British Society for Dermatological Surgery

Undergraduate Essay Prize 2015

"How should we measure the "best" outcomes for skin cancer surgery?"

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Introduction

The modernisation of the patient-doctor relationship has seen an important drift away from the paternalistic model of consultations to the patient-centred one. There is now an ever emerging desire from patients for increased responsibility and clarity of information regarding the standards of care. With the advent of social media and the internet, patients are increasingly prompted to enquire about the possible outcomes of procedures they are undertaking.[1] This is especially true in skin cancer surgery, whereby this effect is compounded by the combination of the already taboo word of 'cancer' and surgery performed on highly valued areas of the body such as the face.

The process of revalidation further highlights the necessity of measuring outcomes in an individual's practice thereby providing evidence of competence, as well as contributing to professional development throughout one's career.[1] Within the healthcare system model, measuring outcomes serve as a component of clinical governance, whereby, "a systematic approach is used to maintain and enhance the quality of patient care at a hospital or national level".[2]

This essay will focus on different perspectives when measuring outcomes in skin cancer surgery (SCS) while attempting to ascertain possible methods in measuring what the "best" outcomes may be.

The importance of Patient-Reported Outcome Measures (PROMs)

Since the World Health Organisation defined health as a "state of complete physical, mental and social well-being,"[3] PROMs have become the cornerstone for obtaining a complete picture of the success of dermatological surgery. Evidence has

continuously shown that data derived from PROMS leads to improved clinical decision making as well as enhanced patient satisfaction and quality of life.[4-6]

The best outcomes for SCS that can be measured via PROMs include a good quality of life (QOL) and patient satisfaction post-treatment. Relevant QOL issues in non-melanoma skin cancer (basal cell and squamous cell carcinomas) patients include wound healing and scarring, and anxiety of future skin cancers.[7] Therefore, the ideal PROM would address some or most of these issues within the context of the "physical, mental and social well-being" of the patient.

Skin cancer specific PROMs

Although there are a myriad of general dermatology PROMs, PROMs that focus solely on SCS patients are lacking. Recently, specific instruments have been developed – namely the Skin Cancer Index (SCI) and the Skin Cancer Quality of Life Impact Tool (SCQOLIT). The SCI is a 15-item disease-specific QOL instrument entailing 3 categories: emotion, social functioning, and appearance.[8-10] Studies have shown improvement in all 3 subscales post-Mohs surgery in NMSC patients[8, 9] in addition to displaying adequate reliability[10], construct validity[9], convergent validity[8, 9], and responsiveness[8, 9]. Several systematic reviews have concluded that the SCI demonstrates the most evidence in measuring relevant outcomes in patients with BCC/SCC[11-13], hence further application of this tool within the NHS is warranted.

The SCQOLIT is a 10-item questionnaire developed for application in non-metastatic skin cancer. Both metastatic melanoma (MM) and non-melanoma skin cancer (NMSC) patients undergoing surgical excision showed a decrease in scores

Table 1. Relevant domains in SCS included in the SCI and SCQOLIT. Although treatment satisfaction and skin-related symptoms such as pain are not covered by either PROM, these domains may be covered elsewhere i.e. during the consultation.

Domain	SCI	SCQOLIT
Perception of diagnosis	x	x
Physical function		x
Skin-related symptoms		
Social functioning	x	
Psychological well-being	x	x
Scarring post-treatment	x	
Treatment satisfaction		

indicating a proportional increase in QOL. Test and retest reliability, consistency, and sensitivity to small variations in a sample of 59 patients with NMSC and 54 patients with MM showed adequate features post-surgically.[14] The SCQOLIT is a potential tool to apply in NMSC and MM, although it has not been evaluated as extensively as the SCI.

Both the SCI and SCQOLIT are well designed to measure relevant outcomes in SCS, namely perceived scarring and pain, social issues, as well as psychological concerns (**Table 1**).

Clinician-oriented outcomes of SCS

Not only do clinician-oriented outcomes provide an evidence base from which to determine the efficacy of the procedure, but also to establish the quintessential procedure for a given patient with a given condition. For example, Mohs micrographic surgery (MMS) is now widely accepted as the most effective technique for treating skin cancers of all types based on available evidence. It accomplishes its objective by sparing as much healthy tissue as possible while almost entirely

expunging cancer cells; cure rates for BCC and SCC are higher with MMS while reducing complications such as wound infection, and improving healing and scarring when compared with the rates for standard excision (SE).[15-18]

Because there are a plethora of possible clinician-based measures of outcome, it is futile to attempt to ascertain the “best” ones for SCS. Rather, a systematic approach is needed. Porter’s seminal work in healthcare and his development of an “Outcome Measures Hierarchy” can be specifically applied to SCS (**Figure 1**). Instead of relying on traditional measures such as complication rates and 5-year survival rates in SCS, other measures that involve the complete continuum of care such as degree of recovery, time to recovery and long-term consequences of therapy constitute essential domains used to measure best possible outcomes.[19]

Visual aids in assessing outcomes of SCS

Evidence has consistently shown that visual images influence the understanding of health information, as well as health behaviours, [20] which can be advantageous when measuring outcomes in SCS. Images relevant to skin cancer are especially crucial since clinical signs are mostly visual, as well as the diagnosis.[21]

Currently, "Outcomes of Skin Surgery" by Dr Graham Colver[22] provides a key step in determining a genuine foundation for outcomes measurement, providing images to highlight exemplary outcomes from SCS. Eventually, it could prove to be a stepping stone to developing tools to assist dermatologists in visualising clinician-based outcomes postoperatively and/or to become an integral part of the informed consent process with patients preoperatively.

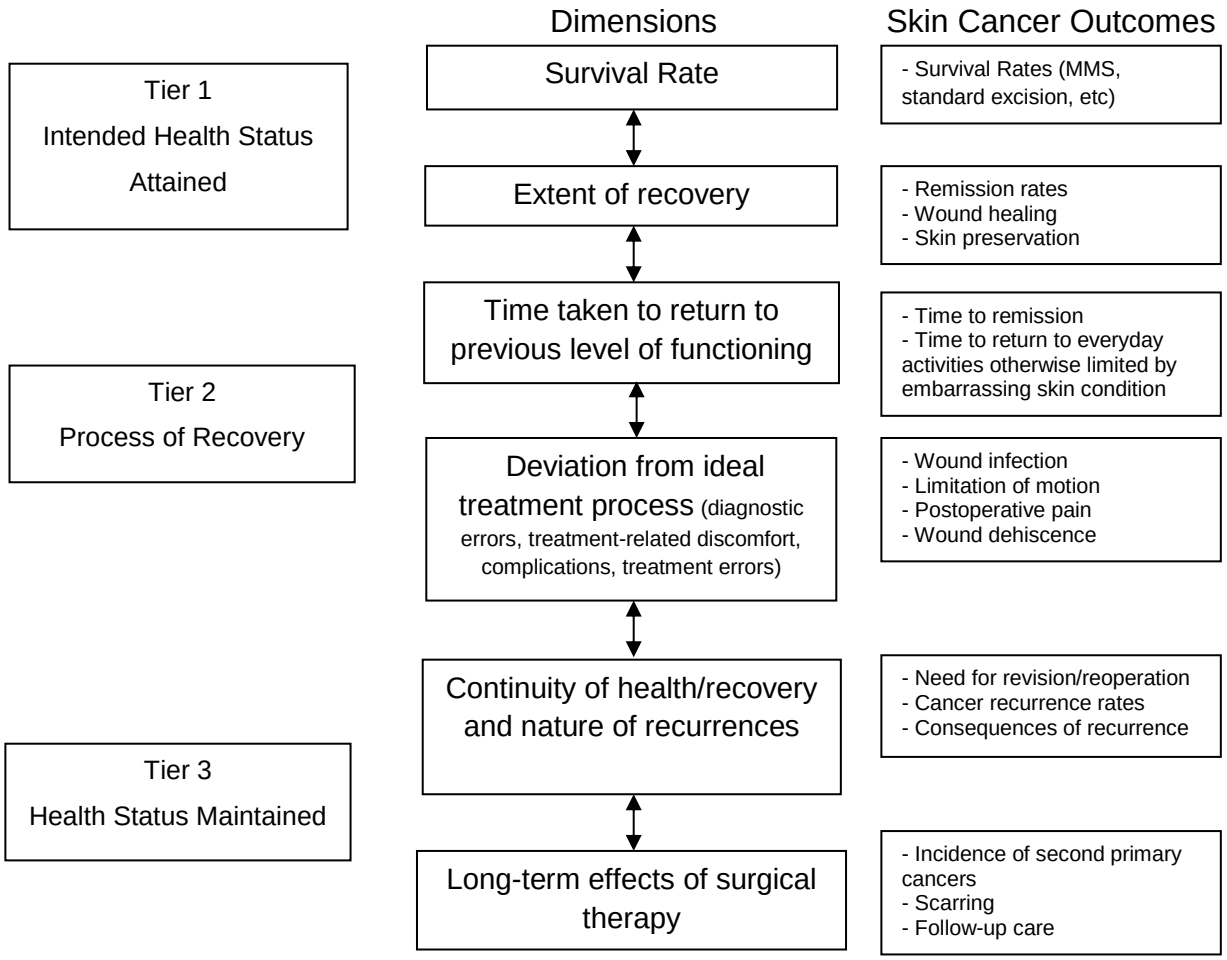

Figure 1. This three-tiered system can convey outcomes for any medical condition after a given treatment. The top tier of outcomes is the most important, with the second and third tiers reflecting a continuum of results depending on success at the first tier. Each tier of the hierarchy has 'dimensions', each of which contains relevant clinical outcomes. Adapted from Porter with permission.[19]

Cost-effective procedures

Cost effectiveness analysis displaying the outcome oriented efficacy of procedures are obligatory in the present health care climate with amplified sensitivity to economic pressures. This becomes even more evident as there is a shortage of dermatologists set against the backdrop of financial cuts and a rising incidence of skin cancers.[23] Regardless of which specific outcome measures are used in SCS and how they are measured, the cost-effectiveness of a given procedure should be allocated equal weighting when considering ideal outcomes in the NHS.

Taking MMS as an example, there has been continuous debate whether or not it is cost-effective when compared to SE. A recent Cochrane systematic review published in 2014 concluded that there was insufficient evidence comparing cost of MMS *versus* SE for periocular basal cell carcinomas[24] while other studies suggest that MMS is indeed cost effective relative to standard excision.[25, 26] However, the current evidence leans towards MMS being the most cost-effective procedure for skin cancers.

Extrapolating these studies to healthcare models in the UK should be carefully analysed. Most cost-analysis studies have been performed in the USA so it is difficult to compare what is essentially a consumer-driven market to a public healthcare system that is the NHS. No studies have taken into account further potential costs that may arise such as higher re-excision rates that may occur in SE *versus* MMS. RCTs that consider these issues in addition to who performs the procedure (GPs, dermatologists, plastic surgeons, specialist nurses) and in what setting (primary or secondary care) should be undertaken to establish what the best 'value for money' is while delivering the 'best' outcomes for SCS simultaneously.

Conclusion

Realistically, PROM's may be challenging to incorporate into everyday practice as clinics are often busy and the main predicament is that there are excessive numbers of such tools from which to choose and insufficient guidance to inform choice.[27] Skin cancer specific instruments may have higher clinical relevance because of their specificity of content, and accompanying increased sensitivity to specific changes in

status.[28] However, broad instruments such as the Dermatology Life Quality Index (DLQI) should not be neglected as it may cast a wider net on possibly relevant outcomes.

The “Outcomes Measures Hierarchy” is an intriguing model designed to broaden the definition of outcomes of SCS to fulfil the entire patients’ journey postoperatively. However, in its current form, it lacks the inclusion of PROMs. Embedding PROMs and visual assessment tools into the “Outcome Measures Hierarchy” would inevitably empower dermatological surgeons in optimising the quality of care delivered to their patients.

Future practices may revolve around the use of computerised adaptive testing and item response theory in obtaining PROM’s, in which questions have been personalised to each individual patient based on their age, demographics and procedure to be undertaken.[29] Measures in assessing the best achievable outcome in SCS may integrate visual images as part of the consultation, which can help the dermatologist and the patient understand the true effect of the procedure against expected visual outcomes.

The exemplary outcome for skin cancer surgery combines a cost-effective approach that delivers optimal clinician oriented outcomes while maximising patient-reported outcome measures (**Figure 2**). In turn, I have argued that we should measure clinician oriented outcomes via the outcomes measures hierarchy and visual instruments, PROMs via questionnaires such as the SCI/SCQLIT, and established a

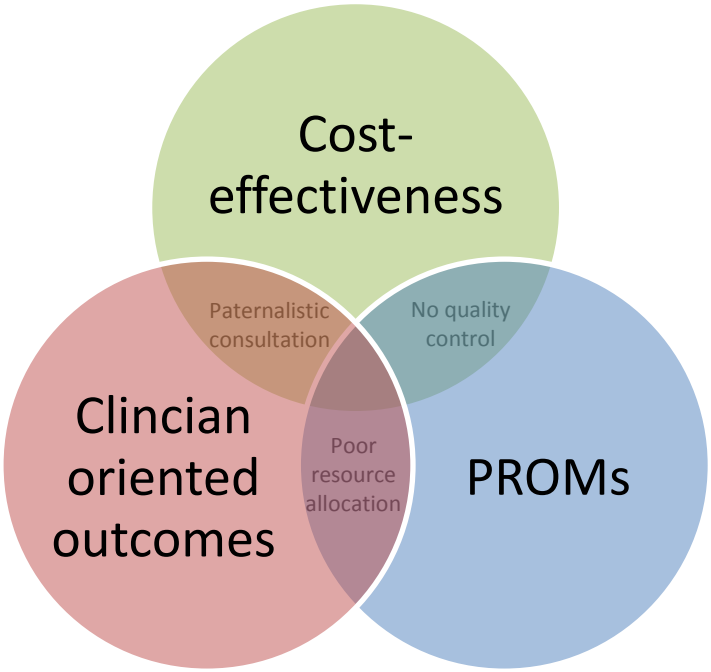

Figure 2. Regardless of what the "best" outcomes of SCS may be, methods employed should take into account cost-effectiveness, clinician oriented outcomes and PROMs. Without cost-effectiveness, achieving ideal outcomes may be impeded by poor resource allocation. Similarly, neglecting PROMs employs a paternalistic approach to practice while clinician oriented outcomes are obligatory for clinical governance.

need for further research in determining a cost-effective procedure that takes into account clinician oriented outcomes and PROMS. It is this intricate amalgamation of these methods that leads to measurement of "best" outcomes in SCS within the context of NHS needs, patient-centred care, and under the umbrella of clinical governance.

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