Complication Rates in Delayed Mohs Micrographic Surgery Reconstruction of the Head and Neck

Sapna A. Patel MD1; Jack J. Liu MD1; Craig S. Murakami MD2,3; Daniel Berg MD4; Amit D. Bhrany MD1

1Department of Otolaryngology–Head and Neck Surgery, University of Washington, Seattle, Washington; 2Department of Otolaryngology, Virginia Mason Medical Center, Seattle, Washington; 3Division of Dermatology, University of Washington, Seattle, Washington

ABSTRACT

Objectives

Reconstruction of Mohs micrographic surgery (MMS) defects can be performed in an immediate or delayed fashion. Defect referral for delayed reconstruction are often larger and more complex. There are no known large studies on complication rates in delayed MMS reconstruction. There are concerns that delayed reconstruction may lead to higher infection rates and unfavorable healing. The objectives of this study are to 1) describe complication rates in delayed reconstruction for MMS defects in the head and neck, and 2) identify risk factors associated with complications.

Study Design


Methods

All patients diagnosed with head and neck carcinoma who underwent MMS and delayed reconstruction were included from two institutions: the University of Washington Medical Center and Virginia Mason Medical Center. We excluded those with incomplete medical records, no follow-up, and same day MMS reconstruction. Immediate complications were defined as events within 24 hours. Delayed complications were defined as events greater than 24 hours. Delayed complications included post-operative hemorrhage, hemostata, infection, necrosis, dehiscence, and other complications such as vestibular stenosis. Data were stratified and analyzed by Chi-square testing based on patient factors, defect size, location, and reconstructive modality.

Results

We identified a total of 415 cases in 342 patients, of which 55% of the defects were considered large (greater than 1 cm on the nose, greater than 2 cm in the head and neck) and 10% had cartilage or bone exposure. Reconstruction occurred from 0-11 days after exclusion with 49.5% of repairs occurring within 2 days of MMS. The overall complication rate was 8.2%. There were two immediate complications (arterial bleeding and hemostasea within 24 hours of reconstruction). The total delayed complication rate was 7.7% (32/415). The infection rate was low (2.4%). When stratified by defect size, only 1 wound infection was noted in small defects. In terms of patient characteristics, delayed reconstruction greater than 2 days, bone or cartilage exposure, and large defects were related to complications. Delayed reconstruction greater than 2 days was related to male gender, bone or cartilage exposure, and large defects. In terms of defect location, complications were related to composite defects only. Lastly, pedicled flaps and pedicled flaps with cartilage graft were associated with complications.

Conclusion

The largest study to report complication rates in delayed reconstruction for MMS defects in the head and neck. The overall complication rate of 8.2% is similar to some of the previous studies which range from 1.6% to 11.7%. The infection rate remained low and was likely overestimated as culture confirmation was not required. Our data suggest that risk of complications increase when reconstruction is performed with larger defects, exposed bone or cartilage, and when the reconstruction is performed greater than two days after Mohs resection.

INTRODUCTION

Mohs micrographic surgery (MMS) is a commonly employed technique for surgical excision of skin cancer, as it allows dermatologic surgeons to precisely remove cancerous lesions offering the highest cure rates. It also allows for maximal preservation of surrounding healthy tissue which is a critical for facial reconstruction.

Closure of a MMS defect can be done immediately or delayed. Much of the decision regarding the timing of reconstruction depends on the complexity and location of the MMS defect, patient anxiety, pain tolerance, and scheduling or availability of the reconstructive surgeon.

Patients who undergo delayed reconstruction tend to have more complex defects. There is also a theoretical concern for increased infection risk by delaying closure. Currently, there is one study published by Morick et al. in 1990, which showed a 5.6% complication rate in a cohort of 55 cases who underwent delayed MMS.

Given the paucity of literature on complication rates in this distinct cohort, our study aims to 1) describe complication rates in delayed reconstruction of MMS defects, and 2) identify risk factors associated with complications.

METHODS AND MATERIALS

• We performed a retrospective cohort study using pooled data from two institutions: University of Washington Medical Center and Virginia Mason Medical Center.

• Our study population included all subjects who underwent MMS reconstruction in the head and neck region from Feb. 1, 1989-Dec. 31, 2012. We excluded those with incomplete records, specifically reports involving prior history and physical, operative details, and follow-up information, those who had same day reconstruction, and patients with no follow-up.

• The primary outcome measures were immediate and delayed post-operative complications. Immediate complications occurred within 24 hours of surgery, while delayed complications occurred more than 24 hours after surgery. Any immediate complication was recorded including wound related or systemic issues. Delayed complications included hemorrhage, hemostasea, infection, necrosis, wound dehiscence, unfavorable wound healing requiring intervention, and others.

• Descriptive statistics were calculated using Excel and SPSS. We used the chi-square statistic to identify any associated risk factors for complications.

CONCLUSION

Our study is the largest series of subjects undergoing delayed reconstruction for MMS defects in the head and neck, with an overall complication rate of 8.2%. Our data suggest that risk of complications increase when reconstruction is performed with larger defects, exposed bone or cartilage, and when the reconstruction is performed greater than two days after MMS.

REFERENCE