# Routine Packing of Simple Cutaneous Abscesses Is Painful and Probably Unnecessary

Gerald F. O'Malley, DO, Paul Dominici, MD, Patricia Giraldo, MD, Elizabeth Aguilera, MD, Manisha Verma, MD, Claudia Lares, MD, Patricia Burger, and Edwin Williams, MD

## Abstract

***Objectives:*** The objective was to determine whether the routine packing of simple cutaneous abscesses after incision and drainage (I&D) confers any benefit over I&D alone.

***Methods:*** In a prospective, randomized, single-blinded trial, subjects with simple cutaneous abscesses (less than 5 cm largest diameter) underwent incision, drainage, irrigation, and standard abscess preparation in the usual manner. Subjects were then randomized to either packing or no-packing. Visual analog scales (VAS; 100 mm) of pain were recorded in the emergency department (ED). All patients received trimethoprim-sulfamethoxazole (TMP-SMX), ibuprofen, and narcotic prescriptions, recorded twice daily VAS pain scores, and returned in 48 hours at which time dressings and packing, if present, were removed and a physician blinded to the randomization and not part of the initial visit repeated measurements and determined the need for further intervention.

***Results:*** Forty-eight subjects were included in the final analysis. There were no significant differences in age, sex, abscess location, or initial pain scores between the two groups. There was no significant difference in need for a second intervention at the 48-hour follow-up between the packed (4 of 23 subjects) and nonpacked (5 of 25 subjects) groups (p = 0.72; relative risk = 1.3, 95% confidence interval [CI] = 0.4 to 4.2). Patients in the group that received packing reported higher pain scores immediately postprocedure (mean difference = 23.8 mm; p = 0.014, 95% CI = 5 to 42 mm) and at 48 hours postprocedure (mean difference = 16.4 mm; p = 0.03, 95% CI = 1.6 to 31.2 mm), as well as greater use of ibuprofen (mean difference = 0.32; p = 0.12, 95% CI = −1.4 to 2.0) and oxycodone/acetaminophen (mean difference = 2.19; p = 0.03, 95% CI = 0.2 to 4.1).

***Conclusion:*** In this pilot study, not packing simple cutaneous abscesses did not result in any increased morbidity, and patients reported less pain and used fewer pain medications than packed patients.

ACADEMIC EMERGENCY MEDICINE 2009; 16:470–473 © 2009 by the Society for Academic Emergency Medicine

**Keywords: wound, abscess, management, packing**

To the best of our knowledge, there is currently no literature describing the indications or necessity for routine packing (filling an abscess cavity with ribbon gauze) of cutaneous abscesses after incision and drainage (I&D). Emergency medicine and surgical references cite incision, drainage, and packing as important aspects of abscess management, but evidence for the recommendations is unclear.[1–4] Traditional teaching is that packing an abscess is necessary for several theoretical reasons (to prevent incomplete collapse of the cavity with infected material trapped inside it or to assist in development of an epithelial lining in the cavity), but none of these theories are well supported by science. There is no evidence that packing a cutaneous abscess after I&D influences or improves outcome.

Packing is painful and may lead to repeat emergency department (ED) visits for packing removal or changing with concomitant increased inconvenience and expense. The decision to pack or not to pack is largely based on physician discretion. Routine packing should not be considered standard practice if it does not improve or influence outcome.

This randomized investigation compares complication rates and discomfort among patients receiving packing

From the Department of Emergency Medicine (GFO, PD, PG, EA, MV, CL, PG), Albert Einstein Medical Center, Philadelphia, PA.

Received October 27, 2008; revision received December 22, 2008; accepted January 7, 2009.

Presented at the American College of Emergency Physicians Scientific Assembly, Seattle, WA, October 11, 2007.

Address for correspondence and reprints: Gerald F. O'Malley, DO; e-mail: omalleyg@einstein.edu.


ISSN 1069-6563
PII ISSN 1069-6563583

doi: 10.1111/j.1553-2712.2009.00409.x

after I&D of simple cutaneous abscesses with patients who are not packed after I&D. To the best of our knowledge this is the first prospective study to investigate this issue.

## METHODS

### Study Design

We conducted a prospective, randomized clinical trial to compare the need for a treatment intervention at a 48-hour reevaluation point in patients randomly assigned to one of two groups. Approval was obtained from the institutional review board (IRB), and informed consent was provided to and obtained from each subject.

### Study Setting and Population

The study was conducted in the ED of Albert Einstein Medical Center (AEMC) between February 2006 and August 2006. The ED at AEMC has research staff available 24 hours per day to screen and enroll potential subjects.

All patients 18 years of age or older with cutaneous abscesses located on the trunk or extremities that required I&D were approached and offered participation in the study. Need for I&D was left to the discretion of the treating physician.

Exclusion criteria were abscesses larger than 5 cm in any dimension; pregnancy; comorbid medical conditions including diabetes, HIV, or any malignancy; chronic steroid use; immunosuppressive states including but not limited to sickle cell disease and sarcoidosis; abscesses located on the face, neck, scalp, hands, feet, perianal, rectal, or genital areas; hidradenitis or pilonidal abscesses; allergy to sulfa or hypersensitivity to trimethoprim-sulfamethoxazole (TMP-SMX); need for procedural sedation or supplemental treatment (intravenous antibiotics or surgical consultation) based on physician's discretion; or subject inability to return for 48-hour follow-up.

### Study Protocol

Group 1 (packed) received I&D with standard packing of the abscess cavity; Group 2 (nonpacked) received I&D without standard packing of the abscess cavity. ''Standard packing'' refers to the usual technique of filling the abscess cavity with ribbon gauze after I&D. Practice variation exists among physicians with regard to the exact technique of packing, and no attempt at making the technique uniform among practitioners was made for the purposes of the study.

The treating physician measured erythema and induration using a measuring tape and estimated the amount of fluctuance as small, moderate, or large. The treating physician cleaned the abscess area with chlorhexidine solution, anesthetized with 1% bicarbonate-buffered lidocaine, incised the abscess with a No. 10 surgical scalpel, collected aerobic wound cultures, irrigated with normal saline, and used a cotton-tipped applicator to break up loculated areas within the abscess cavity. The method of I&D, volume of irrigation, and decision to probe to break-up loculations was standardized, but the volume of irrigation and degree of probing was left to the discretion of the treating physician. If a subject had more than one abscess on his or her body that met eligibility criteria, for the sake of simplicity only one was chosen, at the discretion of the treating physician, to include in randomization.

After the abscess was prepared as described above, the patient was randomized via computer randomization scheme (randomization.com) to either receive or not receive packing with ¼-inch non–iodophor-impregnated gauze packing. The total amount and manner of packing was left to the discretion of the treating physician. Abscesses randomized to not pack were covered with a sterile gauze and silk tape.

Under the supervision of a research assistant, subjects were asked to describe the discomfort of the abscess using a 100-mm visual analog scale (VAS) before, during, and immediately after the procedure. Patients were instructed not to change the dressing at home and to just reinforce the dressing if it were to soak through. All patients were given a discomfort diary, preprinted prescriptions for TMP-SMX (800 mg/160 mg q12h), oxycodone/acetaminophen (5 mg/325 mg q4h prn pain), and ibuprofen (600 mg q4h prn pain). Patients were asked to bring all leftover medications with them at the time of their follow-up. Patients were given a discomfort diary with identical 100-mm VASs and asked to record their discomfort every 12 hours, as well as the amount and type of pain medication that they required to comfortably control pain. Pill counts were used to verify the discomfort diary.

When the patient returned to the ED 48 hours later, a research assistant intercepted the patient, undressed the abscess, and removed the packing if present. An attending physician who had not seen the patient before and was blinded to the randomization then independently evaluated the wound for the primary outcome variable (need for intervention) and measured erythema, induration, and fluctuance. A second, similarly blinded physician repeated the measurements. The discomfort diary was collected and leftover medication was counted. If the subject did not return for the scheduled 48-hour follow-up, a research assistant would attempt to contact the subject by telephone and ask the subject to quantify his or her pain on a scale of 1 to 100, similar to the 100-mm VAS that he or she had used when initially enrolled.

All patients were contacted via telephone at 10–15 days after the original I&D procedure and asked specifically about whether they had required additional interventions either at our hospital or another. All data collection, subject supervision, and phone call follow-up were performed and recorded on preprinted data collection sheets by unblinded trained research assistants familiar with the protocol.

### Outcome Measures

The primary outcome was need for intervention as determined by a blinded attending physician at 48 hours. Intervention was defined as extension of the previous incision, further probing to break up loculations, irrigation, packing the wound, change of initial

antibiotics, need for surgical evaluation, admission to the hospital, or need for another (second) follow-up visit to the ED. Secondary end points included the description of pain and amount of pain medication used by the patient over the 48-hour period between intervention and evaluation and degree of erythema, induration, and fluctuance.

### Data Analysis

No sample size determination or power calculation was performed for this pilot study. We chose to enroll 50 patients for simplicity and on the advice of our IRB. Primary data analysis was performed by comparing number and type of interventions at 48 hours. Mean VAS scores and number of pills taken by each subject were calculated for each time period (initial, immediately following the procedure, and every 12 hours for 48 hours) and descriptive statistics of the differences between the groups were performed using an unpaired t-test. Fisher's exact test was used to examine the primary outcome measure (need for an intervention at return visit). Differences in the means and 95% confidence intervals (CIs) were calculated using INSTAT software (GraphPad Software Inc., San Diego, CA).

## RESULTS

Fifty-one patients were enrolled in the study; 3 were excluded prior to randomization because 1 patient required sedation after the procedure began, another was discovered not to be an abscess but an infected soft tissue mass, and the third in whom no abscess cavity was identified after I&D.

Of the 48 remaining patients, 23 were randomized to the packing group and 25 to the nonpacking group. There were no differences in age or sex between the groups; the majority of patients in both groups were African American, reflecting the demographic characteristics of our patient population (Table 1). Abscesses were located on the buttocks and lower extremities mostly, with the remainder distributed equally on the arms, abdomen, and chest/back (Table 2).

Wound culture results were positive for methicillin-resistant *Staphylococcus aureus* in 29 subjects (60.4%). Cultures were positive for other bacteria in 11 subjects (22.9%), and no cultures were taken in 8 subjects (16.7%).

Table 1
Demographic Characteristics

| Characteristic | Randomization Group | |
|---|---|---|
| | Packing | No Packing |
| Sex | | |
| Male | 12 | 13 |
| Female | 11 | 12 |
| Age, mean (±SD) | | |
| Years | 29.70 (±11.26) | 30.48 (±14.82) |
| Race | | |
| African American | 22 | 24 |
| White | 1 | 0 |
| Hispanic | 0 | 1 |
| Other | 0 | 0 |

Table 2
Abscess Location

| Location | Number of patients |
|---|---|
| Buttock | 12 |
| Forearm | 9 |
| Abdomen | 7 |
| Thigh | 6 |
| Leg | 6 |
| Chest | 3 |
| Back | 2 |
| Upper arm/shoulder | 1 |
| Other | 1 |
| Not recorded | 1 |
| Total | 48 |

### Primary Outcome: Need for Intervention at Return Visit (48 Hours after Enrollment)

Thirty-four subjects (66.6%) returned at 48 hours: 13 (54%) from the nonpacked group and 21 (88%) from the packed group. Nine subjects needed an intervention at the 48-hour follow-up. There was no significant difference in need for intervention between the packed (4 of 23 subjects) and nonpacked (5 of 25 subjects) groups ($p = 0.72$, relative risk = 1.3, 95% CI = 0.4–4.2). No patient who returned for 48-hour follow-up required admission (Table 3).

A total of 14 subjects did not return at 48 hours for follow-up: 11 from the nonpacked group and 3 from the packed group. Ten of the 11 subjects from the nonpacked group who did not return were contacted by telephone and reported that they did not think that the abscess needed to be reevaluated, reported no pain, and did not want to return to the ED; the 11th subject was lost to follow-up. One of the 3 subjects from the packed group who did not return was contacted by telephone and reported moderate pain (50 on a scale of 100) but was unable to secure transportation to return to the ED. The other 2 patients in the packed group who did not return were lost to follow-up.

Thirty-six subjects (75% total; 17/24 from the packed group and 19/24 in the nonpacked group) were contacted at 10–15 days postprocedure via telephone. None required any additional intervention and none reported any complication.

Table 3
Interventions Thought Required by Blinded Physician at 48-Hour Follow-up

| Intervention | Packing Group | No Packing Group |
|---|---|---|
| Irrigation of abscess cavity | 1 | 2 |
| Extension of incision | 0 | 1 |
| Need for second follow-up visit | 2 | 1 |
| Change antibiotics based on culture results | 0 | 1 |
| Repack abscess cavity | 1 | 0 |

### Pain Assessment via VAS Scores

There was no significant difference in preprocedure reported pain scores between the packed group and the nonpacked group (difference of means = 10.25 mm, 95% CI = –7.5 to 27.9 mm, p=0.26). Postprocedural pain scores were significantly higher in the packed group (difference of means = 23.8 mm, 95% CI = 5 to 42 mm, p=0.014) in the immediate postprocedure period. Subjects in the packed group also reported significantly higher average pain scores at the 48-hour follow-up (difference of means = 16.4 mm, 95% CI = 1.6 to 31.2 mm, p=0.03).

### Use of Pain Medication

***Ibuprofen.*** Patients randomized to be packed took a mean (±standard deviation [SD]) of 2.29 (±2.76) ibuprofen pills during the 48 hours following the procedure, whereas those randomized to the nonpacking group took a mean (±SD) of 1.97 (±1.81) pills (difference of means = 0.32, 95% CI = –1.4 to 2.0, p=0.12).

***Oxycodone/Acetaminophen.*** Patients randomized to be packed took a mean (±SD) of 3.1 (±4.1) oxycodone/acetaminophen pills during the 48 hours following the procedure, whereas those randomized to the nonpacking group took a mean of 0.91 (±1.5) pills (difference of means = 2.19, 95% CI = 0.2 to 4.1, p=0.03).

## DISCUSSION

Traditionally, ED treatment of simple cutaneous abscesses involves incision, drainage, and packing the wound with gauze, although a definitive and scientific explanation for this is lacking. Several theories proposed in emergency medicine and surgery texts suggest that packing the wound will prevent the wound margins from closing and forming a potential dead space, leading to recurrent abscess formation. Removal of the packing material has also been suggested as a way to provide gentle debridement of necrotic tissue from within the cavity site.[1–4]

None of the theories regarding packing of cutaneous abscesses have been demonstrated in any scientific way, and it is the experience of the primary author that physicians in developing countries do not routinely pack abscesses because they have not the supplies or capacity to do so.

To our knowledge, this is the first prospective, randomized pilot clinical trial to investigate the necessity of wound packing following I&D of simple cutaneous abscesses. The results are of significant clinical importance, as the primary intervention, use of packing, is painful and of uncertain benefit.

## LIMITATIONS

This is a small pilot study and the results cannot be generalized. Further investigation is planned to determine if the results are applicable to a broad patient population at multiple centers. Inclusion criteria will be expanded to include a more diverse population, and abscesses will not be limited by size or location on the body. The routine requirement for antibiotics will be eliminated, as current literature no longer necessitates their use.

## CONCLUSIONS

Although only a pilot study of safety, our data demonstrate that wound packing for simple cutaneous abscesses is painful and may be unnecessary.

## References

1. Pollack CV. Cutaneous and subcutaneous abscesses. In: Singer AJ, Hollander JE, eds. Lacerations and Acute Wounds: An Evidence-based Guide. Philadelphia, PA: F.A. Davis Company, 2003, p 166.
2. Butler KH. Incision and drainage. In: Roberts JR, Hedges JR, eds. Clinical Procedures in Emergency Medicine, 4th ed. Philadelphia, PA: Saunders, 2004, pp 726–7.
3. Folstad SG. Cutaneous abscesses. In: Tintinalli JE, Kelen GD, Stapczynski S, Ma OJ, Cline DM, eds. Emergency Medicine: A Comprehensive Study Guide, 6th ed. New York, NY: McGraw-Hill, 2004, pp 983–6.
4. Meislin HW, Guisto JA. Soft tissue infections. In: Marx JA, Hockberger RS, Walls RM, eds. Rosen's Emergency Medicine Concepts and Clinical Practice, 5th ed. St. Louis, MO: Mosby, 2002, pp 1949–51.