Editorial Commentary

The past, the present and the future of UK breast reconstruction—are our practices outdated in 2020?

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Provenance and Peer Review: This article was commissioned and reviewed by the Guest Section Editor Dr. Xiao Li, MD (Department of Urology, Jiangsu Cancer Hospital & Jiangsu Institute of Cancer Research & Nanjing Medical University Affiliated Cancer Hospital, Nanjing, China).

Comment on: Jeevan R. Reconstructive utilisation and outcomes following mastectomy surgery in women with breast cancer treated in England. Ann R Coll Surg Engl 2020;102:110-4.

Submitted Dec 09, 2019. Accepted for publication Jan 28, 2020.
doi: 10.21037/gs.2020.02.03
View this article at: http://dx.doi.org/10.21037/gs.2020.02.03

In 2019 British plastic surgeon Ranjeet Jeevan published an overview of an important body of work which has informed and shaped reconstructive breast practice in the UK titled "Reconstructive utilisation and outcomes following mastectomy surgery in women with breast cancer treated in England" in the *Annals of the Royal College of Surgeons England* (1). Much of this work relates to decade old data in a rapidly evolving surgical field, and yet many of the key findings remain relevant to present day practice. Geographical variations in provision of breast cancer reconstructive services and outcomes across England persist (2). Patchy *provision* of information regarding breast reconstruction to patients remains and age still influences decisions about care (3).

Despite these challenges there has been considerable progress in breast and reconstructive surgical practice. Over the past decade reconstructive options have expanded along with the number of breast surgeons able to apply aesthetic techniques to breast cancer surgery, coined "oncoplastic surgeons". The routine use of Latissimus dorsi flap (LD flap) based reconstruction has decreased, giving way to implant and acellular dermal matrix (ADM)-based reconstruction (4,5). Implant-ADM procedure is faster and technically less challenging. LD flaps are increasingly regarded as a salvage option (6).

In order to identify and address challenges in breast and reconstructive surgery data sources should be examined. Some of the findings quoted in Jeevan's paper were extracted from Hospital Episode Statistics (HES) data, described by *NHS Digital* as a "data warehouse" collected by non-clinical coders for payment and commissioning of UK healthcare (7). HES data rely on the completeness and accuracy of coding; the latter depends on clinician input which has hitherto been poor. A survey of over 1,000 UK consultants (attending physicians) in 2012 highlighted poor clinical engagement with coding, with only 21% of NHS consultants reported being involved in clinical coding (8) Recognising the deficiencies in HES data; Jeevan undertook a challenging national prospective audit on reconstruction including over 18,000 patients. He not only analysed decision-making and outcomes but very importantly patient reported outcomes. The approach taken in the US has been to create a National Surgical Quality Improvement Program (NSQIP) database to "measure and improve the quality of surgical care" (9). Ideally, future planning should include a British database like NSQIP.

A notable observation has been that other similar Western countries such as the US are outperforming the UK in immediate breast reconstruction (IBR) rates, reporting 54% in invasive cancer and 63% in DCIS. Clear socioeconomic and ethnic divides are also reported in an insurance and privately funded American system (10,11).

While we may expect that in the state funded British system these divides would not exist, Jeevan's work has suggested that non-white and low socioeconomic classes are less likely to have IBR (12). A better understanding of why different populations accept or decline IBR is essential to reduce this disparity. The wide discrepancy in UK regional IBR rates (9–43%) with the low national rate of 19% in 2009 found by Jeevan is reflective of wider NHS issues as well as individual clinician and patient factors. A multitude of factors affect the patients' uptake of IBR, and clinicians are guided by their experience, skillset and unit policies. It is encouraging to note that the UK IBR rate has increased since 2009 being reported at 23.3% in 2013–2014 (13). The 2018 NICE guidelines state that all mastectomy patients should be offered IBR regardless of local availability, unless significant comorbidities rule it out (14). The 2011 National Mastectomy and Breast Reconstruction Audit found no correlation between the rate of surgeons offering IBR and rate of patient uptake in over 15,000 patients (15). Going forward improving patient access and availability of IBR services especially in low uptake areas is imperative to iron out inequalities in IBR. It is important to support and facilitate women wanting IBR to feel able to accept it.

Identifying and addressing key factors contributing to low IBR rates in individual units is important. Reassuringly Kamali *et al.* found complication rates in IBR remain the same despite increasing age (16) and yet Jeevan's study found increasing age reduced the likelihood of IBR being offered despite other factors being equal or favourable; suggesting possible subconscious clinician bias. In our practice chronological age is irrelevant. We have an aging population of higher socioeconomic class in Cambridge. A recent GIRFT (*Get It Right First Time*) inspection of our unit revealed an IBR rate for cancer of 47% with low complication rates in breast reconstruction at 0.7% for implant only and 2.4% for implant-assisted LD flap. We offer IBR based on physiological age and patient preference and it clearly does not adversely affect our outcomes. Audits such as the National Audit of Breast Cancer in Older Patients (3) allows us to face and recognize treatment bias where it exists and take steps to address it.

Jeevan has highlighted patient access to information as a key factor impacting IBR uptake. He found 65% of patients not taking up reconstruction reported receiving the "right amount" of reconstruction information versus 90% of those who underwent reconstruction. A fully informed patient is important to ensure effective shared decision making in breast reconstruction. The awareness of breast issues and the ease at which patients can access health information continues to expand. Popular viewing sites such as youtube.com contain large volumes of breast surgery content (17). Social media can be utilised to provide IBR information, connect patients to resources and allow patients to be able to anonymously interact with other verified patients who have had IBR and are willing to share their experiences (18,19). During the initial treatment phase following the diagnosis of breast cancer patients are rightly focused on oncological aspects of treatment, and some may not wish to prioritise immediate reconstruction. Use of neoadjuvant treatments, may provide the patient with the time needed to make complex reconstructive decisions. Although using neoadjuvant therapy primarily for this purpose is a relatively poorly explored area, it is a concept that deserves greater attention for future studies. Our own study using Breast-Q to assess patient reported outcomes in bilateral mastectomy and IBR has suggested the indication for surgery either prophylactic, therapeutic or a combination of both affects the patient's perception of experience and satisfaction with surgery (20).

Patient reported outcomes form an important additional source of information in assisting patients to make the best decision regarding reconstruction. In Jeevan's work quality of life outcomes for flap-based reconstructions scored the highest for breast appearance, emotional and sexual wellbeing and satisfaction. Surprisingly, implant only reconstruction did not score any higher than mastectomy alone. The superiority of autologous reconstruction has since been confirmed by other PROM studies (21,22). The offer of implant versus autologous reconstruction in the NHS is often based on the availability of local resources and skill mix however, cost effectiveness and resource implications are also contributing factors. In our own tertiary centre we have observed that since introducing ADM into our practice, there has been an increase in implant-only reconstruction with consequent reductions in more complex and expensive autologous techniques despite the fact that implant-only procedures that incorporated ADM use had similar complication rates to those that did not (5).

The findings of Jeevan regarding patient reported outcomes are broadly similar to those of the Memorial Sloan Kettering group (21,22). In 2017, Pusic *et al.* found one year after IBR that patient satisfaction in implant-based reconstruction with breast appearance and psychosocial wellbeing was equal to preoperative (pre-mastectomy) baseline and better than baseline in autologous flap-based

reconstruction (22). Santosa *et al.* agree that autologous free flap based IBR has higher patient reported outcomes than implant alone (21). A recent systematic review by Cordova et al found that breast reconstruction has led to better patient related outcomes than mastectomy alone (23).

Another notable finding of Jeevan's work was the national reoperation rate for invasive disease of 20% and for in-situ disease as 30% and its associated regional variation. He describes reoperations as a failure and reports 40% of reoperations have mastectomy. Another angle for this data is 8–12% of all BCS patients have mastectomy. It is important to recognize conversion from breast conservation surgery (BCS) to mastectomy is not a surgical failure but a consequence of the oncology of the disease. The extent of disease in a certain proportion of patients is underestimated. Better imaging techniques and protocols can reduce the proportion of patients who have BCS when it proves later to be oncologically inappropriate. The prevention of disease underestimation in future depends on accurate determination of disease extent. Investment and engagement in radiology research will help shorten the patient's journey to definitive treatment.

Regional variations in reoperation rates are multifactorial. Variations in margin policies between hospitals may contribute to this. NICE guidelines regarding margins published in 2002 which were in use at the time of Jeevan's study were recommending margins of 2 mm (24). Since then various consensus guidelines by major professional bodies such as the Association of Breast Surgeons in the UK and Society of Surgical Oncology and American Society for Radiation Oncology (SSO-ASTRO) have been published, the latest NICE guidelines advises there is not enough evidence to define the optimum margin somewhere between 0–2 mm, therefore advise a personalised approach. Based on this, smaller margins are increasingly adopted by a number of breast units. The impact of this change is yet to be seen, although the findings of a large prospective national study in 2017 suggest that any gains are likely to be relatively modest (25).

In conclusion the many important aspects of breast and reconstructive surgery highlighted in Jeevan's paper (1) based on decade old data remain relevant in the present. Although we would have expected it to be outdated now in 2020 instead it provides us with a framework of challenges to address for the future decade. Our goal is to erase breast cancer and reconstructive healthcare inequalities, improve patient experience and create reliable healthcare data to help shape the future. The future includes collaborative clinical databases and registries with 100% clinician engagement, patient reported outcomes and systemic application of validated tools such as the Breast-Q, digital integration, social media engagement, radiological advances and good old-fashioned hard work.

Acknowledgments

The authors would like to acknowledge Ranjeet Jeevan for his extensive body of work that has influenced breast reconstructive practice in the UK.
Funding: None.

Footnote

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/gs.2020.02.03). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Cite this article as: Wignarajah P, Forouhi P, Malata CM. The past, the present and the future of UK breast reconstruction—are our practices outdated in 2020? Gland Surg 2020;9(4):1076-1079. doi: 10.21037/gs.2020.02.03