Incision and drainage of subcutaneous abscesses without the use of packing

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Abstract

Purpose: The classic intervention for subcutaneous abscesses is incision and drainage followed by wound packing. This is thought to aid hemostasis, and prevent reorganization of the abscess. Removal of packing material may be painful and anxiety provoking. We sought to determine whether packing could be omitted with equal efficacy.

Methods: One hundred pediatric patients with subcutaneous abscesses were enrolled between May, 2008 and December, 2010. All underwent incision and drainage, then seven days of oral antibiotics and warm soaks. Patients were randomized to the packing group (PG) or non-packing group (NPG). Packing was removed 24 h after the procedure. Patients were excluded if: 1) diabetic/immunosuppressed, 2) the abscess was perianal or pilonidal, or 3) the abscess was secondary to a previous operation. Patients were evaluated in clinic if recurrence was suspected during follow-up calls on postoperative days seven and 30.

Results: Eighty-five patients completed the study (43 PG/42 NPG). The two groups were not statistically different with respect to initial parameters, recurrent abscesses (one in each group), or MRSA incidence (81.4% PG/85.7% NPG).

Conclusion: Incision and drainage of subcutaneous abscesses without the use of packing is a safe and effective technique. This approach omits a traditional, but painful and anxiety provoking, component of therapy.

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The classic surgical care for subcutaneous abscesses is incision and drainage followed by packing with gauze [1–4]. The removal of packing can be a painful and anxiety provoking procedure for the pediatric patient and their caregivers [5]. Our hypothesis was that incision and drainage without the use of packing would be an equally successful treatment strategy.

1. Methods

1.1. Patient population

After approval by the institutional review board (IRB), pediatric patients (less than 18 years old) with subcutaneous
abscesses were prospectively randomized at a community-based teaching hospital between May, 2008 and December, 2010. Informed consent was obtained from the medical guardian, and assent was obtained from children over seven years of age. Patients were excluded if diabetic or immunosuppressed, if the abscess was perianal or pilonidal, or if the abscess was secondary to a previous operative procedure. One hundred patients were randomized to either the packing group (PG), or the non-packing group (NPG) using a designator randomly placed in the study packet. Data collected on the operative day included: age, gender, abscess location and abscess size.

1.2. Surgical technique

Appropriate intravenous sedation was administered. Using sterile technique, 1% lidocaine was injected, and a 5–8 mm incision was made in the suspected center of the fluctuant area, no matter the size of the abscess. Bacterial cultures were obtained, loculations were bluntly lysed, and the wound was irrigated with copious saline. In PG patients, the wound was packed with dry ½ inch Nu Gauze Plain Packing Strip (Johnson & Johnson, New Brunswick, NJ). NPG patients received no packing.

1.3. Home care

All patients received seven days of postoperative oral trimethoprim sulfamethoxazole unless contraindicated, even if the patient was on antibiotics previously. In addition, participants were instructed to perform twice daily warm soaks, and to cover the wound with plain gauze or a clean diaper. In PG patients, the packing was removed by a caregiver after 24 h.

1.4. Follow-up care

Recurrence of an abscess was defined as treatment failure. Caregivers received follow-up phone calls from one of two pediatric surgery nurse specialists on postoperative days seven and 30. Using an IRB approved telephone script, the care provider was questioned regarding general wound appearance, presence of fever, compliance with antibiotic therapy and warm soaks, timing of packing removal, and whether medical attention was sought elsewhere. Participants were offered an opportunity to discuss any questions or concerns, and to follow-up in the clinic as they felt necessary. If recurrence was suspected by the nurse, patients were evaluated in the clinic. Letters were sent to families who could not be reached by phone after three successive daily attempts. The letter requested that the caregiver contact the surgery office at their earliest convenience. Patients without follow-up were excluded from final analysis (7 PG/8 NPG).

1.5. Statistical method

Prior to the study, statistical computation for sample size (using R statistical software) determined that a study population of 4000 enrollees would be required to provide a power of 80%, assuming an abscess recurrence rate of 2%. Due to the large number of participants required, we chose a more practical group size (100) that could be entered into the study over an estimated 12 month period. Categorical data comparisons between the packing and non-packing groups were analyzed using a Chi-Square test. Numerical data comparisons between the groups were analyzed using a 2 Sample t-test. All tests were conducted at the 0.05 significance level using the Minitab 16 statistical package (Minitab Inc., State College, PA).

2. Results

One hundred forty patients presented with subcutaneous abscesses during the study period. Thirteen patients provided eighteen encounters that met exclusion criteria due to disease processes that included pilonidal disease [4], perirectal abscess [4], hidradenitis [2], infected subcutaneous cyst [1], diabetes [1], and postoperative wound infection [1]. Twenty-two eligible participants declined consent for enrollment into the randomized study resulting in an 82% (100/122) participation rate. Eighty-five patients completed the study (43 PG/42 NPG, statistical power 7.02%). The two groups were not statistically different with respect to age, gender, and mean abscess diameter (5.7 PG/4.6 NPG, p = 0.07; range 1.5–17 cm PG/2–15 cm NPG). The two groups were not different with respect to abscess location (Table 1). There was a single recurrent abscess in each group (2.3% PG/2.4% NPG, p = 1). After repeat incision and drainage, both patients had no further sequelae. The PG recurrent abscess occurred on the neck. The culture of the recurrent abscess grew “normal skin flora.” In the NPG, the recurrent abscess was on the buttock and grew methicillin-resistant Staphylococcus aureus (MRSA). The incidence of MRSA was similar between the two groups (81.4% PG/85.7% NPG, p = 0.59). Other culture results were methicillin-sensitive.

<table>
<thead>
<tr>
<th>Location</th>
<th>Packing Group</th>
<th>Non-packing Group</th>
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<tbody>
<tr>
<td>Face</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Neck</td>
<td>3</td>
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</tr>
<tr>
<td>Upper Extremity</td>
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<td>5</td>
</tr>
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<td>6</td>
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<td>4</td>
</tr>
<tr>
<td>Groin</td>
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<td>3</td>
</tr>
<tr>
<td>Buttock</td>
<td>18</td>
<td>22</td>
</tr>
</tbody>
</table>
3. Discussion

Based on these data, we conclude that it is safe and effective to perform incision and drainage of subcutaneous abscesses without the placement of packing material. Pain scores were not specifically evaluated in this study, but packing removal has been shown previously to be associated with increased pain [5]. A further concern regarding the placement of packing relates to the potential for noncompliance in packing removal. This can lead to infectious complications, such as toxic shock syndrome [6,7]. Thus, we believe the non-packing method to be an improvement over strategies that require removal of packing.

Our paper concurs with similar findings from previous studies in adults [5] and children [8,9]. These reports include many fewer patients than were enrolled in this study, and only one [9] was a prospective, randomized trial. There have also been several recent retrospective studies in the literature that have presented other successful strategies for treating abscesses without using packing material. These techniques include the placement of a “loop” drain [10,11], Penrose drain [12], and modified Pezzar catheter [13]. While each of these studies has merit, we believe that there is one major difference that sets ours apart. These other techniques require a second procedure: the removal of the catheter or drain. While this may not be as painful as gauze removal, the process can be anxiety provoking. Furthermore, a second clinic visit is required. Our technique does not utilize packing or any other device; thus, pain and anxiety are limited while obviating the need for a second office visit.

We showed no difference in the abscess recurrence rate between the two study groups. There are many possible explanations for recurrent abscesses. These include procedural factors (inadequate initial drainage), patient-specific factors (immune status), abscess-specific factors (location, size, organism), and compliance issues (antibiotics, warm soaks). We standardized the size of the incision (5–8 mm) and the surgical technique for all patients. Immunocompromised patients were excluded. The size and location of abscesses were similar in both groups. MRSA status was also similar in both groups. The size of the initial abscesses in both patients with recurrences did not appear to be a factor, as they were each 4 cm in diameter. This was less than the mean diameter of abscesses in both groups.

In one of the NPG patients, a separate drainage was required in a second location 7 cm from the initial incision. The second lesion may have been unrecognized or not fully developed at the time of the initial procedure. It is unlikely that the placement of packing in this patient would have prevented the second abscess.

To be clear, we believe that the non-packing approach can only be successful in the presence of a number of additional factors. We advocate an adequate skin incision, 5–8 mm through the suspected center of the subcutaneous abscess (regardless of the size), followed by thorough exploration of the wound with an instrument to break up loculations. This is followed by copious irrigation of the abscess cavity to expel any residual purulent material. Of note, in our experience, this small but adequate incision heals well without significant cosmetic impact. Future investigations might evaluate the necessity of antibiotic therapy following adequate incision and drainage of subcutaneous abscesses.

The primary limitation of this study is the small population size. Assuming that the incidence of recurrent abscesses is low (2.4% in this study), it would have taken 4000 patients to achieve a study power of 80% (p = 0.05). From a practical standpoint, however, we feel very comfortable recommending this approach based on the results of this series as well as the other studies referenced.

4. Conclusion

Incision and drainage of subcutaneous abscesses without the use of packing is a safe and effective technique. This approach omits a traditional, but painful and anxiety provoking, component of therapy.

Acknowledgments

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References

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