British Journal of Plastic Surgery (2005) **58**, 493–497

ELSEVIER

BJPS
An International Journal of Surgical Reconstruction
www.bjps.com

Comparing the cost of delayed and immediate autologous breast reconstruction in Belgium

M.J. Neyt[a,*], P.N. Blondeel[b], C.M. Morrison[c], J.A. Albrecht[a]

[a]*Department of Economics, Ghent University, Gent, Belgium*
[b]*Department of Plastic and Reconstructive Surgery, University Hospital Gent, Gent, Belgium*
[c]*Northern Ireland Plastic & Maxillo Facial Service, The Ulster Hospital, Belfast, Northern Ireland*

Received 4 February 2004; accepted 15 December 2004

KEYWORDS
Immediate breast reconstruction;
Autologous breast reconstruction;
DIEP flap;
Resource costs;
Savings

Summary This study documents the cost of immediate and delayed DIEP flap breast reconstruction. Immediate reconstruction is more attractive from an economic perspective since it only requires one operation, one anaesthetic procedure and one recovery period in hospital. From the perspective of healthcare budget management, assessing the possible cost savings from immediate reconstruction yields interesting results.

Since charges do not reflect the real costs of providing care, we calculated resource costs using the micro-costing method. About 95% of the initial mastectomy costs could be saved when performing an immediate breast reconstruction. This was about 35% of total standard direct and indirect costs due to mastectomy and delayed breast reconstruction. In a growing cost conscious environment of managed care, the economic evaluation should, therefore, encourage the trend towards more immediate reconstructions.

Mastectomy is still performed in case of large tumour size, tumour recurrence, unfavourable tumour localisation, multifocal tumours and patient anxiety.[1,2] More women than ever are requesting breast reconstruction following a mastectomy to help restore their appearance and self-image. Although the aesthetic result is of paramount importance to the patient, surgeons now practice in a healthcare environment where cost matters. Determining the value—benefit versus cost—of any given procedure is vitally important to ensure its unrestricted, continued availability.

Immediate breast reconstruction provides a number of advantages over delayed reconstruction. Not only is the final aesthetic result superior,[3–7] it also involves a lower number of surgical procedures, hospitalisations and recovery periods.[8–10] Psychosocial factors such as anxiety, depression, self-esteem and confidence, acceptance of the new breast, feelings of femininity and sexuality are also better perceived with immediate reconstruction, which results in a higher quality of life.[3,11–15]

* Corresponding author. Address: Department of Economics, Faculty of Economics and Business Administration, Ghent University, Hoveniersberg 24, B9000 Gent, Belgium. Tel.: +32 9 264 4209; fax: +32 9 264 3599.
E-mail address: mattias.neyt@ugent.be (M.J. Neyt).

S0007-1226/$ - see front matter
doi:10.1016/j.bjps.2004.12.002

A report of Tran et al.[16] indicates that early postoperative radiotherapy may adversely affect the aesthetic outcome of autologous reconstruction. In contrast to this, primary reconstruction does not delay the initiation of adjuvant chemotherapy.[17] Shons et al.[18] argued that delayed reconstruction may be preferable for patients who are not able to make a well-balanced decision at the time of mastectomy due to the overwhelming news of breast cancer diagnosis and the possible treatment options. Therefore, certain patients may prefer to treat the tumour first and think about the reconstruction later.

There are several flap techniques available to perform immediate breast reconstruction. The most common ones are: TRAM (transverse rectus abdominis myocutaneous), DIEP (deep inferior epigastric perforator), S-GAP (superior gluteal artery perforator) and latissimus dorsi myocutaneous flap. More rarely used are the SIEA (superficial inferior epigastric artery) and I-GAP (inferior gluteal artery perforator) flap. In this case, calculations were made for the DIEP flap.[19–21]

Method

Immediate reconstruction is more attractive from an economic perspective than the delayed procedure since it only requires one operation and one anaesthetic procedure, followed by one recovery period in the hospital.[8–10] From the perspective of healthcare budget management, assessing the possible cost savings from immediate reconstruction can yield interesting results.

Previous results

Some existing studies focus on cost savings. Hang-Fu et al.[22] used charges for their cost calculations and concluded that immediate reconstruction decreased hospital costs compared to the delayed procedure. A study of Elkowitz et al.[8] based on hospital bills came to the same conclusion. Another study of Desch et al.[23] examined the costs of immediate versus delayed reconstruction by adding up all claims between 45 days before diagnosis and 745 days after diagnosis. They also concluded that performing immediate reconstruction was less expensive than the delayed procedure.

But as Elkowitz et al.[8] already mentioned in their study, charges do not reflect the real costs of providing care. If we want to know the cost implications from the hospital's point of view, resource costs have to be calculated. As far as we know, only Khoo et al.[9] estimated the difference between immediate and delayed reconstruction on the basis of resource costs, which were defined as the costs to the institution required to provide the services being studied. As they mentioned, this is a better way than using charges since the latter are arbitrary and vary over time. This means that they can change due to administrative decisions without a change in real resource cost.

Standard costs

An economic evaluation without correct cost information cannot provide reliable results. Unfortunately, detailed real cost data for specific diagnostic or treatment options are not available in Belgium. What patients pay or what hospitals receive from healthcare budgets for specific services is relatively easy to find out but does not reflect real costs. As stated by Cramer et al.,[24] a persistent relation between hospital charges to patients for products or services and the actual costs of those products or services does not exist. We, therefore, opt to work with real standard costs for the average patient.

Direct and indirect costs

To calculate the possible cost savings through immediate breast reconstruction we first had to calculate the costs for mastectomy and DIEP flap separately. Afterwards, we calculated the cost for mastectomy followed by immediate breast reconstruction.

The main direct cost-drivers were the use of personnel, material, equipment and hospital-stay costs. Indirect costs made for sterilisation of material and maintenance of equipment was also taken into account. General overhead costs and costs linked to research activities were disregarded since they are in the first place related to a specific department and not to a specific treatment option. Costs caused by complications were not interpreted as standard costs and, therefore, not taken into account. In other words, the real costs are higher than our calculated standard costs and they only reflect a part of total department expenditures.

The personnel, material and equipment costs were calculated directly by using the bottom-up or micro-costing method in which the costs are calculated by directly tracing resources. The personnel costs were estimated by multiplying the time different people were involved by their average labour cost. The costs of disposable materials were based on the standard amounts