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Short communication

Results of flap reconstruction: categorisation to reflect outcomes and process in the management of head and neck defects

M.W. Ho [a,*], M. Nugent [b], F. Puglia [c], R.J. Shaw [d], T.K. Blackburn [e], S. Parmar [f], J. Dhanda [g], A.M. Fry [h], P. Brennan [i], C.P. Barry [j], J. McMahon [k]

[a] *Oral and Maxillofacial Surgery, Leeds Teaching Hospitals NHS Trust, LS2 9LU, Leeds*
[b] *Oral and Maxillofacial Surgery, City Hospitals Sunderland NHS Foundation Trust, Sunderland*
[c] *BAOMS Quality Outcome Metrics Project Manager, British Association of Oral and Maxillofacial Surgeons, Royal College of Surgeons of England, 35/43 Lincoln's Inn Fields, WC2A 3PE, London*
[d] *Oral and Maxillofacial Surgery, Aintree University Hospitals NHS Foundation Trust, Lower Lane, Fazakerly, L9 7AL, Liverpool*
[e] *Oral and Maxillofacial Surgery, Central Manchester University Hospitals NHS Foundation Trust, Manchester*
[f] *Maxillofacial Department, University Hospitals Birmingham NHS Foundation Trust, Queen Elizabeth Hospital, Queen Elizabeth Medical Centre, B15 2TH, Birmingham*
[g] *Oral and Maxillofacial Surgery, Queen Victoria Hospital, East Grinstead*
[h] *Oral and Maxillofacial Surgery, Guy's and St Thomas' NHS Foundation Trust, London*
[i] *Maxillofacial Unit, Queen Alexandra Hospital, PO6 3LY, Portsmouth*
[j] *National Maxillofacial Unit, St. James's Hospital, James's Street, Dublin 8, Ireland*
[k] *Oral and Maxillofacial Surgery, NHS Greater Glasgow and Clyde, Glasgow*

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Abstract

The reporting of the outcomes of flap reconstruction is often based on numerical success rates. Whilst this remains a useful variable with which to measure success, it is limited in its ability to reflect the complex processes involved. The lack of consistency in the categorisation of outcomes of flap reconstruction in the head and neck could potentially lead us to lose the opportunity to fully capture the implications of its success or failure, or both. We propose a classification that moves away from primarily reporting the results of its binary nature, and focuses more on the process of reconstruction, particularly in the head and neck.

Keywords: Reconstruction; flap survival; flap salvage; flap failure

Introduction

The reporting of outcomes of flap reconstruction is often based on numerical success rates.[1–3] While this remains a useful variable with which to measure success, it is limited in its ability to reflect the complex processes involved.[1,2,4] The lack of consistency in the categorisation of outcomes of flap reconstruction in the head and neck could potentially lead us to lose the opportunity to fully capture the implications of its success or failure, or both. Such outcomes are not always binary in nature, and can, on occasion, sit within the spectrum between complete success and complete failure. The processes that are required to manage the residual defect appropriately are not consistently reported compre-

* Corresponding author at: Oral and Maxillofacial Surgery, Leeds Teaching Hospitals NHS Trust, LS2 9LU, Leeds.
E-mail address: michael.ho2@nhs.net (M.W. Ho).

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Table 1
Categories of results/outcomes for reconstruction with free tissue transfer.

Outcome categories for reconstruction with free tissue transfer	Subcategory	Description
1 – Reconstruction successful	1a	Complete success
	1b	Partial success with loss of some components of the flap, but secondary reconstruction or prosthesis not required
2 – Partial failure: some component of flap lost, and secondary reconstruction or prosthesis required to rehabilitate defect (based on intention to treat)	2a	Second flap (free or pedicled) required to rehabilitate residual defect
	2b	Prosthesis used to address residual defect
3 – Complete flap failure	3a	Second flap (free or pedicled) required to rehabilitate residual defect
	3b	Prosthesis used to address residual defect
	3c	Residual defect did not require further reconstructive procedure or prosthetic rehabilitation
Option for addition of further subcategories for outcome 3a/b/c (eg, 3a.i)	*i*	*Arterial failure*
	ii	*Venous failure*
	iii	*Uncertain/other causes- eg, microcirculatory*
4 – Failure to establish reconstruction	4a	Flap harvest attempted but abandoned because of unfavourable anatomy – eg, inadequacy of perforators in MSAP* or ALT**
	4b	Flap harvested but abandoned because of failure to perfuse before release from donor site, or inadequacy of the recipient vessels available – eg, more extensive ablation required
	4c	Flap harvested and transferred to recipient site but abandoned/discarded because of failure to perfuse after attempted anastomosis to recipient vessels

* medial sural artery perforator.
** anterolateral thigh.

Table 2
Categories of results/outcomes for reconstruction with a pedicled flap.

Outcome categories for reconstruction with pedicled tissue transfer	Subcategory	Description
1^{p} – Reconstruction successful	$1a^{p}$	Complete success
	$1b^{p}$	Partial success with loss of some components of flap, but no secondary reconstruction or prosthesis required
2^{p} – Partial failure: some component of flap lost, and secondary reconstruction or prosthesis required to rehabilitate defect (based on intention to treat)	$2a^{p}$	Secondary flap (free or pedicled) required to rehabilitate defect
	$2b^{p}$	Prosthesis used to address residual defect
3^{p} – Complete flap failure	$3a^{p}$	Second flap (free or pedicled) required to rehabilitate residual defect
	$3b^{p}$	Prosthesis used to address residual defect
	$3c^{p}$	Residual defect did not require further reconstructive procedure or prosthetic rehabilitation
Option for addition of further subcategories for outcome 3a/b/c^{p} (eg, 3a.i^{p})	*i*	*Arterial failure*
	ii	*Venous failure*
	iii	*Uncertain/other causes – eg, microcirculatory*
4^{p} – Failure to establish reconstruction	$4a^{p}$	Flap harvest attempted but abandoned because of unfavourable anatomy – eg, inadequacy of vascularity or perforators in supraclavicular or submental island, or internal mammary artery perforators
	$4b^{p}$	Flap harvested but abandoned because of failure to perfuse before release from donor site

hensively, and this leads to a loss of opportunity to define the impact that reconstructive failure has on the burden of care for patients. We propose a classification of outcomes for flap reconstruction that moves away from primarily reporting the binary nature of the results, and focuses more on the process of reconstruction, particularly in the head and neck (Tables 1 and 2).

Discussion

The intention in adopting the classification would be to: reflect the complexity of outcomes succinctly; inform clinicians and organisations of the processes involved in the management of partial or complete success, or both, and of partial or complete failure, or both; contribute to the appraisal and governance of surgical reconstructive teams when they evaluate results and outcomes; and finally, to define the process and outcomes of flap reconstructive surgery more accurately, to allow for the constructive support and input for teams who may require it.

Where more than one flap is required to reconstruct a defect, each flap should be assigned an outcome category. The definition of a surgeon's involvement in a reconstructive procedure would include elements of harvest, insertion, or microvascular anastomosis. It is important to ensure that the outcomes proposed have an element of longevity, as adverse

outcomes can occasionally present late. Those recorded should therefore be based on the clinical status of reconstruction four months after the date of operation to allow enough time for evaluation after the completion of adjuvant treatment.

The proposed system does not reflect any functional outcome or correlate with any quality of life measures, which would be beyond its scope and perhaps too complex to simplify succinctly. The interpretation of outcome data on flap reconstruction must take into consideration denominators of complexity such as the patients' comorbidity scores (robust and uniform) and previous interventions such as operation, radiotherapy, or chemoradiotherapy.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patients' permission

Not applicable.

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