy may be considered. On the other hand, patients who have severe leptomeningeal disease or numerous metastatic deposits undergo radiation therapy. Instead of irradiating the entire brain, patients with localised intracranial illness may undergo stereotactic radiosurgery to minimise radiation exposure and potential side effects (Wang et al., 2019).

However, between 5% to 38% of breast cancer metastases include structures in the eye. The most common sites of metastasis in this type of cancer are the choroid, iris, optic nerve, orbital bone, retina, extraocular muscles, vitreous body, ciliary body, and optical disc. When choroid metastasis

is suspected, decisions about local therapy should be made by a multidisciplinary team (Ruiterkamp & Ernst, 2011). If ocular tissues are involved in the metastasis, it is advisable to simultaneously conduct a brain CT scan and MRI to identify any contemporaneous brain metastasis. There are a number of approaches that can be used to treat choroidal metastases. Systematic treatment with meticulous follow-up and observation is suggested, for instance, for asymptomatic individuals (Leung et al., 2010).

In contrast, palliative external-beam radiation therapy is a safe and effective option for individuals experiencing symptoms, provided that the lens and anterior chamber are spared. Patients diagnosed with choroidal metastases who underwent external-beam radiation therapy (40 Gy) showed an improvement in visual function in 36% of cases and stabilisation in 50% of cases, according to data from a prospective trial in Germany (Ruiterkamp et al., 2009). Results showed that 38% of patients had full regression and 44% had partial regression during follow-up. Similarly, one observational trial with 123 patients indicated that short courses of external-beam radiation therapy were helpful in improving visual complaints and visual acuity. Plaque brachytherapy, proton therapy, and intravitreal injection of anti-vascular endothelial growth factors are some more local treatment options. Case reports and series provide the bulk of the evidence on these treatments, yet this is far from exhaustive (Kim et al., 2018).

If the cancer has spread to the bones, local treatment may be necessary if the patient exhibits symptoms such as a pathologic fracture, reduced mobility, pain, or impairment, spinal cord compression, or any disease affecting the bones. There is no strong evidence or role for resection in asymptomatic patients without signs of imminent fracture, and systematic therapy typically effectively treats bone metastases. A substantial amount of research, however, backs the use of single or multiple fractions of the short-course, local-fixed external-beam radiation therapy for painful metastases (Ruiterkamp & Ernst, 2011). It is also not necessary to intervene locally when lung metastases are not causing life-threatening symptoms, unless the patient has an internal or external blockage to the superior vena cava, in which case local treatments may be beneficial (Soran et al., 2016).

Because isolated nodules in the lungs do not always indicate breast cancer metastases, pulmonary resection can serve dual diagnostic and palliative functions in certain patients. Except for data from case series suggesting that pulmonary tissue resection may improve 5-year survival from 30% to 80% and median survival duration from 40% to 100% among patients with selective breast cancer, there is no valid and robust evidence to support this practise in the context of metastatic breast cancer. Results from a meta-analysis of 2000 patients showed a 46% 5-year survival rate following the removal of lung metastases alone (Thomas et al., 2016).

When breast cancer spreads to other organs, such as the liver, more than half of all cases will have disseminated disease and a bad prognosis. In contrast, only about 5% to 10% of cases will involve the liver alone. In most cases, local management of liver metastases is performed when medical therapy fails to alleviate symptoms like pain or bleeding, or when biliary obstruction occurs (Wang et al., 2019). Nevertheless, there is a lack of prospective evidence comparing systematic treatment with local treatment, and patients without symptoms may still have local resection. Hepatic resection and stereotactic body radiation therapy are common local treatments for liver metastases after a thorough patient evaluation. Surgery, rather than stereotactic body radiation therapy, may be helpful in preserving liver function for peripheral lesions larger than 5 cm (Thomas et al., 2016).

But stereotactic body radiation therapy could be more effective for tumours located in the centre. Radiofrequency ablation has shown promise in certain retrospective studies for the treatment of tiny, isolated hepatic lesions (those less than 3 cm in diameter) that are not in close proximity to important anatomical landmarks such as the diaphragm, biliary system, or major blood arteries. The results of the meta-analysis of 19 controlled trials with 535 patients who underwent hepatectomy due to metastatic breast cancer? The findings revealed a median overall survival rate of 40 months, a five-year survival rate of 40%, and a postoperative death rate of 0% to 6%. (Sales et al., 2011). Surgery and/or ablation did not improve overall survival compared to medical treatment in a later case-control analysis of 167 patients. The results showed that patients with good risk-disease profiles may benefit greatly from local treatment in terms of disease-free survival and time away from systemic chemotherapy (Siegel et al., 2014).

Last but not least, metastasis is less likely to impact the gastrointestinal tract, which includes organs like the colon and stomach, then the oesophagus and small intestine. When a patient has metastasized to the gastrointestinal tract, a multidisciplinary team should evaluate their symptoms and clinical signs to rule out other possible causes, such as a primary tumour of the gastrointestinal tract, lymphoma, or a benign disease, before deciding on a local surgery. It is also quite unusual for breast cancer to go to the ovaries (Ferlay et al., 2015). Regardless of whether the disease has spread to the ovaries or not, oophorectomy may be a good therapeutic impact for premenopausal individuals with hormone receptor-positive breast cancer. Local management of ovarian metastases is not well documented. Overall, the median survival time after ovarian metastasectomy was 41 months in a group of 147 patients (DeSantis et al., 2016).

Discussion

The purpose of this narrative review is to summarise the results of interventional and observational research on the topic of breast surgery and metastatic breast cancer. Breast surgery improves survival rates for women with metastatic breast cancer, according to a meta-analysis of observational studies. While the statistical significance of the results varies among the narrative review's retrospective studies, this is likely because to variations in sample sizes. Regardless, the results remain consistent. Critics still see observational studies as having low quality evidence, even though they consistently provide evidence. This is due to the inherent bias that is often involved with observational research. Despite this critique, the fact that the primary breast tumour may serve as a source of tumour cells and potentially grow and disperse to other tissues could explain these findings or the process by which breast surgery could be effective (Alghamdi & Esam, 2023). Thus, removing the initial breast tumour may improve survival by lowering the likelihood of subsequent metastasis. In addition, tumour cells have the potential to secrete growth factors that can activate signals that promote the spread of cancer to other parts of the body. Results from animal research point to a possible correlation between primary tumour excision and reduced metastasis (Wang et al., 2019).

This is at odds with the scant and inconclusive evidence derived from the few randomised controlled trials. Breast augmentation surgery has shown promise in enhancing local progression-free survival and two-year survival rates, but conflicting evidence suggests it may have no effect on quality of life or distant progression-free survival rates. Therefore, it is difficult to draw firm conclusions regarding the advantages and disadvantages of breast cancer surgery for metastatic breast cancer without strong evidence derived from many RCTs. Furthermore, there is no

information regarding breast-specific survival in the available data, and there is no difference in the evidence for local treatment toxicity between the two groups, which is based on a single RCT (Thomas et al., 2016).

Also, prognoses vary among women with metastatic breast cancer, therefore it's important to treat them as individuals rather than a homogeneous group. Women whose cancer has spread to fewer organs may have a greater chance of surviving than those whose disease has spread to more organs (Soran et al., 2016). Therefore, it is not sufficient to rely on data from just one or two nations; randomised controlled trials should be carried out from multiple countries. This is due to the fact that women residing in industrialised nations are more likely to have an early diagnosis with limited metastasis, whereas women residing in underdeveloped nations may receive a diagnosis with spread to several organs. The results of the surgery could be different for two groups of women because of this; thus, it might not be appropriate to apply the results of a small number of RCTs to all women (Badwe et al., 2015).

Summary of the Current Guidelines (National Comprehensive Cancer Network (NCCN) and European Society for Medical Oncology (ESMO) in Metastatic Breast Cancer

Optimal treatment to reduce symptoms and provide spiritual and psychological support should be provided to individuals diagnosed with metastatic breast cancer, as survival rates are increasing due to new treatment modalities (Bjelic et al., 2020). Systematic therapy is the standard treatment for these patients, however locoregional surgery may also be prescribed after assessing the patient's illness status. The guidelines state that in order to properly manage metastatic breast cancer, a multidisciplinary approach is generally recommended. Although age should not be a determining factor in these patients' treatment decisions, a combined interdisciplinary team should take into consideration the patients' comorbidities and preferences. This is in accordance with ESMO clinical practise guidelines (Siegel et al., 2014).

In addition to palliative care for symptom control, supportive care should be part of the ABC treatment plan as a whole. Patients newly diagnosed with stage IV breast cancer and an intact original tumour require a comprehensive approach to therapeutic decision-making. It is not routinely suggested to treat the primary tumour locoregionally if there is no symptomatic local illness because it does not increase overall survival. Examining the efficacy of locally administered treatments for individuals exhibiting local symptoms as a result of original tumour or metastases is essential (Sales et al., 2011). Patients diagnosed with oligometastatic disease, tumours that have spread solely to bones, tumours that are HER2-negative, patients under the age of 55, tumours that are HR-positive, patients who have a good response to initial systematic therapy, and patients who are younger than 55 years old may be candidates for primary tumour resection (Ruiterkamp & Ernst, 2011).

In addition, patients with advanced breast cancer (ABC) encompass both locally advanced breast cancer that cannot be surgically removed and metastatic breast cancer (DeSantis et al., 2016). The most current version of the ABC guidelines, which were created in collaboration between ESMO and the European School of Oncology (ESO), now includes information on treatment modalities based on patient symptoms, pathology reports, and other workups. These guidelines have the support of numerous international organisations. All patients should have full access to specialist and multidisciplinary care, including that for cancer, palliative care, and end-of-life care, according

to these recommendations, which are based on the philosophy of patient-centered care (Parks et al., 2018).

4.0 CONCLUSION AND RECOMMENDATIONS

Conclusion

The evidence from randomised controlled trials is limited and not conclusive, while observational studies do suggest that breast surgery may benefit with metastatic breast cancer. Since observational studies are prone to problems like selection bias and unmeasured confounding, it is difficult to draw any conclusions regarding the advantages of breast surgery without solid proof from RCTs.

Recommendations

Each woman diagnosed with metastatic breast cancer should be considered individually when deciding whether or not to undergo surgery. This should be done until results from big ongoing RCTs are available. When considering treatment options, the patient and doctor must weigh the pros and cons of each, as well as the associated costs. The current lack of strong evidence calls for more randomised controlled trials (RCTs) in both developing and developed nations, with bigger sample sizes. These trials should also differentiate between groups of women based on whether they are experiencing symptoms or not, and whether they receive systematic therapy prior to surgery. It is important to compare the results for patients who had anti-HER2 treatment vs those who did not when dealing with HER2-positive breast cancer that has spread to other parts of the body.

REFERENCES

Alghamdi M.A, Esam M. S. (2023). Role of Surgery in Metastatic Breast Cancer: Insightsfrom a Narrative Review. *Breast Cancer (Dove Med Press)*, 15:349-358https://doi.org/10.2147/BCTT.S405864

Babiera G.V, Rao R, Feng L. (2006). Effect of primary tumor extirpation in breast cancer patients who present with stage IV disease and an intact primary tumor. *Ann Surg Oncol*.13(6):776–782. doi:10.1245/ASO.2006.03.033

Badwe R, Hawaldar R, Nair N. (2015). Locoregional treatment versus no treatment of the primary tumour in metastatic breast cancer: an open-label randomised controlled trial. *Lancet Oncol*, 16(13):1380–1388. doi:10.1016/s1470-2045(15)00135-7

Bjelic R.V, Fitzal F, Knauer M. (2020). Primary surgery versus no surgery in synchronous metastatic breast cancer: patient-reported quality-of-life outcomes of the prospective randomized multicenter ABCSG-28 positive trial. *BMC Cancer*, 20(1):392.doi:10.1186/s12885-020-06894-2

Cady B, Nathan N, Michaelson J, Golshan M, Smith B. (2008). Matched pair analyses of stage IV breast cancer with or without resection of primary breast site. *Ann Surg Oncol*. 15(12):3384–3395. doi:10.1245/s10434-008-0085-x

DeSantis C.E, Fedewa S.A, Goding S. A, Kramer J.L, Smith R.A, Jemal A. (2016). Breast cancer statistics, 2015: convergence of incidence rates between black and white women. *CA Cancer J Clin*, 66(1):31–42. doi:10.3322/caac.21320

Ferlay J, Soerjomataram I, Dikshit R. (2015). Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer*, 136(5):E359–E86. doi:10.1002/ijc.29210

Khan SA, Zhao F, Solin LJ. (2020). A randomized Phase III trial of systemic therapy plus early local therapy versus systemic therapy alone in women with de novo stage IV breast cancer: a trial of the ECOG-ACRIN research group (E2108). *Am J Clin Oncol*. 38:LBA2–LBA2.doi:10.1200/JCO.2020.38.18_suppl.LBA2

Kim H.J, Kang E, Kim J.H. (2018). Survival benefit of surgical removal of primary tumor in patients with stage IV breast cancer. *Clin Breast Cancer*, e1037–44

Loeffler J.S, Wen P. (2018). *Epidemiology, Clinical Manifestations, and Diagnosis of Brain Metastases*. Waltham, MA: Google Scholar.

Loeffler J.S, Wen P. (2020). *Overview of the Treatment of Brain Metastases*. Waltham, MA:Wolters Kluwer.

Leung A.M, Vu H.N, Nguyen K.A, Thacker L.R, Bear H.D. (2010). Effects of surgical excisionOn survival of patients with stage IV breast cancer. *J Surg Res*, 161(1):83–88.doi:10.1016/j.jss.2008.12.030

Ly B.H, Nguyen N.P, Vinh-Hung V, Rapiti E, Vlastos G. (2010). Loco-regional treatment inmetastatic breast cancer patients: is there a survival benefit? *Breast Cancer Res Treat*,119(3):537–545. doi:10.1007/s10549-009-0610-z

Neuman, H. B., Morrogh, M., Gonen, M., Van Zee, K. J., Morrow, M., & King, T. A. (2010).Stage IV breast cancer in the era of targeted therapy: does surgery of the primary tumormatter?. *Cancer*, *116*(5), 1226–1233. https://doi.org/10.1002/cncr.24873

Parks R, Derks M, Bastiaannet E, Cheung K. (2018). Breast cancer epidemiology. In: *BreastCancer Management for Surgeons*. Springer, 19–29.

Poscia A, Collamati A, Milovanovic S. (2017). Methodological issues in the observational studiesconducted in older population: a narrative review. *Epidemiol Biostat Public Health*,14(2):e12627–e.

Rapiti E, Verkooijen HM, Vlastos G. (2006). Complete excision of primary breast tumor improvessurvival of patients with metastatic breast cancer at diagnosis. *J Clin Oncol*, 24(18):27432749. doi:10.1200/JCO.2005.04.2226

Ruiterkamp J, Ernst M, Van de Poll-Franse L, Bosscha K, Tjan-Heijnen V, Voogd A.(2009).Surgical resection of the primary tumour is associated with improved survival in patientswith distant metastatic breast cancer at diagnosis. *Eur J Surg Oncol*, 35(11):1146–1151.doi:10.1016/j.ejso.2009.03.012

Ruiterkamp J, Ernst MFJ. (2011). The role of surgery in metastatic breast cancer. *Eur J Cancer*,47:S6–S22. doi:10.1016/S0959-8049(11)70142-3

Sales C, Paiva L, Scandiuzzi D, Anjos AC. (2011). Quality of life of breast cancer survivors: socialfunctioning. *Rev Bras Cancerol*, 47(3):263–272. doi:10.32635/21769745.RBC.2001v47n3.2304

Siegel R, Ma J, Zou Z, Jemal A. (2014). Cancer statistics, *CA Cancer J Clin*, 64(1):9–29.doi:10.3322/caac.21208

Soran A, Ozmen V, Ozbas S. (2016). A randomized controlled trial evaluating resection of the primary breast tumor in women presenting with de novo stage IV breast cancer: TurkishStudy (protocol MF07-01). *Am J Clin Oncol*, 34:1005.doi:10.1200/JCO.2016.34.15_suppl.1005

Thomas A, Khan SA, Chris chilles EA, Schroeder MC. (2016). Initial surgery and survival in stageIV breast cancer in the United States, 1988–2011. *JAMA Surg*, 151(5):424–431.doi:10.1001/jamasurg.2015.4539

Wang R, Zhu Y, Liu X, Liao X, He J, Niu L. (2019). The clinicopathological features and survival outcomes of patients with different metastatic sites in stage IV breast cancer. *BMC Cancer*,19(1):1091. doi:10.1186/s12885-019-6311-z