Operational Risk Management in Dermatologic Procedures

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Operational risk management (ORM) is a structured decision-making process that is widely used in military operations to identify and mitigate risks. Specifically, ORM provides a framework to systematically evaluate potential complications, consider a patient's individual medical history and risk tolerance, and ensure both the surgeon and patient understand the possible outcomes and contingency plans. In this article, we propose incorporating ORM-based techniques into patient counseling, in which potential risks are presented in a clear structured format with options discussed transparently to foster shared decision-making.

Operational risk management (ORM) refers to the systematic identification and assessment of daily operational risks within an organization designed to mitigate negative financial, reputational, and safety outcomes while maximizing efficiency and achievement of objectives.[1] Operational risk management is indispensable to modern military operations, optimizing mission readiness while minimizing complications and personnel morbidity. Application of ORM in medicine holds considerable promise due to the emphasis on precise and efficient decision-making in high-stakes environments, where the margin for error is minimal. In this article, we propose integrating ORM principles into dermatologic surgery to enhance patient-centered care through improved counseling, risk assessment, and procedural outcomes.

Principles and Processes of ORM

The ORM framework is built on 4 fundamental principles: accept risk when benefits outweigh the cost, accept no unnecessary risk, anticipate and manage risk by planning, and make risk decisions at the right level.[2] These principles form the foundation of the ORM's systematic 5-step approach to identify hazards, assess hazards, make risk decisions, implement controls, and supervise. Key to the ORM process is the use of risk assessment codes and the risk assessment matrix to quantify and prioritize risks. Risk assessment codes are numerical values assigned to hazards based on their assessed severity and probability. The risk assessment matrix is a tool that plots the severity of a hazard against its probability. By locating a hazard on the matrix, users can visualize its risk level in terms of severity and probability. Building and using the risk assessment matrix begins with determining severity by assessing the potential impact of a hazard and categorizing it into levels (catastrophic, critical, moderate, or negligible). Next, probability is determined by evaluating the likelihood of occurrence (frequent, likely, occasional, seldom, or unlikely). Finally, the severity and probability are combined to assign a risk assessment code, which indicates the risk level and helps visualize criticality. Systematically applying these principles and processes enables users to make informed decisions that balance mission objectives with safety.

Proposed Framework for ORM in Dermatology Surgery

Current risk mitigation in dermatologic surgery includes strict medication oversight, sterilization protocols, and photography to prevent wrong-site surgeries. Preoperative risk assessment through conducting a thorough patient

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history is vital, considering factors such as pregnancy, allergies, bleeding history, cardiac devices, and keloid propensity, all of which impact surgical outcomes.[3-5] After gathering the patient's history, dermatologists determine appropriateness for surgery and its inherent risks, typically via an informed consent process outlining the diagnosis and procedure purpose as well as a list of risks, benefits, and alternatives, including forgoing treatment.

Importantly, the standard process for dermatologic risk evaluation often lacks a comprehensive systematic approach seen in other higher-risk surgical fields. For example, general surgeons frequently utilize risk assessment calculators such as the one developed by the American College of Surgeons' National Surgical Quality Improvement Program to estimate surgical complications.[6] While specific guidelines exist for evaluating factors such as hypertension or anticoagulant use, no single tool synthesizes all patient risk factors for a unified assessment. Therefore, we propose integrating ORM as a structured decision-making process that offers a more consistent means for dermatologists to evaluate, synthesize, categorize, and present risks to patients. Our proposed process includes translating military mishap severity into a framework that helps patients better understand decisions about their health care when using ORM (eTable 1). The proposed process also provides dermatologists with a systematic, proactive, and iterative approach to assessing risks that allows them to consistently qualify medical decisions (eTable 2).

Patients often struggle to understand surgical risk severity, including overestimating the risks of routine minor procedures or underestimating the risks of more intensive procedures.[7,8] Incorporating ORM into patient communication mirrors the provider's process but uses patient-friendly terminology—it is discussion based and integrates patient preferences and tolerances (eTable 2). These steps often occur informally in dermatologic counseling; however, an organized structured approach, especially using a visual aid such as a risk assessment matrix, enhances patient comprehension, recall, and satisfaction.[9]

Practical Scenarios

Integrating ORM into dermatologic surgery is a proactive iterative process for both provider decision-making and patient communication. Leveraging a risk assessment matrix as a visual aid allows for clear identification, evaluation, and mitigation of hazards, fostering collaborative choices with regard to the treatment approach. Here we provide 2 case scenarios highlighting how ORM and the risk assessment matrix can be used in the management of a complex patient with a lesion in a high-risk location as well as to address patient anxiety and comorbidities. It is important to note that the way the matrices are completed in the examples provided may differ compared to other providers. The purpose of ORM is not to dictate risk categories but to serve as a tool for providers to take their own experiences and knowledge of the patient to guide their decision-making and counseling processes.

Case Scenario 1—An elderly man with a history of diabetes, cardiovascular accident, coronary artery bypass grafting, and multiple squamous cell carcinoma excisions presents for evaluation of a 1-cm squamous cell carcinoma in situ on the left leg. His current medications include an anticoagulant and antihypertensives.

In this scenario, the provider would apply ORM by identifying and assessing hazards, making risk decisions, implementing controls, and supervising care.

General hazards for excision on the leg include bleeding, infection, scarring, pain, delayed healing, activity limitations, and possible further procedures. Before the visit, the provider should prepare baseline risk matrices for 2 potential treatment options: wide local excision and electrodessication and curettage. For example, surgical bleeding may be assessed as negligible severity and almost certain probability for a general excision.

Next, the provider would incorporate the patient's unique history in the risk matrices (eFigures 1 and 2). The patient's use of an anticoagulant indicates a bleeding risk; therefore, the provider may shift the severity to minimal clinical concern, understanding the need for enhanced perioperative management. The history of diabetes also has a considerable impact on wound healing, so the provider might elevate the probability of delayed wound healing from rare to unlikely and the severity from moderate to severe. The prior cardiovascular accident also raises concerns about mobility and activity limitations during recovery, which could be escalated from minimal to moderate clinical concern if postoperative limitations on ambulation increase the risk for new clots. Based on this internal assessment, the provider identifies which risks are elevated and require further attention and discussion with the patient, helping tailor the counseling approach and potential treatment plan. The provider should begin to consider initial control measures such as coordinating anticoagulant management, ensuring diabetes is well controlled, and planning for postoperative ambulation support.

Once the provider has conducted the internal assessment, the ORM matrices become powerful tools for shared decision-making with the patient. The provider can walk the patient through the procedures and their common risks and then explain how their individual situation modifies the risks. The visual and explicit upgrade on the matrices allows the patient to clearly see how unique factors influence their personal risk profile, moving beyond a generic list of complications. The provider then should engage the patient in a discussion about their risk tolerance, which is crucial for mutual agreement on whether to proceed with treatment and, if so, which procedure is most appropriate given the patient's comfort level with their individualized risk profile. Then the provider should reinforce the proactive steps planned

to mitigate the identified risks to provide assurance and reinforce the collaborative approach to safety.

Finally, throughout the preoperative and postoperative phases, the provider should continuously monitor the patient's condition and the effectiveness of the control measures, adjusting the plan as needed.

In this scenario, both the provider and the patient participated in the risk assessment, with the provider completing the assessment before the visit and presenting it to the patient or performing the assessment in real time with the patient present to explain the reasoning behind assignment of risk based on each procedure and the patient's unique risk factors.

Case Scenario 2—A 38-year-old woman with a history of hypertension and procedural anxiety presents for evaluation of a biopsy-proven basal cell carcinoma on the nasal ala. The patient is taking diltiazem for hypertension and is compliant with her medication. Her blood pressure at the current visit is 148/96 mm Hg, which she attributes to white coat syndrome. Mohs micrographic surgery generally is the gold standard treatment for this case.

The provider's ORM process, conducted either before or in real time during the visit, would begin with identification and assessment of the hazards. For Mohs surgery on the nasal ala, common hazards would include scarring, pain, infection, bleeding, and potential cosmetic distortion. Unique to this patient are the procedural anxiety and hypertension.

To populate the risk assessment matrix (eFigure 3), the provider would first map the baseline risks of Mohs surgery, which include considerable scarring as a moderate clinical concern but a seldom probability. Because the patient's procedural anxiety directly increases the probability of intraoperative distress or elevated blood pressure during the procedure, the provider might assess patient distress/anxiety as a moderate clinical concern with a likely probability. While the patient's blood pressure is controlled, the white coat syndrome raises the probability of hypertensive urgency/emergency during surgery; this might be elevated from unlikely to occasional or likely probability, and severity might increase from minimal to moderate due to its potential impact on procedural safety. The provider should consider strategies to address these elevated risks during the consultation. Then, as part of preprocedure planning, the provider should consider discussing anxiolytics, emphasizing medication compliance, and ensuring a calm environment for the patient's surgery.

For this patient, the risk assessment matrix becomes a powerful tool to address fears and proactively manage her unique risk factors. To start the counseling process, the provider should explain the procedure, its benefits, and potential adverse effects. Then, the patient's individualized risks can be visualized using the matrix, which also is an opportunity for reassurance, as it can alleviate patient fears by contextualizing rare but impactful outcomes.[9]

Now the provider can assess the patient's risk tolerance. This discussion ensures that the patient's comfort level and preferences are central to the treatment decision, even for a gold-standard procedure such as Mohs surgery. By listening and responding to the patient's input, the provider can build trust and discuss strategies that can help control for some risk factors.

Finally, the provider would re-evaluate throughout the procedure by continuously monitoring the patient's anxiety and vital signs. The provider should also be ready to adjust pain management or employ anxiety-reduction techniques.

Final Thoughts

Reviewing the risk assessment matrix can be an effective way to nonjudgmentally discuss a patient's unique risk factors and provide a complete understanding of the planned treatment or procedure. It conveys to the patient that, as the provider, you are taking their health seriously when considering treatment options and can be a means to build patient rapport and trust. This approach mirrors risk communication strategies long employed in military operational planning, where transparency and structured risk evaluation are essential to maintaining mission readiness and unit cohesion.

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APPENDIX

eTABLE 1. Modified ORM Framework for Medical Decision-Making

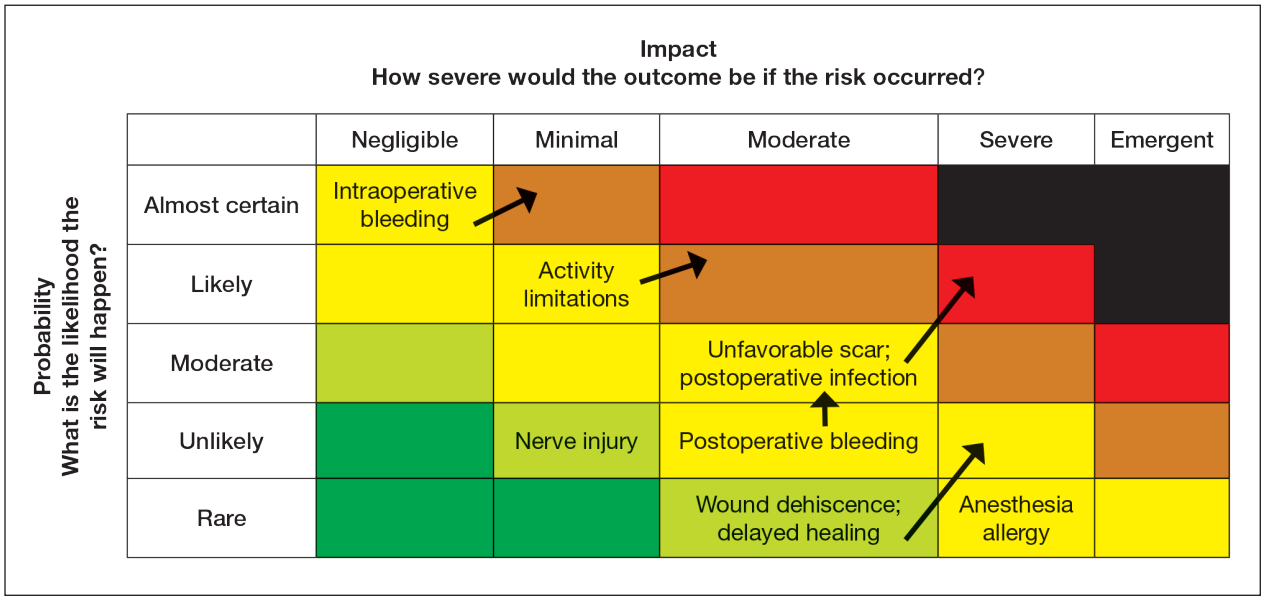
Severity category	Description
Emergent	Requires immediate intervention to prevent mortality/permanent disability
Severe	Requires urgent or intensive interventions to mitigate substantial morbidity
Moderate	Nonurgent and non–life-threatening but requires timely attention beyond the standard of care to prevent lasting health impacts
Minimal	Nonurgent, non–life-threatening situation that requires only routine care
Negligible	Simple standard management has a near 100% chance of mitigating the issue

Abbreviation: ORM, operational risk management.

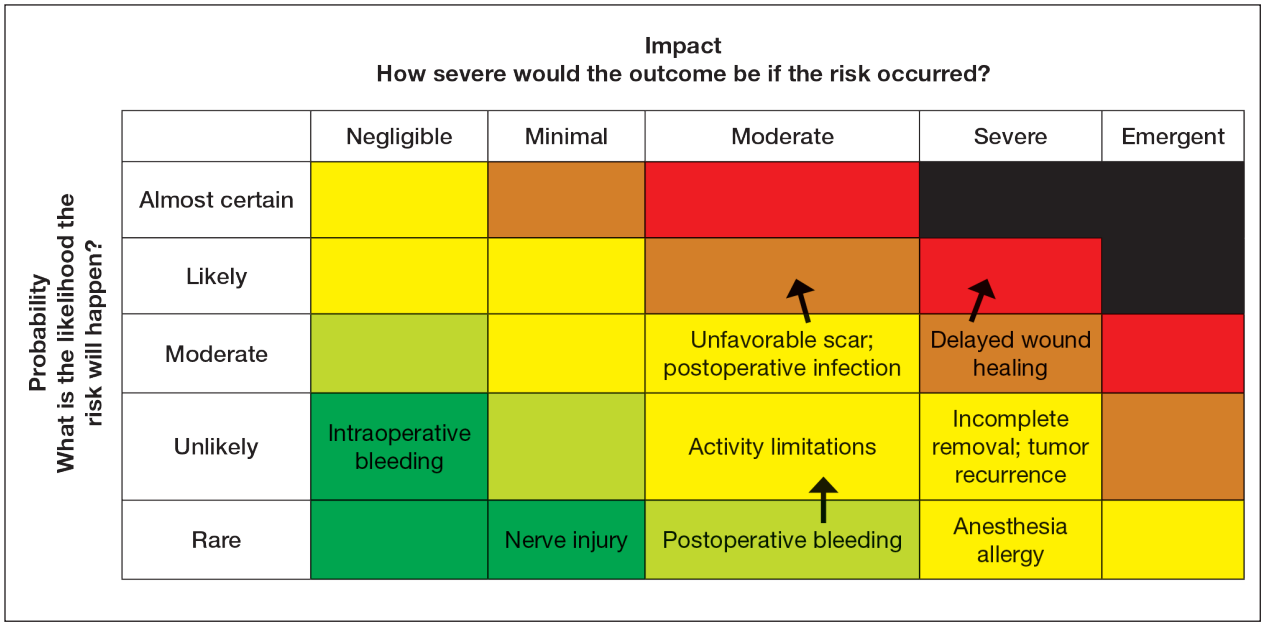
eTABLE 2. Applying the ORM Process to Dermatologic Care

ORM step	Provider decision-making	Patient counseling
Identify hazards	Determine possible hazards of a planned procedural intervention	Explain the procedure and its common risks and/or adverse effects
Assess risks	Categorize hazards by severity and probability; highlight hazards with elevated ORM severity	Explain how individual patient factors (eg, medical history, medications, comorbidities, lifestyle, epidemiology) and preferences impact their risk assessment, using a risk assessment matrix as a visual aid
Make informed decisions	Determine acceptable risk levels and risks necessary to improve the patient's current condition/status	Assess the patient's overall risk tolerance and determine what they consider acceptable risks
Implement risk controls	Take steps to mitigate risks (eg, ensuring proper instruments, medications, supplies, staffing)	Define and reinforce the steps to be taken to mitigate risk
Re-evaluate	As the procedure progresses, reassess hazards based on how the situation or the patient's condition has changed	Throughout the operation, communicate with the patient to evaluate whether they are tolerating the procedure and communicate changes that arise

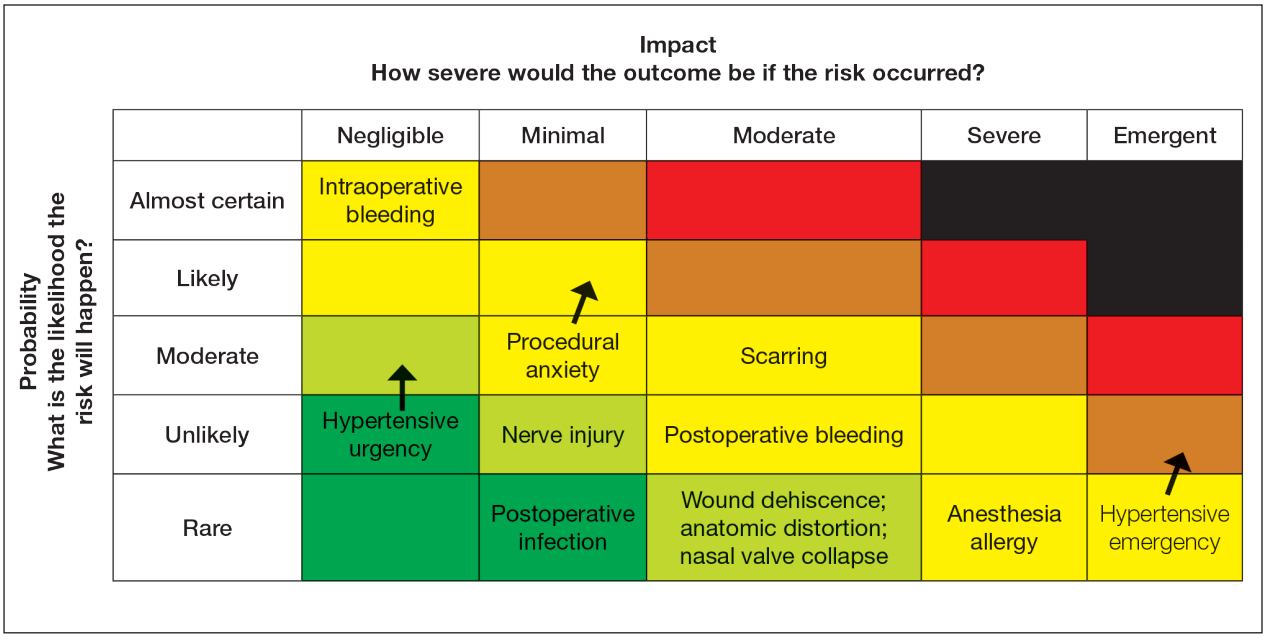
Abbreviation: ORM, operational risk management.



eFIGURE 1. Risk assessment matrix for wide local excision in case scenario 1.



eFIGURE 2. Risk assessment matrix for electrodessication and curettage in case scenario 1.



eFIGURE 3. Risk assessment matrix for Mohs micrographic surgery on the nose in case scenario 2.