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Methodologic Issues in the Comparison of Microsurgical Flaps/Techniques in Head and Neck Reconstruction

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- Evidence-based microsurgery
- Hierarchy of the strength of evidence for treatment decisions in microsurgery
- Types of questions asked (background versus foreground questions) to identify the best available evidence
  Scenario 1
  Scenario 2
- Strategies for searching the microsurgical literature
- Study outcomes (types, perspective, and time horizon) in microsurgery
- Economic analysis in head and neck microsurgical reconstruction
- Interpretation and applicability of results to clinical practice
- Summary
- Acknowledgments
- References

Evidence-based microsurgery

In microsurgery publications and presentations at national or international meetings, claims are made regarding the superiority of one technique or flap over another in head and neck reconstruction. The evidence behind many of these claims is lacking at best and misleading at worse. Surgeons have traditionally made therapeutic decisions based on existing surgical dogma, personal experience, recommendations of surgical authorities, and thoughtful application of surgical basic sciences [1]. Head and neck microsurgeons need to offer their patients the microsurgical techniques and flaps that do more good than harm and that are worth the efforts and costs of using them. Variations in surgical interventions can be costly to patients, health care systems, and society. Many different and challenging methodologic issues arise when microsurgery investigators and practitioners compare different techniques/flaps in head and neck reconstruction. It is important for head and neck microsurgeons to apply principles of evidence-based microsurgery when deciding which of the competing surgical techniques/flaps to promote or use on their patients.

Many different factors influence clinical decision-making in head and neck microsurgical reconstruction [Fig. 1]. The clinical state, setting,

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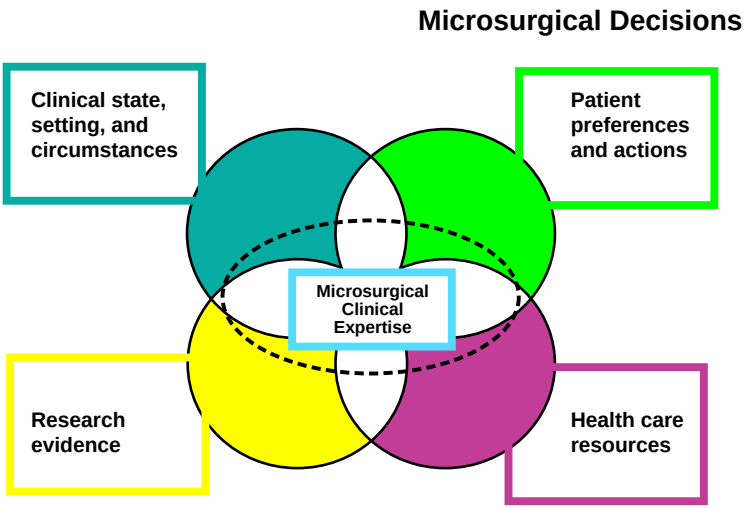

Fig. 1. Items that influence clinical decision making in microsurgery.

circumstances, as well as patient preferences and actions, can affect clinical decision-making, such as whether to use a fibular or a scapular osteocutaneous flap for oromandibular reconstruction. The availability of health care resources can also impact surgical decisions (eg, community versus tertiary academic center). The research evidence needs to play a significant role in clinical decisions. All of the items listed previously are combined with the clinical expertise of the head and neck microsurgeon to influence decisions on the treatment of head and neck cancer patients.

Evidence-based microsurgery is defined as the integration of the best research evidence with clinical expertise and patient values. It can also be defined as the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. Evidence-based microsurgery emphasizes the need to properly evaluate the efficacy of microsurgical interventions before accepting them as standard surgical practice. Evidence-based microsurgery is an approach to practicing microsurgery in which the microsurgeon is aware of the evidence in support of practice and the strength of that evidence. It involves systematically finding, appraising, and using contemporaneous research findings as the basis for clinical decisions.

In contrast to the traditional paradigm of surgical practice, evidence-based microsurgery acknowledges that intuition, unsystematic clinical experience, and pathophysiologic rationale are insufficient grounds for clinical decision-making. It also stresses the examination of evidence from clinical research. Additionally, evidence-based microsurgery suggests that a set of formal rules must complement microsurgical training, and common sense is required for microsurgeons to interpret the results of clinical research effectively.

There are two fundamental principles of evidence-based microsurgery. Firstly, the evidence alone is never sufficient to make a clinical decision because microsurgeons (decision makers) must always trade the benefits and the risks, inconvenience, and costs associated with alternative free flaps and in doing so also take the patient's values and preferences into consideration. Secondly, evidence-based microsurgery requires a hierarchy of evidence to guide clinical decision making. Assuming that all of us would like to practice evidence-based microsurgery, the identification of the outcome and its measurement has important ramifications.

In this article, several methodologic issues are discussed that arise when microsurgeons compare different microsurgical techniques or flaps, either as a research investigation or application in head and neck reconstruction. The first issue is the hierarchy of evidence, and the second is an explanation of the differences between background and foreground questions and the various strategies used for searching the literature in identifying the best available evidence. The third issue involves the importance of appraising study outcomes in head and neck microsurgery, including the type of outcome, the perspective, and the time horizon chosen. Fourthly, the importance of conducting economic evaluations in head and neck microsurgery is addressed. Finally, the strategies for interpreting and determining the applicability of results from the published literature to a microsurgeon's head and neck clinical practice are highlighted.