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### Characterizing procedural complications using a structured dermatology triage approach in an academic center



Procedural complications have a detrimental impact on the quality of care delivered by dermatologists.<sup>1-3</sup> Though observational studies have identified relatively low rates of true complications arising from outpatient dermatologic procedures—most commonly bleeding or surgical site infections—the extent of clinical resources dedicated to their management in a standard dermatology practice has not

been well characterized. We sought to characterize procedural complication frequency as identified through a novel, structured, dermatology-specific triage algorithm to better understand resource use in an academic dermatology practice.

Over a 6-month period from February 2017 through July 2017, nursing triage staff at the Brigham and Women's Hospital Department of Dermatology tracked all possible complications in postprocedural patients using standardized tracking logs (Fig 1). All nurse-initiated calls, patient-initiated calls, patient portal messages, and postprocedural visits for complications were tracked. All patients undergoing excisions received routine day 1 post-procedure calls. Patients with suspected complications were provided phone-based education for suspected minor complications (eg, adhesive allergy, minor pain) or scheduled for in-person evaluation of suspected major complications (eg, wound infection) within 1 day.

Eight thousand five hundred thirty-seven procedures were performed during the study period (Table 1). Four hundred eighty-eight telephone calls were completed, identifying 44 patients with 56 postprocedural complications or concerns. Most patient concerns were expressed between days 5 and 10 postprocedurally; only 2 patients were identified on routine postprocedure day 1 calls with potential complications. The most frequent patient concerns included procedure site infection, excessive pain, and allergic contact dermatitis. Thirty-one patients were scheduled for in-person dermatologist evaluation based on nursing triage suspicion, 20 of whom received systemic antibiotics for suspected infection (overall infection rate, 20/8084 [0.25%]). One patient required inpatient hospitalization for a postprocedural complication during the 6-month period, requiring intravenous antibiotics for a postprocedural lower extremity cellulitis.

Current literature suggests that approximately 2% of patients undergoing routine dermatology outpatient procedures experience complications, slightly higher than our single academic medical dermatology practice-limited observation. If nonexcision patients with complications sought care elsewhere (despite postprocedural care instructions to contact us with any concerns), our findings may underestimate true procedural complication incidence.

Our observations provide several insights for efficient resource use of a nursing triage algorithm in a dermatology practice.<sup>4</sup> First, excisions were most likely to result in postprocedural complications, potentially justifying routine postprocedural calls to patients postexcision. However, the timing of postprocedural calls needed to be reconsidered because

Date	PT Name/MRN	Proc date/MD	Procedure	Reason for contact	Action taken
	NAME:	PROCEDURE DATE:	BIOPSY: SHAVE/PUNCH EXCISION PUNCH EXC LN2 ED&C OTHER: _____	NURSE: POST-OP/RESULTS PT INITIATED: CALL/E-MAIL/PG BLEEDING EXCESSIVE PAIN DEHISCENCE POSSIBLE INFECTION	MD REVIEWED Y/N _____ (MD INITIALS) LEFT MESSAGE _____ (DATE) APPT SCHED _____ / _____ (MD/DATE) TOPICAL ABX ORDERED _____
	MRN:	MD SURGEON:	LOCATION:	WOUND CARE BX RESULTS ADHESIVE/BACITRACIN ALLERGY NO ISSUES OTHER: _____	ORAL ABX ORDERED _____ TOPICAL STEROID _____ EDUCATION _____ OTHER: _____

**Fig 1.** Nursing triage tracking worksheet for postprocedural complications.

**Table I.** Postprocedural complications in an academic dermatology practice over 6 months

Procedure type	No. performed	Suspected complications, n (%)
Biopsy	3120	20 (0.6)
Excision	632	22 (3.4)
Destruction	4785	2 (0.04)
Total	8537	44 (0.5)

  

Date of postprocedure patient contact	Patient-initiated contacts, n (%)
Day 0-4	7 (16)
Day 5-9	20 (45)
Day 10-14	11 (25)
Day 15-19	1 (2)
Day 20-24	4 (10)
Day ≥25	1 (2)

  

Postprocedural complication	Patients, n (%)
Suspected wound infection	26 (46)
Excessive pain	11 (20)
Allergic contact dermatitis	8 (14)
Bleeding	4 (7)
Dehiscence	3 (5)
Other concerns	4 (7)

  

Complication disposition	Patients, n
Resolved via phone	13
Dermatologist visit	31
Medication ordered	28
Analgesic	4
Topical antibiotic	14
Oral antibiotic	20
Wound culture performed	9
Hospital admission	1

The total number of complications exceeds the number of patients because select individuals experienced >1 complication from a single procedure.

almost 50% of patient concerns arose between days 5 and 9 (Table I), and the overall complication rate was markedly low. Second, nursing triage algorithms successfully addressed nearly one third of postprocedural patient concerns directly via phone, emphasizing their valuable role in maintaining efficient clinical workflow and avoiding unnecessary appointments for both patients and physicians.

Finally, education for signs of wound infection, strategies for pain control, and symptoms of contact dermatitis in postprocedural patient education are warranted given that these were the most common patient concerns. Additional refinement and study of triage strategies—eg, incorporating patient-uploaded images of procedural sites, offering virtual teledermatology visits, and examining diverse practice settings—is warranted to facilitate delivering timely, high quality, patient-centered dermatologic care through clinical triage nurses.

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### **Surgical skills video-based assessment tool for dermatology residents: A prospective pilot study**



Surgical training is an integral part of dermatology residency education and a requirement for graduation.<sup>1,2</sup> Surgical education is provided to residents through various means, including lectures, text readings, practice sessions, and the practical application of skills during patient care.

Feedback of surgical technical skills and safety is commonly given at the bedside or immediately after a procedure is performed. However, feedback may not be comprehensive because of time constraints and the hesitancy to give feedback at the bedside where the patient can overhear these comments. Being able to offer critical individualized feedback to residents regarding surgical technical skills and safety may improve their overall surgical technique and help reduce sharps injuries.<sup>3</sup>

Precedence exists in resident procedural training to record surgeries and provide feedback from surgical videos.<sup>4</sup> In our study, dermatology residents recorded an excision with a head mounted point of view camera (GoPro HERO Session; GoPro Inc, San Mateo, CA). Recordings were used for self-evaluation in combination with formalized faculty evaluation to allow for a meaningful and detailed assessment of technical skills and sharps safety.

The study was approved by the University of Iowa Institutional Review Board. Each resident performed an excision and intermediate linear closure on the trunk or extremity of a patient while wearing the head-mounted point of view camera. After the procedure, each resident completed a self-evaluation consisting of a modified objective structured assessment of technical skills and a global assessment scale on a 5-point Likert scale. Residents had not reviewed the evaluation previously. Two blinded dermatology faculty reviewed each recording independently and rated the residents using the same modified objective structured assessment of technical skills and global assessment scale and completed a safety checklist.

Ratings that differed by >1 point were reconciled through discussion. Interviewer ratings were averaged for comparison to resident self-scores. Median scores for each postgraduate year (PGY) level were

obtained from the individual self- and faculty-assigned mean scores for each survey question. The median scores were compared by PGY level using the Wilcoxon signed-rank tests, and the strength of association between self- and faculty-assigned scores and PGY level was assessed using Pearson correlation analyses. Statistical analysis was performed using Stata software (version 14; Stata Corp, College Station, TX).

Twelve residents (8 women and 4 men) were recorded, of which 4 were PGY-2, 5 were PGY-3, and 3 were PGY-4. There were a total of 35 unsafe events, with an average of 2.69 ( $1.37 \pm 0.38$ ) per resident. PGY-2 and PGY-3 residents displayed a similar numbers of unsafe events, with an average of 2.8 unsafe events per resident. PGY-4 trainees displayed a decrease in the number of unsafe events, with an average of 2.3 per trainee. Residents rated themselves higher than faculty did on 12 of 15 evaluation categories examined (Table I). Table II shows the 5 most common unsafe events observed. There was a statistically significant positive correlation between PGY level and faculty-assigned scores (correlation coefficient 0.49,  $P < .0001$ ), but no statistically significant correlation between PGY level and resident self-scores.

Overall, this study found that point of view video assessment of resident surgical procedures is an effective and unique way to objectively assess surgical technical skills and identify unsafe surgical practices. The review of these videos provides an opportunity for intentional self-review and an opportunity for meaningful one-on-one individualized faculty feedback with the goal of improving surgical skills and safety. It is important to be mindful of the ethical and legal implications with recording procedures and the potential for permanent recordings to be used in medical litigation. It is important to be cognizant of this when recording and storing patient procedures.<sup>5</sup> Limitations of this study include the small sample size. Of note, the surgical safety checklist used is not a validated measurement tool and originated from review of the text "Safety in Office-Based Dermatologic Surgery."<sup>6</sup> There is a paucity of dermatologic surgical safety-specific evaluations, and we felt that our list of unsafe events would be a useful addition when performing a step-by-step evaluation of the safety of surgical excisions performed by the resident. Future studies could incorporate the use of follow-up video recording and assessment to determine if the feedback results in improved surgical skills and a reduction in unsafe surgical practices.