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A retrospective case series evaluating the efficacy of preoperative, intra-incisional antibiotic prophylaxis in Mohs micrographic surgery: An effective method to reduce surgical-site infections and minimize systemic antibiotic use

To the Editor: Postoperative surgical-site infections remain an important cause of patient morbidity and play a significant role in added health care costs.[1-5] There has been a recent trend toward increasing systemic prophylactic antibiotic use despite evidence-based guidelines calling for perioperative antibiotic de-escalation.[1-5] The purpose of this study was to investigate the efficacy of preoperative, intra-incisional, prophylactic clindamycin in reducing the risk of surgical-site infections in patients who underwent Mohs micrographic surgery during a 22-month period.

A retrospectively collected, consecutive case series study was conducted in our surgical facilities from January 1, 2018, to November 15, 2019. Before tumor excision, patients received a dose of intra-incisional clindamycin mixed with buffered lidocaine and epinephrine (concentration of 408 μg/mL) (Table I) (Fig 1). After tumor excision, surgical wounds were either reconstructed or allowed to heal by secondary intention. All patients undergoing repair received another dose of intra-incisional clindamycin before reconstruction (Table I). Postoperative follow-up occurred at 1 week or at the patient's request. A surgical-site infection was defined as a clinically evident infection occurring 1 to 30 days postsurgery, with a positive-result wound culture not consisting of commensal skin flora. Individuals with a documented clindamycin allergy were excluded.

Of the 11,412 patients who underwent Mohs micrographic surgery, 7,944 (69.6%) had same-day reconstruction and the remaining 3,468 (30.4%) healed by secondary intention. Postoperative surgical-site infections were observed in 0.3% of

Table I. Postoperative surgical site infection characteristics

Total patients	11,412	
Total postoperative SSIs, No. (%)	44 (0.3)	
Patients who underwent same-day reconstruction, No. (%)	7,944 (69.6)	
Patients who healed via secondary intention, No. (%)	3,468 (30.3)	
Mean tumor size (range), cm	1.8 (0.6—19)	
Dosing		
Mean (range) initial dose before excision of first Mohs layer, μg	816 (204—4080) Stratified by tumor size: 612 for tumors <1 cm 816 for tumors 1—2 cm 1224 for tumors 2—3 cm Case by case for tumors >3 cm	
Additional dose before reconstruction	Mean 2040 (1224—6120)	
Postoperative SSIs in cases that underwent same-day reconstruction, No. (%)	20 (0.25) Stratified by repair type: Primary 8/20, flap 6/20, graft 6/20	No significant difference in infection rates based on repair type, $P = .44$
Postoperative SSIs in cases that healed via secondary intention, No. (%)	24 (0.69)	No significant difference between infections in repaired Mohs defects vs wounds allowed to heal via secondary intention, $P = .39$
Organism type, % (No.)	Gram positive, 57 (25/44) Gram negative 43 (19/44)	No significant difference in infection rates between gram-positive and -negative organisms, $P = .20$
Organism speciation, % (No.)	*Staphylococcus aureus*, 52.3 (23) *Pseudomonas*, 20.5 (9) *Aspergillus*, 6.8 (3) *Enterobacter*, 6.8 (3) *Proteus*, 4.5 (2) Group B streptococcus, 4.5 (2) *Klebsiella*, 2.3 (1) *Acinetobacter*, 2.3 (1)	
Location, % (No.)	Ear, 40.9 (18) Distal lower extremity, 15.9 (7) Central face, 18.2 (8) Trunk, 13.6 (6) Distal upper extremity, 9.1 (4) Scalp, 2.3 (1)	

SSI, Surgical-site infection.

patients (Table I). There was no significant difference in surgical-site infections between reconstructed wounds versus those that healed by secondary intention (Table I). In reconstructed wounds, there was no difference in infection rates between primary closures, flaps, or grafts.

Surgical-site infections occurred most frequently on the ear and distal extremities (Table I). There was no difference between gram-positive or -negative infections and no difference between gram-positive or -negative organisms in relation to site (Table I). The most common organisms were *Staphylococcus aureus* and *Pseudomonas*. No cases of antibiotic-associated diarrhea or adverse allergic cutaneous or systemic drug reactions were noted or reported. No patients received systemic pre- or postoperative antibiotics.

Our infection rate of 0.3% is 2.5 to 10 times lower than that reported for equivalent type and site surgeries (eg, dermatologic, Mohs micrographic and facial plastic surgeries).[1-5] Using a concentration of 408 μg/mL, we can achieve local tissue concentrations that are 40-fold greater than tissue levels achieved with systemic administration.[4] Because the dose is delivered only into the local dermis and

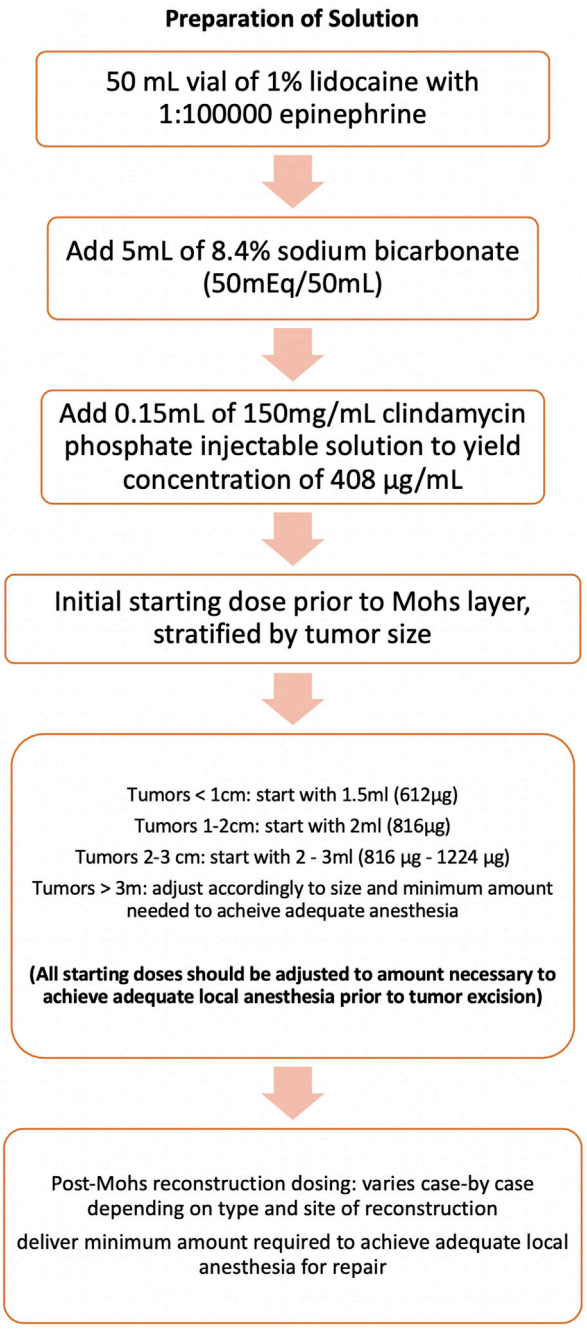

Fig 1. Intra-incisional clindamycin protocol algorithm for clinician use.

subcutis, negligible amounts enter systemic circulation; therefore, there is decreased potential for antibiotic resistance, systemic drug interactions, and disruption of the intestinal microbiome.[4]

One limitation of this study was the patient retention rate; approximately 18% did not return for routine postoperative follow-up. As such, it is plausible that the true surgical-site infection rate was higher. However, this is unlikely because we maintain close contact with our patients and referring providers for all surgical site complications.

In summary, this study demonstrates that preoperative, intra-incisional, prophylactic clindamycin is a safe and effective method to reduce postoperative surgical-site infections and may help to reduce systemic antibiotic overuse.

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The effectiveness of rituximab in pemphigus and the benefit of additional maintenance infusions: Daily practice data from a retrospective study

To the Editor: Rituximab in combination with short term prednisone or other immunosupressive therapy is recognized as the first-line therapy in pemphigus.[1] Additional maintenance infusions are often given on clinical indication, but evidence regarding these infusions is scarce. The aim of this study was to