E3. The impact of surgical techniques on quality of life

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Surgery remains the chief treatment for primary breast cancer. As case survival improves in breast cancer so quality of life (QoL) assumes a greater importance. QoL is influenced by the surgical techniques used.

Operable primary breast cancer

In breast cancer changes in surgical techniques have largely focussed on lessening the side-effects of therapy without unduly increasing the rate of local or regional recurrence.

For the first 60 years of the 20th century, the treatment given almost universally for breast cancer was radical mastectomy followed by radical irradiation to the chest wall and to the lymph nodes. Although this resulted in a very low rate of local and regional recurrence, the radicality of treatment had no benefit in survival terms.

The first change in technique was towards improvement in the cosmetic result by the use of the modified radical mastectomy (Patey mastectomy), however severe side-effects, such as gross lymphoedema of the arm and irradiation necrosis remained a common problem.

Large trials lessening the side-effects of therapy were carried out in the 1960s and 1970s. These demonstrated that there was no advantage to adding radiotherapy to radical mastectomy and that treatment by mastectomy with a watch policy for lymph nodes rather than prophylactic irradiation of the lymph nodes, had no deleterious effect on survival.

Breast-conserving therapy which had first been used by Keynes in the 1930s was re-introduced in the 1970's through clinical trials such as the Milan Trial [1] comparing breast-conserving surgery with radical mastectomy showed no disadvantage for the former. The initial operations of breast-conserving surgery were quadrantectomy or segmentectomy in which large volumes of breast tissue were removed, not achieving good cosmesis [2]. Reports then appeared showing [3] limited wide local excision with excision margins free of tumour, followed by intact breast irradiation, to be a safe technique giving local recurrence rates over the first 10 years of follow-up of less than 1.5% per annum.

The use of wide local excision, with a histologically-confirmed 5 mm margin all around the circumferential edge of the tumour, has been shown to give generally good cosmetic outcomes [4]. In 254 patients studied, good or excellent cosmetic results, assessed both subjectively by a panel and objectively, were graded as good or excellent. This assessment bore close correlation to the results of patient self-assessment and satisfaction [5].

Although it is often assumed that a good cosmetic result gives rise to a better quality of life, this was not demonstrated during the re-introduction of breast-conserving surgery nor did the units often evaluate their cosmetic results. Studies attempting to demonstrate quality of life improvements from a better cosmetic procedure in surgery for primary breast cancer suffered from the problems of confounding variables, such as a lowered quality of life (QoL) in women undergoing more major operations that might be brought about by their belief that the greater the surgery, the worse the prognosis; in addition, studies suffered from the multiplicity of operative procedures studied, breast-conserving surgery and several different post-mastectomy reconstruction procedures and this was further confounded by young women being more likely to opt for surgery which carried a better cosmesis.

In a study using only one surgical technique (wide local excision – WLE), with combined objective and panel subjective measurement of the cosmetic result, cosmetic outcome has been compared with QoL, using the Hospital Anxiety and Depression Scale (HADS) the Body Image Scale and the Rosenberg Self Esteem Scale (RSE). 254 women were studied. There was an excellent correlation between cosmesis and the levels of anxiety and depression, and between cosmesis, body image, sexuality and self-esteem. The study demonstrated, without the confounding variable of different techniques, that cosmetic outcome has a marked bearing on QoL.

Cosmetic outcome and patient satisfaction were also studied following 101 subcutaneous mastectomies (SCM) (retaining the nipple with silicone implants) for invasive or *in-situ* cancer [6]. Again good to excellent cosmesis was achieved in 70%. Although satisfaction levels (80% moderately or very satisfied) were reasonable, they were lower than the 90% following WLE and this does not include the approximately 8% suffering failure of SCM through infection or flap necrosis.

The psychological outcomes in groups undergoing WLE (above), reconstruction by a variety of techniques

and simple mastectomy, were compared [7]. Greater psychological morbidity was seen in the simple mastectomy groups. Patient satisfaction and psychological measurements were better in the WLE group than those undergoing mastectomy with reconstruction.

In conclusion, regarding surgery for primary operable breast cancer, the best cosmetic result and it follows the best psychological adjustments and patient satisfaction, are achieved following breast-conserving surgery. If feasible, this should be the operation offered to women wishing for a good cosmetic result. Breast reconstruction gives an improved QoL over simple mastectomy, but should be reserved for those women who have to be advised to undergo mastectomy because of extensive disease or adverse features on histology.

Locally advanced breast cancer

Locally advanced breast cancer (greater than 5 cm diameter) has a very poor prognosis and is sometimes seen as a target for systemic therapy only. However, the goals of surgery are both cure (rarely possible in locally advanced disease) and local and regional control. Radical surgery still has a place in the treatment of larger or locally advanced cancers for uncontrolled disease and gives extremely poor quality of life. Pre-operative endocrine or chemotherapy may be helpful in reducing the size of the primary tumour [8].

Locally recurrent breast cancer

Local recurrence can be disastrous to patients if extensive. Every effort should be made to control local recurrence by local means, even if this means the use of large grafts or free flaps. Omental pedicle flaps, covered by split skin grafts can be effective in the control of extensive chest wall recurrence [9].

Regional recurrence

Axillary recurrence should be an indication for full axillary clearance (level III). This may lead to the unpleasant side-effect of lymphoedema, but this is much less likely than after the use of a combination of surgical clearance and radiotherapy.

Distant metastatic spread

Surgery may be used in a number of situations to relieve symptoms and improve QoL. These are the province of surgeons in specialities other than breast surgery. However, they should only be carried out in centres where the surgeons have special experience of using their techniques for metastatic cancers eg. neurosurgery to excise a brain metastasis, orthopaedic surgery such as hip replacement, spinal surgery for acute or impending cord compression, the cutting of a pericardial window for malignant effusion, relief of ureteric obstruction from a lobular carcinoma. Lymphoedema may be helped by identifying and dilating the vein when narrowed by fibrosis.

Women at risk of contracting breast cancer

The risk of contracting breast cancer for a woman with a proven *BRCA1* or *BRCA2* mutation may be as high as 50% by the age of 50 years. Under these circumstances, bilateral prophylactic mastectomy with reconstruction may be offered to young women. These women are reasonably anxious about the possibility of breast cancer and this anxiety is certainly relieved by surgical prophylaxis. The quality of the reconstruction is very important to these young women, who actually have to live with the knowledge that histologically-normal breast tissue has been removed.

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